

## Study on Bangi Gateway Customer Awareness Level About the Source of Air Pollution Due to the Increased Use of Vehicles

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### Abstract

Air pollution is an act of staining the cleanliness of the air causing its quality to decrease. Therefore, the causes of air pollution should be addressed immediately to make it easier for us to deal with them before it gets rampant and protracted. Smoke emissions by vehicles also contribute to air pollution in the country. This study aims to identify the level of awareness of Bangi Gateway customers regarding the source of air pollution due to the increase in the use of vehicles especially in Bangi, Selangor. In addition, levels of knowledge, awareness and solution measures to prevent air pollution from occurring were also identified. A total of 150 respondents were selected to answer the questionnaire via the Google Forms link. Data collection is in the form of a Likert scale. The findings found that the majority of respondents are very concerned about environmental pollution and the impact of environmental pollution on the local community. Among the proposed solutions are the use of electric vehicles and public transport, the sharing of vehicles to get to the same place, as well as the use of bicycles or scooters as well as walking for short distances. This initiative will not only save costs but also improve the health quality of the community.

**Keywords:** Pollution, Vehicle, Awareness, Solutions

### Introduction

According to the Environmental Quality Act (AKAS) pollution is defined as a change either directly or indirectly to the properties of physics, chemistry, biology or radiation levels

of any part of the environment (Nawawi et al., 2013). Pollution occurs by removing or placing waste to the detriment of the original function of the part. The pollution can create a condition that may be harmful to the health, safety or welfare of the public, as well as affecting other life such as animals or plants. Pollution can also be interpreted as the inclusion of pollutants such as chemicals, light, and energy in the environment that can leave traces of destruction, thus can cause human health problems, threaten natural resources and ecosystems, and disrupt the functioning of environmental origin (Atkinson et al., 2001). The word environmental or in English is called "environment" which means the surrounding or environmental conditions (Kemp, 2002). Therefore, if it refers to the general translation, then the word "environment" is to refer to anything that surrounds man. Specifically, the word environment also refers to the physical phenomena that surround an organism on the face of the earth. This physical phenomenon also includes phenomena related to climate and weather.

In addition, there is another definition of environmental which is more about the understanding of ecologists. It is explained that it is a geographical term on philosophical doctrine that emphasizes physical aspects such as world climatic conditions and is closely related to human activity (Collin, 1988). Such definitions can be presented generally explaining that the environment is a whole of surrounding phenomena that can affect the life of an organism. According to Islam, "environmentalism" is based on the teachings of tauhid or the understanding of unity that combines man, nature, and God (Gade, 2019). Islam makes morality the core of the relationship between nature and divinity. The concept of man as a caliphate shows that the environment is the right of Allah and His creation. Therefore, people need to carry out the mission and trust as a caliphate on earth. In the West, environmental management began at the end of the 19th century because of the 1.0 industrial revolution (Chandrappa & Das, 2012).

In general, pollution can be divided into several pollutions; water, odour, air and land pollution (Ashraf et al., 2014). For example, there are several pollutions that can harm the environment, among which are rampant felling of trees, levelling the mountains and dredging the waters. Such activities can lead to the occurrence of environmental pollution. The issue of environmental pollution is a topic that is often discussed from various angles from time immemorial. Air pollution refers to a change in the presence of chemicals, particulate matter or the existence of pollutants in the air or atmosphere that are harmful to life such as humans, animals and plants (Seinfeld & Pandis, 2016). Air pollution can also be divided into two types, namely indoor air pollution and outdoor air pollution (Mukhopadhyay et al., 2014).

Indoor air pollution is pollution that occurs inside buildings such as houses, shops and shopping places while outdoor air pollution is pollution that occurs outside the building. Indoor air pollution can occur from human activities themselves such as smoking cigarettes indoors and the use of mosquito repellents that can release suspended particulate matter in the air. The effects of such indoor air pollution can lead to asthma (Jaimini et al., 2017). This is because high air pollution causes the contaminated material to be inhaled when we breathe. Among the substances that can provoke an asthma attack is ozone (Goodman et al., 2018). Ozone gas will form when the sun reacts with chemicals that are freed from vehicle smoke as well as fuel burning such as from factories and oil rigs. The above problems stem from suspended particulate matter as a result of fuel burning by mills, wood burning or forest products.

Air pollution is an act of staining the cleanliness of the air causing its quality to decrease. Therefore, the causes of air pollution should be addressed immediately to make it

easier for us to deal with them at an early stage hence the situation is more manageable and not protracted. Smoke emissions by vehicles also contribute to air pollution in the country. Most of the community prefer to use cars, resulting in an increase in vehicles moving on the road. This causes smoke to be released into the air through the exhaust of the car. If the vehicle used is not properly maintained, the vehicle will emit excess smoke. Such things will adversely affect human health. Vehicle fumes containing toxic gases such as carbon monoxide have polluted the cleanliness of the air in the country (Tucki et al., 2019).

The Air Pollution Index (IPU) in 2019 recorded the status of unhealthy values (101-200) and very unhealthy (201-300) due to current pollution and cross-border haze (DOSM, 2019). According to a Metro newspaper report, a total of 1,484 schools in seven states were ordered to close due to increased IPU readings around their respective areas (Metro, 2019). The haze phenomenon in Malaysia is a problem that occurs every year, and even the people of this country seem to be used to it. To date, various efforts have been made by the Meteorological Department and other relevant agencies to address the haze and air pollution problems that plague the country. The air quality analysis in the Bangi district of Selangor recorded the status of the IPU value contaminated before the COVID-19 crisis in early 2020. However, the value of this composition changed to net during the implementation of MCO 1.0 due to travel restrictions and all forms of business operations other than frontline activities (Abdullah et al., 2020).

There are various causes that can lead to the occurrence of air pollution. One of them stems from the release of dirty smoke by industries that release smoke openly through factory chimneys (Wei et al., 2018). In addition, smoke emissions from vehicles, smoking habits and open burning are among the main contributors to air pollution (Nnaji et al., 2023). Among the effects of air pollution that can occur are thinning of the ozone layer, haze, acid rain, and warming of the earth (Pallavi & Shani, 2021). Air pollution also causes problems in terms of health, safety, human comfort or property damage. This study will discuss more about air pollution caused by motor vehicle smoke emissions. Nowadays, vehicles are a daily necessity for all walks of life to facilitate their movement from one place to another. The burning of fossil fires such as petrol, diesel from motor vehicles will produce carbon monoxide and nitrous oxide gases that will contribute to the occurrence of air pollution (Lee et al., 2019).

Air pollution has two parts, namely primary pollution and secondary pollution (Saohasakul & Pochanart, 2023). Primary pollution refers to pollution that has sulphur monoxide and carbon monoxide due to incomplete combustion and fine particles have been deposited in the air. The release of fumes from vehicles is categorized under primary pollution. For secondary pollution, it is also the result of sulphur dioxide reactions that usually occur in volcanic areas.

The increase in the number of vehicles in an area will cause the emission of greenhouse gases such as carbon monoxide and dust, smoke and foreign particles to increase (Li et al., 2023). These emissions will have a negative impact on the air quality index. Air pollution contributes to the degradation of ecosystems and threatens human health due to exposure to various risks of diseases such as wheezing, asthma and so on (Turdimovich and Khasanovich, 2023). Understanding the amount of customer knowledge in a densely populated area like Bangi Gateway is crucial in an era where environmental sustainability and public health are becoming increasingly important considerations. This study intends to provide light on the degree to which people are informed about the harmful impacts of car emissions on air quality by examining the awareness levels of local residents and customers. This information can act as a motivator for the design of policies and well-informed decisions

targeted at reducing air pollution. Additionally, by highlighting locations where there may be a need for additional public education and awareness initiatives, this study provides insightful information that can help create a healthier and more ecologically conscious community.. Therefore, this study will focus on three main objectives, the first is to identify the impact on local air if using self-propelled vehicles, the second is to study the sensitivity to pollution occurring around the residential area, and the third to study the solutions to the problem of air pollution in the local area.

## METHODOLOGY

This methodology is used to ensure that the objectives of the study can be achieved based on reliable data. This study is about the awareness of Bangi Gateway customers regarding the source of air pollution due to the increased use of vehicles in Bangi.

<b>Metho d</b>	<b>Instruments</b>
Quantitative	Questionnaire

Table 1: Study instrument methods

## QUESTIONNAIRE

For this study, a total of 150 respondents from among the visitors of Bangi Gateway, a shopping mall in Bangi district, Selangor were randomly selected to answer the questionnaire via the Google Form link. The data collection used by researchers is a primary data method for obtaining data through questionnaires (Zhang et al., 2018). This questionnaire consists of four sections, namely Part A, B, C and D. Part A is related to the demographic information of the respondent including name, gender and age. Part B is about the impact on local air in case of excessive use of self-propelled vehicles. Part C is about the level of concern for air pollution occurring in the area where the population lives. Finally, Part D is about solutions to the problem of air pollution in the local area. For Parts B, C and D, the 5-point Likert scale instrument has been used which represents the statement of Strongly Agree, Agree, Uncertainty, Disagree and Strongly Disapprove. The Likert scale is widely used to measure respondents' attitudes, preferences, and opinions (Leung, 2011).

## OBSERVATION

The observation method is an alternative method of researchers in the collection of information (Williams, 2007). Based on the observations of the researchers, the researchers found that there are many vehicles used in the Bangi Gateway area. This will easily result in air pollution occurring as smoke from vehicles emits greenhouse gases that can cause the air to dry out. In addition, visitors who come from Bangi Gateway do not use public vehicles to reduce smoke emissions from vehicles.

Therefore, this study has used a quantitative type of study methodology i.e. questionnaires and observation methods as researchers want to identify the impact on local air in the event of excessive use of their own vehicles, study the level of concern for air pollution occurring in the area where the population lives and study the solutions to the

problem of air pollution in the local area. The information obtained through questionnaires and observations was processed to produce the perfect findings.

## FINDINGS

This section explains the results of the data analysis based on the respondents' response to the awareness of Bangi Gateway customers regarding the source of air pollution due to the increased use of vehicles in Bangi.

## DEMOGRAPHICS OF RESPONDENTS

A total of 150 respondents comprising Bangi Gateway customers were questioned. The background description of the respondent involves aspects of gender and age.

No	Factor	Category	Frequency ( <i>f</i> )	Percentage (%)
1	Gender	Male	41	27.3
		Female	109	72.7
2	Age	18-24	121	80.7
		25-34	16	10.7
		35-44	5	3.3
		45-54	5	3.3
		55-64	2	1.3
		Other(specify)	1	0.7

Table 2: Background of Respondents

Based on the results of the study, out of the 150 respondents surveyed, 41 people equivalent to 27.30% were male respondents, while the female respondents were 109, equivalent to 72.70%. There is a difference in the gap in gender selection. For the demographic of age category respondents, the 121 respondents aged between 18-24 years old. For respondents aged 25-34, it represented 10.70% which is 16. Meanwhile, the number of respondents aged 35-44 years amounted to 5 people which is 3.30%. For respondents aged 45-54 years, 5 people are equal to 3.30%. Respondents aged 55-64 years old were 1.30% which is equivalent to 2 people. Finally, the number of respondents who stated another age was 0.70%. For respondents who stated other ages were respondents who were 15 years old. This can be evidenced in the questionnaires distributed to the respondents.

No	Items	Very Agree		Agree		Uncertain		Disagree		Very Disagree	
		<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
1	Increased release of greenhouse gases	80	53.33	58	38.67	11	7.33	1	0.67	0	0.00
2	Increase in haze cases	87	58.00	50	33.33	11	7.33	1	0.67	1	0.67
3	Unsanitary and polluted air quality	103	68.67	44	29.33	1	0.67	1	0.67	1	0.67
4	Enactment pollution air	103	68.67	42	28.00	3	2.00	1	0.67	1	0.67

Table 3: Identify the impact on local air if using self-driving vehicles excessively.

The first objective is to identify the impact on local air if using self-driving vehicles excessively for increased greenhouse gas emissions. Scale 5 (Very Agree) showed a percentage of 53.33% equivalent to 80 respondents. Scale 4 (Agree) showed a percentage of 38.67% equivalent to 58 respondents. While for scale 3 (Uncertain) showed a percentage of 7.33% equal to 11 respondents. Scale 2 (Disagree) shows a percentage of 0.67% which is equivalent to one respondent. For Scale 1 (Very Disagree) there is no percentage because no respondent chooses scale 1. Scale 5 (Very Agree) is the highest percentage as many respondents strongly agree that increased greenhouse gas emissions are one of the causes that will cause polluted air.

Moreover, for the increase in haze cases. Scale 5 (Very Agree) shows a percentage of 58.00% equivalent to 87 respondents. Scale 4 (Agree) showed a percentage of 33.33% equivalent to 50 respondents. While for scale 3 (Uncertain) showed a percentage of 7.33% equal to 11 respondents. Scale 2 (Disagree) and scale 1 (Very Disagree) show a percentage of 0.67% which is equivalent to one respondent. Scale 5 (Very Agree) is the highest percentage as the increase in haze cases is due to the production of large amounts of vehicle smoke into the air.

In addition, the percentage of air quality is unsanitary and polluted. Scale 5 (Very Agree) showed a percentage of 68.67% equivalent to 103 respondents. Scale 4 (Agree) showed a percentage of 29.33% equivalent to 44 respondents. While for a scale of 3 (Uncertain) shows a percentage of 0.67% equal to one respondent. Scale 2 (Disagree) and scale 1 (Very Disagree) show a percentage of 0.67% which is equivalent to one respondent. There were 103 people who voted strongly because excessive use of self-driving vehicles would affect the local air i.e. unsanitary and polluted air quality.

This objective has also examined the percentage of enactment air pollution. Scale 5 (Very Agree) showed a percentage of 68.67% equivalent to 103 respondents. Scale 4 (Agree) shows a percentage of 28.00% equal to 42 respondents. While for a scale of 3 (Not Certain) shows a percentage of 2.00% equal to 3 respondents. Scale 2 (Disagree) and scale 1 (Very



Disagree) show a percentage of 0.67% which is equivalent to one respondent. Most respondents strongly agreed that excessive use of self-driving vehicles would lead to air pollution.

As for the other part, there were six respondents who noted other effects on local air if using their own vehicles excessively. Among them are severe jam, disturbed and non-green scenery, car density causes carbon dioxide gas to be released heavily, thinning the ozone layer, increasing the cost of living and affecting human health. Based on other effects stated by the respondents, this has caused the locals to experience poor air in their environment.

No	Items	Very Agree		Agree		Uncertain		Disagree		Very Disagree	
		<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
1	We do not put enough effort in preserve clean air quality	85	56.67	50	33.33	12	8.00	3	2.00	0	0.00
2	Too many complaints have been made regarding air pollution	77	51.33	41	27.33	28	18.67	4	2.67	0	0.00
3	Users should give attention towards effects of air pollution	103	68.67	44	29.33	3	2.00	0	0.00	0	0.00
4	Consumers need to find other alternatives to reduce air pollution	100	66.67	46	30.67	4	2.67	1	0.67	0	0.00

Table 4: Assessing the level of concern about air pollution that occurs in the area where residents live.

The second objective of studying the level of concern for air pollution occurring in the areas where the population lives has shown that we are not putting enough effort into preserving clean air quality. Scale 5 (Very Agree) showed a percentage of 56.67% equivalent to 85 respondents. Scale 4 (Agree) showed a percentage of 33.33% equivalent to 50 respondents. While for scale 3 (Not Sure) shows a percentage of 8.00% equal to 12 respondents. The scale 2 (Disagree) shows a percentage of 2.00% which is equivalent to 3 respondents. For Scale 1 (Very Disagree) there is no percentage because no respondent chooses scale 1. Scale 5 (Very Agree) is the highest percentage because many respondents strongly agree that we are not putting enough effort into preserving clean air quality. This could illustrate that there are a handful of people who are not concerned about air pollution.

A percentage of too many complaints have been made regarding air pollution. Scale 5 (Very Agree) showed a percentage of 51.33% equivalent to 77 respondents. Scale 4 (Agree) showed a percentage of 27.33% equivalent to 41 respondents. While for scale 3 (Not Sure) showed a percentage of 18.67% equal to 28 respondents. The scale 2 (Disagree) shows a percentage of 2.67% which is equivalent to 4 respondents. For Scale 1 (Very Disagree) there is no percentage because no respondent chooses scale 1. Scale 5 (Very Agree) is the highest percentage as many respondents strongly agree that too many complaints have been made regarding air pollution. This is said because humans care about air quality so as not to be polluted.

In addition, percent of consumers should pay attention to the effects of air pollution. Scale 5 (Very Agree) showed a percentage of 68.67% equivalent to 103 respondents. Scale 4 (Agree) showed a percentage of 29.33% equivalent to 44 respondents. While for a scale of 3 (Not Certain) shows a percentage of 2.00% equal to 3 respondents. Scale 2 (Disagree) and scale 1 (Very Disagree) show a percentage of 0.00% i.e. no respondent chooses the scale. Based on the chart above, most respondents strongly agree if consumers pay attention to the effects of air pollution.

In addition, percent of consumers need to look for other alternatives to reduce the problem of air pollution. Scale 5 (Very Agree) shows a percentage of 66.67% equivalent to 100 respondents. Scale 4 (Agree) showed a percentage of 30.67% equivalent to 46 respondents. While for scale 3 (Not Sure) showed a percentage of 2.67% equal to 28 respondents. The scale 2 (Disagree) shows a percentage of 0.67% which is equivalent to 1 respondent. For Scale 1 (Very Disagree) there is no percentage because no respondent chooses scale 1. Scale 5 (Very Agree) is the highest percentage as many respondents strongly agree that consumers need to find other alternatives to reduce the problem of air pollution. This is said to be because the alternatives that now show fewer effective results. Therefore, we need to find other alternatives to reduce the problem of air pollution.

As for the other part, there were five respondents who expressed other levels of concern about air pollution occurring in the area where the residents live in the event of excessive use of their own vehicles. Among them are working together to create awareness campaigns in their respective areas of residence, act as soon as possible after getting a report, the government should enforce the law, increase electricity-based vehicles due to reducing pollution and "carpooling" campaigns. This is said because there are some people who are not concerned about the air quality of the environment.



No	Items	Very Agree		Agree		Uncertain		Disagree		Very Disagree	
		<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
1	Using public transportation	102	68.00	42	28.00	5	3.33	1	0.67	0	0.00
2	Sharing vehicle to the same destination	86	57.33	63	42.00	1	0.67	0	0.00	0	0.00
3	Walk to destinations close to home	84	56.00	58	38.67	6	4.00	2	1.33	0	0.00
4	Using vehicles that do not emit smoke like an electric scooter	74	49.33	66	44.00	8	5.33	2	1.33	0	0.00

Table 5: Examine solutions to air pollution problems in the local area.

The last objective is to study the solution to the problem of air pollution in the local area, which includes the percentage to use public transport services to the destination. Scale 5 (Very Agree) shows a percentage of 68.00% equivalent to 102 respondents. Scale 4 (Agree) shows a percentage of 28.00% equal to 42 respondents. While for a scale of 3 (Uncertain) shows a percentage of 3.33% equal to 5 respondents. Scale 2 (Disagree) shows a percentage of 0.67% which is equivalent to one respondent. For Scale 1 (Very Disagree) there is no percentage because no respondent chooses scale 1. Scale 5 (Very Agree) is the highest percentage as many respondents strongly agree that using public transport services to get to the destination is one of the solutions to overcome the problem of pollution in the local area.

Apart from using public transport services to the destination there is also a percentage of sharing vehicles to the same destination. Scale 5 (Very Agree) showed a percentage of 57.33% equivalent to 86 respondents. Scale 4 (Agree) showed a percentage of 42.00% equivalent to 63 respondents. While for a scale of 3 (Uncertain) shows a percentage of 0.67% equal to one respondent. Scale 2 (Disagree) and scale 1 (Very Disagree) show a percentage of 0.00% i.e. no respondent chooses the scale. Based on the chart above, most respondents strongly agree if sharing a vehicle to the same destination as it can overcome the problem of air pollution in the local area.

In addition, percent of the walk to a destination close to home. Scale 5 (Very Agree) shows a percentage of 56.00% equivalent to 84 respondents. Scale 4 (Agree) showed a percentage of 38.67% equivalent to 58 respondents. While for a scale of 3 (Not Certain) shows that 4.00% percent is equal to 6 respondents. The scale 2 (Disagree) shows a percentage of 1.33% which is equivalent to 2 respondents. For Scale 1 (Very Disagree) there is no percentage because no respondent chooses scale 1. Scale 5 (Very Agree) is the highest

percentage as many respondents strongly agree that walking to a destination close to home can reduce the problem of air pollution. Besides that, walking can also be healthy as walking is a good light workout.

In addition, the percentage of vehicles that do not emit smoke such as electric scooters. Scale 5 (Very Agree) showed a percentage of 49.33% equivalent to 74 respondents. Scale 4 (Agree) showed a percentage of 44.00% equivalent to 66 respondents. While for a scale of 3 (Not Certain) showed a percentage of 5.33% equal to 8 respondents. The scale 2 (Disagree) shows a percentage of 1.33% which is equivalent to 2 respondents. For Scale 1 (Very Disagree) there is no percentage because no respondent chooses scale 1. The use of vehicles that do not emit smoke such as electric scooters can preserve air quality so that there is no contamination. Therefore, most respondents strongly agree if the use of vehicles that do not emit smoke as a solution to the problem of air pollution in the local area.

As for the other part, there are two respondents who provide another solution to the local air in case of excessive use of self-propelled vehicles. Among them are creating awareness campaigns and increasing electric vehicles. Based on other solutions provided by the respondents, create an awareness campaign for the locals in providing new knowledge so that they are more sensitive to air pollution in the local area.

## **DISCUSSION**

Air pollution is indeed something that often faces worldwide. Carbon dioxide gas, sulfur dioxide, carbon monoxide, chlorofluorocarbons, smells, heavy and toxic metals such as copper lead and radioactive waste are examples of prevalent pollutants (Peszko et al., 2023). Air pollution is generated by polluted smoke emitted directly into the atmosphere by industry, motor vehicles on the road, open burning, and volcanic eruptions (Saohasakul & Pochanart, 2023). Its influence, in turn, can cause ozone layer thinning, smog, global warming and acid rain (Cheptsov & Bocharov, 2023). Not only that, but human health and comfort will suffer as well.

The findings have shown that there are many Bangi Gateway visitors who are aware of the air pollution that occurs due to the increase in vehicles. The response also showed that the visitors of Bangi Gateway strongly agreed that the effect of excessive use of their own vehicles was causing the greenhouse gas emissions. There are also those who agreed that the effect of excessive use of vehicles is causing increased haze and air pollution. One of the most complete methods for combating global climate change is sustainable mobility. As a result, decarbonization of the transportation industry using electric vehicles (EV) and shared mobility is currently a cost-effective and ecologically benign alternative (Pamidimukkala et al., 2023). EVs also have several advantages over traditional automobiles, such as zero greenhouse gas emissions, ease of use, dependability, affordability, convenience, efficiency, and connectivity (Rapson & Muehlegger, 2023). Besides that, there are also respondents who give additional opinions on the effects of excessive use of vehicles that can lead to traffic congestion, increase the cost of living, scenery pollutant and jeopardised the health of the community. By reducing the number of vehicles in transit, congestion, and the discharge of damaging gases in metropolitan areas, shared mobility helps to alleviate the problems caused by pollution and traffic congestion (Pamidimukkala et al., 2023).

Apart from that, the Bangi community is also very concerned about the air pollution that occurs in the area where the residents live. The average strongly agrees that residents need to be integrated in addressing this problem and do not rely on the government fully to fight this issue. The respondents strongly agreed that residents need to pay more attention

to air pollution, thus need to look for other alternatives to reduce the problem of air pollution. The most promising option to overcome this problem is to change industrial technology, particularly to waste-free technology (Allamuratov & Tlepbergenova, 2023). Some opinion suggest that community does not putting enough effort into preserving clean air quality despite numerous complaints made about air pollution. Others also suggested on how to reduce the problem of air pollution, among which is that residents need to work together to create awareness campaigns in their respective areas of residence. Meanwhile, the government needs to be quick to act after receiving complaints or reports. In addition, the government should also enforce the law and promote on the use of EVs. Air pollution monitoring and control are well established in Malaysia. Fees and fines are imposed on vehicle that pollute the air in excess of the specified level are set by the government in accordance with the United Nations' standards which can be found within instruments such as the Environmental Quality (Control of Emissions and Diesel Engines) Regulations 1996, and the Environmental Quality (Control of Emission from Petrol Engines) Regulations 1996 (Mustafa & Rusli, 2016). The Environmental Quality Act 1974 through the Environmental Quality (Control of Lead Concentration in Motor Gasoline) Regulations 1985 were introduced to reduce and subsequently eliminate use of lead additives in motor gasoline due to the health consequences of lead exposure because when lead is emitted to the air, it can contaminate soil, urban dusts, and crops (UNEP, 1999). On top of that, the development of ecologically friendly modes of transportation is one of today's top goals to overcome air pollution issues.

Next, among the discussions that can be made to solve the problem of air pollution is that the community needs to use public transport services or to share the same vehicle to get to the same destination. By lowering the number of cars utilized for personal transport and enhancing the usage of existing seat capacity, this solution may deliver major socioeconomic and environmental benefits (Agatz et al., 2012). This can reduce the occurrence of air pollution that occurs as a result of excessive use of vehicles. In addition, individuals can also walk to a place that is quite close to home or use vehicles that do not cause smoke discharge such as electric scooters. To fight the air pollution crisis, prioritize nonmotorized transportation (walking and cycling) as appealing transportation choices (Atash, 2007). Apart from reducing air pollution the use of electric vehicles can also save transportation costs.

## **CONCLUSION**

Overall, the study found that society has a high value of concern for the problem of air pollution. Although the level of concern for the environment among consumers is high, in terms of consumption practices can still be improved in line with the active environmental campaigns recommended by the Ministry of Local Government Development. In conclusion, the air pollution that occurs due to excessive use of vehicles has long since brought awareness to the community but there are still some people who do not consider the problem of air pollution and selfishness which is to continue to use the vehicle continuously. This problem is difficult to solve completely but the community can reduce the problem of air pollution from continuing to occur and get worse and endanger the health of all parties. The government should play an important role in addressing this issue and not let the people struggle on their own. All parties play an important role in combating this issue as well as individuals who are still in the notch for a long time and do not care about the problem of pollution that is getting worse.

## REFERENCES

1. Abdullah, S., Mansor, A. A., Napi, N. N. L. M., Mansor, W. N. W., Ahmed, A. N., Ismail, M., & Ramly, Z. T. A. (2020). Air quality status during 2020 Malaysia Movement Control Order (MCO) due to 2019 novel coronavirus (2019-nCoV) pandemic. *Science of the Total Environment*, 729, 139022.
2. Agatz, N., Erera, A., Savelsbergh, M., & Wang, X. (2012). Optimization for dynamic ride-sharing: A review. *European Journal of Operational Research*, 223(2), 295-303.
3. Allamuratov, M., & Tlepbergenova, P. (2023). Atmosfera's pollution as an actual global problem. *Innovative developments and research in education*, 2(14), 42-48.
4. Ashraf, M. A., Maah, M. J., & Yusoff, I. (2014). Soil contamination, risk assessment and remediation. *Environmental risk assessment of soil contamination*, 1, 3-56.
5. Atash, F. (2007). The deterioration of urban environments in developing countries: Mitigating the air pollution crisis in Tehran, Iran. *Cities*, 24(6), 399-409.
6. Atkinson, R. W., Ross Anderson, H., Sunyer, J., Ayres, J. O. N., Baccini, M., Vonk, J. M., Boumghar, A., Forastiere, F., Forsberg, B., Touloumi, G., Schwartz, J., & Katsouyanni, K. (2001). Acute effects of particulate air pollution on respiratory admissions: results from APHEA 2 project. *American journal of respiratory and critical care medicine*, 164(10), 1860-1866.
7. Chandrappa, R., & Das, D. B. (2012). *Solid waste management: Principles and practice*. Springer Science & Business Media.
8. Cheptsov, A. A., & Bocharov, A. M. (2023). Effect of air pollution from vehicles.
9. Collin, P. H. (1988). *Dictionary of Ecology and the Environment*. United Kingdom: P. Collin Publications.
10. Department of Statistics Malaysia (DOSM). (2019). (Accessed on 9th August 2023). [https://dosm.gov.my/v1/uploads/files/3\\_Time%20Series/Malaysia\\_Time\\_Series\\_2019/20\\_Alam\\_Sekitar.pdf](https://dosm.gov.my/v1/uploads/files/3_Time%20Series/Malaysia_Time_Series_2019/20_Alam_Sekitar.pdf)
11. Gade, A. M. (2019). *Muslim Environmentalisms: Religious and Social Foundations*. United States: Columbia University Press.
12. Goodman, J. E., Zu, K., Loftus, C. T., Lynch, H. N., Prueitt, R. L., Mohar, I., Shubin, S.P., & Sax, S. N. (2018). Short-term ozone exposure and asthma severity: Weight-of-evidence analysis. *Environmental Research*, 160, 391-397.
13. Jaimini, U., Banerjee, T., Romine, W., Thirunarayan, K., Sheth, A., & Kalra, M. (2017). Investigation of an indoor air quality sensor for asthma management in children. *IEEE sensors letters*, 1(2), 1-4.
14. Kemp, D. (2002). *The Environment Dictionary*. United Kingdom: Taylor & Francis.
15. Lee, H. H., Iraqui, O., & Wang, C. (2019). The impact of future fuel consumption on regional air quality in Southeast Asia. *Scientific reports*, 9(1), 2648.
16. Leung, S. O. (2011). A comparison of psychometric properties and normality in 4-, 5-, 6-, and 11-point Likert scales. *Journal of social service research*, 37(4), 412-421.
17. Li, T., Yang, H. L., Xu, L. T., Zhou, Y. T., Min, Y. J., Yan, S. C., Zhang, Y.H., & Wang, X. M. (2023). Comprehensive treatment strategy for diesel truck exhaust. *Environmental Science and Pollution Research*, 30(19), 54324-54332.
18. METRO. (2019). Accessed on 9<sup>th</sup> August 2023. <https://www.hmetro.com.my/utama/2019/09/497998/1484-sekolah-ditutup-metrotv>

19. Mukhopadhyay, K., Ramasamy, R., Mukhopadhyay, B., Ghosh, S., Sambandam, S., & Balakrishnan, K. (2014). Use of ventilation-index in the development of exposure model for indoor air pollution—A review. *Open Journal of Air Pollution*, 2014.
20. Mustafa, M., & Rusli, M. H. M. (2016). The position of environmental law in Malaysia in dealing with domestic and regional air pollution problems. *Jurnal sultan alauddin sulaiman shah*, 3(2), 155 – 165.
21. Nawawi, M. N., Ali, J., & Lim, H. E. (2013). Pematuhan industri pembuatan terhadap peraturan alam sekitar di utara semenanjung Malaysia. *Jurnal Ekonomi Malaysia*, 47(2), 111-121.
22. Nnaji, C. C., Chibueze, C., & Afangideh, C. B. (2023). The menace and mitigation of air pollution in the built environment: A review. *Nigerian Journal of Technology*, 42(1), 12-29.
23. Pallavi, S., & Shani, Tiwari. (2021). *Air Pollution and Its Complications: From the Regional to the Global Scale*. Switzerland: Springer International Publishing.
24. Pamidimukkala, A., Patel, R. K., Kermanshachi, S., Rosenberger, J. M., & Tanvir, S. (2023). A Review on Shared Mobility and Electric Vehicles. In *International Conference on Transportation and Development 2023* (pp. 333-342).
25. Peszko, G., Amann, M., Awe, Y., & Kleiman, G. (2023). *Air Pollution and Climate Change: From Co-Benefits to Coherent Policies*. World Bank Publications.
26. Rapson, D. S., & Muehlegger, E. (2023). The economics of electric vehicles. *Review of Environmental Economics and Policy*, 17(2), 000-000.
27. Saohasakul, L., & Pochanart, P. (2023). Innovative Characteristic Assessment of Air Pollution in Bangkok. *International Journal of Science and Innovative Technology*, 6(1), 45-58.
28. Saohasakul, L., & Pochanart, P. (2023). Innovative Characteristic Assessment of Air Pollution in Bangkok. *International Journal of Science and Innovative Technology*, 6(1), 45-58.
29. Seinfeld, J. H., & Pandis, S. N. (2016). *Atmospheric chemistry and physics: from air pollution to climate change*. John Wiley & Sons.
30. Tucki, K., Mruk, R., Orynycz, O., Botwińska, K., Gola, A., & Bączyk, A. (2019). Toxicity of exhaust fumes (CO, NOx) of the compression-ignition (diesel) engine with the use of simulation. *Sustainability*, 11(8), 2188.
31. Turdimovich, A. T., & Khasanovich, S. M. (2023). The study of air pollution at the present stage. *Eurasian Journal of Engineering and Technology*, 17, 71-75.
32. UNEP. 1999. *Phasing Lead out of Gasoline: An Examination of Policy Approaches in Different Countries*. Paris: United Nations.
33. Wei, Y., Gu, J., Wang, H., Yao, T., & Wu, Z. (2018). Uncovering the culprits of air pollution: evidence from China's economic sectors and regional heterogeneities. *Journal of Cleaner Production*, 171, 1481-1493.
34. Williams, C. (2007). Research methods. *Journal of Business & Economics Research (JBER)*, 5(3).
35. Zhang, L., Tian, J. H., Jiang, J., Liu, Y. J., Pu, M. Y., & Yue, T. (2018). Empirical research in software engineering—a literature survey. *Journal of Computer Science and Technology*, 33, 876-899.