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Is the Future of Green Enterprise Really Green? Assessment of Stakeholders' Awareness on Green Enterprise

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Abstract

Educating individuals on "greening" their activities during the execution of their jobs would contribute in controlling environmental harm. Therefore, this study aimed to determine the awareness and perception of tricycle drivers in San Pablo City, Laguna, Philippines on green enterprise. A survey was done that involved one hundred fifty (150) public utility vehicle (PUV) drivers. The questionnaire intended to measure awareness on general concepts as well as on air emission control and perception on greening their activities as they render transport service. The research also determined if awareness on green enterprise would influence perception on green practices. This study also examined if there is difference in the awareness and perception of the PUV drivers when they are grouped according to profile factors. The study revealed that the tricycle drivers in San Pablo City, Laguna are highly aware of the meaning, benefits, and activities of green enterprise. Moreover, the result showed that the drivers agreed on the green practices applicable to their work as public transport drivers. It was also found out that awareness on green enterprise significantly influence perception on green practices. Furthermore, it was determined that there is no significant difference among the awareness of the respondents on green enterprise when grouped according to profile factors but there is significant difference among the perception of the tricycle drivers on green enterprise when grouped according to civil status.

Keywords: *Awareness, Green Enterprise, Transport Drivers*

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1. Introduction

Air pollution is highly ranked as one of the world's considerable environmental problems. In fact, it is also one of the top risk factors for mortality; specifically, a major risk factor in low-income countries. It recorded to have caused an approximate five million deaths all over the world in 2017 contributing 9%, which is estimated to be 1-in-10 deaths (Ritchie & Roser, 2020). Moreover, air pollution kills an estimated seven million people worldwide every year. Data disclosed by the World Health Organization (WHO) showed nine out of ten individuals breathe air containing harmful levels of pollutants (Schraufnagel et al., 2019). Cases of death due to air pollution are high in the Philippines since it ranked third all over the world. As reported by WHO (2018), there were around 45.3 deaths per 100,000 people caused by air pollution. The leading contributor to air pollution is vehicle emission (Perez, 2019).

Air pollution sources can be classified as stationary, mobile or area, as described in Philippine Republic Act (RA) 8749. The Land Transportation Office (LTO) classified mobile vehicles into seven groups namely; cars, trucks, buses, motorcycles/tricycles, utility vehicles, sports utility vehicles, and trailers. Starting 2005, the proportion of motorcycles and tricycles have gone up until it exceeded utility vehicles number and became the prevalent mobile vehicles in the Philippines (Philippine Environmental Management Bureau, 2015). In addition, Tri-Tugaswatil et al. (1995) as cited in Balaria et al. (2017) mentioned that tricycles are recognized as one of the public transportations generating enormous gas emission that contributes to the release of lead and nitrogen dioxide in the atmosphere.

The effects of climate change, that also include different kinds of pollutions and the depletion of non-renewable natural resources, has resulted to environmental awareness (Douglas, 2006). Rules and regulations that emphasize on the protection of the environment are continually being formulated worldwide. Republic Act No. 8749 or better known as the Philippines Clean Air Act of 1999, defines the government's program controls to reduce air pollution and integrate environmental protection into its development plans. Despite the government programs and policies, it was reported by the Department of Environment and Natural Resources (DENR) that the current level of air quality in the Philippines does not comply with the standards of the Clean Air Act. Although the air pollution rate has decreased by twenty percent, it still has not met ideal levels (Perez, 2019).

The environmental awareness brought forth various concepts that promote environmental protection. One of these is the term green enterprise, which refers to services, products, and jobs from a number of sectors that emphasize sustainability, fewer emissions of greenhouse gases, and thus, slowing climate change. Terms such as green business, green economy and sustainable business are also commonly used. Green enterprise also includes a number of business sectors, including transportation, renewable energy, industry, agriculture, recycling, and waste management (Health24, 2011). It also encompasses the adoption of environmentally-favorable practices by any industry or service provider. Green businesses often weigh in on reusable products which could have multiple uses, or are produced from recycled materials (Natural Standard, 2011).

As motorcycles and tricycles are now the dominant mobile vehicles in the Philippines, greening of tricycle transport service would contribute in lessening air pollution in the country. Hence, this study seeks to find out awareness and perception on green enterprise of public transport drivers in the city of San Pablo, Laguna. Moreover, the outcome of this research could be a basis in educating tricycle drivers on how they could be of help in cleaning the environment.

2. Literature Review

Businesses are basically designed to make money by providing specialized items or services that meet a certain demand. Each business strives to maximize profits by selling as many goods or services as feasible. However, the production of goods and services has a significant environmental impact. One of the connotations of the term "green" to the world is the appropriate selection and use of resources (Nowak & Leymann, 2013). Furthermore, each phase of creation uses a specific number of resources. This could be either direct or indirect resources. Direct resources are raw materials or supplemental items that are processed within or for a business. Indirect resources, such as energy, are resources that have been induced to affect the status of the environment before the organization uses them. The selection of appropriate resources, as well as their effective and efficient use, are critical to minimize the impact of businesses on the environment. However, Friedman (2017) quips that the business world has just one sort of social responsibility: businesses should use their resources and conduct their operations with the goal of increasing profits while adhering to the rules of the game.

Awareness pertains to information gained through experience or education (Al-Dosary, 2020). In general, it means being knowledgeable and being conscious. Awareness is the state or

ability to perceive, to feel, or to be conscious of events, objects, or sensory patterns (Gafoor, 2012). Awareness of green enterprise then means being knowledgeable of this concept as well as its corresponding practices in consideration of a given job. On the other hand, perception is by means how something is understood, regarded or interpreted. For the purposes of this study, it was defined as how the tricycle drivers would agree on the green practices involving their jobs. The statement of considering green among the people can be a salient factor for the success to reduce the problem of pollution (Din et al., 2013). In this context, Ereneo (2010) recommended that although there are already significant programs initiated by both the public and private sectors, development of appropriate national action plans on skills training, environmental education, and human resource development to reinforce greening vision are necessary.

Development significantly comprises sustainability, it entails promoting socioeconomic growth in a way that does not jeopardize future generations' futures and takes into account the demands and rights of the natural world. The pursuit of ecological, economic, and social issues is its underlying concept, and it encompasses three essential priorities; environmental - avoiding environmental degradation and mitigating environmental hazards; economic – meeting people's fundamental material requirements using technology that do not degrade the natural environment; ensuring the social minimum (the eradication of hunger and poverty), health care, spiritual growth (culture), safety, and education. The ecologization of the economy appears to be a viable means of putting sustainable development ideals into practice. Ecologization, in its proper sense, takes into account not only ecological concerns (the need to conserve the environment), but also social aspects. Not only the natural environment, but also all facets of man's social life. As a result, the term "ecological economy" is coined to describe a system that optimizes the flow of commodities and services to ensure optimal resource utilization and minimal waste creation (Kouch 2015, p. 14).

Enterprises take one of two approaches to the challenges of ecological responsibility: reactive, which entails only compliance with environmental legislation, or proactive, which means that an enterprise recognizes the importance of the ecological aspect and looks beyond the scope and timeframe of current arrangements by anticipating what will become new. Building connections between businesses and stakeholders is increasingly driving proactive behavior. It should be noted, however, that many businesses take a passive approach to matters concerning the environment and ecology. The following are some of the reasons for this predicament (Bernaciak 2000, pp. 91–92): management's lack of attention to environmental issues, as well as

a failure to see the link between business and the environment; there is no link between a company's market position and its environmental commitment; the actual, negligible environmental impact of a business, as a result of factors such as industry characteristics, technology used by the business, and facility size; in terms of profitability, incurring additional costs associated with environmental preservation may appear foolish.

According to Sperling and Salon (2002), transportation is critical to economic, social, and environmental growth. The goal of transportation and mobility is to efficiently move people and things while minimizing negative effects on the environment and society. It's easy to say, but tough to put into practice. To ensure a suitable combination of private and public transportation, public and private organizations and institutions must collaborate. In addition, Woodcock and Aldred (2011) reported on refocusing the part that transport plays with respect to society, health and environment, and it is a chance work on by emphasizing on the favorable effects of green transport in attaining health, clean environment, increased social coherence, improved quality of life and economic development. On the other hand, Pardo (2012) observes that city planners in developing countries are regretfully continuing to pursue the same car-oriented transportation development patterns as in the past. Many industrialized cities are now attempting to recover from a car-dominated development phase by suspending the construction of new infrastructure for private automobiles and reallocating road space for public transportation and non-motorized transportation. Energy use and carbon emissions in the transportation industry are expanding faster than in any other sector around the world, especially in developing countries.

The current transportation system is a major contributor to air pollution, greenhouse gas emissions, environmental degradation, global warming, and health consequences. Greening the transportation industry is a critical component of resolving the prior issues. Automobiles dominate urban areas around the world, making them less sustainable. Air and noise pollution, traffic congestion, road accidents, the decrease of public transportation, environmental degradation, climate change, and energy depletion are all issues that cities in developing countries face. Many commuters in developing cities rely on informal paratransit services because they provide on-demand mobility, are easy to locate and catch, and cover all locations, particularly those without access to formal transportation. However, these unofficial transportation networks have significant drawbacks: they increase traffic congestion, pollute the air and noise, cause traffic accidents, and promote violence among route cartels. In addressing such difficulties, it is not an option to develop a sustainable and green transportation system to

overcome and meet the transportation demands of the ever-growing urban population and freight facing megacities.

According to Amhmed and El Monem (2020), there are numerous definitions for sustainable and green transportation because it was defined by several organizations and professionals. The authors described sustainable and green transportation as any mode of transportation that considers humanity, is economical, safe, and offers a variety of modes of transportation. It also uses renewable or regenerated energy instead of fossil fuels and has a low environmental impact. Furthermore, the features of a sustainable urban transportation system must be strengthened and addressed in an integrated manner. "*These features include mobility, accessibility, affordability, social equity, efficiency, safety, security, convenience, low carbon, comfort, and people- and environment-friendliness*," (Pardo, 2012).

3. Methodology

This study used descriptive quantitative design, which describes the phenomenon as it occurs. Since the aim of the study is to measure the level of awareness, quantitative method of data gathering and data presentation is the most appropriate.

As to the selection of the respondents, there are 7,500 registered tricycle drivers (including inactive) in the City of San Pablo in the Philippines. A sample size was chosen consisting of 150 drivers using quota and convenient sampling methods.

Table 1
Demographic Characteristics

Characteristics	F	%	Characteristics	F	%
Age Range			**Number of Dependents**		
20-34	67	44.67%	0-2	112	74.67%
35-49	60	40.00%	3-6	32	21.33%
50 and above	23	15.33%	7 and up	6	4.00%
Civil Status			**Educational Attainment**		
Single	62	41.33%	Elem	37	24.67%
Married	87	58.00%	High School	76	50.67%
Widow	1	0.67%	Vocational	2	1.33%
Separated	0	0.00%	College	35	23.33%
Monthly Income					
5,000 and less	9	6.00%			
5001-10000	108	72.00%			
10,001 and more	33	22.00%			

Table 1 indicates that more of the respondents are in the early years of working which constitutes 44.67% of the total respondents. Only 23 or 15.33% of the respondents are with age 50 years old and above. This is consistent with the study of Miguel et al. (2018) on compliance of PUV drivers to the Road Safety Precaution that majority of the drivers were 31-35 years old which constitutes 12 or 40% of the total number of respondents. They further implied that the drivers are predominated by 31-45 years old because their age is their most driven condition; this is also the marrying age that's why drivers support their families.

It could be observed that married PUV drivers comprise the largest bulk of respondents which was recorded at 58% of the total respondents. On the other hand, the least number of respondents which only consists of one respondent is a widow. The outcome for this profiling coincides with the study of Miguel et al. (2018) that the drivers are predominated with those that are in the marrying ages and this is their means of providing for their families.

It could be seen that most respondents earn between P5,000 to P10,000 who are 72% of the total respondents. This result concurs with a study by Irene (2017) that the average daily income of tricycle drivers is P250. Thus, an estimated monthly income could be generated, on the average, at seven thousand five hundred pesos (P7,500.00). This average daily income of an average family of four children was perceived to be not enough for their daily needs but still majority viewed *pedicab* (human powered tricycle designed to carry passengers and goods) driving as the easiest way to earn.

This table shows that 74.67% of the respondents has dependents ranging from zero to two. Only six (6) tricycle drivers or 4% of the total respondents have seven (7) or more respondents. This is in congruence with the result of a survey made by the Philippine Statistics Authority (2017) that the average ideal family size is 2.7 children. Supporting families with sufficient resources may be the reason why many couples are hesitant about having more kids.

The large bulk of respondents were high school graduates that comprise 50.67% of the total. Biona (2017) investigated on the alternative technologies for the Philippine utility jeepney and found out that roughly 50% of the drivers has high school as their educational attainment. It could be implied that since working as a public utility driver does not require college degree, most of those who have not attained this level, could easily enter into this profession.

A survey was conducted through a self-administered questionnaire which consisted of three parts. The first part aimed to determine the demographic profile of the respondents. On the other hand, the second part of the questionnaire is composed of fifteen (15) questions that sought

to find out the level of awareness of the respondents on green enterprise specifically five (5) questions that measured their know-how on the general concept and ten (10) questions on the knowledge on air emission. Moreover, the third part determined the perception of the respondents on the practices of green enterprise relating to their job. The questionnaire was also validated by a statistician. The reliability of the instrument was tested using Cronbach Alpha with resulting values shown in table 2.

Table 2

Reliability Test

Variable	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
Awareness on General Knowledge	0.896	0.895	5
Awareness on Air Emission	0.889	0.889	10
Perception on Green Practices	0.709	0.744	5

Tabular representation with corresponding percentages was used to describe the profile of the respondents. On the other hand, a Likert scale was utilized to assess the level of awareness and perception on green enterprise. The weighted mean was computed to summarize this assessment. Furthermore, linear regression was conducted in determining if awareness on green enterprise would influence perception on green practices while Analysis of Variance was done in determining difference of assessments among the groups of respondents.

4. Results and Discussion

The succeeding paragraphs would discuss the awareness and perception of the respondents on green enterprise.

As could be deduced from table 3, on the average, tricycle drivers are highly aware of general enterprise in accordance with its general concepts. It gained highest mean awareness on the definition and description of green enterprise. On the other hand, it got the lowest score on the view that the Philippine government are conducting training that tackles on how to implement “greening” in one’s business. Related to this, Bronola et al. (2019) in their study on green marketing recommended that all areas specifically the cooperative sector enhance its green development awareness campaigns and information drives. This could be done through various

capacity building activities to be able to promote a positive mindset and attitude towards greening and educate the cooperatives on different greening practices.

Table 3

Mean Awareness of Respondents on Green Enterprise in Terms of General Knowledge

General Knowledge	Mean	SD	Interpretation
1. The term "green enterprise" refers to services, products, and jobs that focus on sustainability, fewer emissions of greenhouse gases, and slowing climate change.	3.33	0.76	Highly Aware
2. The term "green enterprise" covers the adoption of environmentally sensitive practices by any industry or service provider.	3.23	0.78	Aware
3. Republic Act No. 10771 also known as the "Philippine Green Jobs Act of 2016", promotes the creation of green jobs, granting incentives and appropriating funds.	3.25	0.89	Highly Aware
4. The Philippine government conducts training on green productivity that discusses on how to practice "green" in one's enterprise.	3.15	0.89	Aware
5. In my job as a public utility driver, I can do "greening" as I render my services.	3.29	0.76	Highly Aware
Composite Mean	**3.25**	**0.69**	**Highly Aware**

It can be observed from Table 4 that the respondents are highly aware on the green practices for air emission control. It could be further noted that they are most aware that they can aid in cleaning the air by travelling only at speed required by traffic regulations and road conditions. On the other hand, the least mean computed on the respondents' awareness is that they can help cleaning the air through maintaining vehicle by changing oil regularly (every 5,000 kilometers).

It is important that tricycle drivers are aware of the practices that could contribute to air emission control since despite the existence of laws such as the Philippine Clean Air Act and Biofuels Act of 2006, gaps have been identified by Asian Development Bank and Clean Air Initiative for Asian Cities Center (CAI–Asia Center) (2010) and has also further recommended that review on enforcement and implementation of Clean Air Act to be able to assess its effectiveness as well as apply definite measures to transport sector that have been proven effective by other studies could be undergone.

Table 4

Mean Awareness of Respondents on Green Enterprise in Terms of Air Emission Control

Air Emission Control	Mean	SD	Interpretation
1. The use of gasoline and diesel enhancer such as F2020 Fuel Saver can saved fuel by enhancing its engines.	3.27	0.65	Highly Aware
2. It reduces smoke emissions that are harmful to the environment.	3.29	0.70	Highly Aware
I can help clean the air by...(numbers 3-8)			
3. Maintaining vehicle by changing oil regularly (every 5,000 kilometers).	3.17	0.75	Aware
4. Keeping the engine well-tuned following the owner's manual.	3.47	0.60	Highly Aware
5. Keeping tires properly inflated.	3.48	0.63	Highly Aware
6. Observing proper driving habits.	3.47	0.65	Highly Aware
7. Not overloading.	3.46	0.67	Highly Aware
8. Travelling only at speed required by traffic regulations and road conditions.	3.53	0.61	Highly Aware
9. Using the E-Trike promotes energy efficiency in the transport sector.	3.38	0.66	Highly Aware
10. Four-stroke engine is more environment-friendly.	3.36	0.73	Highly Aware
Composite Mean	**3.39**	**0.47**	**Highly Aware**

Table 5 summarizes the perception of the PUV drivers on green enterprise practices. On the average, the respondents agree on the stated green practices. It could be observed that the highest mean was computed in using gasoline and diesel enhancer such as F2020 Fuel Saver. However, the lowest mean perception was determined for the regulations limiting the age of tricycles to 10 years. This category also has the highest standard deviation which means that relatively, there is a bigger variation of responses from the mean perception.

Table 5

Mean Perception of Respondents on Green Enterprise

Perception on Green Enterprise	Mean	SD	Interpretation
1. Using of gasoline and diesel enhancer such as F2020 Fuel Saver.	3.16	0.69	Agree
2. Using of biofuel.	3.15	0.75	Agree
3. Using of E-trike	2.93	0.72	Agree
4. Regulations limiting the age of tricycles to 10 years.	2.65	1.06	Agree
5. Banning of two-stroke engine tricycles.	2.81	0.97	Agree
Composite Mean	**2.94**	**0.59**	**Agree**

The Philippines Daily Inquirer (2017) reported that the phase-out of old PUVs is expected to spark outrage among operators and drivers who insist that it will lead to loss of livelihood. Conversely, a study by Balaria et al. (2017) revealed that majority of tricycle drivers were agreeable to the shifting from engine propelled tricycle to E-trike. Although in the long run, E-trike was found to be sustainable, its cost impedes adoption and total employment of the City Government. Moreover, Purwandani and Michaud (2021) took note that lack of capital is one of the main barriers in implementing green business practices.

The subsequent paragraphs would discuss on the result of the statistical treatments done.

Table 6

Linear Regression

	Estimate	SE	95% CI		t	p
			LL	UL		
Intercept	1.933	0.296	1.348	2.519	6.524	<0.001
Awareness	0.303	0.088	0.129	0.477	3.440	<0.001

Using regression analysis, awareness on green enterprise was found to significantly influence perception on green enterprise practices. The adjusted R2 of this model is 0.068, which indicates that 6.80% of the variation in perception on green enterprise practices was explained by the awareness on green enterprise. The significant F-ratio (F =11.831, p = <0.001) indicates that the results of the regression model could hardly have occurred by chance. Thus, the goodness-of-fit of the model is satisfactory. Based on the beta coefficient of the independent variable, it is possible to assess the impact of the variable on the dependent variable, which is perception on green enterprise practices. It could be implied that if a driver is more aware about green enterprise, then he would strongly agree on the green enterprise practices involving their work. In addition, it could be concluded that the more understanding one driver has on green enterprise, including its benefits and advantages to the environment, the more he would be in concurrence with the implementation of its practice.

Table 7 presents that there is no significant difference among the awareness of the respondents as grouped according to profile factors. It could be deduced that differences in age, civil status, number of dependents, educational attainment, and monthly income do not translate to differences in awareness to green enterprise. It can be implied that tricycle drivers are knowledgeable of green practices to protect the environment no matter what age, marital status, number of dependents, educational attainment and monthly income they have. This is consistent

with the result of the study of Aydinan (2020) that tricycle drivers are knowledgeable of road traffic rules and regulations. However, despite being knowledgeable, it was found out that they are not always compliant.

Table 7

Test of Difference in the Awareness Among the Respondents on Green Enterprise as Grouped According to Profile Factors

Profile	F-value	p-value	Interpretation
Age	0.763	0.468	Not Significant
Civil Status	0.849	0.430	Not Significant
Number of Dependents	0.139	0.870	Not Significant
Educational Attainment	1.692	0.171	Not Significant
Monthly Income	0.713	0.492	Not Significant

On the other hand, Table 8 shows that there is significant difference among the perception of the respondents on green enterprise as grouped according to civil status. It could mean that the difference of perception among the single, married and widowed drivers is significant.

Table 8

Test of Difference in the Perception Among the Respondents on Green Enterprise as Grouped According to Profile Factors

Profile	F-value	p-value	Interpretation
Age	0.645	0.526	Not Significant
Civil Status	3.475	0.034	Significant
Number of Dependents	1.151	0.319	Not Significant
Educational Attainment	0.071	0.975	Not Significant
Monthly Income	0.041	0.959	Not Significant
Religion	1.566	0.187	Not Significant

DePaulo (2017) stated in her research that cross-sectional studies most of the time find small difference between single and married people. But she concluded that many single individuals fare better psychologically when they do not have a husband or a wife. Studies on interpersonal life show that family, friends, social connections, and personal communities have important roles in the lives of many single people. Oftentimes, singles are more into maintaining

a heterogeneous interpersonal ties than married people. Education, work, caregiving and solitude are also valuable elements of many single people's lives.

5. Conclusion

Motorcycles and tricycles are now the dominant mobile vehicles in the Philippines. Therefore, implementing green practices in the tricycle transport would contribute in lessening air pollution in our country. The tricycle drivers of San Pablo City, Laguna are considered highly aware of what green enterprise is, its general concepts and air emission control practices. The awareness covers the *what's* and *how's* of green enterprise. It could be deduced that tricycle drivers in the city are well aware of its definition, Philippine government's programs, and applicable activities that will aid in controlling air emission. The respondents also agree on green enterprise practices such as using of gasoline and diesel enhancer, biofuel and E-trike as well as limiting the age of tricycles to 10 years and banning of two-stroke engine tricycles.

It was proven that there is a significant relationship between the awareness and perception on green enterprise. Thus, it can be concluded that the more knowledgeable a driver is about the benefits of greening their work, they would be more in concurrence with its practices. In addition, it was determined that the awareness of the tricycle drivers do not differ significantly when they are grouped according to profile factors. However, it was found out that perception on the green enterprise practices differs significantly among single, married and separated drivers.

Since it was proven that there is a significant relationship between awareness and perception on green enterprise, it is considerable to conduct seminars or trainings that will focus on "greening" the work of public utility drivers specifically those in the tricycle transport. As awareness on the benefits on green enterprise is increased, the drivers' agreement to the implementation of its practices is also strengthened. Though the government already has a training program for drivers that includes road safety and good grooming, it should also incorporate environmental awareness and green productivity.

Another issue that points to the objection of the drivers and transport operators in the implementation of green practices is financial concerns as they deem it could result to losses. Specifically, the using of E-trike and limiting the age of tricycles to 10 years would mean additional cost for the drivers or transport operators as well. Thus, it is suggested that the government put up a financial program that could help ease the burden in complying with policies that promote green practices. In addition, since in the Philippines, policies on air

emission are already in place, its enforcement and implementation could be reviewed and consequently improved to obtain the objective of having a cleaner air and healthy environment.

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