

THE STUDY OF THIRD PARTY LOGISTIC USAGE IN EAST JAVA

Annisa Kesy Garside

Industrial Engineering, Muhammadiyah Malang of University
annisa_garside@yahoo.com

ABSTRACT

This research aims to conduct a study of third-party logistic (3PL) used by manufacturing industries in East Java, Indonesia. The study is proposed to find out the level of 3PL usage by company, decision making process, types of 3PL service, logistic cost allocated for 3PL, impact of 3PL usage, the risks of 3PL usage and the future plan for 3PL application. Based on the data obtained through survey, most companies are satisfied enough with the service provided by 3PL firm. The biggest positive impacts achieved are on-time delivery and customer satisfaction. Based on the existing positive impacts, most companies are willing to enhance the use of 3PL service.

Keywords: *third-party logistic, survey, logistic.*

1. INTRODUCTION

The tougher competition among companies and globalization has triggered companies to reorganize the logistic system in order to improve customer service and reduce cost. One of reorganization strategies is to rely the part or whole logistic activities on another firm which is known as third-party logistic (3PL) (Baki and Murat Ar, 2009). Definition of 3PL or logistic outsourcing is frequently found in the literatures, one of them was first defined by Lieb (1992). Lieb (1992) defined 3PL as the use of external firm to handle logistic functions which is traditionally handled by the company itself. Based on the survey conducted by Langley and Capgemini (2014), the company using logistic service gained positive impacts such as reduction of logistic cost by 11 percent, inventory cost by 5 percent, and logistic fixed cost by 23 percent in 2014. In addition, the customer service improvement which is measured through order fill rate indicator reaches between 66 and 68 percent in 2014.

Several studies in terms of use of 3PL service have been widely conducted by researchers. Empirical study on the use of 3PL service was firstly conducted by Lieb within 500 big scale manufacturing companies in the USA. Lieb repeated the study between 1992 and 2006 which is later known as "Lieb Series". According to Lieb series, some researchers conduct the study

in their countries. Arroyo et al. (2006) conducted research in Mexico. Study on the use of 3PL service in Europe was conducted by Large, R., and Kovács (2001) in companies in Germany and Hungary, Roques and Michrafy (2003) in France, Ernst et al. (2002) and Baki (2004) in Turkey. The same study also has been done in Asia such as Singapore (Bhatnagar et al., 1999; Sohail et al., 2006), Malaysia (Sohail and Sohal, 2003), China (Hong, et al., 2004), Saudi Arabia (Sohail and Al-Abdali, 2005), and Sahay & Mohan (2006) in India. Study of the use of 3PL service in Australia has been conducted by Dapiran et al. (1996) and Sohal et al. (2002). Those researches asked about the magnitude of 3PL service usage, type of logistic service used the most, possible advantages, challenges on implementation, and impact of 3PL service usage for the company.

Study of 3PL service usage has been performed in some countries in Asia. But, there has not been any study ever conducted in Indonesia. East Java is one of the provinces in Indonesia which has been rapidly grow in industrial sector and placed as second rank after Jakarta in terms of the contribution to Gross Regional Domestic Product of Indonesia. According to Statistic Indonesia (2012), industrial processing sector contributes about 27 to 28 percent of total Gross Regional Domestic Product of Indonesia and agriculture sector only counts for 17 to 18 percent with a declining trend

from 2007 up to 2011. Moreover, the unit number of enterprise growth including micro, small, and medium enterprise and large scale industry in East Java nearly reaches 20 percent per year (Disperindag, 2012). The growth of industry in East Java demands a more intensive logistic role because industry activities are related to the warehousing, transportations, delivery consolidation, and freight forwarding. By looking to the existence of 3PL firms in Indonesia and the growth of industry number year by year, makes this research a necessity to be conducted in order to find out how far the use of 3PL service by manufacturing industry in East Java.

2. RESEARCH METHOD

The research was conducted following several steps as shown in figure 1. First step was a literature review to study the use of 3PL implementation in other countries by other researchers. In addition, the researcher was also reviewing the industrial growth and contribution in Indonesia and specifically for East Java. Based on the literature and industrial review, the next step was to formulate the objective of the research.

Data collection is using questionnaire which is developed by Zang (2009) with minor modification. The instrument objects are focused on: level of 3PL usage, decision making process, type of 3PL service, budget allocation for logistic due to use of 3PL service, impact of 3PL usage, the risks suffered by companies due to 3PL service usage, and future plan in the use of 3PL.

Sample population is collected randomly from the list of manufacturing industry obtained from the directory of big industry in 2013 which was issued by Trade and Industry Department of East Java. Cover letter and questionnaire are addressed to the logistic manager and delivered via post to 200 companies. Within 2 months, 29 questionnaires were not sent successfully because the company addressed does not exist anymore. A total of 33 questionnaires were received and filled properly, representing a response rate of about 16%, which compares favourably to response rates for other recent studies of the use of

contract logistics services (Lieb et al., 1993; Bhatnagar et al., 1999; Roques and Michrafi, 2003; Lieb and Bentz, 2004, 2005; Baki, 2004; Sohail et al., 2006).

The data gathered from questionnaire was processed using SPSS software. The statistical descriptive method was used to present data in tabular form and its frequency calculation. The result was the data in tabulated frequency which will ease the presentation of research deliverable. The results were summarized and conclusion was drawn out of it.

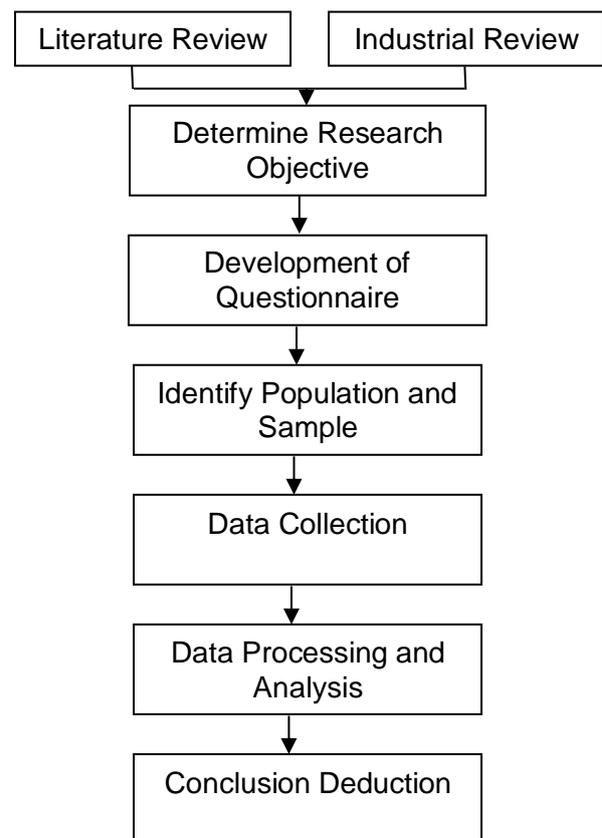


Figure 1. Research Process

3. RESULT AND DISCUSSION

3.1 Level of 3PL Service Usage and User Profile

57.58% of 33 respondents who fill the questionnaire acknowledged that their company has used 3PL service. Baki & Murat Ar (2009) conducted a comparative study on the use of 3PL in 7 countries namely United State, Singapore, Australia, Malaysia, Ghana, Turkey, and Saudi Arabia. The result shows that the extent of 3PL usage is about 60 to 75 percent. It can be said that 3PL service usage in East Java

grows as good as in another country. From the duration of 3PL usage, the company which uses its service for 1 to 3 years is only 15.79%. By contrast, 84.21% state that they have been using logistic service for at least 5 years.

Most of companies using 3PL hold a long term contract or relationship with its 3PL firm. 68.42% of respondents state having held an agreement such a contract in term of its logistic service with 3PL firm. The respondents generally use 3PL service for over 5 years and because of that the standard role is needed to ensure a good cooperation and relationship between both parties. If it is compared with past studies conducted by Sohail & Sohal (2003) and Baki (2004), 60% is not a small percentage because the client companies in Malaysia and Turkey which holds a contract is still under 50%. Half of all respondents (53.85%) decided to choose contract period between 1 and 3 years, while 23.08% is less than 1 year, and 23.08% is more than 5 years.

All respondents acknowledged that they use 3PL service from more than one firm for supporting logistic activities. 47.36% of 33 respondents use 2 to 3 3PL firm. And the rest use more than three 3PL firm. Based on the company size with respect to number of labor, 39.39% have more than 501 labors, 9.09% have 301 to 500, 18.18% have 201 to 300 labors, 12.12% have 101 to 200 and 51 to 100, 9.09% have 25-50 labors.

3.2 Decision Making Factors

Table 1 shows the reason factor of half of respondents not to use 3PL service. There is 57.14% of respondents stated having sufficient skill and resource to manage logistic activities. Consideration of not to outsource logistic activities can be understood by outstanding company when the company literally has sufficient skill, resource, and effectiveness in managing its own logistic. Moreover, 28.57% admitted not having yet knowledge regarding 3PL and 14.29% admitted that they get lost of control over the logistic function. 7.14% admitted that they get less support in organization. Organizational support is one of the difficulties confronted for logistic outsourcing. The research related to outsource conducted by Elmuti and

Kathawala (2000) showed that less support from top management will raise a serious problem influencing unsuccessful business and lost trust toward 3PL capability. Another factors (e.g. distribution is handled by distributor and market share tends to be small) count for 7.14%.

Table 1. The Reasons of Not Yet Used 3PL Service

Factors	Percentage of respondent
Doesn't have a knowledge about 3PL	28.57
Having adequate skill and resource	57.14
Hidden true cost of outsourcing	14.29
Lost of control over the logistic function	14.29
Less organizational support	7.14
Uncertainty in service level provided	7.14
others	7.14

The main reason to use 3PL service for companies in East Java is to improve customer service satisfaction, whereas 63.16% of respondents have that factor. It is relevant to the research conducted by Bhatnagar et al. (1999), where 76.3% of respondents (Singaporean companies) admitted that customer satisfaction is one of main factor to be considered. In India, 71.3% of respondents also admitted that customer satisfaction is the main factor (Sahay & Mohan, 2006). 47.37% of respondents select reducing capital investment as consideration in using 3PL service and it becomes the second priority as a fully considered factor in 3PL service usage by companies in East Java. The use of 3PL service will reduce capital investments in facility and equipment such as warehouse facilities, material handling, order picking, transportation vehicle, and information technology so that company is able to focus its asset and investment to core business or another area which is more productive (Mentzer et al., 2007). In Europe, 38% of 3PL service users indicated that reducing capital investments is the important factor for deciding logistic outsource (Wilding and Juriado, 2004). Then productivity improvement is the third considered factor in

using 3PL service with percentage of respondent reaches about 36.84%. Past study which is performed in companies in Singapore (Bhatnagar et al., 1999), Malaysia and Singapore (Sohail et al., 2006), and India (Sahay and Mohan, 2006) shows that productivity development in productivity rate improvement and fill rate is the factor considered by most of 3PL service users in those countries.

Table 2 shows whole factors which are reasonable for company to use 3PL service. 31.58% of respondents admitted that the reason of using 3PL service is focused on business core. The reason for being focused on core business is understandable because it is very difficult to be an expert in all aspects performed by the company. In other side, only 21.05% of respondents choose reduction of logistic cost as the reason of using 3PL service. That result is quite different from the result of the study which is early conducted in other countries where many of them admitted that reducing operational logistic cost is the main factor which is considered in performing outsources. The study conducted by Lieb et al. (1993) showed that companies in USA and West Europe can reduce logistic cost up to 30 to 40%. Sohail and Sohal (2003) identified that the main factor in using 3PL service in Malaysia is cost minimization and improvement of customer service. A comparative study of the use of 3PL service presented by Arroyo et al. (2006) showed that companies in USA and Europe are more focused on cost reduction whereas companies in Mexico is more focused on improvement of customer service satisfaction and core business. One of the logical reasons is logistic cost is still quite high in Indonesia compared with other countries, so company using 3PL service does not yet gain significant logistic cost reduction for the company. Whereas, the last considered factor is global capability improvement including 5.26% of respondents.

3.3 Use of 3PL Service

47.37% of survey companies using logistic services offered by 3PL companies for domestic and international operations. Domestic and international is a terminology

used to represent geographical area toward logistic activity. Then, 36.84% of companies are using logistic services for domestic operations and 15.79% are using logistic for international operations. This shows that the main focus of 3PL service user at companies in East Java is providing domestic and international logistic services. This result is not extremely different from comparative study of 3PL user conducted by Baki & Murat Ar (2009) where 4 countries including United State, Singapore, Malaysia, and Ghana have identic characteristics. Malaysia is the highest rate country with the use of domestic and international logistic service. Similarly, there is a quite few companies using 3PL service just for international operations, percentage from the survey in East Java reaches 15.79% and 1% to 7% from the comparative result conducted by Baki and Murat Ar (2009).

Table 2. The Reason of 3PL Service Usage

Factors	Percentage of respondent
Customer service improvement	63.16
Reducing capital investment	47.37
Productivity improvement	36.84
Focus on core business	31.58
Service flexibility improvement	26.32
Increasing inventory turnover	21.05
Logistics cost reduction	21.05
Access of faster technology and information	10.53
Global capability improvement	5.26

Table 3. Type of Service Used by Companies in East Java

Type of logistic service	Percentage of respondent
Domestic transportation	84.21
Freight forwarding	68.42
International transportation	57.89
Warehouse management	15.79
Shipment consolidation	15.79
Reverse logistic	10.53
Information technology services	10.53
Customer Service	10.53
Product labelling, packaging, assembling	5.26

Table 3 shows the types of service used by companies in East Java. Most of 3PL services used in operational and routine activity involves domestic transportation (84.21%), freight forwarding (68.42%),

international transportation (57.89%), shipment consolidation (15.79%), and warehouse management (15.79%). Whereas, logistic service included in value added services & strategic and IT-intensive services is still minimum. In accordance with classification defined by Langley & Capgemini (2014), there are 2 types of value added services which have been used by companies in East Java which are reverse logistic and product labeling, packaging, and assembling. 10.53% of respondents reported that they have used reverse logistic service and 5.26% used service of product labeling, packaging, and assembling. Besides, there is a service included in strategic & IT-intensive service category which has been used and it is a 10.53% of respondents. That result evidently is not extremely different from the survey conducted by Langley and Capgemini (2014) where logistic outsourcing activities are much more operational and routine. Those activities involves domestic and international transportation (81% and 78% respectively), warehouse management (73%), and freight forwarding (62%). According to Baki & Muarat Ar (2009), the most used logistic services in United State, Singapore, and Malaysia are shipment consolidation, fleet management/operation in Australia, and warehouse management in Turkey. By comparing survey result of companies in East Java and those countries, it can be concluded that operational and routine logistic services which are rarely used by companies in East Java are shipment consolidation and warehouse management.

3.4 Commitment to 3PL Service Usage

The percentage of logistic budget allocated to 3PL firm is used to measure the company commitment over the 3PL service usage. Table 4 shows percentage of budget allocated by companies in East Java for outsourcing their logistic activity. A part of respondents (52.63%) admitted that their company allocated logistic budget as 20 to 39% for outsourcing logistic. 36.84% of respondents have allocated logistic budget less than 20% and only 5.26% percent of respondents allocated logistic budget minimum 40% for outsourcing logistic. If

being compared with a comparative study of use of 3PL service in 7 countries presented by Baki and Murat Ar (2009), then that allocation is not too small because majority of respondents in those countries only allocated the budget less than 20% for 3PL firms except in Malaysia.

Table 4. Percentage of Logistic Budget Allocated by User Company

Type of logistic service	Percentage of respondent
0-19	36.84
20-39	52.36
40-59	5.26
60-79	5.26
80-100	0

3.5 The Impacts of 3PL Usage

Survey is performed by asking the respondents to assess by using Likert scale 1-5 in order to show impact of 3PL service usage for company. Score 1 indicates very low impact and score 5 indicates very high impact. The calculation result according to assessment on 10 considered aspects is shown in table 5.

Table 5. Impacts of 3PL Usage for User Company

Impacts of 3PL usage	Mean	Standard Deviation	Max	Min
On-time delivery to customer	4.11	0.76	5	3
Customer service satisfaction	4.05	0.68	5	3
Logistic system performance	3.42	0.92	5	1
Profit growth	3.26	0.75	5	2
Revenue growth	3.26	0.91	5	2
Marketing area expansion	3.21	1.11	5	1
Inventory level reduction	3.16	0.73	5	2
Logistic cost reduction	3.11	0.68	4	2
Return On Investment (ROI)	3.05	0.73	4	1
Labor attitude	3.05	0.8	5	2

Table 5 shows respondents gaining enormous positive impact of 3PL service usage with respect to delivery on-time with mean 4.11 and standard deviation 0.76 and service satisfaction to customer with mean 4.11 and standard deviation is relatively small of about 0.68. By relating the impact and the main reason of companies in East

Java using 3PL service particularly on customer service satisfaction (see table 2), then it can be said that companies have a good experience in cooperation with 3PL firm in order to achieve its goal. Based on the calculations, percentage of respondents in East java providing an assessment by the high impact or very high impact in customer service satisfaction is 63.16%. While, the result of study in other countries shows a higher percentage which is 94% in Singapore & Turkey and 96% in Malaysia. Other aspects contributing a big impact are logistic system performance, revenue growth, and. The aspect with very low impact is labor attitude with mean 3.05 and standard deviation 0.8. The high standard deviation shows a high assessment variance among respondents.

3.6 Risks of 3PL Service Usage

42.11% of respondents using 3PL service stated the confronted risk is lack of updates toward government policy or public issues. The second biggest risk is lack of ability to update 3PL technology (31.58%). The next risk is lack of information to compare 3PL (26.32%). In addition, the rare occurred risk (less than 15 percent) is lack of interaction with customer. Table 6 shows risk order confronted by companies in East Java when using 3PL service.

Table 6. The Risk Order Confronted by 3PL User

Risk type	Percentage of respondent
Lack of update toward government policy or public issue	42.11
Lack of ability to update 3PL technology	31.58
Lack of information to compare 3PL	26.32
Difficulty in coordination with another department's staff	21.05
Lost ability to manage logistic	21.05
Lack of interaction with customer	10.53

Research conducted by Han (2012) provided information regarding risks confronted in relation management of 3PL in Tianjin, China. Based on his research, the initial risk confronted by companies in Tianjin is about unfair treatment and slow reaction toward government policy as the second biggest risk. That shows that there is a

similarity. The big risk confronted by companies using 3PL service such as lack of update toward government policy is caused by logistic activity that has been handled by another party.

3.7 Future Plan in 3PL Service Usage

This survey is purposed to find out the level of company satisfaction over the service provided by 3PL firm currently. The result of survey shows 36.84% of respondents admitted that the service is "satisfactorily", and 63.16% admitted "moderate". From Table 7, it can be seen in detail the level of service satisfaction in each service type using Likert Scale 1-5. Many of respondents assess "moderate" or equal to 3 in order to express satisfaction in each service type so mean obtained is between 3 and 4. 6 out of 9 types of service used by companies in East Java have a means less than 4 so it can be said that generally respondents still feel "moderate" with the service at present time.

Table 7. Level of Logistic Service Satisfaction

Level of logistic type	Mean	Standard Deviation	Max	Min
Domestic transportation	3.63	0.5	4	3
Freight forwarding	3.62	0.51	4	3
International transportation	3.64	0.5	4	3
Warehouse management	3	0	3	3
Shipment consolidation	3.67	0.58	4	3
Reverse logistic	3	0	3	3
Product labelling, packaging, assembling	4	0	4	4
Information technology services	4	0	4	4
Customer Service	4	0	4	4

Respondents are asked in terms of 3PL service usage in the future based on the experience of logistic service provided by 3PL firm. Surprisingly 73.68% of respondents stated that they will increase 3PL service usage at their company even though the survey result shows that most of respondents is moderately satisfied by the current service. Beside the service used currently, most of companies in East Java

plan to add logistic service in shipment consolidation (40%), warehouse management (20%), lead logistic provider /fourth-party logistic (20%), and 13.33% of respondents plan to use service for fleet management and customer service. While, 26.32% of respondents admitted “no change” in the future for logistic service which is going to be used.

4. CONCLUSION

Result of study on 3PL service usage shows that there have been many companies in East Java which have used 3PL service and it has been established for more than 5 years. All survey companies admitted having cooperated with more than one 3PL firm and the types of outsource logistic service is relatively diverse. Moreover, the main reason for many companies in East Java to use 3PL service is improving customer service. The survey result indicates that the biggest impact gained by most of companies in East Java is customer satisfaction. So, it can be concluded that the companies have a good experience by cooperating with 3PL firm.

Commitment of companies in East Java over 3PL service usage is measured from percentage of logistic budget allocated to 3PL firm. The result shows half of respondents admitted that their company allocated logistic budget as 20 to 39 percent for outsourcing logistic. This percentage is evidently not smaller than percentage risen by companies in other countries. So, it can be concluded that companies in East Java have a serious commitment in 3PL service usage.

The result of survey shows that most of respondents are just moderately satisfied with the service provided by 3PL firm at present. But, most of respondents keep planning to increase 3PL service usage in the future. Several potential logistic services to be increased are warehouse management; shipment consolidation; Lead Logistic Provider (LLP)/Fourth-Party Logistic (4PL); product labelling, packaging, assembling; order management and fulfillment; and information technology services.

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AUTHOR BIOGRAPHIES

Annisa Kesy Garside is a Lecturer in Department of Industrial Engineering, Faculty of Engineering, Muhammadiyah Malang of University, Malang, Indonesia. She received a Master Degree from Institut Teknologi Sepuluh Nopember (ITS) in 2007. Her teaching and research interests include Supply Chain Management and Logistic Management. She is currently a member of the optimization and simulation laboratory, as a Head Laboratory. Her email address is <annisa_garside@yahoo.com>