Green Supply Chain Management and Environmental Impacts on Public Perception of Electric Vehicle in Indonesia: Model with PLS-SEM and COST APPROACH

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Abstract- **The purpose of this study is to examine green supply chain management on electric vehicles in Indonesia. Variables in this research consisted of green supply chain, non-financial incentives by government and environmental im-pact on public perceptions of electric vehicles. The green supply chain man-agement variables in this study were the value added green supply chain man-agement and registration green supply chain management. The non-financial incentives variables in this research included the provision of public charging station and parking fee exemption. Samples from the study derived from 187 potential buyers of electric vehicles domiciled in Denpasar and Badung, Bali Province. This study adopted Structural Equation Model with SmartPLS as the analysis technique. A cost approach was also applied in this study. The appli-cation of these two methods was to provide a comprehensive understanding of policies related to electric vehicles. In line with other studies, the results of this study demonstrated that all variables had a positive effect on the public perception of electric vehicles. However, the environmental impact variable had the greatest influence at the lowest cost compared to other variables. Non-financial incentives variable exhibited a positive influence at an affordable cost than green supply chain management variable. The green supply chain management variable was confirmed to have a positive effect with the most expensive cost compared to others.**

Keywords: *Electric Vehicle, Green supply chain management, Non-Financial Incentives, Environmental Impact, Structural Equation Model, Cost Approach*

1. Introduction

Organizations today must respond to an increasing rate of change; product and technology life cycles are getting shorter, competitive pressures force rapid changes in the design of products and services, and consumer demand requires greater differentiation of products and services. Increasingly it is believed that businesses cannot compete as isolated entities, but can only do so as networks. The supply chain (SC), as a network, is expected to provide the customer with the right products and services, on time, with the required specifications and at the right place. However, an SC can be quite complex. It is usually defined as a set of interdependent organizations that act together to control, manage and improve the flow of materials, products, services and information, from the point of origin to the delivery point (the end customer) in order to satisfy customer needs at the lowest cost to all members. An important issue in supply chain management (SCM) is management related to the environment. Green supply chain management (GSCM) has emerged as an organizational philosophy which helps organizations and their partners to achieve corporate profit and market-share objectives by reducing environmental risk and impacts while improving ecological efficiency Climate change refers to a drastic change in temperature, rainfall, wind patterns and various other effects. It brings about extreme weather and natural disasters such as floods and hurricanes. Both direct and indirect human activities lead to the occurrence of climate crisis. These involve the use of motorized vehicles, factory and household activities. While transportation sector contributes approximately 14% of world gas emissions causing climate change. [1]

Numerous countries have been putting on effort to minimize the impact of climate change. One of the steps taken is to switch from Internal Combustion Engine to electric vehicles [2]. Maintaining low carbon emissions, electric vehicles are proven environmentally friendly, moreover, they do not produce carbon emissions [3]. As an increase usage of electric vehicles, it is expected to reduce carbon emissions and improve air quality.

European countries first issued policies in promoting to use of electric vehicles in 2001. The comparison of fiscal and non-fiscal incentive policies in European countries can be seen in table 1

Table 1 Incentives for Electric Vehicle Policy on European Countries

Country	Purchase Subsidies	Registration Tax benefit	Ownership Benefit	Company Tax Benefits	VAT benefits	Other Financial benefits	Local Incentives	Infrastructure Incentives	Total
France	Y	Y	Y	Y	Y	N	Y	Y	7
Norway	N	Y	Y	Y	Y	Y	Y	Y	7
Germany	Y	N	Y	Y	N	Y	Y	Y	6
Portugal	Y	Y	Y	Y	Y	N	Y	N	6
UK	Y	Y	Y	Y	N	N	Y	Y	6
Belgium	Y	Y	Y	Y	N	Y	N	N	5
Spain	Y	Y	Y	N	N	N	Y	Y	5
Sweden	Y	N	Y	Y	N	N	N	Y	4
Italy	Y	N	Y	N	N	N	N	Y	3
Netherland	N	Y	Y	Y	N	N	N	N	3
Switzerland	N	N	Y	N	N	Y	N	N	2
Turkey	N	N	N	N	Y	N	N	N	1

Indonesian government's policies under President Joko Widodo to promote the electric vehicles issued two regulations. The first one is in Presidential Regula-tion Number 55 / 2019 dated August 5, 2019 concerning the battery-based electric motor vehicle acceleration program for road transportation [4]. The second is Government Regulation Number 73 /2019 dated October 24, 2019 asserting taxa-ble goods classified as luxury in the form of motor vehicles subject to value added tax [5]. Indonesia has regulated five from eight incentives in the table 1 that are; registration tax benefits, value added tax benefits, other financial benefits, local incentives, infrastructure incentives. By providing five incentives in the table 1, Indonesia is aligned with Belgium and Spain.

Green supply chain management is purchase incentive, it can increase sales of electric vehicles [6]. People prefer to buy vehicles that get incentive. Although the purchase incentive is in the form of tax relief but it has a positive correlation to the market share of electric vehicles, the tax incentive will not be adequate in promoting electric vehicles if it is not supported by non-financial factors [7].

The Indonesian government issued two regulations about green supply chain management and non-financials incentives for electric vehicles in Indonesia. This study aims to see how the impact of tax incentive policies and non-financials incentives on people's perceptions of electric vehicles. This study also looks at the environmental impact on people's perceptions about electric vehicles.

2 RESEARCH MATERIALS AND METHODS

2.1 Electric Vehicles

Electric vehicles according to President Regulation Number 55 / 2019 are electric-motor driven vehicles and acquire an electric power supply from batteries directly in or outside the vehicles. Electric vehicles regulated in President Regula-tion Number 55 / 2019 are a two-wheeled electric vehicle and four-wheeled elec-tric vehicle. Types of electric vehicles that got incentives are; Hybrid Electric Vehicle (HEV), Plug-In Hybrid Electric Vehicle (PHEV), Full Electric Vehicle (EV).

2.2 Green supply chain management for Electric Vehicles

Green supply chain management policy for electric vehicles is affirmed in President Regulation number 55 / 2019 and number 73 / 2019. There are two green supply chain management already belong to rule of law based on the above regu-lations. The two green supply chain management are the reduction of value added tax (VAT) and registration tax for electric vehicles. The green supply chain man-agement on electric vehicles is expected to lower the purchase price of electric vehicles. The price disparity between electric vehicles and internal combustion engine vehicles makes people unwilling to switch to electric vehicles so to say that electric vehicles are costly.

2.3 Value Added Green supply chain management

Value added green supply chain management for electric vehicle which is offered by the government according Government Regulation number 73 / 2019 is value added tax for luxury goods. Value added tax for luxury goods is a tax that is levied on transactions that are classified as taxable goods, which are classified as luxury, whether produced domestically or imported. Government views this tax to carry out the function of balancing the tax burden between low-income and high-income consumers, as well as controlling consumption patterns of taxable goods that are classified as luxury. Value Added Tax on luxury goods shows the means of taxation as an equitable distribution of in the community.

The tax incentive policy will stimulate people's interest in the purchase and use of electric vehicles [8]. It is assumed that the public do not desire to waste much of their spending on electric vehicles. The fiscal policy variable on that research are reduction in the price of electric vehicles and a reduction in the charging price of electric vehicles. Reducing vehicle prices by $ 1,000 will in-crease sales of electric vehicles by 2.6%. [9]

Green supply chain management have a positive effect on sales of electric vehicles [10]. Green supply chain management for electric vehicles are positively correlated to sales but the most effective is the exemptions of driving bans [11]. H1: The incentive value added tax for electric vehicles had a positive and significant effect on the people's perception to refer to electric vehicles.

2.4 Registration Green supply chain management

Follow the President Regulation number 55 / 2019, the Provincial Government of Bali issued Bali Governor Regulation number 48 / 2019 regarding the use of battery-based electric vehicles. The regional regulation regulates the elimination of transfer fees for electric motor vehicles

[12]. Tariffs on transfer fees of motor vehicle are currently in effect are 15%.

All policies direct positive correlation with the interest in electric vehicles [13]. Green supply chain management in the form of registration tax and annual tax are positively correlated to sales, a 10% increase in incentives will in-crease sales by 3% [14]. H2: The incentive registration tax for electric vehicles had a positive and significant effect on people's perception to refer to electric vehicles.

2.5 Non-Financial Incentives

In addition to the tax incentive policies for electric vehicles, the Government also proceeds non-financial incentives. Non-financial incentives in President Regulation Number 55 / 2019 is given through provision of public charging stations and parking's fee exemptions for electric vehicles. The provisions of a variety of fiscal and non-fiscal incentives as well as a large number of potential consumers stand a good chance to attract new investment for electric vehicles.

2.6 Public Charging Stations

Electric vehicles are electric motor driven. Electric motors in electric vehicles charge their power from the batteries they have. Batteries in electric vehicles are like batteries in common electronic equipment. It can be charged at home, office or other places. Since the battery power in this type of vehicle is limited, it requires public places to charge the battery or charging stations. Charging Stations are a must for electric vehicles, without their provision in public places, the con-sequence will burden the electric vehicle users. It becomes impractical when the battery runs low or out, these users must return to their home, office, or places where they usually recharge the battery.

The availability of charging stations is needed in the campaign to support electric vehicles [1]. All policies are positively correlated in promoting electric vehicles and will have an impact on reducing emissions [13]. The availability of charging stations is indispensable to motivate the use of electric vehicles [15]. H3: The provision of charging stations had a positive and significant effect on the perception of people's choices to refer to electric vehicles.

2.7 Parking Fee Exemption

Beside roads and charging facilities, vehicles also require a place to park. High parking rates have become common in major cities in Indonesia. The main problem happens due to the lack of parking space compared to the number of vehicles. The number of vehicles that continues to grow every year is not proportional to the number of parking spaces available. The slow increase in parking spaces is caused by high cost in terms of investment in parking lots, then it be-comes directly proportional to vehicle parking rates.

Bali Provincial Government through Governor Regulation Number 48 / 2019, caters incentives to exempt parking fees for electric vehicles. This parking fee exemption is carried out at government offices, shopping centers, public parking's or roads.

Green supply chain management alone are not sufficient to encourage the use of electric vehicles, they must also be followed by non-fiscal incentives such as the provision of charging stations and road accesses for high occupancy vehicles [16]. Parking facilities, bus road accesses, availability of charging stations and zero emission zones are the most important factors in promoting electric vehicles [17]. Parking facilities and the use of bus roads are cheaper and more effective incentives than subsidies for electric vehicles [18].

All incentive policies will increase interest in the purchase and use of electric vehicles [8]. Based on a study, the most effective policy was non-fiscal policy that is the exclusion of vehicle purchase restrictions and the exclusion of driving restrictions that had a significant impact over fiscal policy. The incentives for electric car operations must be greater than the purchase incentives [1]. H4: Park-ing fee exemption had a positive and significant effect on people's perceptions to refer to electric vehicles.

2.8 Environmental Impact

The purposes of incentives for electric vehicles as stipulated in the President Regulation number 55 of 2019 are to increase energy efficiency, security, and conservation in the transportation sector, also to realize clean energy, clean air quality, environmentally friendly, and part of Indonesia's commitment to re-duce greenhouse gas emissions. Electric vehicles have environmental impacts, to mention a few: reducing carbon emissions, preventing climate change and reducing dependence on fuel oil. By reducing dependence on fuel oil, it does not only sustain energy efficiency for the country but also for households. Electricity is a low cost energy and more environmentally friendly than fuel oil. Protection of environmental impacts is one of the variables comprised in President Regulation number 55 of 2019 in addition to fiscal incentives and non-fiscal incentives.

Every 10% increase in green supply chain management will give 3% rise in sales of electric vehicles [14]. When public perception of electric vehicles magnifies, this contributes to environmental impacts in the form of reducing vehicle emissions and ensuring cleaner energy. The usage will have a significant impact on the environment [19]. It will reduce the use of combustion engine. The expansion of electric vehicles will have an impact on the environment [15]. Electric vehicles are environmentally friendly. H5: Environmental impact had a positive and significant effect on people's perceptions to refer to electric vehicles. The following conceptual model is illustrated in figure 1. Also refer to the lack of studies linking GSCM elements and performance measurement, stressing the need for future stud-ies which address the GSCM business and environmental results. Moreover, Zhu et al. (2007) highlight the need for in-depth studies of the connections between GSCM and SC performance

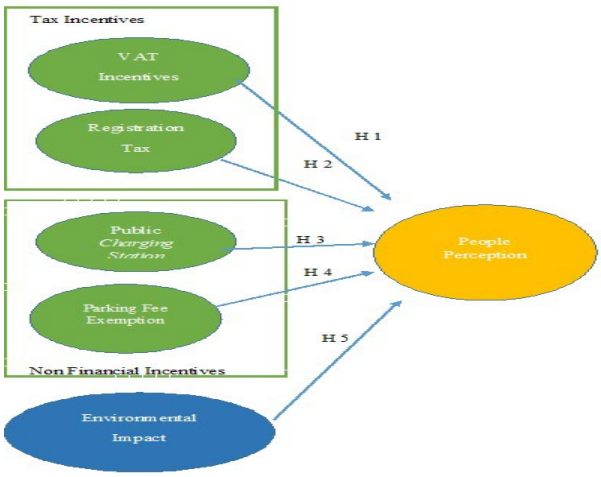

Fig. 1. Conceptual model

2.9 Method

Respondents in the study were residents of Denpasar city and Badung regency. The research location was Denpasar as the capital of the Bali Province, and Badung is the economic center of the Bali Province. Bali province was chosen as it was in line with the use of variables contained in the Bali Governor Regulation number 48 / 2019. Samplings in Denpasar City and Badung Regency would represent other regions in the province of Bali. The Respondents' criteria are as follows; 1. Domiciled in the city of Denpasar or Badung district, 2. Having a combustion engine vehicle.

The total of samplings taken in the study was 187 respondents [20]. Re-spondents were selected using a multistage random sampling method and com-bined with quota sampling. The research instrument employed was a question-naire. The questionnaire made was in the form of closed and open questionnaires. Closed questionnaire based on agree-disagree with 10 point scale with data inter-val from point 1 strongly disagree and point 10 strongly agree. This online instru-ment was within a google form then was distributed through social media by tar-geting on social media users who followed social media account on electric vehi-cles in Bali.

Descriptive statistic was probed with reference to spss23 to give thorough comprehension regarding data collection from respondents on a survey that was conducted in this study. Data were examined based on frequency distribution and valid percentages in accordance with the research method.

Table 2 Respondent's Domiciles

	Freque	**%**	**Valid Percentage**	**Cumulative Percentage**
Badung	92	49.2%	49.2%	49.2%
Denpasar	95	50.8%	50.8%	100.0%
Total	187	100.0%	100.0%	100.0%

A total of 187 respondents filled in the questionnaire online with 49,2% re-spondents domiciled in Badung Regency and those of Denpasar city with 50,8%. Education background of these respondents is demonstrated in the table below with 48,7 % High School Degree, 44,4 % Diploma/ Bachelor Degree and 7 % Mas-ter Degree/ Doctoral Degree. Distribution of respondents' income can be evi-denced in the following table. Approximately 18, 2% of respondents had income below Rp 4,500,000, 36.4% of respondent with income range between Rp4.500.001 to Rp12.500.003 and 45.5% of respondents above Rp 12,500,001.

Table 3 Respondents' Education Background

	Frequency	%	Valid Percentage	Cumulative Percentage
High school / Equal	91	48.7%	48.7%	48.7%
Undergraduated	83	44.4%	44.4%	93.0%
Graduated	13	7.0%	7.0%	100.0%
Total	187	100%	100%	100%

Table 4 Respondents' Income

	Frequency	%	Valid Percentage	Cumulative Percentage
Under or equal Rp 4.500.000	34	18.2%	18.2%	18.2%
Rp4.500.001 - Rp 12.500.003	68	36.4%	36.4%	54.5%
Above Rp 12.500.001	85	45.5%	45.5%	100.0%
Total	187	100%	100%	100%

The usage of Questionnaires was to measure people's perception of electric vehicles. The questionnaire was divided into 5 variables; Environmental Impact, VAT incentives, Registration Green supply chain management, Charging station, Parking fee exemption with a total of 9 items as the table in the followings.

Table 5 Variables Name and Number of items

Variables Name	**Number of Item**
Environmental Impact	3
VAT Incentives	2
Registration Green supply chain	2
Charging station	1
Parking fee exemption	1
Total	9

Research model applied in this study was a tiered structural model with a technique of SEM (structural

equation modelling). Data were analyzed by the component-based partial lest square (PLS) method to assess the research model. We used partial least squares (PLS) component-based structural equation model because of latent variable, sample size and number of path models. PLS-SEM is a promising method that offers vast potential for SEM-Researches especially in the disciplines of marketing, management information, and government [21]. This method is deemed more appropriate than covariance-based SEM such as LISREL because the current research aims to predict key target construct [22].

2.10 Cost Approach

Individual rationality is an axiom of neoclassical economics. Individuals are assumed to own their coherent preferences characterized by transitivity (if alternative A is preferred to alternative B, and B is preferred to alternative C, then A is preferred to C) and completeness (all alternatives can be ordered), and they act as if they are seeking to obtain more over less, preferred outcomes [23]. Com-prehensive policy analysis requires the assertion and justification of goals that provide a basic for systematically comparing policy alternatives. Efficiency is among the relevant policy goals. It carries prosperity for the society. Especially to developing countries, in this case, Indonesia, where efficiency is essential to make prosperity for the nation.

Total Cost = Cost per unit x Total Quantity

3 RESULT AND DISCUSSION

3.1 Measurement Model Result (Outer Model)

A theoretical framework is proposed in this section in order to explore the influence of green practices on SC performance in an industrial context. This is a first step toward providing a global overview and understanding of the influence of green practices on SC performance. Measure the content validity means that all items are measured according to the core concept of the construct it has been used.

a) Convergent Validity Test

Convergent validity test is executed by looking at the loading factor value of each indicator to the constructs. For confirmatory research, the loading factor limit used is 0.7, while for exploratory research is 0.6 and 0.5 for development research. For this was a confirmatory study, the loading factor limit used was 0.7. The estimation results of the PLS model can be seen in figure 2.

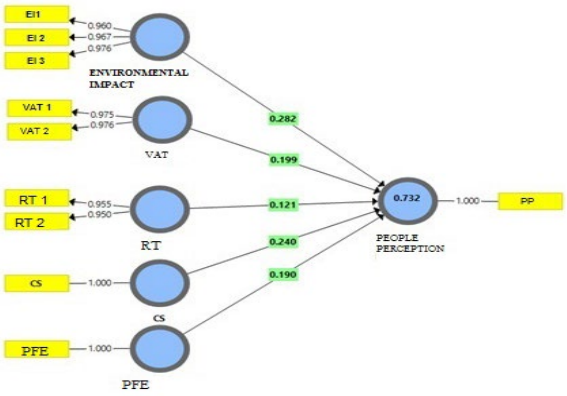

Fig. 2. PLS Algorithm

Based on the figure above, all indicators indeed had a loading factor value above 0.7, meaning, the model has met the convergent validity requirements. In addition to looking at the loading factor value of each indicator, convergent validity is also assessed from the AVE value of each construct, the PLS model is declared to have met the convergent validity if the AVE value of each construct is> 0.5. The full AVE value of each construct can be seen in the following table 6.

Considering the results of the PLS analysis in the above table, the value of AVE for all constructs whether in the form of dimensions or variables has exceeded 0.5, indicating that all indicators in each construct have passed the required convergent validity criteria.

Table 6 Loading Factor Value and AVE Value

	RT	CS	EI	PP	PFE	VAT
RT 1	**0.955**					
RT2	**0.950**					
CS		**1.000**				
EI1			**0.960**			
EI2			**0.967**			
EI3			**0.976**			
PP				**1.000**		
PFE					**1.000**	
VAT 1						**0.975**
VAT2						**0.976**

The results of the discriminant validity test in the table above showed that all constructs had the AVE square root value above the correlation value with other latent constructs denoting that the model passed the discriminant validity.

c) Composite Reliability Test

Construct reliability can be assessed from the Cronbach's Alpha value and the Composite Reliability value of each construct. The recommended values for each composite reliability and Cronbach's alpha are more than 0.7. However, in development research, because of the low loading factor limit (0.5), the low values of Composite Reliability and Cronbach's Alpha values remained acceptable as long as the requirements for convergent validity and discriminant validity have been fulfilled.

Table 7 Composite Reliability Test Results

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
RT	0.897	0.899	0.951	0.907
CS	1.000	1.000	1.000	1.000
EI	0.966	0.967	0.978	0.937
PP	1.000	1.000	1.000	1.000
PFE	1.000	1.000	1.000	1.000
VAT	0.950	0.950	0.976	0.952

The reliability test results on table 9 displayed that all constructs had composite reliability values> 0.7 and Cronbach's alpha> 0.7, proving that all constructs have fulfilled the required reliability values.

d) Goodness of Fit Model Test

The results of the PLS model goodness of fit test in table 9 showing that the SRMR value of the saturated model was 0.026 and so was the estimat-ed model. Providing the SRMR value of the model to both saturated mod-el and estimated model were below 0.10, the model was deemed perfect fit and suitable for testing the research hypotheses.

3.2 Inner Model Test

Testing the inner model includes significance testing of direct and indirect effects, measuring the magnitude of the effect of each exogenous variable on endogenous variable. All of these tests were carried out to test the research hypothesis.

a) Direct effect testing

Significance testing of direct effects was applied to determine the effect of exogenous variables on endogenous variables. The hypotheses in this test were as follows:

Ho: Exogenous variables had no effect on endogenous variables

Ha: exogenous variables affected endogenous variables

Based on the test results, if the value of P value is <0.05 and t statistic is > 1.96 then Ho is rejected and we can grasp that the exogenous variable has a significant effect on endogenous variables, whereas if the p value is > 0.05 then Ho is not rejected and it signifies that the variable exogenous has no effect on endogenous variables.

From the results of the significance test, we could further our understanding on the influence relationship direction of exogenous variables on endogenous. The direction of the relationship could be deter-mined from the original sample values of each influence relationship. If the influence relationship direction is positive then the influence of exoggnous variables on endogenous will be positive/unidirectional. On the other hand, when the original value of the sample is negative, then the influence relationship direction of exogenous variable on endogenous vari-ables is the opposite. The estimation results of the model as a means to test the hypothesis in this study are portrayed in figure 3.

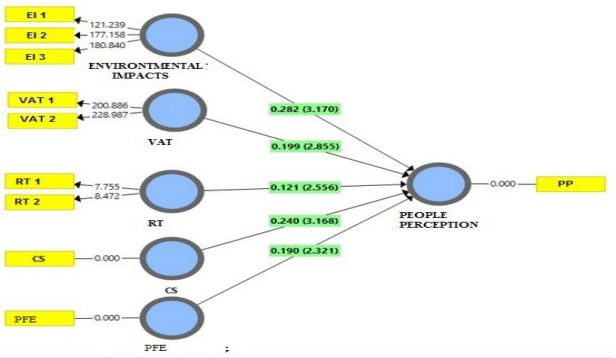

Fig 3 Bootstrapping

Evidenced on the estimated results of the PLS model with the bootstrapping technique above, all paths were viewed significant (p value for all paths was <0.05). The significance test results of direct influence are illustrated in table 8 as follows:

Table 8 The Significance Test Results of Direct Influence

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	TStatistics (|O/STDEV|)	P Values
VAT -> PP	0.199	0.201	0.070	2.855	**0.002**
TR -> PP	0.121	0.119	0.047	2.556	**0.005**
CS -> PP	0.240	0.241	0.076	3.168	**0.001**
PFE -> PP	0.190	0.184	0.082	2.321	**0.010**
EI -> PP	0.282	0.282	0.089	3.170	**0.001**

b) Testing Research Hypothesis

Table 9 show the p value indicating the effect of VAT on people's perception (VAT PP) H1 was significant (0.002) with a T statistic value of 2.855 which is above 2.58 (α = 0.01; two-sided test) with a positive marked path coefficient of 0.199. The p value indicating the effect of registration tax on people's perceptions (TR PP) H2 was significant (0.005) with a T statistic value of 2.556 which is above 1.96 (α = 0.05; two-sided test) with a positive marked path coefficient of 0.121. The p value indicating the effect of charging solution on people's perceptions (CS PP) H3 was significant (0.001) with a T statistic value of 3.168 which is above 2.58 (α = 0.01; two-sided test) with a positive path coefficient of 0.240. The p value indicating the effect of parking fee exemption on people's perceptions to vehicles (PFE PP) H4 was significant (0.010) with a T statistic value of 2.321 which is above 1.96 (α = 0.05; two-sided test) with a positive path coefficient of 0.190. The p value indicating the effect of environmental impact on people's perceptions (EI PP) H5 was significant (0.001)

with a T statistical value of 3.170 which is above 2.58 (α = 0.01; two-sided test) with a positive path co-efficient of 0.282. All result of hypothesis tested indicating the whole inde-pendent variables have positive and significant influence on people's perception to encourage the use of electric vehicles.

3.3 Cost Approach

As the sample to determine cost approach regarding green supply chain management, this study picked some of the most affordable and most popular vehicles in the community. The most affordable electric vehicles are Toyota CHR Hybrid cars and Uwinfly Love Summer Electric Motors, in regards to the most popular electric vehicles, this study took Mitsubishi PHEV and the Selis Agats motor into consideration as well. The amount of Value Added Green supply chain management can be looked up to in the comparative figure of tax benefits. Providing the Toyota CHR Hybrid cars are given a value added tax incentive of U$ 2,991 and the Mitsubishi Outlander PHEV [20] types get a value added tax incentive of U $ 7,743.

The amount of tax registration incentives can be seen in the tax benefits comparison figure where Toyota CHR Hybrid type cars are supported by tax registration incentives of U $ 1,490 and Mitsubishi Outlander PHEV cars get a total of tax registration incentives as much as U $ 11,465. As for the Ecgo Bike motorcy-cle is privileged with an incentive tax registration of U $ 89 and Selis Agats motorbike is of U $ 208.

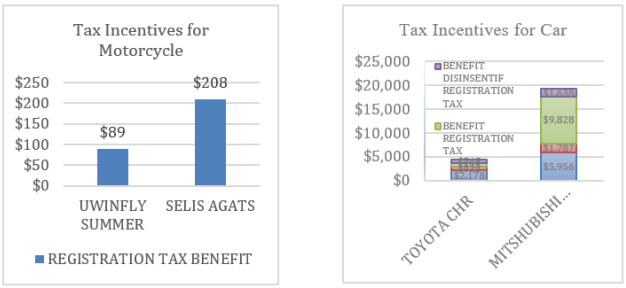

Figure 4 Green supply chain management Benefit

Car parking fee in accordance with the Governor's regulation for one year is U $ 500 and motorbikes for U $ 167. To sum up, the five-year-parking fee for cars is as much as $ 2,500 and U $ 835 for motorbikes. Construction costs for charging stations vary greatly, construction of car charging stations is estimated approximately U $ 27,383 (slow charging), U $ 55,675 (normal charging) and U $ 83,513 (fast charging). Electric charging stations for motorbikes cost U $ 2,784.

The cost of an environment impact campaign is in fact, low priced, more-over, it can be managed for free. The government has public budgets. The govern-ment may also facilitate in terms of offices and public places as an electric vehicle campaign site. Comparison of Original Samples Estimates and each cost approach are exemplified in the table 10.

Table 10 Comparison of Original Samples Estimates and Cost Approach

	Original Sample Estimate	Cost Approach
Environmental Impact	0,282	Minimum
Charging Station	0,240	U$ 2784 (motor cycle) and U$ 27.838- U$ 83.513 (Car)*
VAT Incentives	0,201	U$ 2.991 - U$ 7.743**
Tax Registration Incentives	0,199	U$ 89- U$ 208 (motorcycle) and U$ 5.216 - U$ 11.465 (car)**
Parking fee exemption	0,184	U$ 835 (motorcycle) and U$ 2.500 (car)**

3.4 Discussion and Findings

As displayed at Table 9, the whole hypotheses tested in this research were approved with the variables VAT incentives, registration green supply chain management, charging station, parking fee exemption and environment impact. The entire incentive policies on electric vehicles disposed a positive effect on people's perceptions of electric vehicles. This result was in line with researches conducted by [8] and [19]. Environmental impact has the biggest influence than other variable, which is different from other research. Environmental impact variable has an original sample estimate with a value of 0.282, People viewing how electric vehicles can reduce the use of fuel oil. This ultimately might save house-hold expenses and state expenses. The research location preferred was in Bali, concerning the level of awareness Balinese culture has in order to preserve their environment. The second biggest variable of original estimate was the charging station of 0.24. The provision of public charging stations will promote convenience to use electric vehicles. The tax incentive variable that is an incentive commonly given in electric vehicle policies resulted in an original estimate of 0.199 for value added green supply chain management and 0.121 for tax registration incentives. Green supply chain management are incentives for purchasing electric vehicles, the presence of purchase incentives will encourage public interest in buying electric vehicles. The parking fee exemption variable had an original sample estimate of 0.190. The existence of parking fee exemption will provide com-fort for the use of electric vehicles.

With reference to the cost approach, the most expensive cost per unit in incentives for electric vehicles is an incentive tax registration of $ 5,216- $ 11,465 for cars and $ 89- $ 208 for motorbikes. The amount of tax registration incentives is due to tax registration rates in Bali at 15% of the sales price after tax. This 15% tariff is greater than other provinces in Indonesia. The second highest cost per unit is the value added tax incentive of $ 2,991 - $ 7,743 for cars. Value added tax for luxury goods is only charged for car, small categories of motorcycles are not subject to value added tax for luxury goods. The tariff for value added tax rate for luxury goods is 10% of the selling price before tax. Value added tax rate is lower than the tax registration rate. The cost per unit of parking fee exemption incentives for electric vehicles is $ 835 for motorcycles and $ 2,500 for cars for five years.

Based on the cost approach, the lowest cost was the environmental impact campaign for electric vehicles. The

government has a lot of public spaces for environmental impact campaign of electric vehicles. Electric vehicle campaigns can motivate public awareness to use electric vehicles. The construction of a charging station is affordable for the government. Building a charging station in Denpasar takes about $ 40,000 with 6 car charging stations and 6 motorcycle charging stations. Commercialized charging stations can generate revenue to finance their development.

In relation with the Original Sample Estimate and Cost Approach comparison table, the environment impact variable had the greatest effect and the lowest cost. The second variable that exhibited a major influence and affordable cost is the charging station variable. Parking fee exemption variable also denoted afford-able in terms of cost but the effect is not quite convincing. The variable green supply chain management that are value added green supply chain management and tax registration were the highest at cost. Both of these green supply chain management variables had less influence. Green supply chain management for motorbikes are relatively cheaper than cars. For daily use, Indonesian people prefer use motorbikes than cars.

4 CONCLUSION

This paper explores the relationships between green practices and SC performance. It proposes a set of green practices which could be deployed in the con-text of an automotive SC, as well as measurement systems which could be used to evaluate the influence of these practices on SC performance. It is suggested that the Indonesian government should put more effort on campaigns to use environ-mentally friendly electric vehicles in order to induce people's perception on the use of electric vehicles. It has been confirmed that the environmental impact variable had the greatest influence on people's perception of electric vehicles at the lowest cost. In addition to the environmentally friendly electric vehicle campaigns, several non-financial variables to be taken into consideration by the government are the availability of charging stations and parking fee exemption. The provision of charging stations denoted influential on people's perceptions of electric vehicles at a fairly affordable cost and to facilitate their usage. Variable parking fee exemption for electric vehicle also provides convenience for the users. The parking fee exemption variable had no significant effect but the cost is lower than the cost of green supply chain management. These non-financial variables have a positive influence and the costs are more affordable than the tax incentive variable. Green supply chain management are general policies implemented in various countries in adopting electric vehicles are a decent solution with less influence and high cost. Green supply chain management for cars and motorbikes had the same impact while green supply chain management for motorcycles are relatively cheaper. The culture of Indonesian society that prefers motorcycles for daily mobility will lead green supply chain management for electric vehicles for motorcycles easily accepted by the public. Tax incentive for motorbike can encourage a major change of the use of internal combustion engine motorbikes to electric motor. Parking fee exemption had little impact with a path coefficient of 0.190. All in all, each incentive contributed a positive correlation in increasing people's perception of electric vehicles. However, the execution costs for each incentives given by the government are different. The constraint of budget would need special attention by the government in choosing policies in increasing people's perception to adopt electric vehicles.

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