

Environmental Friendly Determinants Toward Green Awareness and Its Impact on Advocacy on Using Third Party Logistics Service Providers Based on Generation Y Perspective in Thailand

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Abstract. This research aims to study the environmental friendly factors that impact on the perspective of green awareness and how its awareness impacts on selecting third-party logistics service providers. The sample of the study is generation Y from 11 universities in every region of Thailand; and they use third-party logistics such as Kerry Express, Thai Post, or others. The sample size of respondents is 452 observations. The results of collected data from questionnaires answers were analyzed by using path analysis. In our results, there are 6 determinants impact on green awareness: pollution prevention, energy consumption control, high quality in alternative energy usage, clean energy usage, operating on environmental management standard such as ISO 14000 and reuse and recycle policy. In addition, the green awareness of generation Y impacts on willingness to use, willingness to pay more, and willingness to suggest to the others to use green third-party logistics provider.

Keywords: Environmental friendly determinants, green awareness, third party logistics service provider, advocacy, generation Y

1. Introduction

In last decades, sustainability issues have increasingly considered in various industries; they have to collaborate in order to reduce the problems in the society. The principle of sustainability comprises of three integrated pillars: social, economic, and environment. United Nation invent the guideline and indicator to measure the sustainability for all nation which aim to address the poverty, inequality, climate, environmental degradation, prosperity, and peace and justice (SDGs, U.N. ,2015).

With the growth in economics, logistics is essential part of economic growth and it causes the pollutions; air, noise, sea and etc. Then, logistics third party companies are the companies that provide the activities carried out by a logistics service provider as shipper consist of at least transportation. They have to consider to be green third party logistics in order to reduce amount of pollutions and make a sustainable of green third party logistics. In this scenario, the environmental management in logistics operations are essential to reduce the negative impact to society. Due to the several reasons, logistics providers have to consider the effect of logistics operations cause the negative environment: 1) the gas emission from transportation and logistics causes the second biggest issue to the air pollution, 2) the demand of products transfer and people movement has increased exponentially overall the globe, and 3) the crisis in global warming has been issued critically and enforced to logistics services (Evangelista, P., Santoro, L., & Thomas, A., 2018).

With the issue, the logistics management is still conflicted with the environmental management due to the increment of demand in transporting the products to destinations overall the globe. All activities in logistics are inevitable to harm and damage the environment especially transporting products (Tissayakorn, K., & Akagi, F., 2014).

In Thailand, PM 2.5 dust has occurred during February – March 2019 which caused by building construction or increment of transportation. The other serious crisis that affect the daily life in nowadays are global warming and climate changes, both are mostly manmade disasters. The increased volumes of carbon dioxide and other greenhouse gas released by the burning of fossil fuels, land clearing, agriculture, and other human activities, are believed to be the primary sources of the global warming that has occurred over the past 50 years.

Due to the increment in e-commerce, the products are transferred from one country to another countries easily with the logistics. Many generation Y people run their own business by selling and buying the product online. Therefore, they will often use the third party logistics to assist them to transfer product to their customers. Hence, third party logistics are essential for them.

Obviously, there are many startups innovate their business by concentrating in logistics service providers but the awareness of environmental effect from logistics in teenagers is not much mentioned. According to the dimensions of environmental performance, there is no any third party logistics in Thailand realize on any environmental dimensions. In addition, there is no clarify in green policy or sustainable policy towards the environment from third party logistics. With the main barrier of Third party logistics adopting green actions at the national level is the scarce interest of customers and users in green products and services (Perotti, S., Micheli, G. J., & Cagno, E., 2015).

As a consequence, this study aims to study the effect of environmental friendly determinants towards the green awareness of generation Y and also advocacy for using third party logistics.

2. Literature Review

Environmental Friendly Determinants

Hertz, S., & Alfredsson, M. (2003) defined third party logistics as the external provider who manages, controls, and delivers logistics activities on behalf of shipper. Evangelista, P., Santoro, L., & Thomas, A. (2018) had summarized the factors affecting the adoption green actions of third party logistics into six taxonomies: economic-financial, organizational, market-related, governmental and technological. To adopting green action, the third party logistics providers have to invest the green technology and machine. Several authors mentioned the main barrier of third party logistics in adopting green action is high investment costs (Bloemhof, J. M., van der Vorst, J. G., Bastl, M., & Allaoui, H., 2015; Perotti, S., Micheli, G. J., & Cagno, E., 2015).

With the competition among third party logistics, green marketing is one of strategy to convince the customers to purchase the services or products. Green marketing is defined as the impact of marketing activities on resources which affect positively and negatively into the environment, natural resources, and pollution. For the market-related, the third party logistics have the barrier for green adoption because of the scarce interest in green products and services from the customers (Perotti, S., et al., 2015). When the scarce interest in green products and services, the third party logistics are not able to invest money for green actions because the customers do not consider or use the environmental friendly products and services.

In the present, the green logistics is focused widely and the demand of green products or services from the customers are increasing because the customers aware of the long term effect on safety of their life from natural disaster. The people are more worried about the environmental effect. Hence, they want to make the greener world. Kumar, S., Garg, R., & Makkar, A. (2012) studied the determinants impact on the green product awareness in India. They found that the youngster also aware of green products especially men in India. They

revealed that the determinants impact on the green product awareness: reference groups and promotional activities on eco-friendly products.

Nowadays, most of populations who relatively in business of transport logistics are more considering and awaking of environment. Most of manufacturing start to be green development. They are considering environment that might impact on their operations. Chancing to be more environmental friendly concept within the organization by focus on green purchasing and eco design in between department in organization. Jayarathna, C. P. (2016) also improve their company to adopt in green and considering in cost, delivery, quality, strategic alliance, service, pollution control, green product, environment management which are the determinants factor of the supplier selection process with green consideration (Gurel, O., Acar, A. Z., Onden, I., & Gumus, I., 2015).

For creating sustainability in environment, resources are more understandable for developing in environmental sustainability issues in the logistics service industry by analysis and study from vehicle energy efficiency, inter-modality, warehousing and green building, recycling materials and waste reduction including reverse logistics, Environmental Management Systems (EMS), green certifications, and environmental collaboration (Evangelista, P., Santoro, L., & Thomas, A., 2018).

Some of company may consider purchasing green which is also some of the main factor that important with environment and concerned about factor of choosing service. Purchasing green consider many factors such as eco-driving, CO₂ declaration to reduce carbon dioxide around the road, choosing alternative offered for each type of transport, wide climate protection programmed, emission calculations, customized solutions, environmental friendly vehicle, regulations for vehicles, intermodal solutions and etc. All these factors are considered before becoming green purchaser (Evangelista, P., Huge-Brodin, M., Isaksson, K., & Sweeney, E., 2011). Zhu, Q., Sarkis, J., & Lai, K. H. (2007) mentioned the company performance based on environment issue included reduction of air emission, reduction of waste water, reduction of solid wastes, decrease of consumption for hazardous/harmful/toxic materials, decrease of frequency for environment accidents, and improve a company's environmental situation.

Green supply chain practices (GSCP) in logistics has been identified into 8 pillars (Perotti, S., Zorzini, M., Cagno, E., & Micheli, G. J., 2012): green supply, distribution strategies and transportation, warehousing and green building, reverse logistics, cooperative with customers, investment recovery, eco-design and packaging, and internal management. Based on third party logistics, Perotti, S. et al. (2012) proposed the dimensions of environmental performance based on 88 articles which were reduction of air emission, reduction of waste water, reduction of solid waste, reduction of energy consumption, improvement of transportation environmental performance, decreasing of hazardous/harmful/toxic material consumption, and decreasing of frequency for environmental accidents.

With the green concept in third party logistics, there is no any third party logistics in Thailand implement green practices obviously, the respondents have to give the level of interest to use third party logistics based on the attributes in environmental performance.

Green awareness

As the mentioned limitation in previous section, there is no real implemented for the green in third party logistics. The customer also cannot define the satisfaction because of this limitation. As a consequence, the customer satisfaction cannot be evaluated by the respondents.

Instead of measuring customer satisfaction, green awareness can benefits to businesses in order to convey the green strategy to encourage the people and society to purchase products or services that are eco-friendly even though the people are less interested (Glegg, G., Richards, J., Heard, J., & Dawson, J., 2005). Green awareness refers to the ability of consumer to recognize and recall the green environment from the implemented activities. Nowadays, people are paying

increasing attention to environmental concerns such as global warming, ozone destruction. For those people who aware of greenness, they will have more intention to purchase the products or services that are eco-friendly (Ottman, J. A., & Herbert, H. 1993). They will also be influencer to encourage the others to purchase the green products or services.

Advocacy

Advocacy is mentioned by Philip Kotler (2017) as the concept of marketing 4.0. Advocacy is the sense of keep using the brand, repurchasing the brand, and recommending the brands to others. In addition, the customers will be requested to answer the level of willingness because green third party logistics in Thailand are not yet implemented obviously. Laheri, V. K., Dangi, H., & Vohra, A. (2014) proposed the effect of environmental awareness towards green buying decision. However, advocacy reflects the customer behavior toward green services or products. Therefore, it is measured by three items: 1) willingness to use third party logistics, 2) willingness to pay more money for green third party logistics, and 3) willingness to tell others to use green third party logistics.

Research Methodology

Population and sample

The population used of this study are undergraduate students who are using shipping companies: Kerry, Thai post and others. The sample are determined and gathered from 11 government universities covered all region of Thailand: Chiangmai University, Khon Kaen University, Mahidol University, Chulalongkorn University, Kasetsart University, Thammasart University, Silpakorn University, King Mongkut's Institute of Technology Ladkrabang, Burapha University, Prince Songkla University, and Suranaree University of Technology. According to the sample size determination by Taro Yamane formula, the sample size in this study should be at least 385 observations. However, the researchers collect data from 451 observations.

Research Instrument

Research instrument in this study is questionnaire. It is divided into 3 parts: part 1 general information of the observations, part 2 influential determinations to selecting the third party logistics company, and part 3 the other suggestion about the influential factors that might impact on third party logistics selection. In this study, environmental determinants are scoped into 10 items which are: 1) preventing pollution emission, 2) controlling energy usage, 3) using alternative energy, 4) selling the environmental friendly containers, 5) using vehicles that reduce pollution emission, 6) ISO 14000 standard operation, 7) using eco-friendly material, 8) using clean energy, 9) using the reusable material and package, and 10) decreasing of hazardous/harmful/toxic material consumption. For the awareness has one item to investigate the aware of using third party logistics. To measuring advocacy, this study considers three items which are 1) willingness to use third party logistics, 2) willingness to pay more money for green third party logistics, and 3) willingness to tell others to use green third party logistics.

The reliability of 14 items, Cronbach's Alpha, is 0.929. According to the result, the research instrument is reliable for testing hypotheses in the study. The questionnaires are distributed by stratified sampling and purposive sampling based on the defined universities. The statistical analysis technique is path analysis to analyze two effects: 1) from environmental determinants to green awareness and 2) from green awareness to advocacy.

4. Data analysis and results

Demographic of respondents is shown in table 1. The respondents are in different universities around Thailand. The highest number of respondents is in Kasetsart University (21.3%) but not much differ from the other universities. According to the observed respondents, they are mostly in the 3rd year students (38.8%). They use the third party logistics less than 1 time per week about 68.7% whereas 2-3 times per week about 23.9%. The third party logistics

company in this study, the majority are Kerry Express (50.3%) which the amount is not much differ from Thai post (48.3%).

Table 1 Numbers and percentages of respondents classified by demography (n = 451)

Demographic	Number	Percentage
University		
Chiangmai University	14	3.1
Khon Kaen University	31	6.9
Mahidol University	17	3.8
Chulalongkorn University	13	2.9
Kasetsart University	96	21.3
Thammasart University	57	12.6
Silpakorn University	61	13.5
King Mongkut's Institute of Technology Ladkrabang	40	8.9
Burapha University	36	8.0
Prince Songkla University	7	1.6
Suranaree University of Technology	21	4.7
Others	58	12.9
Education level		
1st year student	54	12.0
2nd year student	133	29.5
3rd year student	175	38.8
4th year student	89	19.7
Frequency of use		
Less than 1 / week	310	68.7
2-3 per week	108	23.9
3-4 per week	20	4.4
5-6 per week	9	2.0
Everyday	4	.9
Company		
Thai Post	218	48.3
Kerry Express	227	50.3
Others	6	1.3

The level of interest in environmental determinants is evaluated individually. The first essential factor that respondents are interested is using eco-friendly material (Mean = 4.0865 and Std. Dev. = 0.81599). The second essential factor is preventing pollution emission (Mean = 4.0754 and Std. Dev. = 0.84253). For the third essential factor, there are two determinants: using the reusable material and package (Mean = 4.0244 and Std. Dev. = 0.86504) and ISO 14000 standard operation (Mean = 4.0244 and Std. Dev. = 0.56247).

Table 2 Descriptive statistics in each attributes

Attributes	Mean	Standard Deviation
Environmental determinants		
E1) preventing pollution emission	4.0754	0.84253
E2) controlling energy usage	3.9446	0.86360

Attributes	Mean	Standard Deviation
E3) using alternative energy	3.9800	0.88043
E4) selling the environmental friendly containers	4.0022	0.87813
E5) using vehicles that reduce pollution emission	4.0022	0.92496
E6) ISO 14000 standard operation	4.0244	0.56247
E7) using eco-friendly material	4.0865	0.81599
E8) using clean energy	4.0177	0.87414
E9) decreasing of hazardous/harmful/toxic material consumption	4.0244	0.86504
E10) using the reusable material and package	3.4346	1.39110
Green awareness		
G1) the aware of using third party logistics	3.9956	0.87431
Advocacy		
A1) willingness to use third party logistics	4.1242	0.81792
A2) willingness to pay more money for green third party logistics	3.9268	0.90503
A3) willingness to tell others to use green third party logistics	4.1397	0.81677

The assumption of path analysis: normality should be firstly examined. Based on skewness and kurtosis of each attribute meet the qualification which their value should be below 3. Secondly, the multi-collinearity problem should be investigated. According to correlation result as shown in table 3, the Pearson's correlation among determinants are below 0.90 which can be concluded that the multi-collinearity problem in this study is eliminated.

Table 3 Correlation analysis

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	G1	A1	A2	A3
E1	1													
E2	.754	1												
E3	.727	.791	1											
E4	.546	.610	.612	1										
E5	.593	.609	.630	.744	1									
E6	.511	.536	.545	.701	.666	1								
E7	.466	.461	.473	.598	.521	.569	1							
E8	.448	.425	.471	.541	.541	.518	.699	1						
E9	.275	.275	.316	.272	.374	.212	.351	.399	1					
E10	.440	.460	.494	.591	.600	.541	.589	.611	.407	1				
G1	.483	.485	.496	.602	.583	.566	.530	.523	.391	.626	1			
A1	.489	.469	.411	.550	.543	.563	.497	.488	.197	.567	.576	1		
A2	.491	.472	.419	.464	.483	.481	.463	.485	.433	.522	.514	.568	1	
A3	.446	.477	.452	.498	.523	.513	.462	.498	.226	.555	.542	.689	.651	1

To evaluate the fitness of measurement and structural model, the $\chi^2/d.f.$, GFI, AGFI, NFI, CFI, IFI, RMSEA, and SRMR are criteria to evaluate the goodness of fit of both models. The results should be in the acceptable level (Hair et al., 2006; Leong, Hew, Lee, & Ooi, 2015) as shown in table 4. As illustrated in table 4, all indicators are in acceptable threshold. Thus, the measurement and structural model are fit with the dataset very well.

Table 4 Measures of model fit

Goodness of fit measures	Recommended value	CFA Model (Result)
$\chi^2/d.f.$	≤ 3.000	2.168
GFI	≥ 0.90	0.983
AGFI	≥ 0.90	0.932
NFI	≥ 0.90	0.987
CFI	≥ 0.90	0.993
IFI	≥ 0.90	0.993
RMSEA	≤ 0.08	0.051
RMR	≤ 0.08	0.019

Source: GFI = Goodness-of-Fit Index; AGFI = Adjusted Goodness-of-Fit Index; NFI = Normed Fit Index; CFI = Comparative Fit Index; IFI = Incremental Fit Index; RMSEA = Root Mean Square Error of Approximation; RMR = Root Mean Residual

From the result of table 5, it demonstrates that there are 7 environmental determinants impact significantly on the green awareness: E1) preventing pollution emission ($\beta = 0.144$, CR = 3.574), E2) controlling energy usage ($\beta = 0.093$, CR = 2.064), E3) using alternative energy ($\beta = -0.096$, CR = -2.173), E4) selling the environmental friendly containers ($\beta = 0.087$, CR = 2.026), E6) ISO 14000 standard operation ($\beta = 0.161$, CR = 4.263), E8) using clean energy ($\beta = 0.091$, CR = 2.440), and E10) using the reusable material and package ($\beta = 0.283$, CR = 7.751). There are three determinants that do not have significant effect on green awareness: E5) using vehicles that reduce pollution emission, E7) using eco-friendly material, and E9) decreasing of hazardous/harmful/toxic material consumption.

Furthermore, green awareness has significantly impact on all three items in advocacy: 1) willingness to use third party logistics ($\beta = 0.950$, CR = 15.973), 2) willingness to pay more money for green third party logistics ($\beta = 0.866$, CR = 13.774), and 3) willingness to tell others to use green third party logistics ($\beta = 0.897$, CR = 14.872).

Table 5 Summary of Hypothesis Testing Results

Path	Standardized Coefficient	Unstandardized Coefficient	Standard Error	Critical Ratio	P-value
E1 → G1	0.144	0.150	0.042	3.574	0.000**
E2 → G1	0.093	0.094	0.046	2.064	0.039**
E3 → G1	-0.096	-0.095	0.044	-2.173	0.030**
E4 → G1	0.087	0.086	0.043	2.026	0.043**
E5 → G1	0.072	0.068	0.040	1.697	0.090
E6 → G1	0.161	0.163	0.038	4.263	0.000**
E7 → G1	0.044	0.047	0.040	1.166	0.244
E8 → G1	0.091	0.091	0.037	2.440	0.015**
E9 → G1	0.020	0.013	0.018	0.680	0.496
E10 → G1	0.283	0.286	0.037	7.751	0.000**
G1 → A1	0.950	0.889	0.056	15.973	0.000**
G1 → A2	0.866	0.904	0.066	13.774	0.000**
G1 → A3	0.897	0.838	0.056	14.872	0.000**

**significance level at 0.05

5. Conclusion and discussion

For encouraging the green implementation in third party logistics, the market-oriented is crucial to force the third party logistics company aware of green operation (Glegg et al., 2005). With this study, the researchers found that the environmental determinants in third party logistics industry will encourage the green awareness of generation Y by preventing pollution emission, controlling energy usage, using alternative energy, selling the environmental friendly containers, ISO 14000 standard operation, using clean energy, and using the reusable material and package.

For third party logistics providers, should increase the green awareness to the generation Y customers in order to obtaining competitive advantages. The companies should have policy or implementation plan to support based on 7 environmental determinants. The priority of influential determinants are ordering: using the reusable material and package, ISO 14000 standard operation, preventing pollution emission, using alternative energy, controlling energy usage, using clean energy, selling the environmental friendly containers, respectively.

All determinants has positive impact on green awareness except using alternative energy. Because there is no concrete policy on using alternate energy and there are many limitations on using alternative energy in third party logistics, it has impact on the quality and efficiency on delivering the products. As a consequence, the awareness in this issue has inversely been affected by using alternative energy.

For the advocacy, the green awareness has significantly impact on all dimensions in advocacy. When the customers are more aware of green, the customers do intend more on using the services, telling to the others and also paying more money to purchase and support the green services in third party logistics.

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