

AN INVESTIGATION ON THE RESIDENTS'
ACCEPTANCE TOWARDS WASTE INCINERATOR

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**AN INVESTIGATION ON THE RESIDENTS' ACCEPTANCE
TOWARDS WASTE INCINERATOR**

By

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ABSTRACT

AN INVESTIGATION ON THE RESIDENTS' ACCEPTANCE TOWARDS WASTE INCINERATOR

LAU HAN MAN

The construction and operation of waste incinerators have gradually shown that they are a plausible solution for waste management. However, social barriers, such as community acceptance, are slowly becoming a hurdle for waste incinerator projects, and overlooking them will eventually lead to delays, suspensions, cancellations, and eventual stoppage of operations. A similar scenario was found in Malaysia, for instance, the Broga and Kepong project, which was delayed, suspended, and reviewed due to failure to address the community acceptance issue. Therefore, the general objective of this study is to develop a model to facilitate the implementation of the siting of waste incinerators within their neighbourhood vicinities in Malaysia. Data collection will be conducted by using survey instruments in the area of Kepong and Pangkor Island, with around 300 valid residents, with the simple random sampling technique to recruit respondents among residents from that area. The regression modelling analysis will be performed via SPSS software version 21, which includes multiple regression, factor analysis and MANOVA. Based on the findings, the independent variable of risk perception and the mediating variable of attitude had valid and effective strategies that can be proposed in addressing residents' concerns and simultaneously increasing the acceptance of siting the waste incinerator. Therefore, it could improvise how to assist politicians or constructors understand the community's behaviour and attitude towards the siting of the waste incinerators. Essentially, this study will facilitate Malaysia in achieving the United Nations' Sustainable Development Goals (SDG) via waste incinerator implementation as a sustainable waste management practice in addressing the climate change issue (SDG 13) and adverse environmental issues (SDG 11), and to increase the share of renewable energy generated using solid waste (SDG 7).

**Keyword: Attitude, Community Acceptance; Local Opposition/Support;
Waste Management; Waste Incinerator**

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LIST OF ABBREVIATIONS

3R	Reduce, Reuse, and Recycle
SWM	Solid Waste Management
LCA	Life Cycle Assessment
MSWI	Municipal Solid Waste Incineration
MSWG	Municipal Solid Waste Generated
COVID-19	Coronavirus Disease 2019
SDGs	Sustainable Development Goals
UN-SDGs	United Nations' Sustainable Development Goals
DEIA	Detailed Environment Impact Assessment
WtE	Waste-to-Energy
SEM	Structural Equation Modelling
PRISM	Planned Risk Information Seeking Model
MWIP	Municipal Waste Incineration Plants
NIMBY	Not In My Backyard
DAD	Decide Announce-Defend
LULU	Locally Unwanted Land Use
TT	Thermal Treatment
MSW	Municipal Solid Waste
SPSS	Statistical Package for the Social Sciences
ZWL	Zero-Waste Lifestyle
RP	Risk Perception
PJ	Procedural Justice
DJ	Distributional Justice
SN	Subjective Norms
PBC	Perceived Behaviour Control
ATT	Attitude
IASWI	Intention to Accept Sitting of Waste Incinerators
VIF	Variance Inflation Factors
MANOVA	Multivariate Analysis of Variance
ANOVA	Analysis of Variance
KMO	Kaiser-Meyer-Okin
WtP	Willing to Pay

CHAPTER I

INTRODUCTION

1.1 Introduction

In this chapter, it will be going to discuss the research background and current situation of the implementation of waste incinerators for waste management of community acceptance, and followed by problem statement, research objectives and questions, the significance of the study such as theoretical significant and practical significant of the study, and organization of the study.

1.2 Background of the Study

A product or items produced by various society activities to fulfil individual needs and wants in their daily activities. But it will become a solid waste when it has lost its value, and it is well known as solid waste. Solid waste is a material that had been lost of their value. Solid waste is an unavoidable by-product worldwide now, and the economic development and increase in the world of standard living. It will lead to an increase in the quantity and quality of the complexity of the generated waste in the world as shown in **Figure 1.1**. The continued economic development, better living standards for the countries, and

growth of population also are key points that lead to a critical increase in the quantity of waste in their country. This also causes environmental pollution and affects every person around the world, no matter the level of income, level of education etc. (Kaze et al., 2018). Concern over the growth of solid waste, Hoornweg and Bhada-Tata (2012) acknowledged that waste generated will adversely affect the global environment. Besides that, it would also cause a dramatic increment in handling costs if the solid waste were not being managed properly and wisely. It is agreeable that solid waste is the most common and unavoidable by-product of our urbanization and economic activities.

According to the data that had been collected by Kaze et al. (2018), the World Bank record showed the world is generating 2.01 billion tons of municipal solid waste annually. However, at least 33% of the solid waste was not managed positively in an environmentally correct manner. Additionally, the average waste generated per person per day is 0.74 kilograms, but surprisingly the waste generated per person increased to 4.54 kilograms from 0.11 kilograms while increasing the range more widely. In case, we do not take any action to reduce and manage correctly on solid waste, global waste should be also expected to increase to 3.40 billion tonnes by 2050 which is more than double the population growth over the same period.

Figure 1.1: Plastic waste at the Thilafushi Waste Disposal Site, Maldives



Sources: Kaza et al. (2018)

Figure 1.2: Solid Waste Issue at the Pulau Pangkor, Malaysia



Source: Own Findings

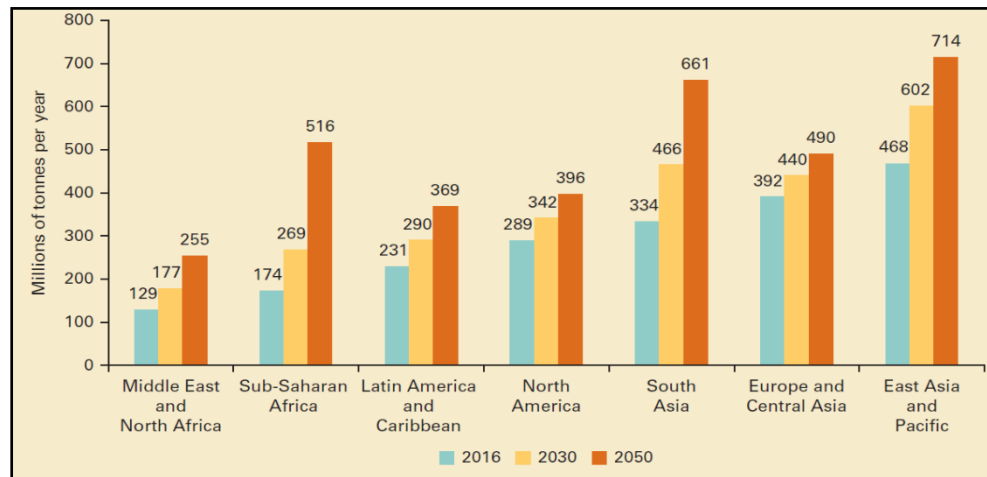
Figure 1.3: Solid Waste Issue at the Kepong Taman Beringin, Malaysia



Source: Own Findings

Comes to solid waste management in Malaysia, many wastes have been generated and require a huge manpower to handle them, refer to the **Figure 1.2** and **Figure 1.3**. As shown, the waste in Pulau Pangkor does not generate as much as the Kepong, thus they are manageable to handle and treat them to recycle or convert them to energy by the incinerator. However, the solid waste generation in Kepong is much higher than that in Pulau Pangkor and causes the nearby location to have a bad smell, which will cause people's health issues.

Figure 1.4: Projected waste generation, by region (millions of tonnes/ years)



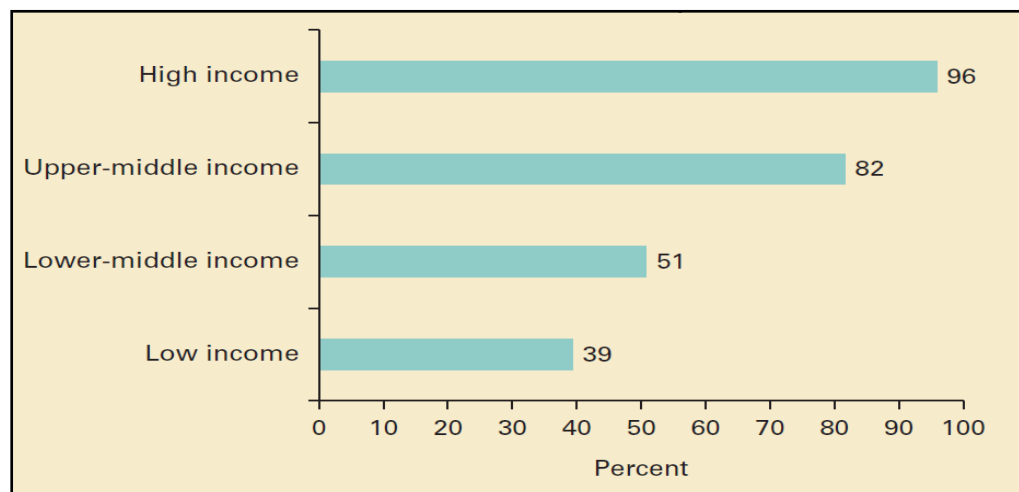
Sources: Kaza et al. (2018)

According to the data by Kaza et al. (2018), **Figure 1.4**, shows that all the waste generated by the group of factories or individuals is significantly increasing from the year by year from 2016 to 2050 projection (showing by blue, yellow and orange colour based on the region in the world). However, as their prediction also shows when coming to the year 2050, the waste generation surprisingly increases more sharply compared to the last different gap of 14 years. The highest of the waste generated is from the countries of East Asia and the Pacific, and the second will be South Asia where Malaysia is located also.

Moreover, all the waste is generated from different levels of income group either, however, better-developed countries and higher standards living of the countries have the highest collective rate of wastage. Although the difference of the income groups has the difference in the percentage generating of wastage, the higher income group of people tends to be more concerned about wastage and more willing to collect waste to decrease the solid waste worldwide, refer to

Figure 1.5 below. Kaze et al. (2018) mentioned that the higher income group had the highest rate of the collective which consists of 96%. But the low income only has 39% which also presented that there is a huge gap between both income groups. Furthermore, the upper-middle-income has 82%, and the lower-middle-income group only has 51%. Thus, it is significantly also shown that the difference in income group also plays a different role in the collective waste which helps the 3Rs concept (Reduce, Reuse, and Recycle).

Figure 1.5: Waste collection rates, by income level (percent)

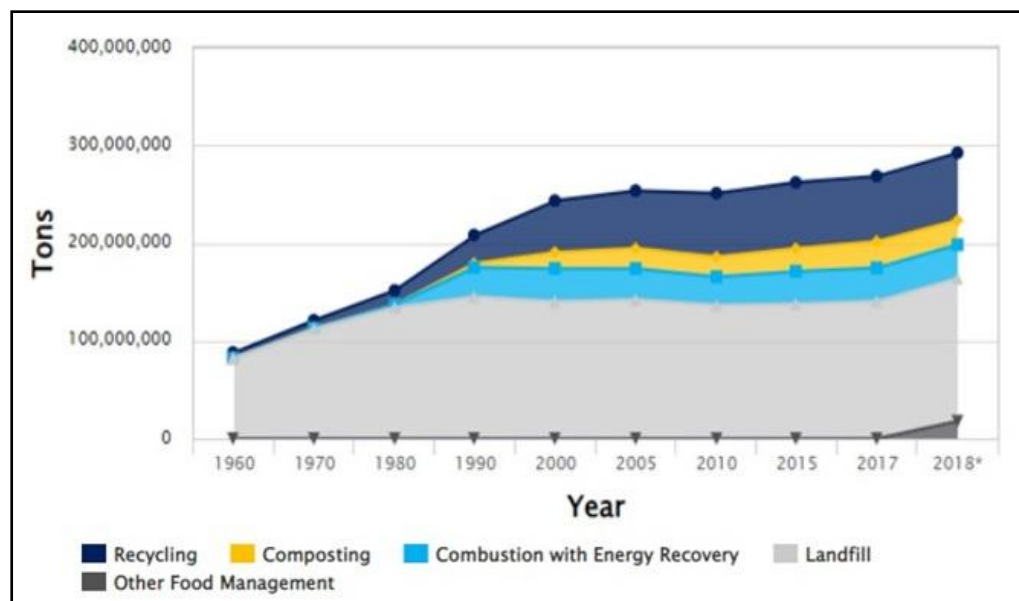


Sources: Kaza et al. (2018)

Therefore, Solid Waste Management (SWM) also is a part of important technology of technical and economic that helps an integral part of an environmental management system (Das et al., 2019). Das et al. (2019) also mentioned that the approach of the SWM is to practice an effective based on the environmental regulations establish sustainability for development and maintain the volume and quantity of solid waste, and it is also based on the principle of the 3Rs concept. Furthermore, Nanda and Berruti (2021) also mentioned that

there are three top producers of municipal solid waste which are the USA, China and India, and the low-income group to middle-income group generates mainly organic waste. Nevertheless, the high-income group will more be producing on the wastepaper, metals, and glasses. Besides that, the management of municipal solid waste also includes a few methods which are recycling, incineration, waste-to-energy conversion, composting, or landfilling.

Figure 1.6: Municipal Solid Waste Management: 1960 – 2018



Sources: United States Environmental Protection Agency, (n.d.)

There are many solid wastes simultaneously generated from different countries in the world showing in the **Figure 1.6**, which caused a sharp increase in global waste in the current world now as mentioned above. There are many ways to treat that waste by reducing its volume via recycling, composting, combustion with energy recovery, landfill etc. In **Figure 1.6** above, we can see that many countries continue using the landfill method (146,120,000 tons) to treat wastage. However, the methods of recycling (69,090,000 tons), composting (24,890,000

tons), and combustion with energy recovery (34,550,000) are lesser than the landfills in the year 2018. Although the method of recycling, composting, and combustion with energy recovery significantly increased during the year 1990, the method of the landfill tends to be more preferred by countries in handling their solid waste.

Although there are multiple types of solid waste management that have been introduced and practising in the current worldwide now, the most favourable of waste management currently are landfill concepts as mentioned above. However, the concept of the landfill will bring up different pros and cons of this method. The pros of it being capable of effective waste disposal and economical. But comes the cons, it will be caused by environmental degradation and air pollution. Besides that, it requires a large land to solve the waste, and it is not a long-term goal to solve this issue. Thus, the waste incinerator tends to alternative strategy to replace the landfill method for the long-term run, refer the **Figure 1.5** below to understand better landfill and waste incinerator methods.

Numerous studies have examined and debated the relative benefits and costs associated with waste incineration as a waste management strategy. For example, Assamoi and Lawryshyn (2012) reported that waste incineration demonstrates superior environmental performance and contributes to a significant reduction in greenhouse gas emissions when compared with landfill disposal; however, the capital and operational costs of incineration facilities are substantially higher than those of landfills. As illustrated in **Figure 1.7**, landfilling is often regarded as a short-term waste management option, as existing landfill sites eventually reach capacity

and require the development of replacement facilities, which may result in considerable long-term financial and environmental impacts.

Within landfill-based strategies, sanitary landfills have been developed as an improvement over traditional open landfill. Sanitary landfills incorporate engineered liners, leachate collection systems, gas capture mechanisms, and systematic waste compaction and daily cover, which collectively reduce soil and groundwater contamination, odour, and public health risks. In contrast, traditional landfills typically lack such controls, leading to higher risks of environmental pollution and community opposition. Despite these improvements, sanitary landfills still require large land areas, generate methane emissions over time, and pose long-term monitoring and maintenance obligations, making them less sustainable in densely populated or land-scarce regions.

Compared with both traditional and sanitary landfills, municipal solid waste incineration (MSWI) offers the advantage of significant volume reduction and energy recovery. Anshassi et al. (2021), using a life cycle assessment (LCA) approach, found that MSWI is environmentally more favourable than landfilling when energy generated from incinerated waste is used to offset fossil fuel-based energy sources. Nevertheless, incineration is associated with higher upfront investment costs, complex technological requirements, and persistent public concerns regarding air emissions and health risks.

Overall, while sanitary landfills represent an environmental improvement over traditional landfill practices, they remain a transitional solution rather than a long-term sustainable strategy. Incineration, although cost-intensive and socially contested, offers potential environmental benefits through energy recovery and reduced land dependency, highlighting the need to balance economic, environmental, and social considerations in waste management decision-making.

Figure 1.7: Landfill vs Waste Incinerator

Figure 1.7 (A): Landfill



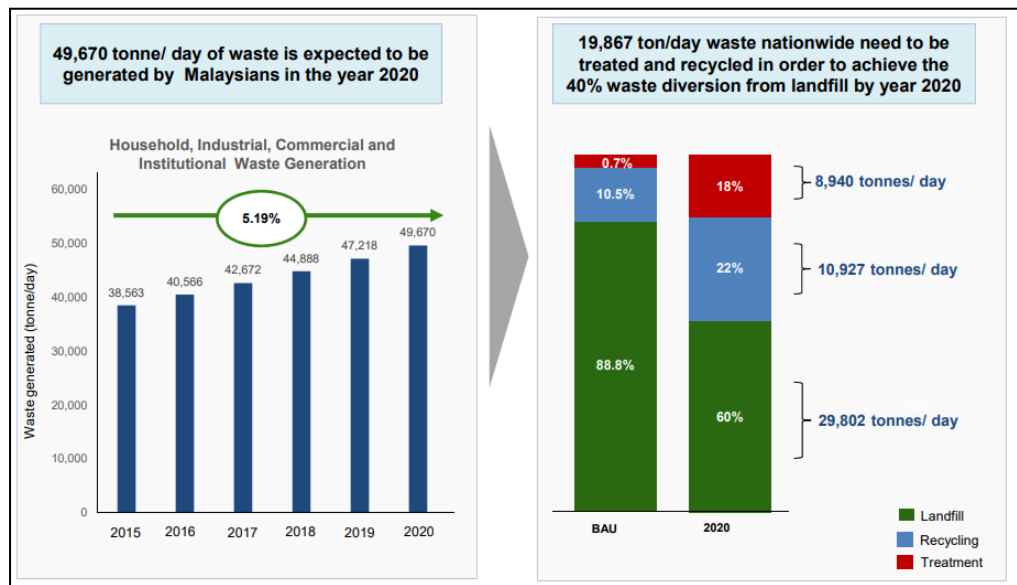
Figure 1.7 (B): Waste Incinerator



Sources: Anshassi et al. (2021)

Accordingly, the report of Solid Waste Management Lab (2015) also found that Malaysia is using the method of managing waste landfill with ~89% which is more than other methods of waste management, and the generation of waste also continues to increase by 5.19%, refer **Figure 1.8** below. However, the government also tends to diversify the landfill to other waste management during 2020 which are 18% in treatment, 22% in recycling and reduce the percentage of the landfill to 60%.

Figure 1.8: Malaysia waste generation and landfill percentage



Sources: Pemandu (2015)

Sreenivasan et al. (2012) also discussed the issue of Solid Waste Management in Malaysia. They mentioned that the stage of Kuala Lumpur currently reduces the dependence on landfills and the solution of the incinerator is difficult to implement due to population density. The government of Malaysia is looking for alternative and innovative solutions to solve the problem of waste management practices for the locals. Nasir (2004) estimated the total Municipal Solid Waste Generated (MSWG) in Kuala Lumpur from 2009 to 2023, and it increased to 9207.84 tons/day while the population increased to 4.21 million during the year 2023, refer to **Table 1.1**. The researcher Fauziah and Agamuthu (2003) also did the prediction from 2009 to 2023 about the solid waste generated in Kuala Lumpur with the sector, and they also predicted that the resident has the highest score on it with 4419.77 tons/ day (48%) compared to other sectors, refer **Table 1.2**. Therefore, managing solid waste still is a huge difficult challenge for Malaysia.

Table 1.1: Assessment of Total MSWG of Kuala Lumpur

Year	Population of K.L. city Millions	MSWG Kg/Cap./day	MSWG Tons/day
2009	2.43	1.66	4029.85
2011	2.63	1.72	4534.78
2013	2.85	1.79	5102.97
2015	3.08	1.87	5742.35
2017	3.33	1.94	6461.85
2019	3.60	2.02	7271.50
2021	3.90	2.10	8182.59
2023	4.21	2.19	9207.84

Sources: Nasir (2004)

Table 1.2: Assessment of Sectoral SWG of Kuala Lumpur (Tons/day)

Year	Residential (48%)	Street Cleansing (11%)	Commercial (24%)	Institutional (6%)	Construction & Industry (4%)	Landscape (7%)
2009	1934.33	443.28	1025.97	241.79	161.19	282.09
2011	2176.69	498.83	1088.35	272.09	181.39	317.43
2013	2449.42	561.33	1224.71	306.18	204.12	357.21
2015	2756.33	631.66	1378.16	344.54	299.69	401.96
2017	3101.69	710.80	1550.84	387.71	258.47	452.33
2019	3490.32	799.86	1745.16	436.29	290.86	509.00
2021	3927.64	900.09	1963.82	490.96	327.30	572.78
2023	4419.77	1012.86	2209.88	552.47	368.31	644.55

Sources: Fauziah &Agamuthu (2003)

1.3 Current Situation of the Implementation of Sitting of the Waste Incinerator in Malaysia

Malaysia still is one of the developing countries with continuous progress and development is becoming a developed country in the year 2030 and believes the goal is reachable despite Coronavirus Disease 2019 (COVID-19)'s dire economic impact told by the federal minister, Kumar (2021). Therefore, sustainable development also plays an important role that is unable to lack out which will be able to achieve the goal, and sustainable disposal of municipal solid waste is also one of the strategies. As we know, the sustainable disposal of municipal solid waste is one of the challenging environmental issues in Malaysia.

Municipal solid waste has accounted for 64% of total solid waste generated in Malaysia (EU-Asia, 2009), with the remaining being industrial waste, commercial waste, and construction waste. At present, Malaysia is still highly dependent upon landfill practice to dispose of its municipal solid waste which about 80% of the waste is disposed of via landfill (Fazeli et al., 2016). Following the growth of population, it is not surprising to learn that land available to "fill" our waste will become limited as more space is needed to support the growth of population and the urbanization process. More apparently, there is an incremental trend in waste generation which is associated with the increase in Malaysia's population (Agamuthu & Fauziah, 2011) and the rapid urbanization process in Malaysia (Murad & Siwar, 2007).

Malaysia has experienced a tremendous increase in household waste generation in which solid waste generation has increased at the rate of more than 90% for every ten years (Abdul Jalil, 2010). For instance, in 2007, 18,000 tons of waste were being generated daily in Malaysia, with its population at about 25 million (Ong, 2007). Besides, Zaini, S. (2011) also mentioned that Malaysia on average produced an estimated 17,000 tons of municipal solid waste per day, and it is estimated to increase to more than 30,000 tonnes in the year 2020. Only a small fraction of this waste is incinerated. The Municipal Solid Waste (MSW) incinerators with 5 to 20-ton/day capacity are available at the islands of Pangkor, Labuan, Langkawi and Tioman.

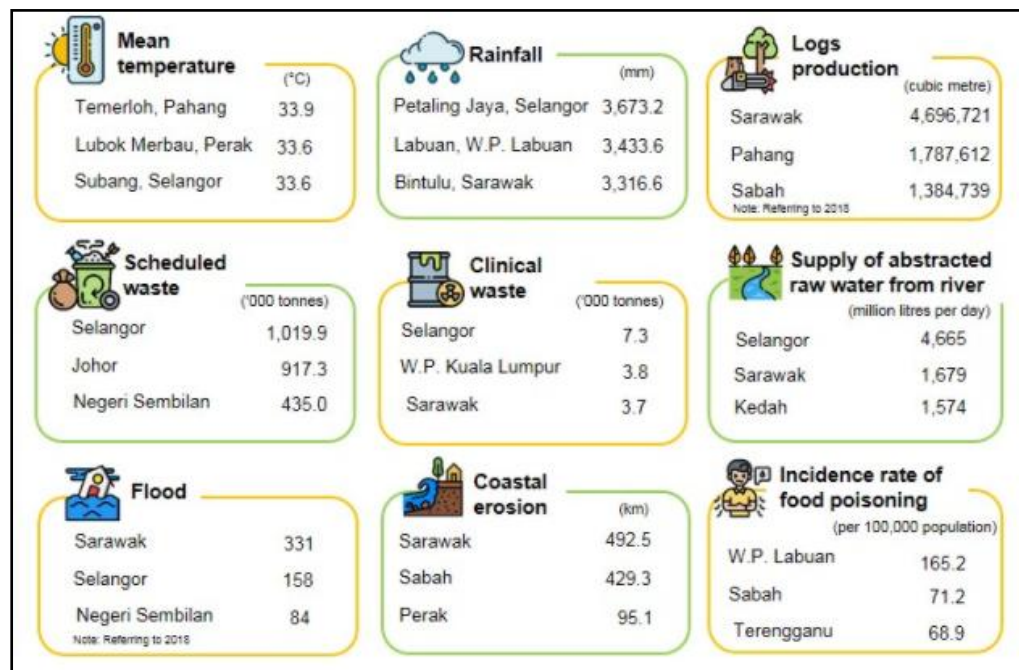
Mahidin, the chairperson of the Department of Statistics Malaysia presented the environmental statistics of Malaysia in the year 2020, refer to **Figure 1.9** below. This data allows us to understand the status of the environment that has concurrently impacted our Malaysia environmental issues. In this data had been clearly stated that scheduled waste and clinical waste are playing one of the impacting issues on our environment issue. But what are the differences between scheduled waste and clinical waste?

According to Hossain et al. (2011), they mentioned that clinical waste is considered as any waste that has been disposed of from the healthcare facilities. For example, the items that had been used and consisted of human tissue (other than hair, teeth and nails) from any healthcare facility. The clinical waste originates from healthcare facilities and other related facilities such as laboratories, autopsies, mortuaries etc. Besides that, the scheduled waste could

be understood as the waste categories that had been produced from many different resources and negatively impacted our environment, or as known as hazardous waste (Aydeed & Ismail, 2023). Besides that, the scheduled waste possesses hazardous characteristics and has the potential to affect public health and the environment adversely.

After we had more knowledge of the differences between clinical waste and scheduled waste based on the explanation above. We can understand the statistics mentioned by the Mahidin. Referring to the Environment Statistics 2020 in Malaysia, their data show that the state of Selangor generated 1,019.9 thousand (25.4%) tonnes of scheduled waste in 2019 and dominated in the clinical wastes with 7.3 thousand tonnes compared to other states. Besides that, they also mentioned that the scheduled waste in the period between 2015 to 2019 had increased by 8.3% annually and was generated by 4,013.2 tonnes in 2019. The power plant activity in Malaysia also contributed a total of 24.2% of the industries which include the materials of the metal refinery (12.2%), chemical industry (10.7%), and electric & electronic (10.1%). Furthermore, they also expect the number of clinic waste will increase inordinately due to the sharply increasing number of COVID-19-positive cases in 2020. The expected reason for the sharp increases in both is because the increase of manpower of health facilities and quarantine centres had inadvertently dedicated the increasing volume of clinical waste.,

Figure 1.9: Environment Statistics 2020 in Malaysia



Sources: Mahidin (2021)

According to the Marhidin (2020), who is the chief statistician of Malaysia, presented that the Department of Statistics Malaysia compendium of environment statistics report 2020, it was shown that the scheduled wastes generated 4.0 million tonnes during 2019. Besides that, it also shows that 57.1 per cent (2.3 million tonnes) of the total scheduled wastes were generated by the power plant, metal refinery, chemical industry and electrical & electronics in Malaysia. On the other hand, we can also see that 42.9 percent (1.7 million tonnes) of the total scheduled wastes were generated by the residents and households of Malaysia. In the estimation of the year 2024 and 2025, there is approximately 38,427 metric tonnes of solid waste that will be generated per day, which translates to roughly 1.17 kg per person per day in Malaysia.

In referring to this issue, a waste incinerator has been proposed as an alternative option to replace landfills. Cherubini et al. (2009) and Marchettini et al. (2007) mentioned that it is a preferred option to minimize the adverse impact of landfill practice. On the other hand, it can be referred to as a renewable energy generation option to strengthen Malaysia energy security while minimising the dependency on the depleted resource used for power generation (Fazeli et al., 2016). However, the installation of waste incineration is not without hurdles. Among others, failure to understand public opposition and acceptance of waste incinerators has been acknowledged as the main reason for the delay in installation of a waste incinerator, and even cancellation of waste incinerator projects (Lang and Xu, 2013, Wolsink, 2010). Malaysia has embarked on a waste incinerator as an option to dispose of solid waste in the year 1996 (Abd Kadir et al., 2013). Small scale waste incinerator has been installed and operated at tourism islands - Langkawi, Pangkor, Tioman and Labuan.

There is a similar case occurring with the new construction of the waste incinerator located at Bukit Tagar Enviro Park, Rawang. The primary purpose of elevating the waste incinerator is to reduce the volume of waste within the Selangor area and emphasise that it is a highly recommended solution for the solid waste management system (Team, 2025). However, the residents had attracted attention from the facilities and protests towards it due to concerns on environmental, safety and health issues. This new facility is also facing a similar issue which happened before at the Pulau Pangkor and Kepong.

Local authorities in which the small-scale waste incinerator is located are given the responsibility to collect waste, transport waste to the incineration facility and operate the waste incinerator. However, due to the high operation cost caused by the issue of high moisture content of the waste, these small-scale waste incinerators had been halted from the operation and left idle (Abd Kadir et al., 2013). Nonetheless, some incineration has been operated again in the year 2012 based on the volume of collected solid waste (Aja and Al-Kayiem, 2014).

For this study, the data will supposedly collect and selected the region of Pulau Pangkor and Taman Beringin, Kepong. The residents from Pulau Pangkor are more able to accept the facilities. However, the residents in Kepong, they are totally opposite to accept the waste incinerator facilities in their neighbourhood vicinity. For instance, the waste incinerator in Pulau Pangkor is operating only when the volume of collected waste is reaching its 20t/day capacity, refer **Figure 1.10** below. The small-scale waste incinerator operation in Malaysia indicates that economic feasibility is the main obstacle for these small-scale waste incinerator operations. However, Thong (2013) found out that the residences who live nearby the waste incinerator in Taman Beringin, Kepong, refer **Figure 1.11** below, are resisting to accept the waste incinerator as they are believing they will face a lot of impact in their live issue such as noise, health impact etc.

Figure 1.10: Waste incinerator in Pulau Pangkor (2021)



Sources: Own findings (During data collection period December 2022)

Figure 1.11: Illustration of the proposed waste incinerator in Taman Beringin, Kepong



Sources: Own findings (During data collection period March 2023)

1.4 Problem Statements

The General Assembly announced the 2030 Agenda for Sustainable Development which includes 17 Sustainable Development Goals (SDGs) in September 2015. The principle of the SDGs is to target “leaving no one behind” and emphasize the alternative approach to achieving sustainable development for all countries together. Among all the SDGs stated globally, waste management is also being introduced about SDGs 11 (Sustainable cities and communities) and SDGs 12 (Responsible consumption and production) are the important goals that need to be achieved across all countries, and Malaysia is one of them.

Cibrario (2018) mentioned that waste collection and management are necessary public services to protect public health and the environment. In the current global policy framework, waste management service is prominently featured in the indicators of both SDGs as mentioned above. Besides that, it is also committed to the concept of 3Rs, to properly collect and handle hazardous waste through the whole life cycle by international standards by 2020. As mentioned, the 3Rs concepts are to help solve the issue of solid waste which has the same direction as SDGs 11 and 12.

However, some of the solid waste management is unable to use this concept due to some external requirements such as natural and political obstacles. Thus, they intend to solve with the landfill method, but this strategy of landfill is not a sustainable strategy for all periods and durations. This is why the waste incinerator becomes one part of the important strategies to fulfil waste service management in the indicator of SDGs 11 and 12. Therefore, our general objective of this study is to develop a model to facilitate the implementation of the sitting of waste incinerators within their neighbourhood vicinities in Malaysia. Research objective 1.4 will be fully explained following the research problems.

Take deeper views on Malaysia's current situation and also have a similar obstacle in the waste incinerator after understanding the problem of unification on the solid waste management issue. According to the news of New Straits Times (2021), Datuk Mohd Zain Hassan who is the Chief Executive Officer (CEO) of Alam Flora Sdn Bhd said that Alam Flora currently is on the right track to improving the aspects of sustainable living and environmental care in Malaysia which aligns with United Nations' Sustainable Development Goals (UN-SDGs). In that case, multiple waste incinerators are planned to be built in different locations to sustain municipal waste management and minimise the usage of the landfill.

In Malaysia, five well-known existing small-scale waste incinerators operate without waste-to-energy (WTE) recovery, such as Pulau Langkawi, Pulau Tioman, Pulau Pangkor, Pulau Labuan and Cameron Highland. Whereas proposed large-scale incineration facilities are typically designed as WTE systems. Despite the potential technological and economic advantages of large-scale WTE incinerators, such projects have consistently faced strong community rejection. Public opposition is largely driven by concerns over environmental impacts, health risks, and long-term social costs, often outweighing perceived benefits. Nevertheless, empirical studies suggest that modern waste incineration, when properly regulated, can contribute to national economic growth, technological advancement, and improved waste management efficiency. However, one interesting dispute raised from the waste incineration installation scenario in Malaysia is, why are residents against the large-scale waste incinerator (Kepong case study) installation, but no objection being raised when a small-scale waste incinerator (Pulau Pangkor case study) is being installed? Therefore, it is essential to critically examine the actual costs of large-scale incineration projects—not only in terms of financial investment, but also environmental, social, and health-related costs—to enable balanced decision-making and to bridge the gap between socioeconomic protentional, technological potential and community acceptance.

There is a total of five mini waste incinerators built in Malaysia and continuously operating. Those facilities are located at Pulau Langkawi, Pulau Tioman, Pulau Pangkor, Pulau Labuan and Cameron Highland to increase the municipal waste management around the area. Other than that, these five locations are a few of the interesting famous tourists that have been introduced across the world. Thus, one of the objectives of these five incinerators that were built in those tourist places is to sustain and reduce the volume of solid waste with strong community acceptance support (Ibrahim, 2017). Especially the locals in Pulau Pangkor tend to have a positive community acceptance towards the facilities, and they also rely on it instead of the landfill method (TheStar, 2019). The Pulau Pangkor locals tend to accept the facilities built in their neighbourhood's vicinity which shows that the community and society are willing to willing to accept the sitting waste incinerator.

Further study on the perspective of the local acceptance. Kikuchi and Gerardo (2009) said that the Malaysia scenario confirms that local acceptance of solid waste disposal facilities is a prerequisite for the facilities, especially for those the large-scale waste incinerators to be installed. The implementation of the waste incinerator would be delayed indefinitely if fails to meet the perspective of the local acceptance. Therefore, it will play a part in the specific objective (1) to study in our research: **To identify the factors affecting towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia.**

To uncover the real reason for explaining this interesting phenomenon, there is a need to investigate community acceptance of the waste incinerator facility sitting controversy in Malaysia. We need to understand what the reason small-scale waste incinerators at Pulau Pangkor is operate successfully without local objection, but not the large-scale waste incinerators at Kepong facing local resistance. Furthermore, there were a lot of studies and research that already mentioned the importance of constructing the waste incinerator. Essentially, the implementation of the waste incinerator can fulfil the contribution of the Malaysian government's aim in addressing the issues related to waste disposal and waste management. Other than that, the facility of the waste incinerator has been proven that it can enhance energy security and provide an alternative option for electricity generation. **In this scenario, we need to categories as one of our specific objectives (2) is to analyse the relationship among risk perception, trust, procedural justice, distributional justice, subjective norms and perceived behaviour control with attitude of the residence towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia.**

Regarding the waste incinerator located in Kepong as mentioned previously, the project is unable to have a further process on the implementation and unable to operate to solve the waste issue around that area. According to the report written by Chew (2018), one of the challenges is that the projects did not gain approval from the Detailed Environment Impact Assessment (DEIA). As a result, the projects are still unable to be processed in the Taman Beringin. Although our federal government had stated the importance of building a waste incinerator in

Taman Beringin to solve the increasing number of solid wastes generated from Klang Valley. A great example, the Bukit Tagar is one of the places that use the waste management of landfills to solve the solid waste around Klang Valley. However, it is reaching its capacity and last for the next 60 to 70 years only. Therefore, the waste incinerator is an important solution to take the place of the landfill methodology. But seems like the residents still constantly have a negative response and attitude towards the waste incinerator. Thus, our specific objective (3) will be **to estimate the mediating effect of attitude of the residence towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia.**

However, the waste incinerator that is proposed to be built in Kepong, Taman Beringin was facing negative community acceptance issues. Nevertheless, the government had proposed to build a waste incinerator in that area to reduce and minimize the solid waste in the Klang Valley. But it has still been postponed and pulled off a deal due to community acceptance issues as the locals are unable to accept the facilities built in their vicinity. Therefore, the perspective of community acceptance and support from the locals are also important factors that decide the construction of the waste incinerator. Thus, our specific objective included the resident's opposition/support towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities. Meanwhile, a tourism place presents one of the factors the place attachment factor, thus we are going **to analyse the correlation between the moderating effects of place attachment and the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities** for our specific objective (4).

The research gap of this study is Yong et al. (2019) also researched the sustainable Waste-to-Energy (WtE) Development in Malaysia needs to fulfil the requirement of the variables of technical, economic, environmental, and social issues. From the technical and economic perspective, they mentioned it could bring tons of benefits to society including reducing waste volume entering landfills and at the same time generating energy from waste. This solution could be having two birds with one stone to solve the landfill issues, increase the process of reducing waste and at the same time generate the energy to reduce the fees of natural energy. The waste incinerator is a type of facility that includes the multiple advantages of technology and economics towards society and can achieve the major objective of SDGs and UN-SDGs in Malaysia.

Furthermore, they also mentioned the variable of environmental and social issues, and it covered public health and safety management, government initiatives and politics. The government introduced the facilities with tons of benefits and advantages and the process development of the waste incinerator via public social media such as newspapers and the internet. However, the residents still are rejecting the incinerator or renewal energy facilities built in their vicinity. Thus, we noticed that this study does not stand on the point of perspective of the community to look at the problem of rejection. Although their result significantly prove that the advantages and benefits have a huge impact on sustainable development which can achieve SDGs 11 and SDGs 12. But still, the Malaysians cannot accept the facilities built in their neighbourhood vicinity and the problem of community acceptance has not been solved. Therefore, it shows the research gap between the previous study and the current study.

To further understand the research gap between our study and the previous study. We studied with other research journals. Most of the studies have been introduced to the advantages and benefits that will come from the facilities. Some of them introduced the disadvantages and cons of those facilities, and they also provided the solution to minimize and reduce the cause. However, there are lack of studies on the community acceptance towards waste incinerators. Thus, we found three theories to support our study to understand community acceptance to close the research gap in the current society. First of all, energy justice is a great social perspective theory that can understand people's behaviour toward a particular thing. This theory includes the main factors which are procedural justice, distributional justice, and recognition justice. The research done by Fu et al. (2021) showed that energy justice is greatly important in reaching the sustained development of waste incinerators. Particularly procedural justice played an important role in main the relationship between the residents and operators of waste incinerators while it could provide the same goal and decision from the process within the organizer and management.

Besides that, Xu & Lin, (2020) also did research on the community's acceptance of waste incinerators which are risk perceptions. They also found that residents who live near the waste incinerator have the attitude to pay more electricity to avoid the building as they feel it has a risk that will impact their daily. Based on the articles above, we can find that the perspective of community and social acceptance is one of the strong fundamental perspectives that can determine the outcome of the facilities. Last but not least, the theory of planned behaviours enables us to understand how residents behave after the circumference happens.

Besides that, this theory is also being used multiple to study the waste incinerators in their country. Using the theory of planned behaviour has significantly proven that the resident's attitudes would be influenced by a few of the variables toward the waste incinerator (Yuan et al, 2019). Across all the studies, it shows that there is a research gap after comparing the studies between the previous study and current research. Therefore, the current study will be concerned with the theory of risk perception, community acceptance and behaviour to understand people's attitudes towards the intention of sitting in the waste incinerator in their neighbourhood vicinity in Malaysia.

1.5 Research Objectives

We had understood that some gaps caused the waste incinerators to have difficulty being accepted by the neighbour's vicinity after we went through the problem statement. Thus, we will be going to discuss the general objective and specific objectives to enhance our research study in this section.

1.5.1 General Objective

The general objective of the study is to develop a model to facilitate the implementation of the sitting of waste incinerator within their neighbourhood vicinities in Malaysia.

1.5.2 Specific Objectives

1. To identify the factors affecting towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia.
2. To analyse the relationship among risk perception, trust, procedural justice, distributional justice, subjective norms and perceived behaviour control with attitude of the residence towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia.
3. To estimate the mediating effect of attitude of the residence towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia.
4. To determine the moderating effect of place attachment towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia.

1.6 Research Questions

Besides that, we also prepared the research questions that are to meet our general and specific objectives.

1. What are the factors affecting towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia?
2. How are the relationship among risk perception, trust, procedural justice, distributional justice, Subjective Norms and perceived behaviour control with attitude of the residence towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia?
3. What is the mediating effect of attitude of the residence towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia?
4. Is it the moderating effect of place attachment towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia?

1.7 Significant of Study

Numerous previous studies have examined the challenges surrounding community acceptance of waste incinerator siting in residential areas. For instance, Yong et al. (2019) focused primarily on evaluating environmental, financial, and public issues related to energy recovery in Malaysia. Their findings revealed a significant positive relationship between environmental considerations and the sustainable development of waste-to-energy (WtE) systems. Moreover, Yong et al. (2019) emphasised that the successful implementation of WtE technologies, such as incineration plants and landfills, depends on the promotion of local innovation and technological advancement, which in turn supports long-term economic viability, social inclusiveness, and environmental sustainability. These findings highlight the important role of advanced WtE technologies in driving sustainable economic growth at the national level.

However, while existing studies have largely concentrated on the **technological and economic benefits** of waste incineration, **limited attention has been given to the social dimension, particularly community acceptance**. From a social science perspective, theories such as **risk perception** (Van Winsen et al., 2011), **community acceptance** (Velasco-Herrejon & Bauwens, 2020), and the **Theory of Planned Behaviour** (McCauley et al., 2010) have been widely used to explain residents' attitudes, intentions, and behaviours toward infrastructure and energy-related projects. Prior research applying these theories demonstrates that

perceptions of risk, trust, fairness, and social norms play a critical role in shaping public acceptance of WtE facilities.

Despite this, relatively few studies have **integrated these theories into a single conceptual framework** to examine community acceptance of waste incineration in the Malaysian context. Addressing this gap, the present study incorporates **risk perception theory, community acceptance-related constructs** (trust, procedural justice, and distributional justice), and the **Theory of Planned Behaviour**, with attitude serving as a mediating variable. By doing so, this study contributes to the literature by offering a more comprehensive understanding of why community groups are resistant to waste incinerator siting and how their intentions toward acceptance are formed. This social-focused approach provides valuable insights to complement existing technological and economic perspectives, thereby supporting more balanced and socially informed waste management policy decisions in Malaysia.

1.7.1 Theoretical Significant of the Study

The first theory mentioned above is risk perception theory, Siegrist & Árvai (2020) also mentioned the importance of risk perception for people's behaviour, and there are a few important variables that will significantly affect risk perception which are the characteristics of hazards, the characteristics of risk perceivers, and the application of heuristics to inform risk judgments. Since the waste incinerator is one of the famous technologies in solid waste management, however, the residents still refuse to accept it as the facilities will bring out a hazard and multiple risks towards the locals. The same goes for the theory of community acceptance and the theory of planned behaviour, and these theories also play a significant role that significant identifying how people's attitudes and reflecting on their behaviour intentions or beliefs.

Furthermore, Segreto et al. (2020) found that community acceptance theory, which people will feel distrust towards the stakeholders if they determine to construct the facilities in the people's neighbourhood without having proper communication about the process of decision-making. In this situation, the people tend to protest the facilities constructed in their homeland to avoid the unpredictable damage that will be created by the facilities. As a result, the facilities will tend to shut down or postpone with force as it was unable to gain the level of trust of the residents. Thus, the theory of trust can relate to community acceptance to deeply understand how people react to those facilities when government or politicians plan to construct them. Therefore, the theory of risk perception, the theory of community acceptance, and the theory of planned

behaviour will be included in our proposed conceptual framework to be more accurate to identify the people intent on sitting in the waste incinerator and have future support in the next chapter 2.

1.7.2 Practical Significant of the Study

The government and whom organizer of the waste incinerator can understand more about the perspective of society and the community towards the projects. Although the perspective of the economy, science and health had been reviewed and shown it had a significantly important benefit in solving the waste management issue in Malaysia. However, there is less research going through on society and community perspectives, thus the project is still hard to implement. Furthermore, this study also provides some further knowledge for the other researchers who will further study or research part of this related research. As mentioned above this study, it had provided the perspective of society and community towards the projects sitting in their neighbourhoods' vicinity. Therefore, it will allow additional information to understand people's attitudes on the sitting of the waste incinerator within their neighbourhood vicinity for other researchers who want to conduct further research on the related field.

Some researchers have done a study and research on the theories related to community acceptance to understand how people react and behave towards the facilities. According to He et al. (2021), the residents have a positive attitude towards the management. They were also willing to pay the fees and accept the

sitting of management nearby their area as the Municipal Solid Waste Management in China took concern on them. In the theory of energy justice, justice of distributional also highly presents that it is significantly important to people who localized should have fairness on the social benefit to gain a higher level of public acceptance on the sitting a repositior (Ohtomo et al. ,2021). Therefore, this study and the result of this study will be contributed to understand why residents are rejecting/ accepting the sitting of the waste incinerator within their neighbourhood vicinity with the theory mentioned above.

1.8 Organization of Study

There are FIVE (5) important chapters in this research which include an introduction, literature reviews, methodology, results and findings, and conclusion. Chapter 1 is an introduction to the aim of the study such as the research background, situation factors affecting the study, problem statements, research objectives and questions, and significance of the study.

Chapter 2 will explain the literature reviews of this research and will discuss the theories that are related to this research. Besides, the previous and numerous research papers related to this research will be reviewed and future discussions about the novelty and uniqueness of their article. The conceptual framework and hypotheses development will be stated in this chapter. The relationship between the variables from some of the researchers will be also reviewed as references for this research, and those variables included perception risk, trust, procedural justice, distributional justice, Subjective Norms, perceived behaviour control,

and attitude. Finally, it will also discuss the relationship between the moderator variables (place identity and place interaction).

The research methodology will be discussed in Chapter 3. This chapter will focus on the conceptual model specification, research design, population, sample size, sampling method, measurement, and instruments. Furthermore, this chapter will also describe the pre-test, pilot study and research method to ensure the model is significant and reliable. Finally, the data collection and source of data will also be discussed in this chapter.

In Chapter 4, results and findings will be discussed and interpretation of the results will be shown. The preliminary data analysis will be explained such as descriptive analysis, correlation analysis reliability test for the stationarity of the data. After that, it will be using the Statistical Package for the Social Sciences (SPSS) to analyse the results to identify the community group about their behaviour intention towards the sitting of the waste incinerator in Kepong and Pulau Pangkor.

In Chapter 5, the summary of the study, the findings related to hypotheses and implications like advantages and contribution of this research will be discussed in this chapter. Additionally, the limitations and recommendations of this research will be given in this chapter.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

A slight briefing on the previous chapter, Malaysia's waste management practices, policies, and challenges is evolving to address the growing concerns surrounding waste generation and the completion of environmental sustainability in the country of industrialization development. However, there are multiple challenges such as inefficient recycling rates, waste generation increase, limitation of landfill capacity, public community resistance to WTE and illegal waste dumping. As per current, Malaysia's government is strongly suggesting increasing the recycling rates to achieve 40% in 2025. Meanwhile, they also want to improve the public community acceptance level of the WTE facility. Therefore, our topic will deep down on this topic to understand the community's acceptance towards the waste incinerator facility.

The current chapter is a part of the literature review that will discuss the reviews of relevant and previous theories about the intention to accept the siting of the waste incinerator within their neighbourhood's vicinities. Besides that, this chapter also includes the latest research articles about developing a novel community acceptance model to facilitate the implementation of a waste incinerator. Furthermore, it contains empirical reviews of the factors and social or community perspectives related to waste incinerators in the global environment. Last but not least, it will also include a summary of empirical reviews of the study.

2.2 Theoretical Reviews

A sequence of interrelated psychological and social factors shapes public acceptance of waste incinerator projects. First, individuals form attitudes based on their perceptions of benefits, risks, and trust in authorities. These attitudes then influence their intention, which reflects whether they are willing to support or oppose the development of an incinerator. Intention acts as a key link between attitude and actual behaviour, such as participating in public discussions, expressing support, or engaging in opposition. When negative attitudes dominate, intentions to resist are strengthened, leading to community rejection of large-scale incinerator projects. Conversely, positive attitudes—supported by transparent information and perceived economic and technological benefits—can foster supportive intentions and constructive behaviour, ultimately enhancing public acceptance.

There are numerous theories that help explain social and community behaviour, particularly in understanding the factors that shape public perceptions of waste incinerator development. Previous studies have applied a range of perspectives, including technological, economic, and social science approaches, to examine public responses to waste incineration projects. In the present study, the focus is placed on the **social science perspective**, drawing on theories such as **energy justice**, **community acceptance**, and the **Theory of Planned Behaviour (TPB)** to explore issues related to community acceptance of waste incinerator or waste-to-energy (WtE) facility siting. Guided by these theories, this study conceptualizes **public acceptance** as an outcome influenced by interconnected variables—namely **attitude**, **intention**, and **behaviour**. Individuals' attitudes toward waste incineration, shaped by perceived risks and benefits, influence their intentions to support or oppose such facilities, which in turn determine their actual behaviour. By selecting these theories and variables, the study aims to identify the key social factors affecting community acceptance of waste incinerators. Therefore, we will be more elaborate and justify each of the theories for the better direction of the relationship between the public acceptance.

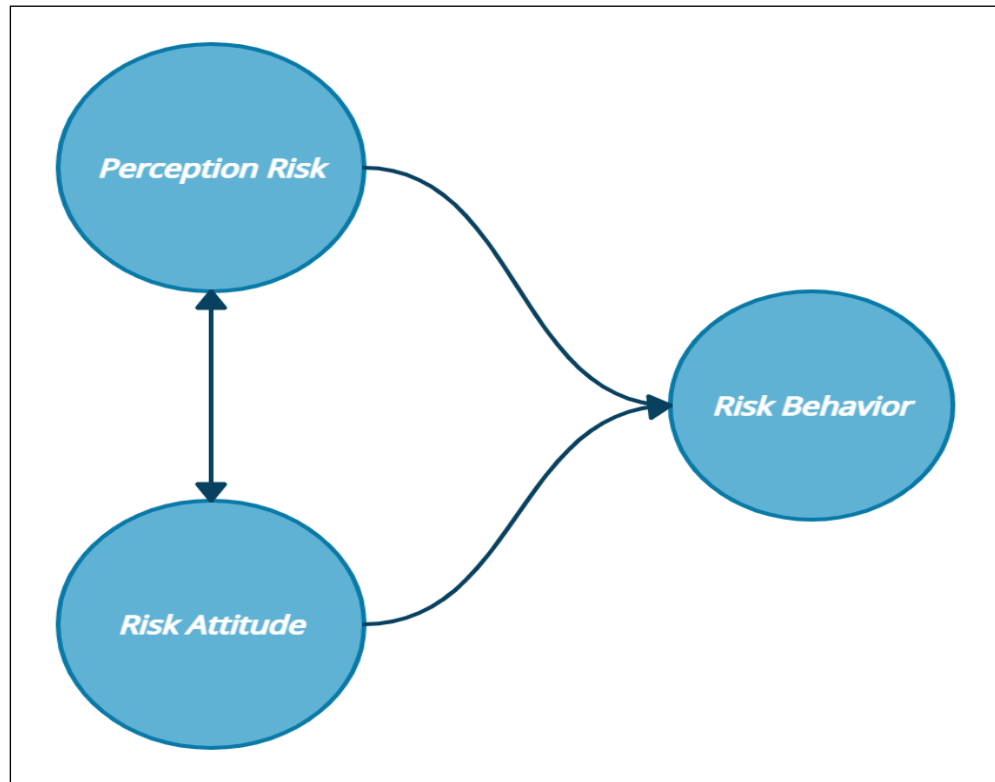
2.2.1 Theory of Risk Perception

The first theory considered suitable for the current study is the theory of risk perception. Risk perception can be understood as the process by which individuals make subjective judgments based on their beliefs, attitudes, and perceptions regarding the severity and likelihood of potential risks (Bena et al., 2019). This theory has been widely applied across various sectors, including economics, finance, social sciences, and technology, to assess uncertainty associated with both tangible and intangible risks. Within the framework of cultural theory, first introduced by Mary Douglas and Wildavsky (1983), risk perception is recognised as a key factor shaping how societies interpret and respond to risk. Prior studies have highlighted that differences in individual beliefs, knowledge, and experiences can lead to varying interpretations of risk sources (Oltedal et al., 2004).

In the context of waste incineration, risk perception is closely linked to concerns over public health and safety, particularly fears related to air pollution, toxic emissions, long-term health impacts, and environmental degradation. Van Winsen et al. (2011) further suggest that effective risk management and transparent communication can foster a sense of balance by encouraging a more conservative risk attitude, refer to **Figure 2.1**. This indicates a direct relationship between risk perception and attitudes toward behaviour. For instance, the siting of new infrastructure or renewable energy technologies within residential areas often introduces uncertainty about future health and safety conditions, which can

heighten feelings of insecurity and increase perceived risk among community members.

Figure 2.1: The basic individual risk behaviour model



Source: Van Winsen et al. (2011)

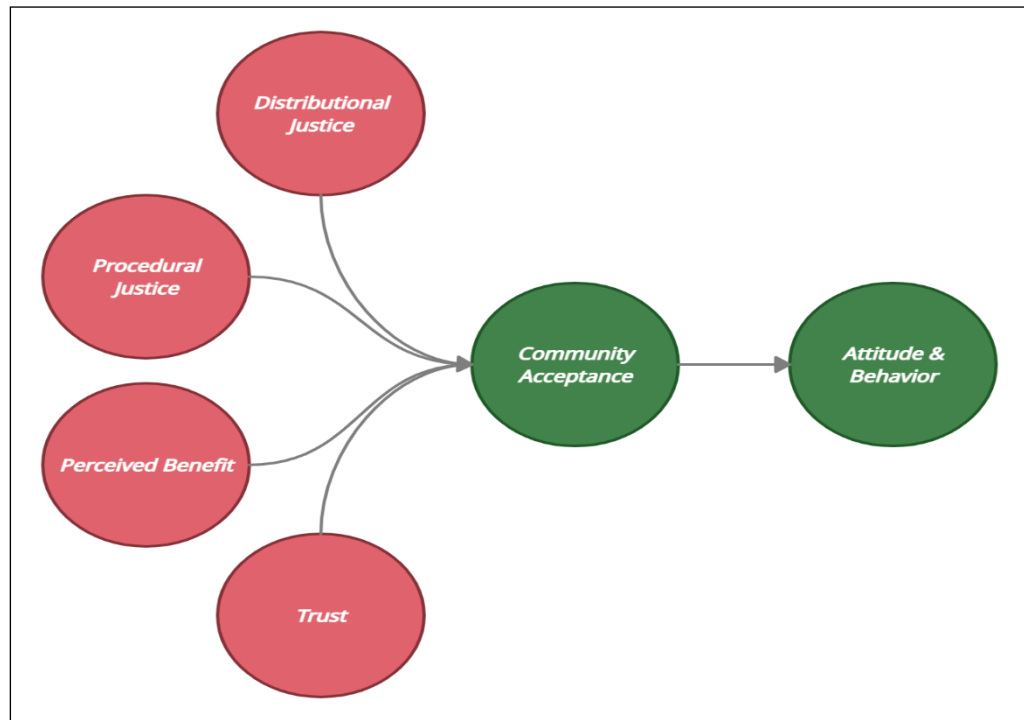
2.2.2 Theory Related to Community Acceptance

The second selection of the important theory that is going to be used in our study is the theory of community acceptance. Many different variables can be related to this theory such as energy justice, perceived benefit, trust etc. Energy justice is one of the important theories that observe how the community reacts to the sitting of energy infrastructure in their living area. Thus, the important variables in the theory of energy justice are procedural justice, distributional justice, and recognition justice.

To understand more about the theory of energy justice. According to Velasco-Herrejon and Bauwens (2020) mentioned that community acceptance has a long-standing topic relationship with the energy industry such as nuclear power infrastructure, waste facilities, hydroelectric schemes and more. It has also proven that energy justice plays an important role in community acceptance, especially with renewable energy technologies. Besides that, there as can be noticed that energy justice which includes the variables of distributional justice, procedural justice and recognition justice has a solid relationship with community acceptance.

Meanwhile, the trust theory also is one part of the important factors that allow us to form a larger image to review the community's acceptance of the renewable energy system. Thus, this theory will be also combined with other variables to form a theory that is related to community acceptance which can refer the **Figure 2.2** below. Those theories of energy justice and trust will be further explained below.

Figure 2.2: Theories Related to Community Acceptance



Source: Velasco-Herrejon & Bauwens (2020)

Furthermore, Wu[”]stenhagena et al. (2007) also researched to study the social acceptance towards renewable energy innovation, and they found that there were many barriers to the activeness of the renewable energy facilities' implementation. Social acceptance has also become one of the strong barriers to preventing the innovation of renewable energy facilities. However, many of the policymakers have made misleading and wrong decisions during the implementation as they believe that social acceptance is not an important issue. Therefore, their study strongly emphasizes that social acceptance also should be taken into concern.

Additionally, there are many general support technologies and policies for effective to positive investment in the renewal facilities, and they decide on the siting of the facilities without going through social acceptance. Because they did not make any investigation into the social acceptance of the locals of the facilities. Those facilities slowly will be continuously facing issues from the locals such as rejection and protests. Thus, the issue of social acceptance has been acknowledged it is indeed a problem when the perspective changes from global to local. Therefore, their research also mentioned the triangle model of social acceptance which including of socio-political acceptance, community acceptance, and market acceptance, refer to **Figure 2.3** below.

Figure 2.3: The triangle of social acceptance of renewable energy innovation



Source: Wu"stenhagena et al. (2007)

2.2.2.1 Procedural Justice

Procedural justice is more focused on the process of discussion, and communication with the local neighbourhood and the government and politicians, and it must show the decision-making process as an equitable and justice procedure in a non-discriminatory way (Walker, 2009). Besides that, McCauley et al. (2010) also mentioned that the whole group of people and participants who were affected should be treated seriously fairness while participating in the process of decision-making.

2.2.2.2 Distributional Justice

Distributional justice means that the local people physically feel getting an unequal allocation of the environmental benefits and costs, and the uneven distribution of their allocation responsibilities after the harmed or diminished well-being by the marginalised group (Walker, 2009). Furthermore, Jenkins et al. (2016) also mentioned that people will also be feeling unequal allocation from the sitting of the infrastructure and the energy service as the uneven spread of the burden and benefit from those sectors.

2.2.2.3 Recognition Justice

For the recognition justice is more focused on the individual must be treated as fairly represented which means that they must be free from physical threats and also offered complete and equal political rights (Schlosberg, 2003). Additionally, the negative forms of culture and political domination will cause the individual to have a lower level of recognition, and it will result in the individual group feeling injustice, less benefit knowledge, values etc. as the people untrust the marginalized social groups (Jenkins et al., 2016).

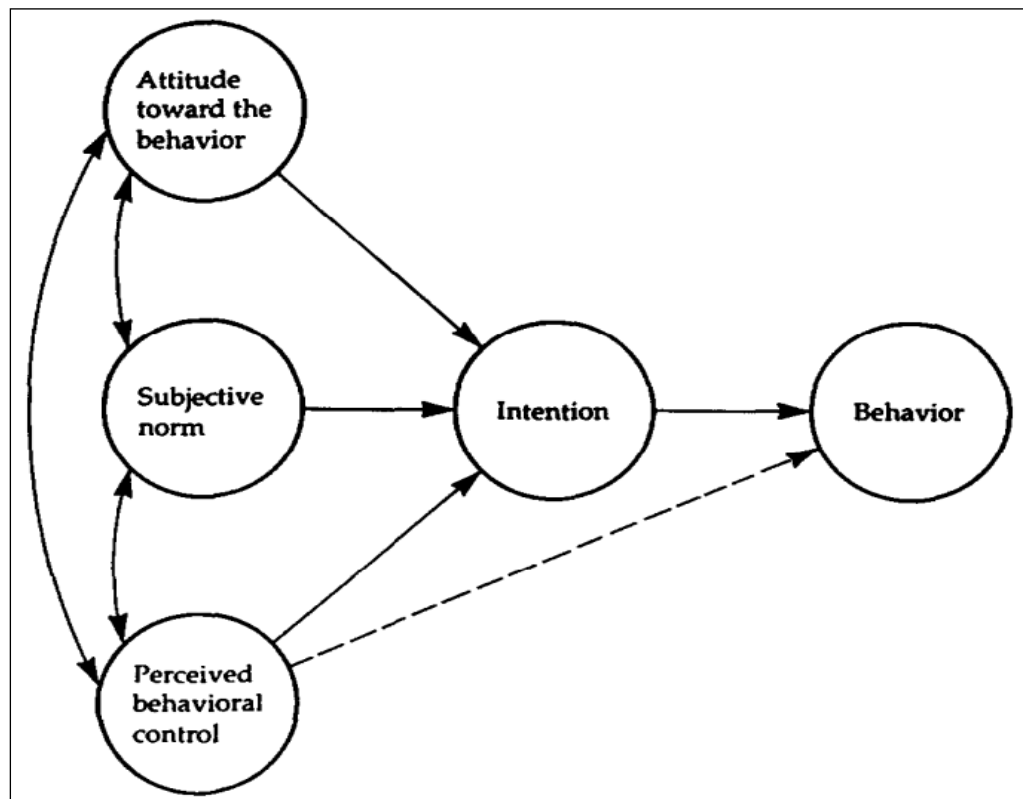
2.2.2.4 Trust

Castelfranchi & Falcone (2005) also discussed the trust theory the inability to use common sense, natural language, or any technical technological decision with an advantage to explain it, and the random restriction of trust to situations where the risks are greater than the utility. Besides that, they also mentioned that social trust also can be presented as a belief in the honesty, integrity, and reliability of others and that first parties or second parties will be willing and unconditionally follow or guesstimate their decision-making.

2.2.3 Theory of Planned Behaviour

The theory of planned behaviour, refer to **Figure 2.4** below, combines and inter-relation with three factors which are the “attitude towards the behaviour, Subjective Norms, and perceived behaviour control”, and they will link to the middle factor (intention) to show the people how much that they plan to exert and how hard as they willing to perform the behaviour towards the situation, Ajzen, (2005).

Figure 2.4: Theory of Planned Behaviour



Source: Ajzen (2005), pp. 117 – 120.

First, the attitude toward the behaviour is showing the person's individual feelings and emotions to think and plan about the behaviour intention and action in that particular situation. It will also bring out the positive and negative value of the outcome or experience after the action has been performed, Ajzen, (2005 & 2020).

Subjective Norms will be playing the role of the people's perception of the social pressure to perform or not behaviour under consideration. It may also be divided into two parts, the injunctive and descriptive norm. The injunctive norm means that the person performing the behaviour is under consideration after they receive the approval or disapproval expectation from either individually or the group around the person such as family, friends, spouse, colleagues and more. Furthermore, the descriptive norm refers to the people who will think and perform the behaviour in a particular situation, Ajzen, (2005 & 2020). Finally, the perceived behavioural control is presented as the person's intention to act according to the person's self-efficacy or ability to perform the behaviour of interest such as required skills and abilities, time, money, resources and more, Ajzen, (2005 & 2020).

2.2.4 Theory of Place Attachment

The theory of place attachment is one of the well-known theories applied to sociology research, and it provides a valuable outcome and results to show the importance of the place reflected in people's behaviour. The place attachment means that treating the phenomenon or location presenting it had a consensus about its meaning, scope and underlying dynamics for all the people, Altman & Low (2012). Furthermore, place attachment studies have also shown that the place had a more meaningful, stronger identity and dependence on the place through visitation or residence, Korpela (2012). Besides that, Manzo & Devine-Wright (2013) also described the six processes on their place-sustaining and place-undermining modes, refer to **Table 2.1**.

Table 2.1: Place Attachment Process

No.	Place Process	Explanation
1	Place Interaction	It represents as the place brings out the life of a place and involves multiple different types of actions, behaviours, situations, and events in a different type of period to implement their everyday lives and the place gains activity and a sense of environmental presence.
2	Place Identity	It presented as the place had the significant phenomenon that had significantly taken part on their lives, and they also unselfconsciously and self-consciously accept and admit the places as their personal and communal identity.

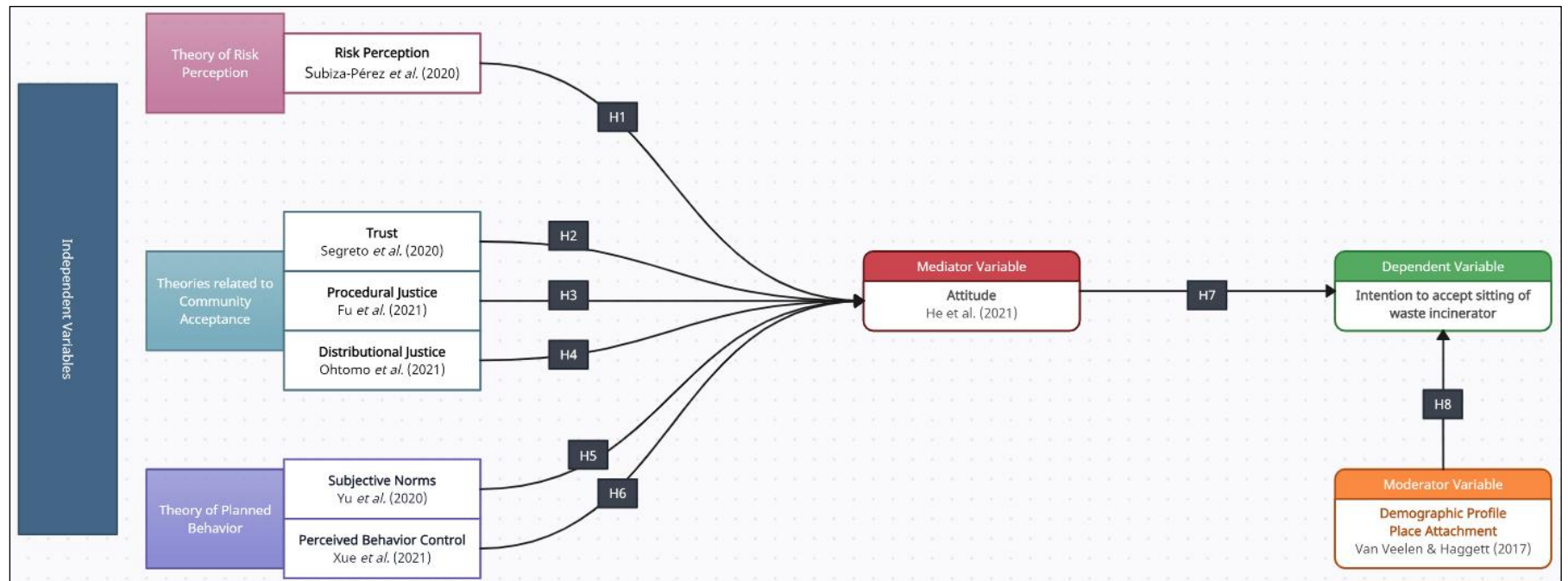
No.	Place Process	Explanation
3	Place Release	It is meaning that the environment or place had the happenstance of unexpected situations or events that create a meaningful of the places. Besides, it also significantly brings out the deep “release” of feeling on the people.
4	Place Realization	The place is combined with people daily behaviour and activity and the physical constitution in the environment ensemble of the places to present a meaningful place for them.
5	Place Creation	The people who are involved will be responsible for planning, thinking, and organizing to create positive street and sidewalk activity in their neighbourhood in order to show the place with amiable attraction. But it may also be easy to weaken the attrition while the creation is towards negatively.
6	Place Intensification	A place that is successfully being improved by affirmative human action and effort such as well-crafted design stuff and policy, create a meaningful of the construction to rebuild the urban places to able to get more attraction and recognition from the people.

Source: Manzo & Devine-Wright (2013), pp. 16 - 19

2.3 Proposed `Conceptual Framework of Developing a Model to Facilitate the Implementation of Sitting of the Waste Incinerator

This study's conceptual framework is grounded in risk perception theory, community acceptance-related theories (including trust, procedural justice, and distributional justice), and the Theory of Planned Behaviour (subjective norm and perceived behavioural control), with attitude positioned as a mediating variable that explains how these independent variables influence residents' intention and behaviour toward accepting waste incinerator development, refer to **Figure 2.5**.

Figure 2.5: Proposal Conceptual Framework of Developing a Model to Facilitate the Implementation of Sitting of the Waste Incinerator



Source: Own Research Development

2.3.1 Research Hypotheses Development

HO₁: There is no relationship between risk perception and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HA₁: There is a relationship between risk perception and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HO₂: There is no relationship between trust and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HA₂: There is a relationship between trust and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HO₃: There is no relationship between procedural justice and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HA₃: There is a relationship between procedural justice and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HO₄: There is no relationship between distributional justice and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HA₄: There is a relationship between distributional justice and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HO₅: There is no relationship between Subjective Norms and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HA₅: There is a relationship between Subjective Norms and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HO₆: There is no relationship between perceived behaviour control and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HA₆: There is a relationship between perceived behaviour control and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HO₇: There is no relationship between the mediating effects of attitude of the residence's opposition/support towards the intention to accept sitting of the waste incinerator within their neighbourhood vicinities.

HA₇: There is a relationship between the mediating effects of attitude of the residence's opposition/support towards the intention to accept sitting of the waste incinerator within their neighbourhood vicinities.

HO₈: There is no correlation between the moderating effects of place attachment and the intention to accept sitting of the waste incinerator within their neighbourhood vicinities.

HA₈: There is a correlation between the moderating effects of place attachment and the intention to accept sitting of the waste incinerator within their neighbourhood vicinities.

2.4 Empirical Reviews of Implementation of Sitting of the Waste Incinerator

Three theories will be more focused on this research after studying the previous theory studies which are the theory of risk perception, theories related to community acceptance, theory of planned behaviour. Besides that, the theory of place attachment will also be considered in this research to identify the outcome and result of people's behaviour towards the waste incinerator. Therefore, this part of the study will be studying the latest article journal about waste incinerators to determine the inconsistencies or gaps in research or conflicts in previous studies to support the conceptual framework in this study.

2.4.1 Risk Perception

In the research studies of Zeng et al. (2024), they used the extended factors of objective knowledge and benefit perceptions, and the Planned Risk Information Seeking Model (PRISM) to analyse the acceptance of the waste incinerators. The total number of respondents of 1726 that successfully collected via interviews in person in China. According to their result found that the WtE incineration projects have effectively boosted the economy and the waste management system in China. However, the locals did not willingly accept and viewed the waste incinerator project with suspicion, opposition, or even outright rejection although the government had introduced its benefits for the locals. The reason behind this was the factor of risk perception, the locals always believed that it

would potential environmental and health risks. Furthermore, not all of the locals were able to understand the scientific results that had been mentioned by the operators, but they were able to view and see the damage output on the environment from the facilities. Thus, they suggested to the risk managers of the facilities and the government need to consider how to establish powerful communication tactics to minimize community acceptance when introducing these projects to the locals. From this study, we understand that the locals still feel there is a potential for risk perception from the facilities although good support for the benefits of the environment, boosts economic and technological protection. Therefore, it has been proven the risk perception variable should always be considered in the first place when comes to the WtE project that is going to be constructed in the resident's area, especially for the waste incinerator.

The article journal found by Subiza-Pérez et al. (2020) analysed two different groups of participants who live within distance of the waste incinerators in the city of Zubietta (Gipuzkoa, Spain). Surprisingly both groups of people who live a distance more than 10km or less than 10km from the waste incinerator, also had counterparts that were unwilling to accept the waste incinerator as they believed that it brings out the waste will affect the environment pollution and will cause their health in danger. Thus, it is shown that there is a low level of acceptance towards the Municipal Waste Incineration Plants (MWIP) as the public institutions or the organizer avoided the unadjusted disgusted social reactions and over-magnified risk perceptions and caused the people to have behaviour against the waste infrastructure. Therefore, the risk perception mentioned that the distance does not mainly affect people feeling insecure, however, risk perception plays an important role that reflects in people's

attitudes to react on the sitting of the waste incinerator that carries out an unpredictable risk to them.

Furthermore, Xu & Lin, (2020), the neighbourhood living nearby Beijing, Shanghai, Guangzhou, and Shenzhen (China) are willing to pay the extra amount of electricity price to avoid the waste incineration power plant construction build in their living area and show the “Not In My Backyard” (NIMBY) effect able manipulate the people attitude and behaviour intention towards the waste incinerator. Three main reasons reflect people evaluate this behaviour intention is because that some families have underaged or young children, they believe that the waste incineration plants will impact their lives, and the price of the electricity will be increased after combined with the electricity consumption which is 105 to 133 yuan per month while estimated 0.60 yuan/kWh more for the existing electricity price. Thence, the waste incinerator can bring a lot of benefits for the country to sustain the development; however, people still disagree with accepting the sitting of the waste incinerator as the risk perception remains insecure as believe that it will significantly impact heavily on their health and living area.

The construction and operation of the waste incinerator as mentioned in previous articles, also clearly show that it is possible to enhance the economic and sustainable development of the country. Catalán-Vázquez et al. (2020) also said that waste incinerators also create lots of job opportunities for the residents but they bring about the negative consequence of the environmental pollutant which will cause health impacts on them. They know that the job opportunity offered by waste incinerators is a bright and great advantage to help in their future. However, they strongly feel that they are living in an area with a high level of environmental pollutants which will cause them to face higher level risk on health such as higher rate cancer, respiratory disorders, problems during pregnancy, etc.

Somehow, the people who live far from the facilities also get the same benefits who live nearer but have less impact on their health issues, thus the local people who nearer will feel unfair as they are facing a higher level of risk perception which causes them to exhibit higher levels of stress, anxiety, and depression. Slowly, they will also start to against and fight the construction of waste incinerators in their neighbourhood vicinity to defend their health and lifestyle. Therefore, risk perception is also significantly highlighted as an important variable in the development of a model for siting or constructing the waste incinerator.

Moreover, the research analysed by Sun et al. (2019) also significantly found that risk perception could be affecting people's attitudes and behaviour about accepting the waste incinerator in their neighbourhood and willing to pay or not. The residents believe that the construction and operation of the WtE projects will affect and impact their health issues and environmental pollutants in their vicinity, and also surprised that the people will feel more negative attitude and higher risk perception when their distance nearer ($> 5\text{km}$) than the facilities. Moreover, the result also shows that the permanent residents will choose to move away and refuse to pay for it when they know the news and information about the construction of the waste incinerator; while the non-permanent residents who come to that area to rent a house or an apartment for their job or study, it shows more protest responses. Contingent on this article, not many people have a positive attitude towards the facilities and choose to move away to reject to pay; the reason behind as the government do not reduce the level of risk perception, and this will lead to failure to hold a positive attitude. In this study, the variable of risk perception and attitude also showed that it is a significant relationship, thus risk perception also presented a variable that should be included in the current study. Hence, it proposes that:

HA₁: There is a relationship between risk perception and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

2.4.2 Theories Related to Community Acceptance

In this theory related to community acceptance, the variables of Trust, Procedural Justice and Distributional Justice will be explained and the supportive journal article below.

2.4.2.1 Trust

Segreto et al. (2020) suggested that mutual trust between the local and the stakeholders of the renewable energy facilities is a critical variable or factor that influences people to accept or not the sitting of the industries around their living area vicinage. Mutual trust can be improved by a different type of solution such as community participation and the dissemination of information; however, the people also will reject and have significant resistance to the development of the project in their community area if the information fails to have transparent information to the residents. Likewise, the communication between the locals and stakeholders is also highlighted solution to improve the trust level, and it will also let the local people get more understanding of its operation and reduce the knowledge gap such as advantages or disadvantages of its production, location, distance, etc. Conversely, the people also will feel distrust towards the stakeholders if they determine to construct the facilities in the people's neighbourhood without having proper communication about the process of decision-making. This situation also will cause the people to reject and be against it, and if it gets more serious will form a group of people to protest the facility.

According to this research, the trust had highly presented that it is an important variable in the community acceptance towards how people intend to accept the sitting of the waste incinerator.

Furthermore, the research found by Huang & Yang (2020) shows that the facility leaders and government in China construct waste incinerators rely on top-down and secretive tactics, and this action causes a broken trusting relationship and creates a group to safeguard their living area. The action or situation created by organizers of the waste incinerators and stakeholders only caused the people more distrust in their decision-making as the locals felt they had been left out of the process and forced to accept the facilities without any knowledge or information about it. In the meantime, residents tend to form a group of NIMBYism if the government or stakeholders still fail to include the public opinion and trust level among them. NIMBYism is meaning that a group of people have the behaviour that does not want something to be built or done near where they live. Thus, the NIMBYism will tend to protest and fight against the construction of the waste incinerator to prevent damage to their area. Although the local authorities will tend to minimize or reduce the anger of the NIMBYism, the distrust will just become more worst if they do not provide a correct public engagement, increase transparency, and economic compensation. Therefore, trust also significantly shows that strongly important that able to impact how people's attitudes and actions toward the construction of the renewable energy facility.

Moreover, Cui et al. (2020) also mentioned that the government in China uses a top-down and closed traditional Decide Announce-Defend (DAD) decision-making approach might been the root cause that affects people feeling unfair and distrust the renewal facilities of the waste incinerators built near their neighbourhood. Apart from this, the sitting of the waste incinerators has the potential that impact environmental pollutants and people's health risks which was also a core reason for the lack of credibility on their organizer, which will also cause the people to feel more perception of risk and choose to distrust on the facilities.

Although waste incinerators were one of the famous renewable industries that were able to provide a great opportunity for sustainable development in China and reducing different natural energy sources, however, it still maintains as a stage of the dilemma of sustainable development; this is because that can attract a large number of different private investors or enterprises to invest on it to gain the efficiency in the economy, but they had missed out on the opinion of the people who will be facing the effect of NIMBY or Locally Unwanted Land Use (LULU) from the sitting waste incinerator. This causes the people to feel highly insecure and unfair about getting the same benefit, but the higher risk will be faced compared to other parties, thus the level of trust in residences will be a crisis and fight against it. Therefore, a waste incinerator will bring great opportunity and profit for economic development, but it will still be unable to construct and operate without getting trust from the locals. So, trust should not be omitted in the study of the construction of renewable energy industries.

The variable of trust had a high degree of risk perception that would make people against and protest the waste incinerator and cause the government to have more difficulty generating an inevitable anti-incineration tendency, Hou et al. (2019). They surveyed 338 residents in the urban area named Asuwei in North Beijing. They found that the inevitable anti-incineration will have a higher chance to happen or be carried out when the level of trust in management or government is low as the residents feel the risk perception has been increased. Thus, the factor of trust has a negative relationship with the risk perception for the citizens or residences, and it was also able to determine the success of the WtE or waste incineration plants.

The same goes for fairness perception is plays another important role similar to the factor of trust, fairness perception and trust perception were interrelated acts as another determinant of opposing sentiment. Therefore, the trust variable also showed that it had a relationship negative relationship with risk perception, and also showed that the people were more against waste incinerators as they felt their risk perception level had increased as the trust in waste management had decreased. Thus, the trust variable in this study also proved that the trust variable is a variable shown to be included in this research to find out a more accurate result on how people's attitudes and behaviour towards the waste incinerator.

Besides that, Liu et al. (2019) suggested that the trust had to consider the beginning of the planning or development of the construction of the renewal facilities in the residence vicinity as it will allow the facility project to get more reliable and trustworthy from the local residences. According to their research, the public influencers in different countries will bring a different level of trust to the residents. For example, comparing the countries of Dutch and China, the Dutch residents will have a stronger effect on the trust in the project's acceptability than the public influence when deciding on the project. However, the China result is the other way around compared to the Dutch. This might be because of the renewal energy usually initiated by the government instead of the energy management, thus residences will be more reliable on the public influencer. Furthermore, imagine that if a country can get highly vigorous in the public influencer and build on trust with the localize.

It also received very positive returns in terms of the acceptability of facilities and can also be better built in an adapted place to provide better services to enhance the country's economy. Therefore, trust also can be reviewed that on a different perspective in a different country; however, trust also plays an important role in the acceptability of the construction of energy facility projects. Besides that, building a strong trust relationship with the residents, and will also get a positive result on acceptability by the residents and success in sitting off it. Thus, it successfully proposes that:

HA₂: There is a relationship between trust and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

2.4.2.2 Procedural Justice

In the variable of procedural justice from the energy justice theory, it gradually became widely used while studying the WtE projects. Procedural justice is a process to let the locals or people attend the decision-making process on certain projects. It might include different types of solutions such as proceeding with a meeting with the chairperson and locals, having an interview section to raise consent, survey form for the local study etc. The study from Richmond-Bryant et al. (2024) had significantly found that the locals were more willing to accept the commercial hazardous waste Thermal Treatment (TT) facility although it had been constructed nearby neighbourhood. Besides that, the locals of Colfax's residents included seventy-one percent Black residents, and forty-six percent live below the poverty, indicating the community's structural vulnerability. But they were still willing to accept the facilities although the residents of Colfax did not have a high education or income level. This is because the locals of Colfax community members had a chance to make a decision-making process together with the members of the TT facilities.

Besides that, it also could let the Colfax community members raise and discuss the environmental hazards together. It has led to the improvement of participation in the decision-making process using codes for communication, organisation, and outcome. Based on this study, we could realize the importance of procedural justice while applying to the WtE facilities. Therefore, this research had been more justify that the variable of the procedural justice should apply into our current study of the sitting of waste incinerator.

As mentioned above, procedural justice is one of the variables to getting people to feel fairness of justice from the process of having communicated and discussed with the organizer to gain the same goal and decision-making on it. Fu et al. (2021) mentioned the importance of procedural justice in the waste incinerator in China. Their result found that the residents had the feeling that a few important variables affected how people's attitudes reacted to it. The justice of the procedural had attached a greatly important from the process between the residents and the management of the organizer in the waste incinerator to gain the same goal and decision, thus the residents should have sufficient information to know about the waste incinerator. However, the government also mentioned the importance of it and also shared the limited information with the public although they had greatly emphasized the importance of public information. But still, they failed and caused the locals to still have low confidence towards the waste incinerator. Therefore, the information about the waste incinerator able to lets people feel they are part of the process to provide suggestions and feedback on the waste incinerator. This also indirectly increases the level of procedural

justice for local people, and this also will bring positive attitudes and behaviour towards the waste incinerator.

Huang & Chen (2021) discussed that the government and politicians should execute procedural justice in the renewable energy policy decision-making process. This action can bring more favourable positive relationships with the local people, and it also satisfies the principle of sustainability. Besides that, they have also proven that procedural justice was able to provide a useful framework when assessing Taiwan's energy and transition policies, and it simultaneously presents that procedural justice was able to reduce the negative effect on people feeling injustice or unfairness. Procedural justice was somehow also surprising in that it was able to ease the distributional environmental justice.

For example, the local people will feel fairness and willing to accept more risk and cost if the management sincerely discusses and communicates the process of decision-making for nuclear energy with the local people with transparent information. Therefore, the variable of procedural justice in this article shows it is a critical variable while applying to the sitting or renewal of the energy facilities, and it also has a strong relationship with distributional justice. Hence, procedural justice also delivers that it is an important variable for the sitting in the energy facilities, so this theory should be applied to the sitting waste incinerator in this topic.

Moreover, Zhang et al. (2021) proved that the importance of procedural justice had a high significance level in affecting people's attitudes toward the behaviour belief on the waste incinerator. Their result has also shown that a high justice perception was able to lead to higher acceptability of the local people to accept the sitting of waste incinerators around their living area and reduce the NIMBY effect. Generally, the government implementing the policy on the waste incinerator tends to operate policies through a “localized/non-transparent” leads to the local people having more difficulty to discuss and interact with them and also causes the people to fail to have a positive relationship and justice experience.

Besides that, the local people started to form institutionalized or non-institutionalized to protest and prevent the waste incinerators built near their living area after the implementation of “localized/non-transparent” policies, but they failed to against it and were forced to accept it. This situation also clearly shows they have emphasized their negative attitude and anger towards the waste incinerator. Thus, the government should present this negative attitude from the residents, and they should share the information and interaction with them to form a better and fair environmental behaviour with the technology now such as social information, internet, etc. In these studies, we also can understand that procedural justice is sure enough to present that it is an important variable in helping the politicians and government while developing the waste incinerator. Therefore, this justice should be included in this model to identify how people's attitudes react to it.

Furthermore, although the government or the management of the waste incinerator had agreed that reframing the WtE as a green energy source was able to provide the perceived benefits and burden associated with this type of technology for the local communities. However, they also wish to become a part of members during the process or decision-making processes, Behrsin, (2020). His research also clarified that the distribution of the cost and benefit is important to the people no matter whether the new facilities have been planted or renewing of the waste facilities.

The local people also feel they should have the chance to be included in the process of knowing the decision-making. This is because they were able to get a better quality and quantity of information from the organizer. In such a way, the people were also willing more secure and minimize the possibility of the perceived risk produced by it. Therefore, procedural justice also shows importance on people's attitudes and behaviour in this article and this variable also presents again that it is a significant variable while researching the waste facilities or industries; so, this variable has to be included in this framework to predict how people attitudes and behaviour more accurately. Based on the article above, it shown that:

HA₃: There is a relationship between procedural justice and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

2.4.2.3 Distributional Justice

Although the government of China had introduced the WtE facilities to be constructed and built at the urban-rural area to sustain and manage their waste management. But it incurred injustice between the rural locals and migrant populations around the facilities (Wang & Lo, 2023). Overview of their research, the management of the facilities had a powerful authority to decide on their decision planning and resource allocation. The facilities would be rejected if the locals felt that injustice and did not obtain their deserved benefit. The further explanation on this particular issue was that the rural residents worked to keep their shoulders at the wheel to obtain the minimum of the benefits provided by the facilities such as income, job opportunities, energy consumption, energy subsidies etc.

Although facilities management had provided benefits and opportunities for them it was not balanced when compared with the risk created from the facilities. As this situation happens, the rural locals will just get their benefit to sustain their basic and daily life to work with the facilities management. The people who had powerful authority over the facilities would become richer and gain more benefits compared to those people who worked hard. Besides that, this will have a snowball effect on the poverty gap and slowly cause public rejection of the facilities to continue operating in their residential.

Thus, we should provide justice while distributing the benefits and risks to the people who face these facilities. Therefore, we will take this variable into our study to understand and identify how social justice could be implemented in people's attitude to accept the sitting of the waste incinerator.

The research done by Ohtomo et al. (2021) identified the local people who live near the waste incineration were more concerned with distributional fairness or justice than the people who non-sitting areas. Besides that, their result also significantly found out that the social benefit surprisingly was affecting how people's attitude when living in the sitting area of the waste incinerator. This was because they faced higher perceived risk than those residents who non-localized. Thus, the justice of distributional also highly presenting that it was important to people who localized should having fairness on social benefit (perceived risk and benefits gained from the waste incinerator). This also reacted to the level of public acceptance of the sitting a repository such as the waste incinerator, renewal energy facilities, solar energy, etc. Therefore, this article also strongly mentioned the important variable of the fairness of the distributional for the people who live nearby on those facilities as they know they are facing a higher risk compared to other people, and so they will compare the benefits that able to gain possible to overcome on the risk that they received.

Furthermore, the social-environmental impact of the waste facilities was also able to be improved by distributive justice, and it was also able to enhance the public acceptance of the NIMBY facility by affecting public perception of benefits and risks, Wang et al. (2021). They also mentioned that procedural justice was also important towards the waste incinerator in the Guanshan substation in Wuhan City, China. However, distributional justice will be becoming more concern variable in reflecting the public acceptance and people's attitude toward the NIMBY projects when they failed to be transparent and fair in their procession of the project NIMBY. It could be understandable as that lower level of procedural justice. The local people also tend to pay more attention to the risk to reach the acceptance of the NIMBY facilities, but the perceived benefit-risk plays a great mediation role that able minimizes the people's negative attention and attitude and emphasized the public acceptance towards the NIMBY industries. Therefore, as we gained the information in this article is that distributive justice able helps to improve the acceptance of NIMBY facilities and industries, thus distributive fairness also plays a role able to preview how people's attitudes on the sitting of development of waste incinerators.

After the studies of the variable for procedural justice, there is another important variable that has been mentioned in the theory of energy justice which is distributional justice. They mentioned a circular economy project could boost the economy and technology effectively and efficiently for their country, but it had to simultaneously with environmental justice which same as the theory of energy justice (Meira et al., 2021). All of these projects should have a valid alternative to the linear economy in terms of both sustainability and social justice.

Their methodology for doing this data research was using the keywords “Circular Economy” and “Environmental Justice” in their title, abstract, or keywords via the Scopus database. Across their studies, they found out that there were a lot of projects that did not meet the standardization of environmental justice, especially distributional justice.

A great example of this is that the WtE project was able to provide good benefits for all the locals and people around it. However, it failed to do so as because they were doing a concept of distribution and allocation from top to bottom (beginning from the management level to the residents as the lowest). In this scenario, the residents will be on the injustice side as they were the people who faced most of the risks and cons of the facilities but had fewer of the advantages and benefits. As a result, it led to one of the hindrance quotes to block the development of the WtE and gradual influence on the circular economy. Therefore, the variable of distributional justice in this study significantly shows that it should not be omitted when studying social justice and acceptance. Thus, we will include this variable in our conceptual framework to identify our general objective.

Moreover, Scott & Powells (2020) also discussed the distributional justice theory in one of the famous renewal energy facilities, hydrogen infrastructure, in the United Kingdom. Their research also found that people will suffer more from additional daily needed spending or payments after the hydrogen infrastructure was built around their vicinity. This was because some of the residents in that particular area who with disability and survived with the government supplement.

The electric bills will be charged additional and provide greater service and supply of electricity for the local residences when the renewal facilities are successfully operating in that area. However, it also became a burden for those residents who have trouble with finances or seeking a job.

Besides that, as currently the internet progressively becomes famous and used by globalizing frequency, thus paying the bill's method also slows change to pay via the internet. This also presents as one of the additional burdens for the people who mentioned facing trouble in financial as they also need to install the internet in their house which causes increasing in their expenses with additional payment on electric bills. Thus, this group of people will be facing more injustice and unfairness compared to another group of people who also enjoy the same benefits provided by the facilities. They will also slowly form a group who will be trying against and stop the facilities built in their neighbourhood. Therefore, it also shows the importance of distributional justice when developing the waste incinerator.

2.4.3 Theory of Planned Behaviour

In this theory of planned behaviour, it will be covering on the Attitude, Subjective Norms and Perceived Behaviour Control variables in this study. Each of the variables will be explained and the supportive journal article below.

2.4.3.1 Attitude

The MSW Management in China played a dazzling role who helping and improving the urban environment, and environmental behaviours. They were also concerned about the urban environment around the local residences; thus, the residents also have a positive attitude towards the management and are willing to pay the fees and accept the sitting of management nearby their area, He et al. (2021). Besides that, most of the residents also have a positive attitude towards waste management because the management takes their environmental concerns into account. Although waste management will be causing environmental pollution.

However, they also have the planning and consideration to reduce the level of pollution. Besides that, they also enhanced the urban environment by reducing rubbish around the area by cleaning the streets, recycling solid waste, maintaining the public dump disposal etc. Although the residents knew that management would cause pollution, they were still willing to accept it. In these studies, the

variable of attitude also shows that it is important while analysing the waste facilities because the post effect will strongly impact those people who live nearby.

Furthermore, Wall et al. (2021) acknowledged that the government should be paying more concern and attention to the resident's attitude when having energy facilities that replace unstable energy sources as it will impact people's beliefs and behaviour in their daily lives. The unstable energy sources fees will be cheaper than the renewal energy sources but they will cause higher levels of environmental pollutants and will finish someday in the future. Consequently, renewable energy will be more effective compared to it. The locals were still unable to accept the facilities and were unwilling to pay the fees for the facilities although it could bring multiple benefits to the residences with unlimited energy sources. This is because there was a great extent increase in the electric fees, and it became one of the factors that locals were concerning.

On the other hand, the locals will be more willing to accept it and pay for renewable energy if the government and private stakeholders become more concerned about public awareness for the locals. It showed that there was a significant increase in the positive attitude of the residents to consume and usage on the renewable energy provided by the facilities. There were a few alternative solutions to have a positive attitude which were promoting the importance and advantage of consuming renewable energy such as reducing the hazard of the unstable energy course, environmentally friendly and protecting the environment. This study also shows that the attitude of the residents was greatly

important towards renewable energy. The same goes for waste incinerators, they would not be successfully operated and constructed if the local people reject and make use of it. Thus, the variable of attitude should be included in this study to develop a framework to identify the significance between attitude and the intention of the sitting of a waste incinerator.

The research written by Nie et al. (2020) discussed that people's attitudes will be affected by the perception of risk produced by waste incineration construction. There were a few main factors as mentioned in the article which were the attitude of neighbours, facility impact, information cognitive, the income of the respondent, distance, and respondent characteristics. Risk perception as mentioned previously was one of the main variables that reflected on their attitude towards the waste incinerator facilities, and people will also follow the positive or negative behaviour on their intention whether to accept the facilities. So, the government needs to pay more attention to people's attitudes, and this will only be achieved through the construction of the renewable energy infrastructure.

Additionally, the government had to take on providing the incidence of social risks by tracking and evaluating risk sources to secure or reduce people feeling risky and having a positive attitude. This study also showed the importance of the perception of risk and attitude. Besides that, it also showed that risk perception had a strong linkage and relationship towards the risk attitude. Thus, the variable of attitude will suggest becoming a mediator variable to find out how people intend the sitting in a waste incinerator in their neighbourhood vicinities.

Moreover, the waste incinerator was also one of the criteria for renewable energy facilities, and some of the residents have a negative attitude towards it. According to the findings were because those two main issues as legitimate concerns and misconceptions, Lucas et al. (2020). The reason caused these two main problems mostly was that the residents had faulty thinking or understanding towards the facilities when the information was not communicated properly due to the lagging of quality control. Although the renewal facilities generated great advantages and benefits for the sustainable economy and development of the country. However, the residents might not understand the importance of it when there is a low quality of information.

Consequently, this situation will slowly form a knowledge gap, and they will treat the facilities as myth or unknown which causes them to feel insecure and afraid to accept it. The residents will start having a negative attitude and set a barrier to breaking off the construction of the renewal facilities If the situation still fails to ameliorate. In order to solve the legitimate concerns and misconceptions, the government had to create a common or easily understandable message about the facilities, and media engagement or use different communication on different residences. Therefore, the attitude in this study also greatly highlighted it is an important variable when the government planning the sitting of renewal facilities, so this variable should not be missing in this research.

Yuan et al. (2019) conducted a research study about the social perspective towards the WtE in Shandong, China with a total number of 650 questionnaires. Along with these 650 questionnaires, it was designed with demographic information of respondents and examined various aspects of social acceptance. There was a total of 629 questionnaires (96.8%) were successfully returned after they were done for surveying. The WtE facilities and waste incineration project were great opportunities to greatly boost the economic growth of a country. Regardless of how it also brings multiple types of negative issues that impact the environment and human health.

The government or risk managers should make more publicity efforts to increase the positive public perception to positively enhance the public attitude toward the residents. Thus, they should be focused and concerned about the groups of people who stay near the waste incineration to respectively promote the development of MSW incinerators. Especially for the group of people who were over 50 years old, low in education level and low-income groups. Besides that, the research mentioned that the resident's attitude towards the waste incinerator was also partially mediated variable by a few differences in variables such as perceived risk, perceived justice, and expectations. Therefore, the public attitude from the residents also plays an important role in the development of the MSW incineration or WtE project, and it processes that:

HA7: There is a relationship between the mediating effect of attitude of the residences opposition/support towards the intention to accept sitting of the waste incinerator within their neighbourhood vicinities.

2.4.3.2 Subjective Norms

Across the objective from the sustainable development goals introduced by the United Nations, more and more people have started to notice the importance of solid waste management to help achieve its multiple objectives. Thus, the Jeddah government also introduced solid waste management such as WtE into their country, but it also brought out environmental impact towards the society (Abdulghaffar & Bakr, 2024). Moreover, the objective of their study was to examine the role of Attitude, Subjective Norms, Perceived Behavioural Control, and environmental knowledge on householders' behavioural intentions toward SWM.

To achieve this objective, they surveyed a total number 1038 of Jeddah participants around the facilities area, and the raw data used SMART-PLS software to run the Structural equation modelling to analyse its result. Their result showed that the variable of Subjective Norms had a level of positive influence on the behavioural intentions of Jeddah householders to participate in SWM activities actively. The householders would be more willing to accept SWM activities from their perspective when they understood the usage and benefits of those activities. Therefore, this article also shows that the Theory of Planned Behaviour is also being supported in this study. This is because it can identify and examine what is the level of their attitude and intention to accept those facilities.

Besides that, the Subjective Norms also had an indirectly significant relationship towards promoting their willingness to adopt building energy-saving technology, and it also becomes a path to influence the locals' attitudes towards the facilities (Li & Wu, 2024). Their study mentioned that the technology in China is getting more advanced and better. It will lead to strong costs in environmental pollution especially in rural areas because of the construction of energy-saving technology facilities. So, they surveyed the rural of certain provinces and cities around the facilities, and some of them were conducted either online or offline in some cities. Their result also proved that rural locals had a positive relationship with their attitude towards accepting the renewal facilities that were constructed in their city with good supportive surveyed data.

Coming through from this study, we could understand that the Subjective Norms sometimes is not able to be reviewed as having a direct impact on their behaviour and attitude. The facilities need to take some time to prove the value of it to the customer to build a positive image for them to slowly penetrate their norms. Then locals would only start to have positive Subjective Norms to adopt on the building energy-saving technology which is similar to our study. Therefore, the variable of the Subjective Norms needs to take into concern into our research study to understand the community acceptance towards the waste incinerator.

The facilities of waste incinerators also being one part of the renewable energy that allows for a reduction level of the environmental impact after lots of the studies previously. The studies of Almrafee and Akaileh (2024) focused on the

locals of Jordan intentionally adopting and purchasing renewable energy (solar panel systems) to install in their houses. They used the data to run the analysis via SPSS version 25 after they surveyed Jordanians with a total number of 428. Furthermore, the uniqueness of their study was that they extended their Theory of Planned Behaviour with pricing theory to it. It helped them to understand how the condition influenced Jordanians to increase their level of intention and attitude to purchase renewable energy. In their finalisation and discussion, they had proven that the attitudes, Subjective Norms (also known as social influence), perceived price, knowledge and perceived behavioural control significantly affect the purchase intention of Jordanian customers to adopt renewable energy. Their result also showed the importance of the theory of planned behaviour to study people how willingness to accept renewal energy in their daily lives or nearby, especially since we use this theory with some extended variables to study it together. Therefore, this supports us to confirm that the Subjective Norms is one the important variables to help us to indicate the level of community acceptance towards on the sitting of waste incinerator in their neighbourhood.

Referring to the research written by Yu et al. (2020) mentioned that farmers had a positive attitude and broken windows towards the waste incinerators as they provided vast benefits and convenience. To achieve a positive on people's behaviour, the Subjective Norms should be taken into concern because it helped to increase the value of the waste incinerator from the farmers' perspective. Somehow the behaviour of the farmers was also significantly affected by the government leadership, groups of farmers and influence of farmer groups. So, they had to implement greater policy regulations and incentives to encourage

farmers to possibly obtain a positive broken window effect and reduce the negative effect. A positive of the broken window effect, it will greatly enhance the farmers' subject norm because they will be getting support from their families, groups of farmers, the government etc. Furthermore, they were more willing to accept and use the waste incinerator to solve their waste issue when they paid attention to the building information, knowledge about the green utilization of agricultural waste, and shared relevant knowledge with the farmers. Therefore, the variable about the Subjective Norms in this study also shows how the third party can influence the people's attitude toward the intention of accepting the waste incinerator.

Furthermore, Liebe & Dorbes (2019) also discussed the variable of Subjective Norms to apply in the locals' behaviour towards renewable energy facilities in Germany. In their result, it was unforeseen that the local people were more willing to accept the wind turbines which have a positive relationship in Subjective Norms towards that renewable energy project compared to other projects. Besides that, the higher level of educated people showed a high level of acceptance levels and willingness to accept projects but not natural gas. According to their finding, they mentioned that the individual will also be affected by the people around them such as family and friends.

They started to change their mindset to become a person who was “environmentalists” to be concerned about or advocate protecting the environment when they were influenced by their family who also supported the renewal facilities. They also started to willingly accept these facilities based on the influence of their family mentioning it could minimize the damage of the environment pollution with scientific proof. Based on this finding, we can understand that the individual norm is sometimes different from others, and the Subjective Norms will follow the majority when internalized norms have conformity to accept on the infrastructure. Therefore, the Subjective Norms also significantly show that it is one of the important variables when conducting a development model on the sitting of a waste incinerator and testing for HA₅ is below:

HA₅: There is a relationship between Subjective Norms and attitude of the residence’s opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

2.4.3.3 Perceived Behaviour Control

Perceived behaviour control also plays a part of important role in the theory of planned behaviour. In this theory, we could understand it is more focused on whether the person possibly performs a given behaviour intention to a certain subject. In the research studies by Sajid and Zakkariya (2024), they also used the theory of planned behaviour to understand the local intention level to adopt the Zero-Waste Lifestyle (ZWL). The meaning of the ZWL stands for waste generation and minimizing the consequences of human activities on the environment. Their result showed that the variables of personal norms, attitude, Subjective Norms, and perceived behavioural control positively influenced the locals' intention to adopt ZWL. Besides that, they also proved that the intention to adopt the ZWL could be better long run in the future if the government or owner manageable wisely on the level of the Subjective Norms and perceived behaviour control. Thus, we could understand that the variable of perceived behaviour control could also help us to understand how the subject/ objective that able to influence people's intention to accept them. Therefore, we would include this variable as one of the important variables or factors to understand people's intention to accept the sitting of waste incinerator in their neighbourhood after this study showed the significant of perceived behaviour control influence on the people's intentions.

Xue et al. (2021) successfully done an investigation about the resident's intention to take collective action through participation in NIMBY protests in China by using the theory of planned behaviour framework. In their research design, they collected a total sample size of 286 Chinese residents who lived near the waste-to-energy incineration plant. Their result found that the individual factors of attitude, Subjective Norms, and self-efficacy positively affected the intention to protest, and the perceived group size indirectly and directly affected intention. There was a positive for the perceived environmental health risk, but a negative for the perceived action risk as to the factors that will be affecting the individual attitude and intention. The WtE facilities provided a benefit and diversified balance among all the locals to enjoy it.

Although they tried to share the goods and benefits for all the people, not everyone will have a low risk but have good benefits. For example, the distance between living compared to the resident's house and the facilities will have a different level of risk perception, and those residents who live near the facilities are going to receive a higher risk compared to those who live at least 5km distance. Thus, the residents became sorrowful and exasperated when they faced a higher perceived risk which impacted their health issues compared to other groups of people who lived far from the infrastructure. For the time being, some of the people will hold their attitude and will not start the protest towards the facilities. Over time, their behaviour will follow the others when more people stand out and try to stop it. This was because they slowly believed that they also performed safeguards to protect their vicinity, and this also formed a sheep-flock effect that will get stronger and form NIMBYism to protest the waste incinerator.

According to this study, the perceived behaviour control and self-efficacy showed that it has a significant level of effect on people individually and behaviour on the intention of sitting for the waste incinerator.

As mentioned previously, the phenomenon of NIMBY for the waste infrastructures can cause the resident's risk perception. A similar research study was conducted by Zhao et al. (2020) to find out the residents' attitudes toward living in Jiangqiao, Shanghai (6 km from the waste incineration). Their result showed that the locals' attitudes become tenser when the waste incineration releases environmental pollutants. The locals felt the environmental pollutants had significantly affected their health or maybe damaged the next generation kid or children. As could be defined the level of risk perception had become higher and reflects the individual attitude against the waste incinerator for most of the residences.

However, some of the residents might be in a pseudo-rational state against the facilities without understanding on nature of the waste infrastructures. In the long run, this would cause the group risk attitude or sheep-flock effect to protest the waste incineration if the risk managers do not take any action or solution to it. Besides that, the environmental pollutants caused the residents to become more sensitive and anxious which may lead to forming a group event to repel waste incineration.

Some of the residents will ignore their behaviour or knowledge and blindly follow their neighbours to form a group to protest it. As could be understood that the variable of perceived behaviour controls significantly understanding a person's attitude and action in certain situations when happens and impacts their daily lives. Thus, it suggested that:

HA₆: There is a relationship between perceived behaviour control and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

2.4.4 Theory of Place Attachment

Renewable energy generation facilities can generate commercial low-carbon energy and improve local energy conditions. However, it will also impact people's daily behaviour, sense of environment, daily activities, and fair distribution of the benefits and costs (Kallis et al., 2021). Besides that, they also mentioned that there were multiple challenges in engaging island communities while planning for deploying renewable energy from different case studies. They also significantly found that the residents feared the construction on their island because they believed it would impact their daily life and activities such as reducing the number of tourists visiting, damaging the environment and infrastructural needs (transport, road, service), affecting their healthy lifestyle and more. So, the management should take into concern the challenges of engaging with island communities on energy issues, and they should also take a more place-led approach will be an emphasis on the preliminary of local priorities and identities before constructing the facilities. This action will carry out a great response on how to avoid on damaging their place interaction, in the same moment to greatly increase and enhance people's attitude and behaviour attention to accept the sitting of the renewable energy facilities. Therefore, the moderator of place attachment should bear in mind that it was also able to influence people to accept or against the sitting of the waste incinerator.

Furthermore, Chappell et al. (2020) also did research that related to the perspective of climax thinking, place attachment, and utilitarian landscape from the implications of the wind energy infrastructure in the Chignecto area, Atlantic Canada. They designed a question survey and randomly distributed it to the local response about the changing landscape of four previous features via mail survey, and its objective is to understand how local residences respond to the exposure to turbines, support for wind energy, and demographics. The result shows that neither the place attachment nor time in the region influenced the climax thinking, however, the male gender and conservative politics were the key points that affected the climax thinking, and the conservatism policy had a negative relationship with those people who were unable to see the wind turbines from home. On the other hand, the climax thinking is a positive relationship with the people who were able to see the facilities from their homes. The residents had a climax thinking that the location would not be changing in the present or future when they were able to see the wind turbines replace the past landscape from their home, so they also feel there will be no further interruption that will impact their daily behaviour and activities as they feel the place had reached the maturity. Therefore, this also shows that the place attachment is also a factor that will influence how people's attitude toward renewable energy facilities when constructed in their neighbourhood vicinity.

Van Veelen & Haggett (2017) mentioned that the place identity in the theory of place attachment had been bringing out a difference of attachment while applying the renewable project in differences of location. Sometimes, people will tend to accept the facilities and construct their living area was because they believe the infrastructure able to enhance their environment. Furthermore, well-designed renewal facilities that were constructed in the area also could bring out the advantage of technology, and positive environmental energy but most importantly it could bring out a different meaning for their places. The renewal facilities and buildings had attractive designs that were able to capture people's eyeballs contact like the hydrogen facilities, solar energy facilities, wind turbines, etc. For example, the renewal facilities can provide job opportunities for the locals and enhance their economy, and they were allowed to form that particular area becomes a heritage area for tourism or visiting. In such cases, the local people will have a positive attitude toward those facilities. Meanwhile, they also accepted the sitting of it and are willing to pay. On the other hand, people will feel offended and reject the facilities when they release lots of carbon dioxide or throw toxins into the river, and this action will form a negative attachment. Therefore, the place attachment shows that an important moderator when planning on the sitting of the waste incinerator.

Wheeler (2017) also conducted an empirical study of reconciling wind farms with the rural place identity and exploring the residents' attitudes to existing sites. Their study also focused on the response to the proposed site instead of the long-term impacts of the wind farm's facilities on residents. It investigated a different group of residents from three different English villages regarding how existing local wind farms were perceived and experienced by them. Other than that, their study also analysed how the new structures were incorporated into conceptualizations of rural places in the long term. Wind turbines surprisingly were famous renewal energy facilities that can be accepted by the local people as they increase the identity of the place. For example, it attracted more tourists to visit that area because they can walk beneath, sit under, or even touch the facilities to feel belongingness rather than purely from a pictorial perspective. The place identity in the theory of place attachment shows that it was a strong and important variable that helps to moderate how people react and intention to accept the renewal energy facilities which is also related to the waste incinerator facilities after getting through this study, thus it also significantly that:

HA₈: There is a correlation between the moderating effect of place attachment and the intention to accept sitting of the waste incinerator within their neighbourhood vicinities.

2.4.5 Summary of Empirical Reviews Table

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
1	Risk Perception	Zeng et al. (2024)	Seeking information about waste-to-energy incineration projects: The role of objective knowledge and benefit perceptions in an extended PRISM	Risk Perception Objective knowledge and benefit perceptions Planned risk information seeking model (PRISM)	Project benefit perceptions. information-seeking intention. objective knowledge. subjective knowledge, risk perception	WtE incinerator introduced in China.	Although the WtE project can bring a lot of benefits to the economic and waste management system. But the first place we should be concerned is from the local's perspective.
2	Procedural Justice	Richmond-Bryant et al. (2024)	Oral histories document community mobilisation to participate in decision-making regarding a hazardous waste thermal treatment facility	Environmental Justice, Community Capacity theory.	Procedural Justice, Oral history.	Colfax's residents in California.	The Colfax residents would accept the Thermal Treatment (TT) to operate in their neighbour if the risk managers and operators were willing to have a meeting or interview with them to participate in the decision-making process.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
3	Perceived Behaviour Control	Sajid, M., Zakkariya, K. A., & Ertz, M. (2024)	Beyond the bin: overcoming the intention–behavior gap in zero-waste living.	Theory of Planned Behaviour.	Attitude, Subjective Norms, Perceived Behaviour Control, Intention to adopt & Norm activation model	349 randomly selected consumers with Partial Least Square-Structural Equation Modeling (PLS-SEM) methodology	A well education of the zero-waste lifestyle (ZWL) able to help the people more understand on the importance of waste management by understanding through perceived behaviour control.
4	Subjective Norms	Su & Wu (2024)	Rural Residents' Willingness to Adopt Energy-Saving Technology for Buildings and Their Behavioral Response Path	Theory of Planned Behaviour	Behaviour attitude, Subjective Norms & Perceived Behaviour Control	Energy-Saving Technology for Buildings in China.	Subjective Norms also is an important variable that could indirectly influence on the people's attitude on willing to adopt the Energy-Saving Technology for Buildings in their living area.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
5	Distributional Justice	Wang & Lo (2023)	Energy and Environmental Justice in China: Literature Review and Research Agenda	Energy Justice & Environmental Justice	Procedural Justice, Distributional Justice & Recognition Justice	Cross-cultural studies	Although the WtE facilities can provide a good number of benefits for the rural and migrant people. However, it would become an injustice when the risk becomes greater than the benefit, and it will lead to a negative impact on social acceptance.
6	Subjective Norms	Abdulghaffar & Bakr (2024)	Role of attitude, Subjective Norms, perceived behavioural control, and environmental knowledge on behavioural intentions of householders toward participating in solid waste management: a case study of Jeddah	Attitude, Theory of Planned Behaviour, environmental knowledge	Attitude, Subjective Norms, perceived behaviour control & environmental knowledge	Studied a total number of 1038 Jeddah participants around the facilities area and used SMART-PLS on the SEM structure.	Although the SWM activities had significant negative impacts on their neighbourhood environment. However, it still allows it to be accepted when the government can control its activities correctly. The Subjective Norms of each participant will have a positive effect on the intention to accept it.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
7	Subjective Norms	Almrafee, M., & Akaileh, M. (2024)	Customers' purchase intention of renewable energy in Jordan: the case of solar panel systems using an extended theory of planned behavior (TPB)	Theory of Planned Behaviour, Perceived Price.	Attitudes, Subjective Norms (social influence), perceived price, knowledge, and perceived behavioural control	SPSS version 25 with a total number of 428 Jordanians.	Attitudes, Subjective Norms (social influence), perceived price, knowledge and perceived behavioural control significantly affect the purchase intention of Jordanian customers to adopt renewable energy.
8	Procedural Justice	Fu et al. (2021)	Three-stage model-based evaluation of residents' acceptance towards waste-to-energy incineration project under construction: A Chinese perspective	Risk Perception Procedural justice Trust Perceived benefits Best Worst-Decision Making Trial and Evaluation Laboratory (BWD) method	Perceived risk, location, trust, perceived benefit, affect, procedural justice	Waste-to-energy incineration projects in China, especially in Hubei Province.	Able to understand how people react on residents' acceptance towards waste-to-energy incineration project (WTEIP) under construction and provide important reference for decision-makers and policymakers in waste management.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
9	Attitude	He et al. (2021)	Extended Theory of Planned Behaviour for Predicting the Willingness to Pay for Municipal Solid Waste Management in Beijing	Theory of Planned Behaviour Willing to Pay	Environmental Concern, Attitude, Subjective Norms, Perceived behaviour control, Willing to Pay	Beijing: Chaoyang District, Haidian District, Fengtai District, Xicheng District, Dongcheng District, and Shijingshan District	Understanding how people are willing to pay the management additional fees via the theory of planned behaviour, it also found that positive connection between environmental concern and residents' willingness to pay.
10	Procedural Justice	Huang & Chen (2021)	Injustices in phasing out nuclear power. Exploring limited public participation and transparency in Taiwan's transition away from nuclear energy	Environment justice - Procedural & Distributional	Discuss the procedural justice with the 45 interviews, with interviewees from a variety of backgrounds: relevant government officials, academics, industry representatives, indigenous communities, and NGOs.	Nuclear power plant in Taiwan	Understanding the important of energy justice that is able to influence how people willingly accept the renewal of energy industries.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
11	Place Interaction	Kallis et al. (2021)	The challenges of engaging island communities: Lessons on renewable energy from a review of 17 case studies	Trust Energy justice Place attachment Risk	Cases studies from the variable of identity, governance, economy, employment, energy, community diversity, encouraging participation, trust & building agreement and managing conflict	Australia, Denmark, Ireland, Italy, Korea, Netherlands, Scotland, USA	If an infrastructure is impacting place interaction such as the daily behaviour of the local people, there will be a significant increase in negative attitude.
12	Distributional Justice	Ohtomo et al. (2021)	Public acceptance model for siting a repository of radioactive contaminated waste	Public acceptance Distributive justice Procedural justice	Affect evaluation, risk perception, trust, perceived benefit, social benefit, stigma, intergenerational Subjective Norms, procedural fairness, acceptance	1016 residents in possible siting areas (Miyagi, Tochigi, Gunma, Ibaraki, and Chiba Prefectures), and 1006 residents in a non-siting area (the Tokyo metropolitan area)	The process of fairness and the concept of fairness are able to influence people's attitudes toward the NIMBY industries.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
13	Attitude	Wall et al. (2021)	Factors Influencing Consumer's Adoption of Renewable Energy	Theory of Planned Behaviour Risk and Trust perception Self-effectiveness	Demographics, renewable energy awareness, self-effectiveness perception, environmental concern, renewable energy generation cost, belief about renewable energy benefits, and risk/trust perception of renewable energy	388 responses from Bangkok, Pattaya, Khon Kaen, Chiang Mai, and Phuket.	The attitude should be taken more on concern when the politicians or organizers constructing a waste incinerator as there is a significant level of relationship between attitude and intention on sitting in the waste incinerator.
14	Distributional Justice	Wang et al. (2021)	Exploring the trade-off between benefit and risk perception of NIMBY facility: A social cognitive theory model	NIMBY Public acceptance Perceived benefit-risk	Personal factors: Self-efficacy & Self-regulation environmental factors: Social trust & justice Outcome expectations: Perceived benefits, risks, rewards, sanctions Behaviour Patterns: Acceptance, Adoption, Response to behaviours	450 sample sized on total population within 3 km of Guanshan	Understanding the trade-off between the variable of benefit and risk reflects how people's attitudes and beliefs on the waste incinerator.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
15	Procedural Justice	Zhang et al. (2021)	Identifying the predictors of community acceptance of waste incineration plants in urban China: A qualitative analysis from a public perspective	Theory of Community Acceptance & Energy Justice	Experience of waste incinerator, government response, family structure, knowledge, health, action of public, attitude, information and procedural justice, pollution treatment, public trust, perceived risk and interests	Using WeChat social tools to surveying different areas of waste incinerators in urban area of China: - - Zhongshan - Beijing - Hangzhou - Changsha - Jiujiang - Dongguan - Haikou - Changde - Anshan - Qionghai extension - Langfang	Provided more clearer direction of the variables that able to identify the community acceptance of waste incineration located in urban areas of China with public perspective.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
16	Perceived Behaviour Control	Xue, Zhao, Hua and Shen (2021)	Residents' intention to take collective action through participation in not-in-my-backyard protests in China	Social trust Perceived environmental health Risk perception NIMBY Self-efficacy	Demographics, health impact, risk, trust, distance, attitude, Subjective Norms, perceived behaviour control	286 Chinese residents living near a waste-to-energy incineration plant	Individual self-efficacy will also influence people's attitude to react to the intention; it is also greatly important to understand why people will follow the majority.
17	Procedural Justice	Behrsin (2020)	Controversies of justice, scale, and siting: The uneven discourse of renewability in Austrian waste-to-energy development	Community Acceptance Risk and benefit perception Justice perception Political efficiency Public trust Place attachment Knowledge NIMBY	Surveying the two differences area to found out of: - - Regional periodicals, facility operator reports, utility publications, grassroots environmental movement websites, political party news alerts, NGO brochures and publications. - Incinerator operating firms ; Incinerator industry interest groups; Environmental NGOs; Grassroots anti-incinerator activists - Local, regional, national, and EU- level elected leaders, policy makers, government agency employees, and political party representatives	Zwentendorf an der Donau, Lower Austria Heiligenkreuz im Lafnitztal, Burgenland Heiligenkreuz (Austria and Hungary)	Understand how people's attitude on reacting to the renewal or reframing of the waste incinerator in that area with the variables of environmental justice.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
18	Risk Perception	Catalán-Vázquez et al. (2020)	“THERE’S A LOT OF CANCER HERE...” ENVIRONMENTAL RISK PERCEPTION AND MORTALITY AMONG WOMEN WHO LIVE IN AN INDUSTRIAL CORRIDOR IN MEXICO	Risk Attitude Perception awareness Social trust	Perceived environmental problems in the community, connections between pollution and health-illness-death, and the social response to perceived industrial pollution	40 women in this study from Xalmimilulco (22) & Huejotzingo (18) [Mexico]	A waste management facility is able to bring a good opportunity to the locals. However, it will also bring up the risk that would have the possibility to damage health.
19	Place Interaction	Chappell et al. (2020)	Climax thinking, place attachment, and utilitarian landscapes: Implications for wind energy development	Place attachment Climax thinking Health	Demographics (Gender, Age, Income and Education), 4 landscape features (Dyke, Foundry, Haybarn, Radio tower, Attachment to Vestigial Utilitarian Landscapes & Place attachment	335 successful surveyed from Sackville and Amherst (Chignecto)	Climax thinking and place attachment about the wind turbines can be reflected in how people's attitudes and accept on it that construct in their living area.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
20	Trust	Cui et al. (2020)	Overview of public-private partnerships in the waste-to-energy incineration industry in China: Status, opportunities, and challenges	LULU & NIMBY Health risk Public trust Policy Sustainability development dilemma	Academic articles on MSW management and incineration practice in China identified, statistical data on MSW collection and treatment, policies and regulations & data is related to individual WTE incineration projects	China (Beijing, Shanghai, Nanjing, Hangzhou, Guangzhou, Changsha)	A waste incinerator will have a difference of opportunities and challenges in construction or organization. Although the trust and NIMBY should be taking more concern and had to consider managing it wisely.
21	Trust	Huang & Yang (2020)	NIMBYism, waste incineration, and environmental governance in China	NIMBY & YIMBY Trust	Diverse source and interview with some variables as seeing is believing, offering compensation and benefits, and partnering with the communities	Hangzhou, Jiufeng	Trust is one of the main criteria that controlling and affecting of the NIMBY reaction in the sitting waste incinerator.

No.	Variable	Author s	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
22	Attitude	Lucas et al. (2020)	Improving Public Attitude towards Renewable Energy	Public attitude Awareness Public concerns Misconceptions	Sitting issues, determine energy policy, policy assessment issues (motivation), information availability, energy decision process (general public & stakeholders), allocation of the decision authority	Renewable Energy Policy Network for the 21st Century (REN21), Greenpeace, Japan Renewable Energy Foundation (JREF), and European Solar Thermal Electricity Association (ESTELA); 350 participants	Understanding communication and information quality is also causing how people attitude toward the management in the renewal facilities, and the attitude is also shown to an important for the success of the construction of the renewal energy facilities.
23	Distributional Justice	Scott & Powells (2020)	Towards a new social science research agenda for hydrogen transitions: Social practices, energy justice, and place attachment	Energy justice Place attachment	Safety, home appliance usage, energy performance, economy, environment, willing to pay, experience of fuel poverty	Northeast and Northwest of England	Understanding the implications of the argument for hydrogen researchers and pointing towards the challenges and opportunities of hydrogen transitions.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
24	Trust	Segreto et al. (2020)	Trends in Social Acceptance of Renewable Energy Across Europe—A Literature Review	Social acceptance Trust in Governance Energy Justice	Trust Procedural & Distributional Justice Sitting Socio-Demographics	Europe with comparative method	Explaining between the importance of trust, energy justice and socio-demographics will influence the sitting location of the renewal energy project.
25	Risk Perception	Subiza-Pérez et al. (2020)	Explaining social acceptance of a municipal waste incineration plant through sociodemographic and psycho-environmental variables	environmental justice Resident attitudes Environment risk Health	Gender, residence, educational attainment, occupational status, political status, political orientation and degree of exposure to the future Municipal waste incineration plant (MWIP)	337 residents in Zubietta (Gipuzkoa, Spain)	Explaining social acceptance of a municipal waste incineration plant through sociodemographic and psycho-environmental variables.
26	Attitude	Nie et al. (2020)	Resident risk attitude analysis in the decision-making management of waste incineration construction	Resident risk attitude Risk perception	Gender, Age, Education, Family size, Income, Distance, Attention towards MSW, Understand incineration technology level, public trust, Health, Satisfaction policies, Environment improvement & Neighbours attitude	320 residents in Jiangqiao (ShangHai)	Understand the variables that influence local resident risk attitudes in the decision-making management of waste incineration construction.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
27	Risk Perception	Xu & Lin (2020)	Exploring the “not in my backyard” effect in the construction of waste incineration power plants - based on a survey in metropolises of China	Risk Perception Attitude	Age, gender, education level, income level, number of underage children, ownership of the property, communication level between neighbourhood, and life impacted	3066 participants	Exploring the “not in my backyard” effect in the construction of waste incineration power plants - based on a survey in metropolises of China.
28	Subjective Norms	Yu et al. (2020)	Assessing Influence Mechanism of Green Utilization of Agricultural Wastes in Five Provinces of China through Farmers’ Motivation-Cognition-Behavior	Theory of Planned Behaviour Motivation-Cognition-behaviour Theory of broken window	Broken window, Subjective Norms, attitude, perceived behaviour control, effect on utilization intention	1000 participants around Nantong, Yancheng, and Huai’an in Jiangsu; Wuhu, Hefei, and Anqing in Anhui; Xi’an, Baoji, and Xianyang in Shaanxi; Lanzhou, Baiyin, and Dingxi in Gansu; Chengdu, Mianyang, and Suining in Sichuan.	A broken window effect is a great solution to helping the locals more willing to accept the sitting of the waste incinerator.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
29	Perceived Behaviour Control	Zhao et al. (2020)	Evolution of the Individual Attitude in the Risk Decision of Waste Incinerator Construction: Cellular Automaton Model	Risk attitude Sheep-flock effect NIMBY	<u>Dependent variable:</u> Group risk attitude (sheep-flock effect) <u>Independent variable:</u> Individual / resident risk attitude: - Gender, Age, the level of education, Career, Number of families, Income level, Distance, Attention to MSW, Understanding of waste incineration plant, Credibility of waste incineration plant, Health, Satisfaction with the preferential policies	Waste incineration around Shanghai (6 km of the Jiangqiao from the waste incineration)	Evolution of the Individual Attitude in the Risk Decision of Waste Incinerator Construction: Cellular Automaton Model.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
30	Risk Perception	Bena et al. (2019)	Risk perception in the population living near the Turin municipal solid waste incineration plant: survey results before start-up and communication strategies	Risk Perception Place attachment Trust Fairness perception	Targets to investigated: - - Risk perception of environmental hazards - Level of environmental information Independent variables: - - Biological data (Sex & Age) - Socio-demographic information (Marital status, place of birth, level of education, having children) - State of health (Self-perceived health status)	Total 394 residents in Turin, Italy 198 exposed group (nearby the plant) 196 unexposed group (n area distant from the plant)	Study of the risk perception in the population living near the Turin municipal solid waste incineration plant and understand the results before start-up and communication strategies.
31	Trust	Hou et al. (2019)	Improving social acceptance of waste-to-energy incinerators in China: Role of place attachment, trust, and fairness	NIMBY effect Risk perception Willing to pay	Gender, Age, Education level, Homeownership, Community type, Average annual household income & Dwelling time	338 residents in the urban area named Asuwei in North Beijing	Understand the structure of how people react to the Waste-to-Energy Incinerators in China with the theory of Place Attachment, Trust, and Fairness.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
32	Subjective Norms	Liebe & Dorbes (2019)	Decomposing Public Support for Energy Policy: What Drives Acceptance of and Intentions to Protest against Renewable Energy Expansion in Germany?	Theory of Planned behaviour NIMBY Place attachment	Attitudes, social norms, NIMBY, Collective action, identity	3400 citizens in Germany	Social norms are able to influence people's attitude perspective of the renewal energy projects, sometimes higher educated people tend to have more positive normal behaviour.
33	Trust	Liu et al. (2019)	Effects of trust and public participation on acceptability of renewable energy projects in the Netherlands and China	Trust Influence over decision Public acceptability	Trust in the energy company & Public influence over decisions	120 participants within the countries of Groningen (Netherlands) and Zhangjiakou (China)	Different countries will have different policies which causes the different levels of trust in the acceptability towards the siting of the facilities. However, trust still stands strongly as an important variable that able to influence the result it.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
34	Risk Perception	Sun et al. (2019)	Public acceptance towards waste-to-energy power plants: a new quantified assessment based on “willingness to pay”	Willing-to-pay Risk perception Attitude Distance (NIMBY / LULU)	Risk perception, geographical, way of living, information & knowledge about waste incinerator, education, year dummy, distance, hazardous, income, gender, environmental improvement, disposal & price of real estate	Shenzhen, China	The variable of willingness to pay and intention to accept the waste incinerator facilities will affect on risk perception and attitude of people. Organizers should hold people's attitudes correctly and control well on the risk perception only to obtain a positive willingness to pay and long-term the facilities.
35	Attitude	Yuan et al. (2019)	Public perception towards waste-to-energy as a waste management strategy: A case from Shandong, China	Social Acceptance Public Attitude Risk perception Distance	<u>Demographic information of respondents</u> Gender, Age, Education, Annual income & Distance from the WtE project to the residency <u>Various aspects of social acceptance</u> Public awareness (PAW) of the environmental issues, PAW towards WtE, Perceived risks (PR) of WtE, Perceived benefits (PB) of WtE & Public attitude (PAT) towards WtE	Urban and rural areas of Jinan City and Liaocheng City in Shandong Province	Study of urban and rural areas to understand the public perception towards Waste-to-Energy.

No.	Variable	Authors	Title	Theory Used	Variables Used	Study Context	Novelty / Uniqueness Originally
36	Place Attachment	Van Veelen & Haggett (2017)	Uncommon Ground: The Role of Different Place Attachments in Explaining Community Renewable Energy Projects	Place attachment Attitude	Case Study from different year	Scottish Highlands	Place identity is significantly important for the locals as brings out a meaningful place for them. So, the organizer should be concerned when planning to construct any renewal energy project.
37	Place Identity	Wheeler (2017)	Reconciling Windfarms with Rural Place Identity: Exploring Residents' Attitudes to Existing Sites	Place attachment Attitude Policy Perception risk	Case study from three different villages with also having wind turbines	3 English Villages: Mullion in Cornwall (25 participants) Askam and Ireleth in Cumbria (26 participants) Martham in Norfolk (27 participants)	A well planning of the renewal energy facilities is able to bring out a different meaning to enhance the identity of the place which also affects the attitude of people on accepting it.

2.5 Conclusion

In this chapter, the reviews of relevant, the previous articles on the export theoretical model in the global market, empirical reviews of the factors related to export theory, and finally, the summary of empirical reviews of the study are discussed. In the next chapter, chapter 3, methodology is going to be discussed.

CHAPTER III

METHODOLOGY

3.1 Introduction

This chapter will discuss the variables related to the model to facilitate the implementation of the siting of waste incinerators within their neighbourhood vicinities, research design and methods, data collection, source of data, and data analysis. The previous chapter discussed the conceptual framework and variables about the intention of the siting of a waste incinerator in a residential neighbourhood vicinity. Those variables were included in the theory of risk perception, community behaviour, planned behaviour, mediating variable (attitude) and moderating variables (place attachment). Therefore, the conceptual framework model specification is stated below.

3.2 Conceptual Framework for Developing a Model to Facilitate the Implementation of Waste Incinerators in Kepong and Pulau Pangkor

Three conceptual model specifications will be focused on and discussed in this research and study which are stated below.

$$\text{Attitude}_i = \beta_0 + \beta_1 \text{RP}_i + \beta_2 \text{Trust}_i + \beta_3 \text{PJ}_i + \beta_4 \text{DJ}_i + \beta_5 \text{SN}_i + \beta_6 \text{PBC}_i + e_{1i} \dots \dots \dots (3.1)$$

$$\text{IASWI}_i = \beta_7 + \beta_8 \text{ATT}_i + e_{2i} \dots \dots \dots (3.2)$$

where:

RP = Risk Perception (based on Likert scale, strongly disagreed = 1, disagreed = 2, neutral = 3, agreed = 4, strongly agreed = 5)

PJ = Procedural Justice (based on Likert scale, strongly disagreed = 1, disagreed = 2, neutral = 3, agreed = 4, strongly agreed = 5)

DJ = Distributional Justice (based on Likert scale, strongly disagreed = 1, disagreed = 2, neutral = 3, agreed = 4, strongly agreed = 5)

SN = Subjective Norms (based on Likert scale, strongly disagreed = 1, disagreed = 2, neutral = 3, agreed = 4, strongly agreed = 5)

PBC = Perceived Behaviour Control (based on Likert scale, strongly disagreed = 1, disagreed = 2, neutral = 3, agreed = 4, strongly agreed = 5)

ATT = Attitude (based on Likert scale, strongly disagreed = 1, disagreed = 2, neutral = 3, agreed = 4, strongly agreed = 5)

IASWI = Intention to Accept Sitting of Waste Incinerators (based on Likert scale, strongly disagreed = 1, disagreed = 2, neutral = 3, agreed = 4, strongly agreed = 5)

Intercept = β_0, β_7

Coefficient of determinants = $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_8$

Error term = e_{1i}, e_{2i}

3.3 Research Design

The research design in the current study will be planning to use the survey collection methodology for each of the individual groups of respondents who live closely with the waste incinerator within the 5km and 10km distance. Based on the previous chapter, we noticed that the respondents would have a difference of attitude to respond to the waste incinerator between those within 5km or 10km distance from the facilities. For those residents who are living at a distance within the 5km, they will reject and are not willing to pay for the facilities which different from the residents who living far from the facilities with at least more than 5km to 10km (Subiza-Pérez et al., 2020 & Sun et al., 2019). Thus, we understand that the different distances between their living area and the facilities showed a significant relationship that impacted residents' behaviour. Besides that, some of the research studies or journal articles mentioned previously also conducted the survey within the distance of 5km between those places to sustain their objective to prove the relationship between the behaviour intention and attitude of the residents towards the facilities. Additionally, we noticed that the residents who live at Pulau Pangkor are willing to accept the facilities to stay near their residential area. However, the residents who live in Kepong are strongly against the facilities to stay near their residential area. Therefore, this study will be conducted on these 2 areas to find out the relationship between the residents' intention to accept and their attitude. Then we will be using these 2 results to make a comparison to let us have a further understanding of its reason.

In the second step, we must decide whether to use a qualitative or quantitative method for our research study to achieve our objective. For further understanding, both methods will also have a different outcome and methods to help us identify our general objective. Thus, we should choose carefully to determine which study research is needed. To further understand the qualitative or quantitative method, there were some studies to let us understand it. The quantitative research approach is a method to help the researcher express the numbers and graphs, and it is a tool to test and confirm the theories and assumptions in research (Streetkerk, 2021). Besides that, this method mostly will be conducted with an experiment, observations recorded as numbers, and surveys with closed-ended questions. Antwi & Hamza (2015) also mentioned that this approach will focus on hypothesis testing and theory testing to achieve the confirmatory scientific method. Furthermore, for most of the researchers who will be conducting a quantitative method in their research is of primary importance to state one's hypotheses and test those hypotheses with empirical data to see if they successfully are supported. Besides that, this method will gather a large sample size to run the result to prove their hypothesis favourably and significantly supported and have the relationship towards their dependent variable or outcome result in their research.

The quantitative method consists of five main types which are survey research, descriptive research, experimental research, correlation research, and casual-comparative research. It is also a great approach to helping this study to understand the community acceptance of the residents towards the sitting of the waste incinerators in their neighbourhood vicinity. The technique of this quantitative method approach is also recommended in this study as community acceptance is also a theory or variable that needs to be focused on hypothesis testing and theory testing to achieve the confirmatory scientific method. Therefore, this study will be using the quantitative method with survey research to measure the possible significant outcome and result via the approach.

The data collection methods will include observation, interviews, focus groups, surveys, and secondary research mentioned by the Streetfkerk, 2021, refer to **Table 3.1** below. In this collection method, the researcher may choose one or more methods to achieve a better understanding and in-depth insights into their research topics.

Table 3.1: Data Collection Methods

No	Methods	Description
1	Observations	Research that is using recording what you have seen, heard, or encountered in detailed field notes.
2	Interviews	Research that will be personally asking people questions in one-on-one conversations
3	Focus Groups	Research that will be asking questions and generating discussion among a group of people.
4	Surveys	Research that will be distributing questionnaires with open-ended questions.
5	Secondary Research	Research that will be collecting existing data in the form of texts, images, audio, or video recordings, etc.

Sources: Streetfkerk (2021)

Based on the previous studies or article journals, most of the researchers also used the quantitative method to analyse their findings and achieve the objective of the research. Therefore, the quantitative method is more recommended in this study when towards the sitting of the waste incinerator. The quantitative method is more recommended after studying the difference between the two methods as stated above. Thus, the current study will choose a quantitative method with a survey approach to identify the outcome of the study to understand how people react to sitting in the waste incinerator.

Lastly, there were eight hypotheses have been introduced for our research study and its objective is to allow us to identify and understand our major objective and check community acceptance towards the waste incinerator. Thus, we are going to use the SPSS software to test those hypotheses to achieve our target, and the reason for the selection of the SPSS software will be going to be discussed in Section 3.5 later. Furthermore, the testing will be conducting the multi-group analysis for the Kepong and Pulau Pangkor to test whether the pre-defined data groups have significant differences in their group-specific parameter estimates. Therefore, this research will identify the relationship towards this study's dependent variable via that software which is the intention to accept sitting of the waste incinerator. Finally, it also will have a further discussion on the result after successfully running through the method used.

3.4 Population and Sample

The sample size is greatly important for a researcher whole conduct a study, and it should be estimated at the time the study is proposed mentioned by Andrade (2020). He also said that a large sample is unnecessary and unethical; however, a too-small sample is unscientific and unethical. Thus, this study will calculate the sample size needed from the population in that selected location.

The location for the current research will be targeting the waste incinerators in Kepong and Pulau Pangkor. According to the website city-facts (n.d.), the area of Kepong is 13.8 km² and the total population is 55,364, refer to **Table 3.2** below. The area of Pulau Pangkor is 18 km² and the total population is 16,571 (Hanafiah, 2016) via the data gained from the Majlis Daerah Pangkor (2015), refer to **Table 3.3** below. Therefore, the two different places of the population that will be used in the calculation in our study are 55,364 and 16,571.

Table 3.2: Kepong population in 2015

Kepong	
Area of Kepong	13.8 km ²
Population	55,364
Male Population	28,734 (51.9%)
Female Population	26,630 (48.1%)

Sources: City-facts (n.d.)

Table 3.3: Population in Pulau Pangkor in year 2015

Village	Total Residents
Kampung Hj Hussin	1,395
Kampung Teluk Gedung	7,973
Kampung Teluk Dalam	2,175
Kampung Sungai Pinang Besar	1,125
Kampung Teluk Kecil	1,415
Kampung Teluk Nipah	2,488
Total	16,571

Sources: Majlis Daerah Pangkor (2015)

Furthermore, this study sample size calculation will be according to the calculation of Taro Yamane's formula as it proves to be mathematically reliable as progression (Ikehi, 2019). For the details of the formula refer below:

Taro Yamane's formula

$$n = \frac{N}{1 + N * (e)^2}$$

Where: -

n = The sample size

N = The population size

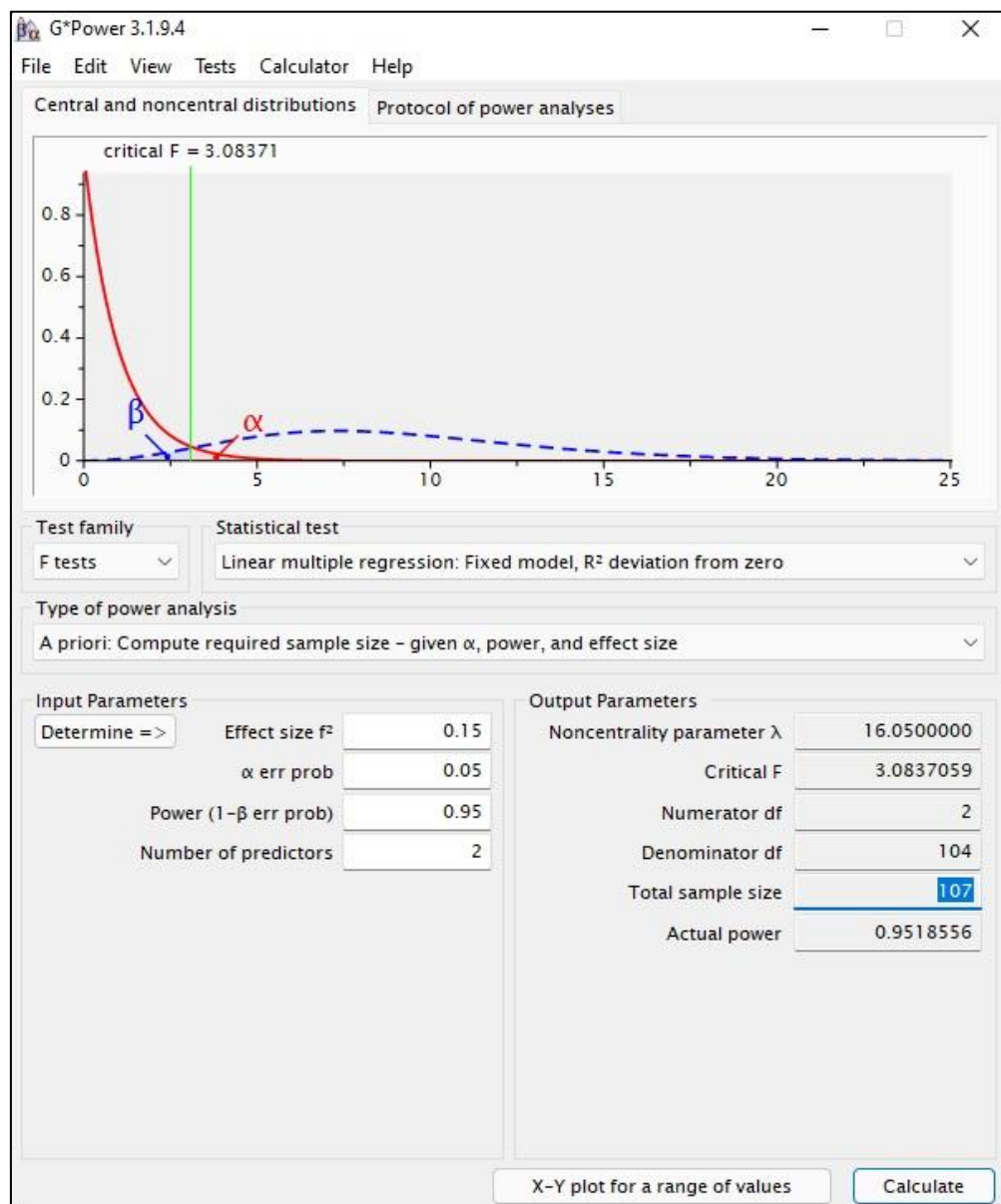
e = the acceptable sampling error

*95% confidence level and p = 0.5 are assumed

Based on the calculation and found that the sample size that needs to be collected is ~397 and ~391 surveys at Kepong and Pulau Pangkor while the $e = 0.05$. G*Power is another alternative software that helps the researcher identify the total sample size needed to be collected for the research and study. Faul et al. (2009) also mentioned that this program is a stand-alone power analysis available free of charge online. It also had many functions of many statistical tests commonly used in the social, behavioural, and biomedical sciences. Therefore, this study also used this software to identify the possible need for the sample size of this study. **Figure 3.1** as below shows that the total sample size should be collected with a total of 107 of each location with the α error probability = 0.05 and the Power ($1 - \beta$ error probability) = 0.095.

However, its comparison between the G*Power and Taro Yamane's formula had different results. To avoid survey bias and error, the questioning survey still follows collected generally targeting an estimated 150 for each place (Kepong and Pulau Pangkor) respondents via a questioning survey. Therefore, the sampling size had been decided to collect each of the places with at least 150 residents. But in the result of the survey collection, it was successfully collected 300 respondents out of 462 from Kepong and 155 respondents out of 268 from Pulau Pangkor. The total amount of respondents will be 455 out of 730 (62.32%) were successfully collected in this study.

Figure 3.1: G*Power result for the sample size



Sources: Own findings

3.5 Sample Size and Sampling Method

According to Nayak & Singh (2021), the sample size can be determined by various constraints such as funding available, time constraints etc. Besides, the sample size should depend on: -

1. The type of data analysis to be performed.
2. The desired precision of the estimates one wishes to achieve.
3. The kind and number of comparisons that will be made.
4. The number of variables that must be examined simultaneously.
5. How heterogeneous the sampled population is?

Thus, we will be more focusing on the theories mentioned in the last chapter which are the theory of risk perception, community acceptance and planned behaviour; and how it reflects on the mediator variable of the residents' attitude toward the intention to accept the sitting of waste incinerators within their neighbourhood vicinities. Besides that, we will also use the moderator variables to evaluate and predict more accurate the outcome of the dependent variable. Therefore, the variables that we will be focusing on are risk perception, trust, distributional justice, procedural justice, Subjective Norms, perceived behaviour control, and attitude; the moderator variable will be place identity and place interaction.

Furthermore, data collection will be conducted using a structured survey administered in Kepong and Pulau Pangkor, with an estimated total sample size of 800 respondents, comprising 400 respondents from each location, as determined by the sample size calculation described earlier.

This study adopts a probability sampling approach, specifically simple random sampling, to ensure that every individual in the target population has an equal and known chance of being selected. Simple random sampling is appropriate for this study because it minimizes selection bias, enhances representativeness, and supports higher internal validity by reducing the influence of systematic confounding variables. By giving each eligible resident the same probability of selection, the method allows the findings to be generalized more confidently to the broader population of each study area.

To implement simple random sampling in this study, a sampling frame was first established for each location. The sampling frame consisted of adult residents (aged 18 years and above) who had lived in Kepong or Pulau Pangkor for at least one year, ensuring that respondents had sufficient exposure to local waste management practices and related environmental issues. In each location, households were identified using publicly available residential listings and local administrative records. Each household within the sampling frame was assigned a unique identification number. A random number generator was then used to select households from the list without replacement until the required sample size of 400 respondents per location was achieved.

Once a household was selected, one eligible respondent was chosen randomly within the household. This was done by using a simple selection rule, such as the next-birthday method, to avoid interviewer bias in respondent selection. If the selected household did not meet the eligibility criteria or declined participation, another household was randomly selected from the remaining list.

Selected respondents were approached either face-to-face by trained enumerators or through self-administered questionnaires distributed at community centers, residential areas, and public spaces within the selected locations. Enumerators explained the purpose of the study, assured respondents of confidentiality and anonymity, and obtained informed consent prior to participation.

Participation in the survey was voluntary, and respondents were informed that they could withdraw at any time without penalty. Data collection continued until the target number of valid responses (400 per location) was reached. Through the use of simple random sampling and standardized recruitment procedures, this study ensures that the data collected are both valid and reliable, allowing for meaningful statistical analysis and robust identification of significant results.

3.6 Measurements and Instruments

After data collection, statistical software was employed to examine the significance of the variables and to analyse the research results. In this study, Microsoft Excel was first used to compile and organise the questionnaire data collected from respondents in Kepong and Pulau Pangkor. Subsequently, **SPSS** was selected as the primary analytical tool to perform statistical analyses.

SPSS is a well-established and robust statistical package that is particularly suitable for **comparison-based and explanatory analysis**, as it supports both parametric and non-parametric statistical tests (Ong & Puteh, 2017). One of the key strengths of SPSS lies in its ability to assess **data assumptions**, including tests for normality and detection of outliers, which are essential for ensuring the validity of statistical results. In addition, SPSS enables detailed examination of relationships between variables through techniques such as factor analysis, multivariate analysis, and regression-based modelling. These features align well with the objectives of this study, which aim to understand the influence of multiple independent variables on community acceptance and to compare perceptions across different geographical locations.

A comparison between **SPSS and SmartPLS**, as presented in **Table 3.4**, further highlights the rationale for software selection. While SmartPLS offers advantages in handling **small sample sizes, non-normal data, and complex models with formative constructs**, it has limitations in providing comprehensive **model fit indices** and is primarily designed for prediction-oriented structural equation modelling. In contrast, SPSS is more appropriate for studies that rely on **reflective constructs**, require extensive **model diagnostics**, and emphasise **group comparisons and hypothesis testing**. Given that this study uses measurement scales suitable for parametric analysis, involves a sample size that meets normality assumptions, and focuses on understanding variable relationships rather than predictive modelling. Therefore, the SPSS is deemed more suitable for our studies.

Table 3.4: Comparison between SPSS and SmartPLS

Software	SPSS	SmartPLS
Distribution Assumptions	Parametric (Univariate & Multivariate Normality)	Non-parametric
Measurement Scale	Internal or Ratio	Categorical to Ratio
Sample Size	Small (non-parametric <100 ~ 200) Large (>200)	Small (30-100) Large (>100)
Indicators to Construct	Mainly reflective construct	Both reflective and formative constructs
Identification of Model	Depends on model (df >0)	Always identified
Complexity of Model	Large models (>100 indicators) problematic	Can deal with large models
Model Fit Indices	A lot	No

Source: Hair et al. (2014)

Moreover, although previous studies have applied theories such as risk perception, energy justice, and the Theory of Planned Behaviour to examine acceptance of renewable or waste-related facilities, there remains a lack of comparative research across different local contexts.

This study addresses this gap by comparing community acceptance between Kepong and Pulau Pangkor. As the data collected in this study exhibit a normal distribution, SPSS provides a reliable and appropriate platform for analysing differences between locations and assessing the relationships between independent variables and the dependent variable. Therefore, SPSS is selected as the most suitable analytical tool for achieving the research objectives.

3.7 Pre-test and Pilot Study

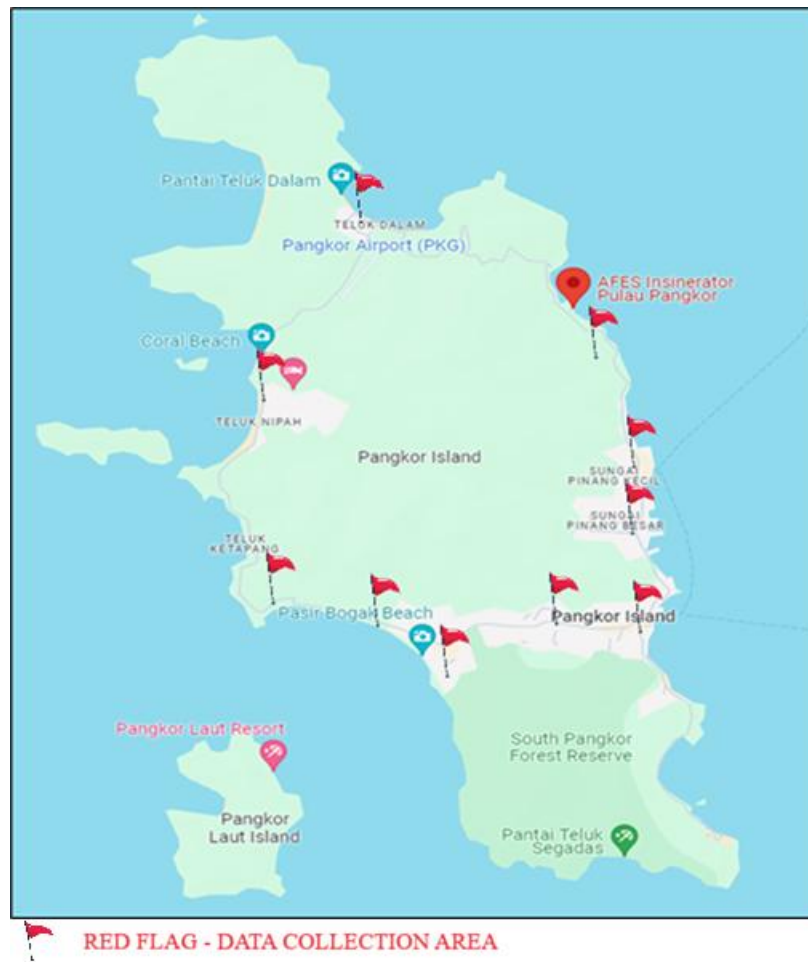
Before running through the pre-test and pilot study, there a minimum sample size should be collected to run the test. Johanson & Brooks (2010) suggested that the minimum recommendation for a pilot study with 30 – 50 representative participants from the population of interest with a single-point estimate. Therefore, we will be using the 30 – 50 random participants from the questionnaire Kepong to run the testing. Nayak & Singh (2021) also strongly mentioned is important before running all the sample sizes of the data because to avoid the pretesting may uncover ambiguity, lack of clarity, or biases in question-wording. This step allows elimination before administering to the intended sample. Therefore, we will conduct a pre-test for our survey research to identify the questions significant to our findings and avoid biased answers. And most importantly to ensure the result without any lack of clarity or biases in question-wording as mentioned.

The pilot study is also one of the extremely important steps during the research part. This is it allows the researcher to detect potential problems in their research design and/ or instrumentation, Nayak & Singh (2021). It ensures the measurement instruments used in the study are reliable and valid measures and may proceed with data collection using the sampled population after the pilot testing is successful. Therefore, this study will also use the pilot study to ensure the resign design and instrument are reliable and valid measures. After that, we will move forward to the next step to collect data in Kepong and Pulau Pangkor.

3.8 Data Collection and Source of Data

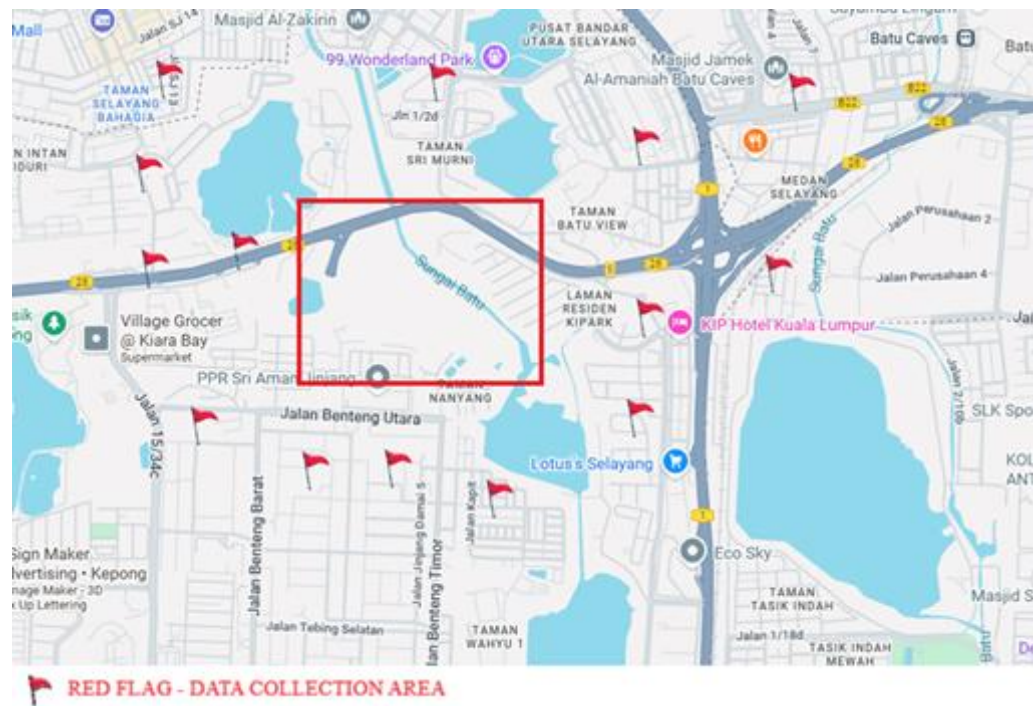
For this paragraph, "We need to be introduced to these 2 places to have a better understanding of where these waste incinerators were constructed and planned to contract before we go into how we are going to design our survey questionnaire and methodology for users for the survey. The waste incinerator location allocated at Pulau Pangkor will be above the hill and near one of the tourist places named Pulau Pangkor View Towers, as shown the **Figure 3.2** below. The waste incinerator was planned to be constructed at Taman Beringin, Kepong, near the Middle Ring Road 2 and surrounding the residents' area, as shown the **Figure 3.3** below. Therefore, our survey study will also focus on the residents who live within 5km and 10km from the waste incinerator that has been constructed in Pulau Pangkor and is planned to be constructed in Taman Beringin, Kepong.

Figure 3.2: AFES Incinerator's location at Pulau Pangkor



Source: Google Map

Figure 3.3: Waste Incinerator planned location at Taman Beringin, Kepong



Source: Google Map

To achieve our general and specific objectives which had been mentioned in Chapter 1 previously, we had designed three steps for our research design to meet our research study's expectations. As planned, we will be focusing on the location of the Pulau Pangkor and Taman Beringin, Kepong. So, our first step will be designing the survey questionnaire which fulfils our variables and theory to understand the community's acceptance towards the waste incinerator. Furthermore, this questionnaire needs to have solid support from the previous research study to sustain a strong bond and relationship within the independent, dependent, mediator and moderator variables, refer on the **Table 3.5** below.

Furthermore, they suggested that the primary issues that need to be examined include missing data, suspicious response patterns (straight lining or inconsistent answers), outliers, and data distribution. Besides that, this study will be using the SPSS to run the analysis to identify the result after the data collection.

Table 3.5: Questionnaire Design

No	Latent Variables	Measurement Statement	References
1	Risk Perception	It is likely that I could get sick or harm from the proposed incinerator. Risk Perception	Subiza-Pérez (2020); Hou et al. (2019); Ohtomo et al. (2021); Wang et al. (2021)
		Pollution from the incinerator can cause cancer and even death.	Subiza-Pérez (2020); Hou et al. (2019); Lucas et al. (2021)
		If radioactive materials leak from a repository of designated waste, many people would be harmed.	Sun et al. (2019); Hou et al. (2019); Ohtomo et al. (2021); Wang et al. (2021)
		Living distance is less than the supposed safe distance, more than 2 km	Sun et al. (2019); Fu et al. (2021); Wang et al. (2021); Nie et al. (2020); Zhao et al. (2020)
		If an accident or an unexpected situation comes to pass at a repository of designated waste, environmental damage would occur soon.	Ohtomo et al. (2021); Wang et al. (2021); Lucas et al. (2021)

No	Latent Variables	Measurement Statement	References
2	Trust	The government has the ability to handle the project of siting a repository of designated waste.	Subiza-Pérez (2020); Liu et al. (2019); Ohtomo et al. (2021); Nie et al. (2020)
		I trust in scientists and engineers in incineration areas?	Hou et al. (2019)
		The review committee will make decisions that involve considering residents' safety.	Subiza-Pérez (2020); Hou et al. (2019); Ohtomo et al. (2021)
		I trust in incinerator regulatory authorities, such as the Department of Environment in Malaysia.	Subiza-Pérez (2020); Hou et al. (2019)
		Do you feel the information that received from developers transparent and comprehensive information?	Segreto et al. (2020)

No	Latent Variables	Measurement Statement	References
3	Procedural Justice	How much influence they themselves would have on decisions regarding the facilities projects?	Liu et al. (2019)
		How much influence people in their neighbourhood would have on these decisions?	Liu et al. (2019); Zhang et al. (2021)
		I can feel my voice had been respected, trustworthiness, and fairness along with discussion of the facilities projects.	Hou et al. 2019)
		The procedure that the government followed to select a possible area for a repository of designated waste was fair.	Ohtomo et al. (2021)
		Do you have the participation in any process of discuss with the developer?	Fu et al. (2021)

No	Latent Variables	Measurement Statement	References
4	Distributional Justice	How much benefit do you think the construction and operation of the substation project will bring to your living/working/trip/etc.?	Wang et al. (2021); Lucas et al. (2021); Yuan et al. (2019)
		How much benefit do you think the construction and operation of the substation project will bring to improving local educational/medical/commercial accessibility?	Fu et al. (2021); Ohtomo et al. (2021); Wang et al. (2021)
		Perceived income increase after the facilities was built.	Fu et al. (2021); Yuan et al. (2019)
		Received a fairness of financial compensations (e.g., tax payments of operators) that able to counterbalance of the cost (e.g., accident risks and environmental pollution).	Hou et al. (2019)
		Accepting a repository will benefit the whole of our prefecture such as economic benefits and economic developments.	Ohtomo et al. (2021); Yuan et al. (2019)

No	Latent Variables	Measurement Statement	References
5	Attitude	I think the waste-to-energy has a bright prospect.	Yuan et al. (2019)
		I believe that waste to energy can increase household income.	Yu et al. (2020)
		I accept incinerators in my city.	Hou et al. (2019)
		I know waste-to-energy technology may cause environmental pollution.	He et al. (2021); Yu et al. (2020)
		I support waste-to-energy construction in local place	Yuan et al. (2019)

No	Latent Variables	Measurement Statement	References
6	Subjective Norms	I think people who are close to me will support the action of paying for facilities management.	He et al. (2021)
		I think the people who are close to me will pay for facilities management.	He et al. (2021)
		I will feel sorry for my future children and grandchildren if our city accepts a repository of designated waste.	Ohtomo et al. (2021)
		My children and grandchildren would not expect me to accept a repository of designated waste.	Ohtomo et al. (2021)
		Support and recognition from family and neighbours.	Yu et al. (2020)

No	Latent Variables	Measurement Statement	References
7	Perceived Behaviour Control	I think my payment will improve the urban environment.	He et al. (2021); Yu et al. (2020)
		It is not difficult for me to pay for facilities management.	He et al. (2021)
		I think I have time, money, and resources to contribute to the facilities management.	He et al. (2021); Yu et al. (2020)
		I have the ability of independent learning.	Yu et al. (2020)
		I am familiar with the policies and channel.	Yu et al. (2020)

No	Latent Variables	Measurement Statement	References
8	Place Attachment	This neighbourhood is part of me.	Subiza-Pérez (2020), Hou et al. (2019)
		It would be very hard for me to leave this neighbourhood.	Hou et al. (2019)
		This is the ideal neighbourhood for me.	Hou et al. (2019)
		City appearance improvement contributed by facilities.	Sun et al. (2019)
		I do not feel integrated in this neighbourhood after the facilities was built.	Hou et al. (2019)
9	Anti waste incinerator intention	I agree that this city should accept a siting of substation project.	Ohtomo et al. (2021); Wang et al. (2021)
		I can be convinced our city should accept a siting of substation project.	Ohtomo et al. (2021); Wang et al. (2021)
		I can accept the social impact of the substation project.	Wang et al. (2021)

Source: Own Development

3.9 Research Methods

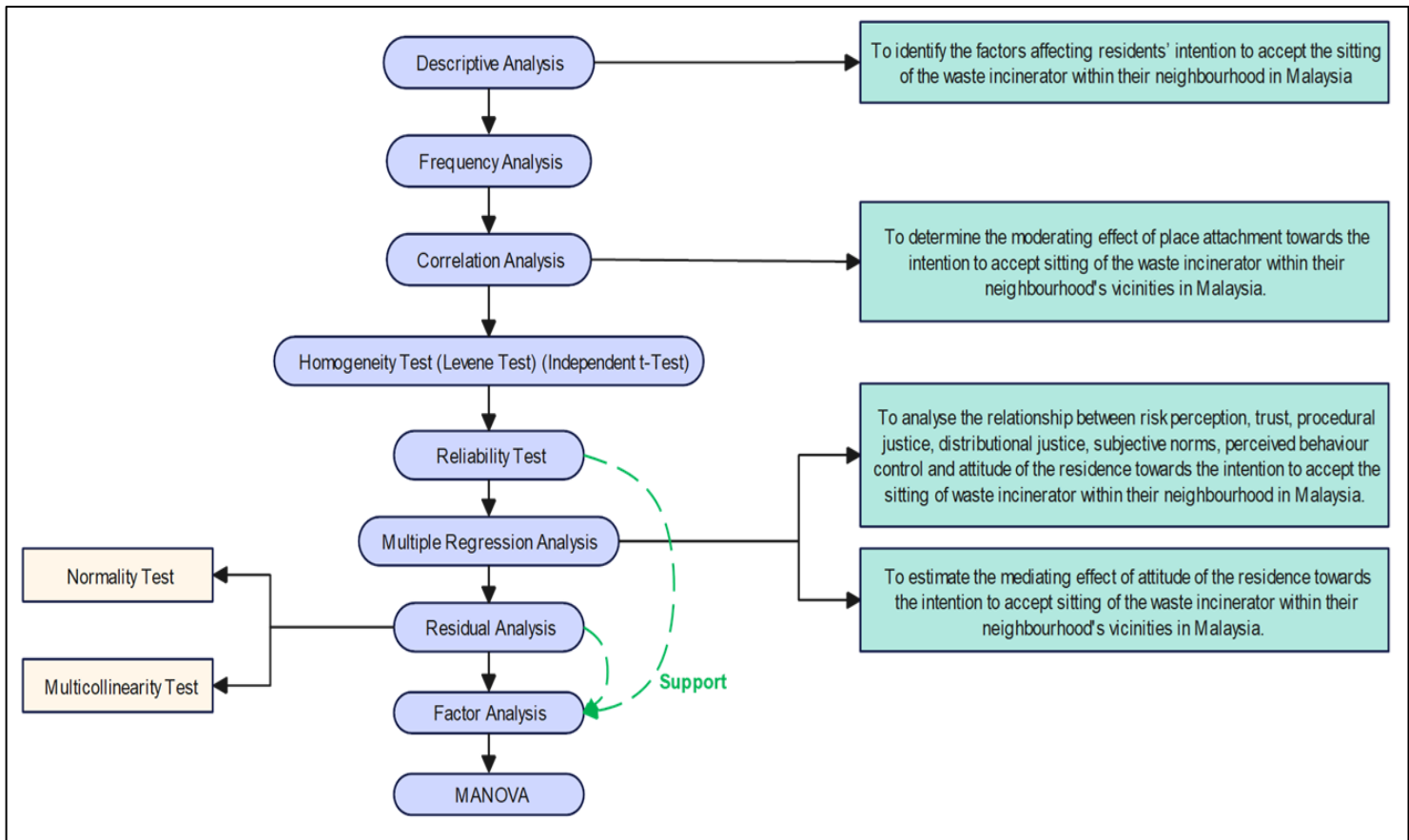
This section outlines the research methods employed in the present study and explains their relevance in achieving the research objectives. A combination of descriptive and inferential statistical techniques was adopted to systematically analyse the survey data and to develop a comprehensive understanding of community acceptance of waste incinerators in the vicinity of residential neighbourhoods.

Specifically, descriptive and frequency analyses were used to summarise respondents' socio-demographic characteristics and to describe general response patterns. Correlation analysis was conducted to examine the relationships between key variables, while Levene's test was applied to assess the assumption of homogeneity of variances prior to conducting further parametric analyses. The reliability test was employed to evaluate the internal consistency of the measurement scales used in the questionnaire.

To examine the predictive effects of multiple independent variables on community acceptance, multiple regression analysis was conducted, followed by residual analysis to verify the underlying assumptions of the regression model. Factor analysis was applied to identify the underlying dimensions of the measured constructs and to reduce data complexity. Finally, multivariate analysis of variance (MANOVA) was used to assess group differences across multiple dependent variables simultaneously, allowing for a more robust comparison between study locations.

In addition, a flowchart illustrating the overall research design is provided to visually summarise the analytical procedures and to clarify how each method contributes to the study objectives. Readers are referred to **Figure 3.4** for an overview of the research design and methodological framework.

Figure 3.4: Flow Chart Research Design for Current Study



Source: Own Development

3.9.1 Descriptive Analysis

Descriptive statistics is a common fundamental component of the research project as it helps to analyse and simplify the collected data (Susanna, 2017). Besides that, they also mentioned that it used to large group of quantitative data to observe the world or a phenomenon and, subsequently, identify. By using Eviews to run descriptive statistics, the mean, median, standard deviation, skewness, kurtosis, Jarque-Bera, probability and number of observations will be computed. Mean and median are categorized as a central tendency which means one value that sums up the group of observations. Kurtosis is analysing the distribution of data around the mean. Jarque-Bera and probability are used to measure the normality of variables to ensure that the data is normally distributed.

3.9.2 Frequency Analysis

The method of frequency analysis is one part of the descriptive statistic method. Rawat (2021) stated it is to understand how frequently a certain event or response is likely to occur. Besides that, this method is important to analyse and calculate the measures of central tendency, dispersion, percentiles, etc. while dealing with the number of occurrences (frequency) of each response chosen by the respondents. Furthermore, the software of SPSS Statistics can also help the researcher to identify clear results with the mean, median and mode.

3.9.3 Correlation Analysis

The correlation analysis is to detect multiple multicollinearities is to examine the simple correlation coefficients between the explanatory variables and is also the statistical technique that shows the strength and the direction of the relationship between independent variables and the dependent variable (Studenmund, 2020). Furthermore, the strength of variables, correlation coefficient (r) can be between $+1$ and -1 . The higher the value of r shows the stronger the relationship between the independent variable and dependent variable. If r is ± 1 , this shows that the variables are a perfect correlation and the strength of the two variables is said to be very strong (Akoglu, 2018).

Akoglu (2018) also mentioned that the direction of a relationship can be divided into a positive relationship, a negative relationship, and no relationship. When the r is 0 or nearly 0, there is no relationship between an independent variable and a dependent variable, but there will be an increase in the independent variable will increase the value of the dependent variable if r is positive. However, if r is negative, an increase in the independent variable will decrease the value of a dependent variable. Thus, it is shown in the **Table 3.6** below.

Table 3.6: The Strength of Correlation Coefficient (r)

If two variables are perfectly positively correlated, then $r = +1$
If two variables are perfectly negatively correlated, then $r = -1$
If two variables are totally uncorrelated, then $r = 0$

Value of Correlation Coefficient	Strength of Correlation Coefficient
< 0.20	Almost Negligible Relationship
$0.20 - 0.40$	Low Correlation
$0.40 - 0.70$	Moderate Correlation
$0.70 - 0.90$	High Correlation
> 0.90	Very High Correlation

Sources: Studenmund (2020)

3.9.4 Homogeneity Test (Levene Test) (Independent t-Test)

The Levene test is one the famous tests to determine and identify whether those variables or samples have equal variances. The equal variances across variables or samples are named homogeneity of variance. Studenmund (2020) said that the testing of the homogeneity expands on two population proportions, which is the two-proportion Z-test, and the response variable has only two outcome categories and we are comparing two populations after using the two-proportion Z-test. Besides that, Homogeneous also can be defined as the same in structure or composition in which the distribution of the responses is the same (homogeneous) across groups when the test gets its name from the null hypothesis. However, in doing the research with the SPSS software, the data will

be more reliant on Levene's test result. Therefore, there are 2 assumptions in Levene's test which are independent observations, and the test variable is quantitative whether it is nominal or ordinal. Furthermore, the data is equal and significant when the significant level of p is greater than 5, contrary, the data is not equal when the is lower than 5.

H_0 : Groups or Samples population variances are equal.

H_A : Groups or Samples population variances are not equal.

3.9.5 Reliability Test

The validity and reliability of the measurement model will be assessed in this stage. Dros (2011) indicated the importance of the reliability test is to measure the stability or consistency of the data collection with the attribute or behaviour. Besides that, the test is also used to measure the data with consistently discriminated individuals at one time or over time. More specifically, this reliability test is also a tool for the measurement of repeatability. Furthermore, Hair et al. (2014) and Dros (2011) also mentioned that this reliability testing test for the consistency of the scale by using Cronbach's alpha to calculate the reliability level to examine the internal consistency of the scales.

To understand the acceptance level of the reliability testing, we could identify through the acceptable level for Cronbach's alpha which is equally or more than 0.7 (Hair et al., 2014 & Dros, 2011). However, if Cronbach's alpha is lower than 0.7 which means that the reliability test is not consistent for testing, refer to **Table 3.7** below.

Table 3.7: The Acceptance Level of Reliability Test

Cronbach's alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Sources: Hair et al. (2014) & Dros (2011)

3.9.6 Multiple Regression Analysis

Multiple regression analysis is one the famous statistical techniques that helps the researcher or doctoral to analyse and examine the relationship between the dependent variable and multiple independent variables (Hair et al., 2014). Besides that, it's main objective of the research study is to use the independent variables whose values are known to predict the value of the single dependent value with a proven significant level (the p-value needs less than 0.05). Thus, we introduced our conceptual framework for developing a model to facilitate the implementation of waste incinerators in Kepong and Pulau Pangkor to run multiple regression analyses to identify the relationship between the variables.

However, there are main assumptions that require to be examined to ensure that the multiple regression analysis is appropriate and accurate before conducting the multiple regression analysis (Hair et al., 2014). The main assumption is the residual analysis which covered of normality test and multicollinearity test.

3.9.7 Residual Analysis

As mentioned previously, we need to have a residual analysis to prove our multiple regression for Kepong and Pulau Pangkor having an accurate and appropriate to justify our independent, moderator, and mediator variables towards the dependent variable. Thus, we will provide more details explanation on the part of the normality test and multicollinearity test below.

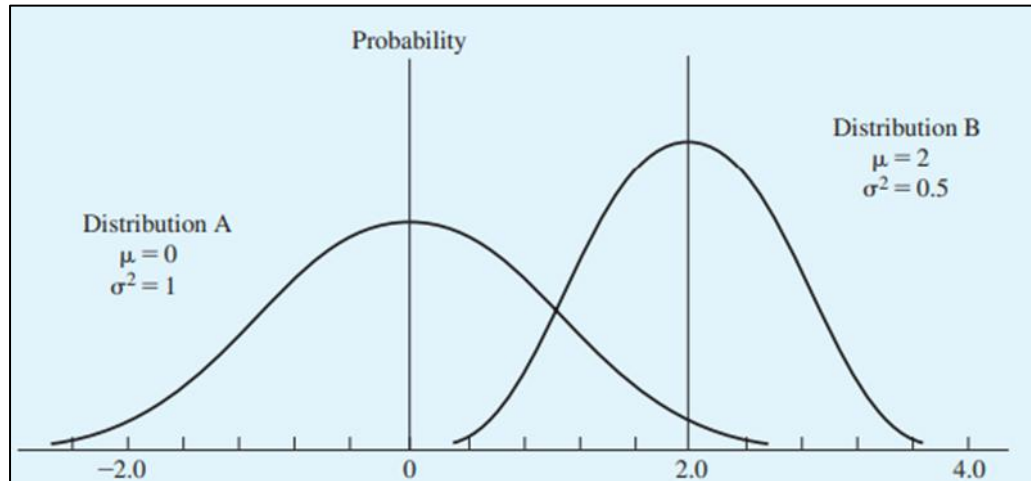
3.9.7.1 Normality Test

Studenmund (2020) said that normality testing is to observe the error term is drawn from a distribution that is normal, and the classical assumption VII states that the observation of the error term is drawn from a normal distribution in which the graph or normality will look like a bell-shaped, refer **Figure 3.5**. However, the graph does not certainly have the same amount of mean and variance. Besides that, the assumption of normality is not required for Ordinary Least Square (OLS) estimation because its major application is in hypothesis testing; it means it uses the estimated regression coefficient to investigate hypotheses about economic behaviour. For example, the test is deciding whether a particular demand curve is in an elastic or inelastic range. There are two ways to find out or detect normality distributed p-value and Jarque-Bera. Therefore, it is shown that:

H_0 : Groups or Sample are normally distributed.

H_1 : Groups or Sample are not normally distributed.

Figure 3.5: Bell-shaped in normal distributed



Sources: Studenmund (2020), pp. 99.

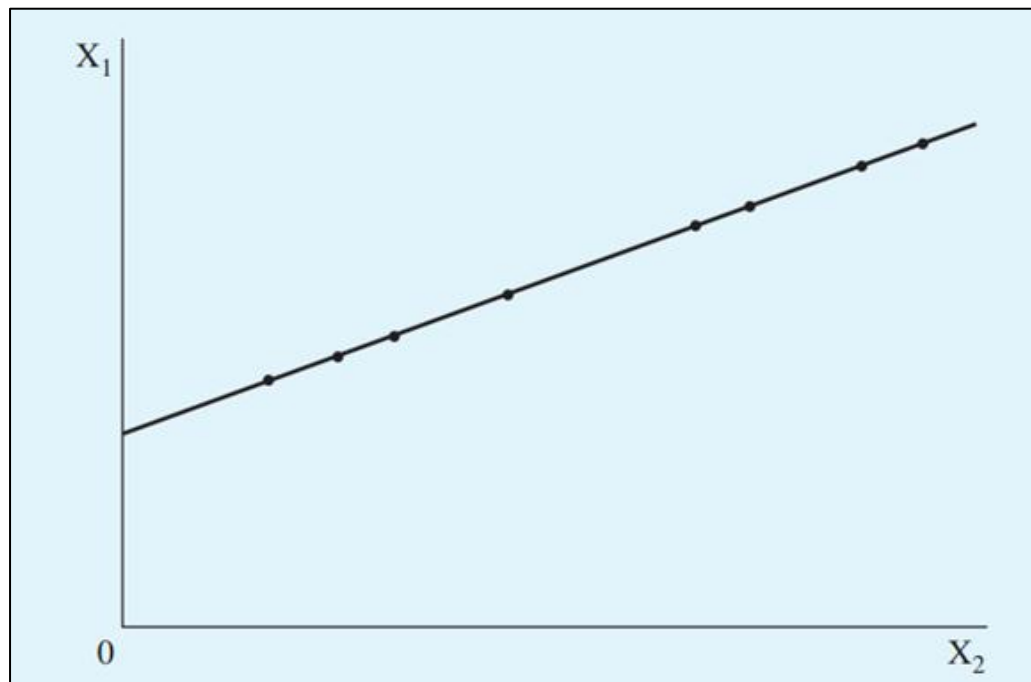
As testing the normality distribution in the SPSS, it will be more concerning in values of Kolmogorov-Smirnova and Shapiro-Wilkis. If the value of the p-value is greater than $\alpha = 0.05$, do not reject H_0 . This is because there is not enough evidence to conclude the residuals are not normality distributed. Therefore, the residuals are normality distributed.

3.9.7.2 Multicollinearity Test

In the multicollinearity test, Studenmund (2020) said that it will diversify into two parts which are perfect multicollinearity and imperfect multicollinearity. Regarding the perfect multicollinearity meaning that the explanatory variable is a perfect linear function of any other explanatory variable, and which also means that the variation in one explanatory variable can be completely explained by movements in another explanatory variable, refer to **Figure 3.6**. The imperfect multicollinearity can be determined as the linear functional relationship between two or more independent variables that are so strong, and it also significantly affects the estimation of the coefficients of the variables. In other words, it also can be understood as there will occur when there two or more explanatory variables are imperfectly linearly related, Studenmund (2020), refer to **Figure 3.7**.

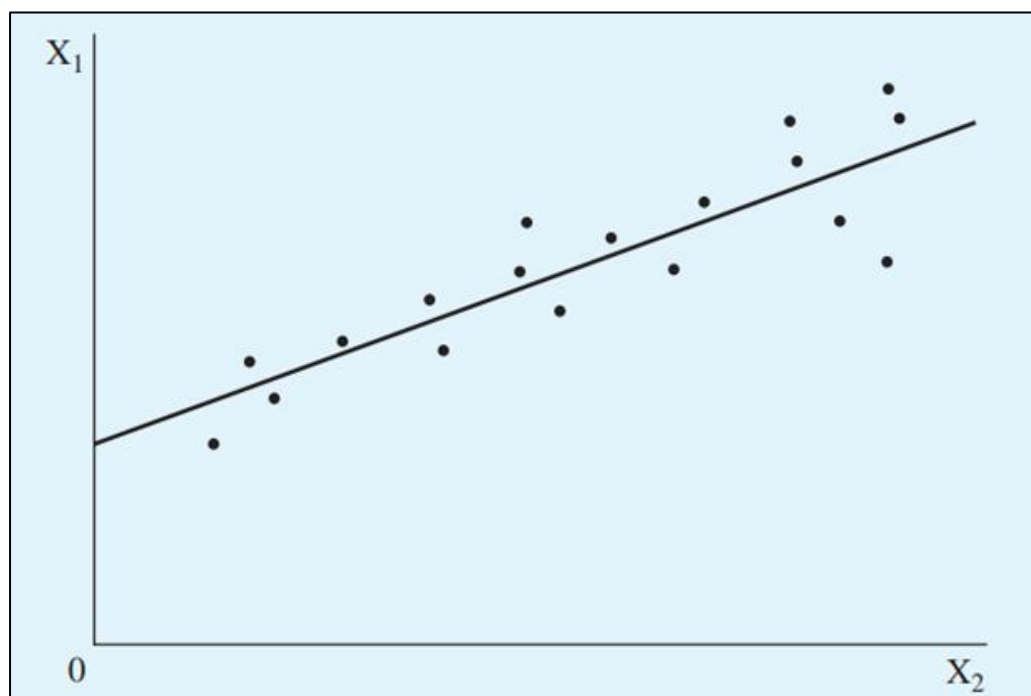
Besides that, it will cause the regression model to take the sampling over a limited range of the values, model specification wrongly, constraints on the model, and an over-determined model. Furthermore, the consequences happened in multicollinearity are the standard error and variance of estimates will increase and effect on reduction in the t-scores and the estimates will become very sensitive to change in specification. The most common function to identify multicollinearity is using the Variance Inflation Factors (VIF) test.

Figure 3.6: Perfect Multicollinearity



Sources: Studenmund (2020), pp. 223.

Figure 3.7: Imperfect Multicollinearity



Sources: Studenmund (2020), pp. 225.

3.9.8 Factor Analysis

The intention of using factor analysis is one of the multivariate statistical techniques to summarize patterns of correlations among observed variables (Hair et al., 2014). It can be an advantageous tool while studying complex sets of data which involve psychological studies, socioeconomic status, and other involved concepts. According to Shrestha (2021), this technique also helps the researcher determine which variables in the set form logical subsets that are relatively independent. Additionally, it would reduce the large amount number of related variables to become a manageable number. This action also helps the researcher more easily manage those independent variables in their data by providing a meaningful and clear understanding of each variable which enabled them to have a beneficial while developing a questionnaire. Besides that, it could use the result of factor analysis to apply to other analyses (multiple regression or multivariate analysis of variance) to identify the research objective and provide a more solid result to prove the findings.

There are two types of factor analysis which are exploratory factor analysis and confirmatory factor analysis. The exploratory factor analysis helps the researcher to develop the structure of data, and it is often used in the early stage of gathering information about (to explore) the interrelationships among a set of variables. Besides that, the confirmatory factor analysis is more often been using on later in the research process to test or confirm the research studies' specific hypotheses or theories concerning the structure underlying a set of variables. This is because,

in the late stage of gathering information, the researcher already has a specific idea about the structure of data on the studies.

According to Hair et al. (2014) guideline, there are four steps required to be fulfilled before running the factor analysis, the steps will be going to specific each of them in **Table 3.8** below.

Table 3.8: Steps on Requirements for the Factor Analysis

Steps	Description
1	The research study data must fulfil the minimum sample size of 100 cases. Then it also needs to satisfy the minimum requirement of a 5:1 ratio of subjects to item.
2	Extract components which have an Eigenvalue above 1.0 (Kaiser's Criterion) in the total variance.
3	Kaiser-Meyer-Olkin (KMO) Test (Kaiser, 1974) is checking for Sampling Adequacy. Regarding the rules of the KMO minimum value should be 0.6 and above and between 0.7 to 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb.
4	Factor loading is above 0.6. This means that the sampling is adequate.

Sources: Hair et al. (2014)

3.9.9 Multivariate Analysis of Variance (MANOVA)

According to Hair et al. (2014), the Multivariate Analysis of Variance (MANOVA) is an extension of the concept of Analysis of Variance (ANOVA) by considering situations where there are one or more nonmetric independent variables on two or more metric dependent variables. To have a better understanding of each of their usage and benefits for the research study, we could understand that the ANOVA allows us to assess the impact of one or more factors on a single dependent variable at a time. For the MANOVA, we could simultaneously explore the effects on two or more dependent variables. Our research studies will consist of multiple independent variables towards the mediator variable and dependent variable. So, we have to use the MANOVA method to run the testing to have a clearer image of their relationship and whether meets the significant level and relationship.

According to the guidelines from Hair et al. (2014) to have a better understanding and support of the MANOVA. We should also run some additional testing which are Box's Test of Equality of Covariance Matrices, Tests of Between-Subjects Effects and Tests of Pairwise Comparisons. The testing of Box's Test of Equality of Covariance Matrices also known as Box's M test is to compare variation in multivariate samples which allows us to understand those covariance matrices whether are equal (homogeneous).

H_O : The observed covariance matrices of the dependent variables are equal across groups.

H_A : The observed covariance matrices of the dependent variables are not equal across groups

For the testing of Between-Subjects Effects is to find out each of the variables between-subjects factor in the design. Finally, the tests of pairwise comparison are to provide the result for us to understand those ranking or choosing from a group of alternatives by comparing them against each other in pairs from this process.

3.10 Conclusion

This chapter, it is done explaining the model and method to identify our independent variables, mediator variable and moderator variable as those models had been mentioned in the last chapter. Furthermore, it also further discussed the conceptual model specification, research design, sample size, sampling method, measurement tool, pilot study and research method. For the next chapter 4, it will be going to discuss the data analysis and results.

CHAPTER IV

DISCUSSION OF FINDINGS

4.1 Introduction

In this chapter, we will discuss and explain firstly the preliminary data analysis of descriptive analysis, frequency analysis, correlation analysis, Levene test & independence sample t-test, and reliability analysis. Secondly, the main data analysis of multiple regression analysis, residual analysis, factor analysis, and MANOVA are included. All the data analysis will be conducted with two separate regions that target data collected which are Kepong and Pulau Pangkor to have a more accurate and better understanding of developing a model to facilitate the implementation of waste incinerators.

Based on the specific objective (1) mentioned that to identify the factors affecting towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia. It is fulfilled for the objective by using the descriptive and frequency analysis of the study.

4.2 Descriptive Analysis

This part of the descriptive analysis has two types of analysis to describe the data within the two regions (Kepong and Pulau Pangkor) constructively. Therefore, we will have a descriptive analysis of demographic profiles and factors affecting the intention to accept sitting of waste incinerators in Kepong and Pulau Pangkor, which kindly refer the **Tables 4.1, 4.2, 4.3** and **4.4** below.

Table 4.1: Descriptive Analysis of Demographic Profile on Kepong

	PA	Gender	Age	HouseSize	Below16	Education	Income
Mean	4.68	1.49	3.23	1.19	1.65	2.30	1.98
Median	5.00	1.00	3.00	1.00	2.00	2.00	2.00
Mode	5.00	1.00	2.00	1.00	2.00	2.00	2.00
Range	6.00	1.00	5.00	1.00	1.00	4.00	3.00
Maximum	1.00	2.00	6.00	2.00	2.00	5.00	4.00
Minimum	7.00	1.00	1.00	1.00	1.00	1.00	1.00
Std Deviation	1.15	0.50	1.46	0.39	0.48	0.82	0.72
Variance	1.32	0.25	2.13	0.15	0.23	0.67	0.53
Skewness	-0.82	0.05	0.21	1.62	-0.62	0.72	0.25
Kurtosis	0.42	-0.20	-1.03	0.62	-1.63	0.60	-0.46
N	300.00	300.00	300.00	300.00	300.00	300.00	300.00

Source: Own findings

Table 4.2: Descriptive Analysis of Demographic Profile on Pulau Pangkor

	PA	Gender	Age	HouseSize	Below16	Education	Income
Mean	4.94	1.48	2.85	1.32	1.52	1.83	1.56
Median	5.00	1.00	3.00	1.00	2.00	2.00	2.00
Mode	5.00	1.00	2.00	1.00	2.00	2.00	2.00
Range	6.00	1.00	5.00	1.00	1.00	3.00	2.00
Maximum	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Minimum	7.00	2.00	6.00	2.00	2.00	4.00	3.00
Std Deviation	0.70	0.50	1.46	0.47	0.50	0.55	0.56
Variance	0.49	0.25	2.13	0.22	0.25	0.30	0.31
Skewness	-1.41	0.07	0.48	0.80	-0.09	0.16	0.32
Kurtosis	6.96	-2.02	-0.65	-1.38	-2.02	1.22	-0.88
N	155.00	155.00	155.00	155.00	155.00	155.00	155.00

Source: Own findings

The results generated from the SPSS, refer to **Table 4.1** and **Table 4.2** above. Table 4.1 result shows that descriptive analysis of the demographics of Kepong. The total respondents of Kepong are 300 respondents with mean of the variables [PA, Gender, Age, House Size, the number of children below the age of 16, Education Level and Income] with the standard deviation are 4.68 (± 1.15), 1.49 (± 0.50), 3.23 (± 1.46), 1.19 (± 0.40), 1.65 (± 0.48), 2.30 (± 0.82) and 1.98 (± 0.72). Besides that, the highest difference between the maximum and minimum is the variable of PA which is between 1 and 7 with a range of 8. Based on the result of the Skewness and Kurtosis values, the data is not symmetrical and not normally distributed.

Moreover, PA is a moderator of the study and later will be tested whether it is a moderating effect to facilitate the implementation of waste incinerators for both the two regions of Kepong and Pulau Pangkor.

After that, the total respondents of Pulau Pangkor are 300 respondents, and its result for the mean on the variables with the standard deviation for Pulau Pangkor is 4.94 (± 0.70), 1.48 (± 0.50), 2.85 (± 1.46), 1.32 (± 0.47), 1.52 (± 0.50), 1.83 (± 0.55) and 1.56 (± 0.56), refer to **Table 4.2** above. Furthermore, the highest difference between the maximum and minimum is the variable of PA which is between 1 and 7 with a range of 6. Based on the result of the Skewness and Kurtosis values, the data is not symmetrical and not normally distributed.

Table 4.3 Descriptive Analysis of Developing a Model to Facilitate the Implementation of Waste Incinerators on Kepong

	IASWI	ATT	RP	Tr	PJ	DJ	SN	PBC
Mean	4.07	4.55	4.44	4.27	3.99	3.99	4.13	3.97
Median	4.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00
Mode	4.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00
Range	5.00	6.00	5.00	4.00	6.00	6.00	4.00	4.00
Maximum	7.00	7.00	7.00	7.00	7.00	7.00	7.00	6.00
Minimum	2.00	1.00	2.00	3.00	1.00	1.00	3.00	2.00
Std Deviation	0.88	1.05	0.99	0.76	1.04	1.19	0.75	0.76
Variance	0.78	1.11	0.98	0.58	1.08	1.41	0.56	0.57
Skewness	-0.02	-0.69	-0.76	1.50	-0.15	0.11	0.79	0.10
Kurtosis	0.27	0.34	0.32	3.97	0.87	-0.23	1.35	0.37
N	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00

Source: Own findings

Table 4.4 Descriptive Analysis of Developing a Model to Facilitate the Implementation of Waste Incinerators on Pulau Pangkor

	IASWI	ATT	RP	Tr	PJ	DJ	SN	PBC
Mean	4.22	4.99	4.75	4.20	4.00	4.03	4.06	3.92
Median	4.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00
Mode	5.00	6.00	6.00	4.00	6.00	6.00	4.00	3.00
Range	2.00	1.00	1.00	3.00	1.00	1.00	3.00	2.00
Maximum	7.00	7.00	7.00	7.00	7.00	7.00	7.00	5.00
Minimum	2.00	1.00	1.00	3.00	1.00	1.00	3.00	2.00
Std Deviation	0.58	0.77	0.63	0.61	0.47	0.65	0.53	0.49
Variance	0.34	0.59	0.39	0.37	0.22	0.42	0.28	0.24
Skewness	0.52	-1.29	-2.00	1.28	0.00	0.26	1.16	-0.52
Kurtosis	3.59	5.39	9.37	4.79	21.60	5.75	6.54	2.27
N	155.00	155.00	155.00	155.00	155.00	155.00	155.00	155.00

Source: Own findings

Besides that, we had also generated a descriptive analysis on Kepong and Pulau Pangkor with our variables which included our dependent variable, mediator variable, moderator variable and independent variables via SPSS, refer to **Table 4.3** and **Table 4.4** above.

Based on the result on **Table 4.3** showed that descriptive analysis of the variables of Kepong with mean of the variables (IASWI, ATT, RP, Tr, PJ, DJ, SN and PBC] with the standard deviation are 4.07 (± 0.88), 4.55 (± 1.05), 4.44 (± 0.99), 4.27 (± 0.76), 3.99 (± 1.04), 3.99 (± 1.19), 4.13 (± 0.75) and 3.97 (± 0.76). Moreover, we found that the highest difference between the maximum and minimum are the variables of ATT, PJ and DJ which are between 1 and 7 with a range of 6. Comes to the skewness analysis, its' values showed that -0.02, -0.69, -0.76, 1.50, 0.11, 0.79 and 0.10, and only 3 variables (IASWI, DJ and PBC) are within the rage of -0.5 and 0.5. Thus, the data is not symmetrical. For the kurtosis values are 0.27, 0.34, 0.32, 3.97, 0.87, -

0.23, 1.35 and 0.37 which are less than 3. Therefore, the data can be assumed to be platykurtic and short-tailed distribution.

For the **Table 4.4** is referring to the descriptive analysis of the variables of Pulau Pangkor, and its mean of the variables with the standard deviation are 4.22 (± 0.58), 4.99 (± 0.77), 4.75 (± 0.63), 4.20 (± 0.61), 4.00 (± 0.47), 4.03 (± 0.65), 4.06 (± 0.53) and 3.92 (± 0.49). According to the result above also showed that the highest difference between the maximum and minimum are the variables of ATT, RP, PJ, and DJ which are between 1 and 7 with a range of 6. Based on the result of the Skewness and Kurtosis values, the data is not symmetrical and not normally distributed.

4.3 Frequency Analysis

This part of the frequency analysis will be going to introduce two types of analysis to describe the variables that we were focusing on in these studies. It also will be covering the two regions (Kepong and Pulau Pangkor) constructively.

Table 4.5: Frequency Analysis on Kepong and Pulau Pangkor

Demographic Variable	Category	Kepong		Pulau Pangkor	
		Frequency	Percentage (%)	Frequency	Percentage (%)
PA	Strongly Disagree	3.0	1.0	1.0	0.6
	Disagree	13.0	4.3	0.0	0.0
	Slightly Disagree	30.0	10.0	4.0	2.6
	Neutral	60.0	20.0	20.0	12.9
	Slightly Agree	121.0	40.3	109.0	70.3
	Agree	71.0	24.7	20.0	12.9
	Strongly Agree	2.0	0.7	1.0	0.6
	Total	300.0	100.0	155.0	100.0
Gender	Male	154.0	51.3	80.0	51.6
	Female	146.0	48.7	75.0	48.4
Total		300.0	100.0	155.0	100.0

Demographic Variable	Category	Kepong		Pulau Pangkor	
		Frequency	Percentage (%)	Frequency	Percentage (%)
Age	15 – 25	34.0	11.3	33.0	21.3
	26 – 35	80.0	26.7	39.0	25.2
	36 – 45	62.0	20.7	33.0	21.3
	46 – 55	50.0	16.7	28.0	18.1
	56 – 65	56.0	18.7	13.0	8.4
	66 – 75	18.0	6.0	9.0	5.8
	Total	300.0	100.0	155.0	100.0
HouseSize	1 – 5	244.0	81.3	106.0	68.4
	6 – 10	56.0	18.7	49.0	31.6
	Total	300.0	100.0	155.0	100.0
Child below the age of 16					
the age of 16	Yes	106.0	35.3	74.0	47.7
	No	194.0	64.7	81.0	52.3
	Total	300.0	100.0	155.0	100.0
Education	Primary	36.0	12.0	38.0	24.5
	Secondary	168.0	56.0	107.0	69.0
	Diploma	69.0	23.0	9.0	5.8
	Degree	24.0	8.0	1.0	6.0
	Master	3.0	1.0	0.0	0.0
	Total	300.0	100.0	155.0	100.0

Demographic Variable	Category	Kepong		Pulau Pangkor	
		Frequency	Percentage (%)	Frequency	Percentage (%)
Income (MYR)	< 2,000	78.0	26.0	73.0	47.1
	2,001 – 5,000	155.0	51.7	77.0	49.7
	5,001 – 10,000	63.0	21.0	5.0	3.2
	10,001 – 20,000	4.0	1.3	0.0	0.0
	Total	300.0	100.0	155.0	0.0

Source: Own findings

This frequency analysis for Kepong and Pulau Pangkor which had been analysed from total respondents of 300 and 155, refer to **Table 4.5** above, respectively. According to the result above, we were able to notice that the move of the respondent had a **slightly agreed** variable of the PA with the total amount of 121 (40.3%) and 109 (70.3%) in the location of Kepong and Pulau Pangkor. The second higher category for PA in Kepong **agreed** which had 71 (24.7%), the third higher in it was **neutral** with 60 (20%). However, the result of Pulau Pangkor PA had two same levels of frequency which were **neutral and agreed** with 20 (12.9%). From this result, we could understand that the place attachment is slightly agreed with most of the residents towards the intention to accept the waste incinerator in their neighbourhood both regions of Kepong and Pulau Pangkor.

Additionally, most of the respondents in the demographic variable of gender for Kepong and Pulau Pangkor were male with the frequency amount of 154 (51.3%) and 80 (51.6%). The female respondents only with a frequency amount of 146 (48.7%) and 75.0 (48.4%) in that location. Based on this study, we understand that most of the gender of males pay more attention to the intention of the sitting of the waste incinerator. Besides that, the frequency amount in the variable of age showed that it had almost the same amount within the area of Kepong and Pulau Pangkor. In the amount of Kepong, the highest to third in the age range of the respondents were 26 – 35 [80.0 (26.7%)], 36 – 45 [62.0 (20.7%)], and 46 – 55 [50.0 (16.7)]. Other than that, the highest amount of age range of the respondents in Pulau Pangkor was 26 – 35 [39.0 (25.2)]; however, the second and third highest respondents had the same amount of frequency which were 15 – 25 and 36 – 45 with 33.0 (21.3%). According to this result, we can understand the residents in Kepong have more awareness of the sitting of a waste incinerator in their neighbourhood in are age range of 26 – 35. Nevertheless, the age range of 26 – 35 for Pulau Pangkor is the group of respondents who noticed the waste incinerator in their neighbourhood.

Furthermore, there are 2 categories for the measurements for the house size demographic profile which are house size range within 1 - 5 and another category will be the range of house size within 6 - 10. According to the result above, we notice that most of the house sizes for those respondents are under the category of 1 – 5. As we can see the respondents in Kepong had the frequency amount with the percentage of 244 (81.3%), and for Pulau Pangkor was having 106 (68.4%). Following this result, we found out that the house size of the family in

Kepong was getting smaller compared to the result of Pulau Pangkor. Thus, we can understand that the younger generation will be getting less at Kepong in the next few years decade.

Furthermore, another category measurement in our demographic profile will be explained on the number of children below the age of 16 at the location of Kepong and Pulau Pangkor. This measurement was targeted to analyse and understand those households having a child who is under the age of 16 to find out their perspective towards the waste incinerator as one of our moderator variables. According to the result above, it showed that the families in Kepong had several 194 with 64.7% having a child not under the age of 16. Comes to the result of households for Pulau Pangkor was having the amount of 81 respondents with 52.3% having a child not under the age of 16. On the other hand, the households that have a child who is under the age of 16 are 106 people 35.3%, in Kepong. Nevertheless, Pulau Pangkor only has 74 (47.7%) households that have a child who is under the age of 16. Therefore, we can understand that most of the young generation now is grown up and able to have their perspective of thinking and independent thought in our study.

Education is one of the important variables that we collected to understand what different education levels of residents' perspectives towards the intention to accept the sitting of the waste incinerator towards their neighbourhood. Based on the result above the highest frequency amount of education levels for Kepong and Pulau Pang were Secondary with the amount 168 (56%) and 107 (69%). Next, the second highest for Kepong was diploma with 69 (23%), but Pulau

Pangkor was primary with 38 (24.5%). We could understand that the residents in Pulau Pangkor have a relatively higher number of ageing residents compared to Kepong. The younger generation who has accessed a better education level had moved out and settled in another state. Thus, the education level will remain high in the level of primary and secondary in Pulau Pangkor.

Last but not least, different levels of income level towards residents also have different perspectives on how their attitude toward the sitting of the waste incinerator. As we refer the **Table 4.5** above, most of the Kepong and Pulau Pangkor residents had an income range of MYR2,001 – MYR5,000 with 155 respondents (51.7%) and 77 respondents (49.7%). The second highest income level in the category of <MYR2,000 for those locations was 78 respondents (26.0%) and 73 respondents (47.1%) of the Kepong and Pulau Pangkor, respectively.

4.4 Correlation Analysis

Based on the specific objective (4) mentioned that **to determine the moderating effect of place attachment towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia**. Therefore, the **Table 4.6** showed that the correlation analysis of demographic profile on Kepong and Pulau Pangkor.

Table 4.6: Correlation Analysis of Demographic Profiles on Kepong and Pulau Pangkor

Variables		Kepong			Pulau Pangkor		
		IASWI	ATT	PA	IASWI	ATT	PA
IASWI	Pearson	1.00	0.171**	0.748**	1.00	0.350**	0.464**
	Correlation						
	Sig (2-tailed)		0.00	0.00		0.00	0.00
	N	300.00	300.00	300.00	155.00	155.00	155.00
ATT	Pearson	0.171***	1.00	0.249**	0.350**	1.00	0.470**
	Correlation						
	Sig (2-tailed)	0.00		0.00	0.00		0.00
	N	300.00	300.00	300.00	155.00	155.00	155.00
PA	Pearson	0.748***	0.249**	1.00	0.464**	0.470**	1.00
	Correlation						
	Sig (2-tailed)	0.00	0.00		0.00	0.00	
	N	300.00	300.00	300.00	155.00	155.00	155.00

Variables		Kepong			Pulau Pangkor		
		IASWI	ATT	PA	IASWI	ATT	PA
Gender	Pearson	0.127**	-0.03	0.06	-0.10	-0.09	-0.06
	Correlation						
	Sig (2-tailed)	0.03	0.56	0.28	0.22	0.25	0.47
	N	300.00	300.00	300.00	155.00	155.00	155.00
Age	Pearson	0.01	0.206**	0.03	0.208**	0.190*	0.14
	Correlation						
	Sig (2-tailed)	0.92	0.00	0.66	0.01	0.02	0.08
	N	300.00	300.00	300.00	155.00	155.00	155.00
HouseSize	Pearson	-0.07	0.02	0.03	-0.04	0.02	0.02
	Correlation						
	Sig (2-tailed)	0.25	0.76	0.61	0.61	0.77	0.78
	N	300.00	300.00	300.00	155.00	155.00	155.00
Below16	Pearson	-0.03	0.10	-	-0.04	-0.03	-0.01
	Correlation			0.115*			
	Sig (2-tailed)	0.63	0.10	0.05	0.63	0.76	0.86
	N	300.00	300.00	300.00	155.00	155.00	155.00
Education	Pearson	0.10*	-	0.02	-0.12	-0.11	-0.13
	Correlation		0.157**				
	Sig (2-tailed)	0.08	0.01	0.72	0.13	0.17	0.10
	N	300.00	300.00	300.00	155.00	155.00	155.00
Income	Pearson	0.128**	-0.141*	-0.03	-0.04	-0.07	-0.172*
	Correlation						
	Sig (2-tailed)	0.03	0.01	0.67	0.61	0.41	0.03
	N	300.00	300.00	300.00	155.00	155.00	155.00

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

Source: Own findings

The result of **Table 4.6** for Kepong showed that the PA has a highly significant level (2-tailed) with α 0.01 level towards the dependent variable (IASWI) and mediator variable (ATT). Furthermore, the demographic variables of Age and Education were also highly significant level (2-tailed) with α 0.01 level towards the mediating variable (ATT), but Age is insignificant, however, Education was significant level (2-tailed) with α 0.10 level towards the dependent variable (IASWI). Additionally, the variable of gender only had a significant level (2-tailed) with α 0.05 level towards the dependent variable (IASWI). Moreover, the income variable had a significant level (2-tailed) with α 0.05 level towards the dependent variable (IASWI) and mediating variable (ATT). Therefore, we can understand that the variables of mediating variable (ATT), moderating variable (PA), Gender, Education and Income significantly influenced the residents to have the intention to accept the sitting waste incinerator in their neighbourhood (IASWI). However, the variables of the moderating variable (PA), the variables of Age, Education, and Income were significantly influenced by the residents' attitude toward the mediating variable (ATT).

On the other hand, the result of correlation analysis showed that there were only 2 items having significance towards our research of dependent variable (IASWI) and mediating variable (ATT) which were our moderating variable (PA), and Age for study location of Pulau Pangkor. The PA variable had a significant level (2-tailed) with α 0.05 level towards the dependent variable (IASWI) and mediator variable (ATT) as mentioned previously. Moreover, the variable of Age also has a significant level (2-tailed) with α 0.05 level towards the dependent variable (IASWI) in the Kepong study. However, the result of Age for Pulau Pangkor only consists of a low significant level (2-tailed) with α 0.10 level towards the dependent variable (IASWI). According to this result, it can also be understood that the different ranges of Age and different levels of PA influence the intention of sitting in the waste incinerator. Thus, this study of demographic profile is possible to play a part in the study of how important general information of the residents can be in influencing the determination of the sitting of the waste incinerator in their neighbourhood vicinity.

Significantly, Correlation analysis of the demographic profile toward the IASWI as a dependent variable, ATT as a mediator variable, and PA as a moderator variable refer to **Table 4.6** above. There is a **moderating effect of place attachment towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia.**

Table 4.7: Correlation Analysis of Variables on Kepong and Pulau Pangkor

Variables		Kepong		Pulau Pangkor	
		IASWI	ATT	IASWI	ATT
IASWI	Pearson	1	0.171**	1	0.350**
	Correlation				
	Sig (2-tailed)				
	N				
ATT	Pearson	0.171**	1	0.350**	1
	Correlation				
	Sig (2-tailed)				
	N				
RP	Pearson	0.746**	0.161**	0.431**	0.306**
	Correlation				
	Sig (2-tailed)				
	N				
Tr	Pearson	0.180**	0.008	0.297**	0.058
	Correlation				
	Sig (2-tailed)				
	N				
PJ	Pearson	0.731**	-0.003	0.450**	0.216**
	Correlation				
	Sig (2-tailed)				
	N				
DJ	Pearson	0.610**	0.027	0.427**	0.222**
	Correlation				
	Sig (2-tailed)				
	N				

Variables		Kepong		Pulau Pangkor	
		IASWI	ATT	IASWI	ATT
SN	Pearson	0.516**	-0.061	0.360**	0.114
	Correlation				
	Sig (2-tailed)	0.000	0.289	0.000	0.160
	N	300	300	155	155
PBC	Pearson	0.633**	0.040	0.264**	0.050
	Correlation				
	Sig (2-tailed)	0.000	0.491	0.001	0.534
	N	300	300	155	155

****.** Correlation is significant at the 0.01 level (2-tailed).

***.** Correlation is significant at the 0.05 level (2-tailed).

Source: Own findings

Moreover, in this analysis of correlation in this study. We also ran a correlation analysis for our independent variables towards the dependent variable (IASWI) and mediating variable (ATT) to understand how important the relationship or connection is within both variables. According to the result above, **Table 4.7**, the independent variables of RP, Tr, PJ, DJ, SN, PBC and mediating variable (ATT) were highly significant level (2-tailed) with α 0.01 towards the dependent variable (IASWI) for both locations of Kepong and Pulau Pangkor. However, it had significantly shown that there is a high mutual relationship between the RP and mediating variable (ATT) significant level (2-tailed) with α 0.01 towards in Kepong.

Moreover, there are significant relationships among RP, PJ, DJ, and mediating variable (ATT) significant level (2-tailed) with α 0.01 towards Pulau Pangkor. Therefore, our independent variables are important to include in our study to understand how those variables can influence and affect residents' behaviour toward the waste incinerator in their neighbourhood. Thus, the residents will be more concerned with the procedural introduced by the higher management of the facilities.

Based on the correlation analysis, only income and place attachment showed statistically significant relationships in both study regions (Kepong and Pulau Pangkor). Therefore, these two variables were selected for further analysis using MANOVA to examine whether there are significant multivariate differences between the regions. The purpose of conducting MANOVA is to determine whether the combined effect of income and place attachment differs significantly between Kepong and Pulau Pangkor.

4.5 Levene Test and Independent Sample T-Test

Table 4.8: Levene's Test for Equality of Variances on Kepong

	Place Attachment	N	Mean	Std. Deviation	Std. Error Mean
IASWI	Slightly Disagree	30.00	3.23	0.50	0.09
	Agree	71.00	4.73	0.48	0.06
ATT	Slightly Disagree	30.00	4.03	1.19	0.22
	Agree	71.00	4.63	0.97	0.12

		Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff	Std. Error Diff	95% Interval of the	
									Lower	Upper
IASWI	Equal variances assumed	0.00	0.95	-14.20	99.00	0.00	-1.50	0.11	-1.71	-1.29
	Equal variances not assumed			-13.88	52.00	0.00	-1.50	0.11	-1.72	-1.28
ATT	Equal variances assumed	1.02	0.32	-2.65	99.00	0.01	-0.60	0.23	-1.05	-0.15
	Equal variances not assumed			-2.44	46.27	0.02	-0.60	0.25	-1.10	-0.11

Source: Own findings

H_O: Groups or Samples population variances are equal.

H_A: Groups or Samples population variances are not equal.

Based on **Table 4.8** above, we analysed 2 different sets of groups which were our dependent variable (IASWI) and mediator variable (ATT) with our variable PA. The reason choosing for PA has been significantly shown that it is an important variable that influences people's perspective and behaviour towards the sitting of the waste incinerator in their neighbourhood.

Based on the result of the table above, it showed that the mean value of slightly disagreed on the IASWI and ATT were 3.23 and 4.03 with a standard deviation of ± 0.50 and ± 1.19 with the sample size was 30. Besides that, the mean with standard deviation for the agreed on both dependent and mediator variables were 4.73 (± 0.48) and 4.63 (± 0.97), and its sample size was 2. Furthermore, the Levene test significant values of both variables were showing that it was 0.95 and 0.32 were greater than $\alpha 0.05$. Therefore, both do not reject H_0 , and the data showed that the groups or sample population variances are equal.

H_0 : There are no significant different between slightly disagree and agree on the groups of intention to accept sitting of the waste incinerator at Kepong in Malaysia.

H_A : There are significant different between slightly disagree and agree on the groups of intention to accept sitting of the waste incinerator at Kepong in Malaysia.

Additionally, according to result from the **Table 4.8** above, the IASWI showed the equal variance assumed t statistic = -14.20 with sig-p value = $0.00 < \alpha 0.05$ level; the equal variance assumed t statistic for ATT = -2.65 with sig-p value = $0.01 < \alpha 0.05$ level. Both were less than $\alpha 0.05$ level, thus both reject H_0 . Therefore, there are significant differences between slightly disagree and agree on the groups of intention to accept sitting of the waste incinerator at Kepong in Malaysia. The 95% confidence interval (CI) for mean differences for both groups of IASWISI and ATT were [-1.71, -1.29] and [-1.05, -0.15] which does not contain 0 and the p-value of the test is less than 0.05, Therefore, 95% confident the different of IASWISI was between -1.71 and -1.29, and ATT was between -1.05 and -0.15.

Table 4.9: Levene's Test for Equality of Variances on Pulau Pangkor

Place Attachment		N	Mean	Std. Deviation	Std. Error Mean
IASWI	Slightly Disagree	4.00	3.50	0.58	0.29
	Agree	109.00	4.29	0.50	0.05
ATT	Slightly Disagree	4.00	3.25	0.50	0.25
	Agree	109.00	5.19	0.54	0.05

		Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff	Std. Error Diff	95% Interval of the	
IASWI	Equal variances assumed	0.28	0.60	-3.13	111.00	0.00	-0.79	0.25	-1.30	-0.29
	Equal variances not assumed			-2.71	3.17	0.07	-0.79	0.29	-1.70	0.11
ATT	Equal variances assumed	0.01	0.93	-7.14	111.00	0.00	-1.94	0.27	-2.48	-1.40
	Equal variances not assumed			-7.61	3.26	0.00	-1.94	0.26	-2.72	-1.17

Source: Own findings

H_O: Groups or Samples population variances are equal.

H_A: Groups or Samples population variances are not equal.

Additionally, the mean values for slightly disagreed on the IASWI and ATT were 3.50 and 3.25 with a standard deviation of ± 0.58 and ± 0.50 with the sample size was 4, referring to **Table 4.9** above. Moreover, the mean with standard deviation for the slightly agreed on both dependent and mediator variables were 4.29 (± 0.50) and 5.19 (± 0.54), and its sample size was 109. Furthermore, the Levene test significant values of both variables showed that it was 0.60 and 0.93 were greater than 0.05. Therefore, both should not reject H_O, and the data showed that the groups or sample population variances are equal.

H_O: There are no significant different between slightly disagree and agree on the groups of intention to accept sitting of the waste incinerator at Pulau Pangkor in Malaysia.

H_A: There are significant different between slightly disagree and agree on the groups of intention to accept sitting of the waste incinerator at Pulau Pangkor in Malaysia.

The IASWI and ATT also showed equal variance assumed t statistic with sig-p value = -3.13 (0.00) and -7.14 (0.00) which were $< \alpha$ 0.05 level. So, both of them should reject H_O. Therefore, there are significant differences between slightly disagree and agree on the groups of intention to accept sitting of the waste incinerator at Pulau Pangkor in Malaysia.

Lastly, the 95% confidence interval (CI) for mean differences for both groups of IASWISI and ATT were [-1.30, -0.29] and [-2.48, -1.40] which does not contain 0 and the p-value of the test is less than 0.05, Therefore, 95% confident the different of IASWISI was between -1.30 and -0.29. Besides that, the 95% confident the difference between ATT was between -2.48 and -1.40. Pairwise comparisons across response categories were performed for each alternative (e.g., “Strongly Disagree”–“Disagree” and “Strongly Disagree”–“Neutral”) in both Kepong and Pulau Pangkor. Levene’s test indicated no violation of the homogeneity of variance assumption. Consequently, to enhance clarity of presentation, only the results for the “Slightly Disagree” and “Agree” categories were reported in the present study.

4.6 Reliability Analysis

Table 4.10: Reliability Analysis for Kepong and Pulau Pangkor

Location	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Kepong	0.828	0.833	8
Pulau Pangkor	0.750	0.766	8

Source: Own findings

Based on the result of the reliability analysis above, refer to **Table 4.10** and **4.11**, as we noticed that the Cronbach's Alpha for Kepong and Pulau Pangkor = 0.828, 0.750. According to back to Chapter 3 previously, the rule of the dump of the reliability analysis. Cronbach's alpha when it's within the range of $0.8 > \alpha \geq 0.7$ is an acceptable level good reliability. Therefore, the data for Kepong was shown as a good level of reliability, and the data for Pulau Pangkor was shown as good reliability. Hence, both of these results had shown significant data consistency that is suitable for factor analysis of this research study.

Table 4.11: Reliability Analysis for Kepong and Pulau Pangkor

Region	Variables	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Kepong	IASWI	29.34	18.860	0.784	0.778
	ATT	28.86	23.862	0.068	0.875
	RP	28.97	18.437	0.736	0.781
	Tr	29.14	23.646	0.192	0.847
	PJ	29.41	17.487	0.814	0.767
	DJ	29.41	17.474	0.684	0.788
	SN	29.28	20.689	0.647	0.800
	PBC	29.44	20.575	0.656	0.798
Pulau Pangkor	IASWI	6.180	0.614	0.393	0.792
	ATT	6.543	0.298	0.167	0.763
	RP	6.129	0.573	0.484	0.799
	Tr	7.188	0.230	0.289	0.763
	PJ	6.629	0.601	0.504	0.703
	DJ	6.270	0.497	0.346	0.714
	SN	6.719	0.481	0.346	0.719
	PBC	7.024	0.400	0.225	0.733

Source: Own findings

4.7 Multiple Regression Analysis

Based on the specific objective (3) showed that **to estimate the mediating effect of attitude of the residence towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia.**

Therefore, in this multiple regression analysis, we ran a total of 4 differences in the regression model to understand the importance of all the variables which included of dependent variable (IASWI), mediator variable (ATT), and independent variables. So, the regression model will be going to include of IASWI model and ATT model of Kepong and Pulau Pangkor, and they will be going to show below.

4.7.1 Multiple Regression Equation for IASWI

Kepong

$$\text{IASWI}_i = 3.416 + 0.144\text{ATT}_i \quad (4.1)$$

[2.994***]

$$R^2 = 0.293; \text{ Adjusted } R^2 = 0.264$$

*Note: *, **, ***: Statistically significant at the 0.10, 0.05 and 0.01 level respectively*

According to Equation (4.1) above, it was an IASWI regression model for the mediator variable towards the dependent variable in Kepong. The explanatory variable accounted for about 26.4% of the variation in the regression model for the IASWI model. Besides that, the mediator variable (ATT) was the important explanatory variable with a sig-p value $0.000 < \alpha 0.01$. When there is a 1 unit

increase in the ATT, on average, it will have a positive effect on the increase in the IASWI by 0.144 units with statistical significance at the 0.01 level. Therefore, it is significantly mediating effect of attitude of the residence of Kepong towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia.

Pulau Pangkor

$$\text{IASWI}_i = 2.890 + 0.266\text{ATT}_i \quad (4.2)$$

$$[4.626^{***}]$$

$$R^2 = 0.123 \text{ Adjusted } R^2 = 0.117$$

*Note: *, **, ***: Statistically significant at the 0.10, 0.05 and 0.01 level respectively*

Besides that, Equation (4.2) above also showed the IASWI regression model for the mediator variable towards the dependent variable in Pulau Pangkor. It showed that the ATT accounted for about 11.7% can be explained in the IASWI model. Furthermore, the ATT variable also had a highly significant level towards the dependent variable with sig-p value $0.000 < \alpha 0.01$. Therefore, when there is a 1 unit increase in the ATT, on average, it will have a positive effect on the increase in the IASWI by 0.266 units with statistical significance at the 0.01 level. Therefore, it is significantly mediating effect of attitude of the residence of Pulau Pangkor towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia.

Conclude that both Equation (4.1) & Equation (4.2) above, we can understand that ATT is an important mediator variable that influences the dependent

variable. Hence, the data can support our alternative hypothesis of HA₇. Furthermore, the variable of attitude also has the same justification as He et al. (2021), which presents as the variable is highly important towards the dependent variable. Therefore, the attitude of the residents' opposition/support had a positive significant relationship towards the intention to accept sitting of the waste incinerator within their neighbourhood vicinity.

R-squared (R^2) is a model that consists of the coefficient of determination. It is a famous statistical measure representing the proportion of the variance in the dependent variable that is predictable from the independent variable(s) in a regression model (Hair et al., 2014). According to Hair et al. (2014), the optimum acceptance level for R^2 is between 0.6 and 0.7. There are many ways to increase the level of the R^2 , however, we already ensured there is no multicollinearity and no outliers and increased the sample size to 455. The main reason for R^2 being low in the equation model of 4.1 (Kepong) and 4.2 (Pulau Pangkor) is that this study focused on the relationship between the mediator variable and dependent variable, which only consists of 1 factor towards the dependent variable. Therefore, both R^2 in these 2 equation models were reasonable on the low level.

According to the specific objective (2) mentioned that **to analysis the relationship among risk perception, trust, procedural justice, distributional justice, Subjective Norms and perceived behaviour control with attitude of the residence towards the intention to accept sitting of the waste incinerator within their neighbourhood's vicinities in Malaysia**, showed in 4.6.2 below.

4.7.2 Multiple Regression Equation for ATT

Kepong

$$ATT_i = 3.981 + 0.366RP_i + 0.052Tr_i - 0.266PJ_i + 0.62DJ_i - 0.135SN_i + \quad (4.3)$$

$$[3.892^{***}] [0.566^{ns}] [-2.141^{**}] [0.762^{ns}] [-1.040^{ns}]$$

$$0.025PBC_i$$

$$[0.235^{ns}]$$

$$R^2 = 0.652; \text{ Adjusted } R^2 = 0.461$$

*Note: *, **, ***: Statistically significant at the 0.10, 0.05 and 0.01 level respectively*

Following Equation (4.3) above, the result showed that the explanatory variable accounted for about 46.1% of the variation in the regression model for the ATT model for Kepong. The 2 independent variables were significant towards the mediator variable which were RP (sig-p value is $0.000 < \alpha 0.01$) and PJ (sig-p value is $0.033 < \alpha 0.05$). However, the sig-p values for Tr (0.572), DJ (0.446), SN (0.299) and PBC (0.814) were greater than the $\alpha 0.10$. Hence, they counted as insignificant in the ATT model.

Additionally, the result to able to let us understand that when there is a 1 unit increase in the RP, on average, it will have a positive effect on the increase in the ATT by 0.366 units with statistical significance at the 0.01 level with holding constant with other variables. However, it will have a negative effect on the decrease in the ATT by 0.266 if there is a 1 unit increase in the PJ, holding constant with other variables.

Pulau Pangkor

$$ATT_i = 3.039 + 0.358RP_i + 0.087Tr_i - 0.003PJ_i + 0.167DJ_i - 0.014SN_i \quad (4.4)$$

$$[2.819^{***}] \quad [0.782^{ns}] \quad [-0.016^{ns}] \quad [1.530^{ns}] \quad [-0.100^{ns}]$$

$$0.185PBC_i$$

$$[-1.325^{ns}]$$

$$R^2 = 0.136; \text{ Adjusted } R^2 = 0.117$$

*Note: *, **, ***: Statistically significant at the 0.10, 0.05 and 0.01 level respectively*

Under Equation (4.4) above, the result showed that the explanatory variable accounted for about 11.7% of the variation in the regression model for the ATT model for Pulau Pangkor. There was 1 independent variable significant towards the mediator variable which was RP (sig-p value is $0.000 < \alpha 0.01$). Unfortunately, other independent variables were unable to meet the minimum significant value. The sig-p value for them was Tr (0.436), PJ (0.987), DJ (0.128), SN (-0.100) and PBC (0.178) were greater than the $\alpha 0.10$. Hence, they were considered insignificant in the ATT model. For the RP variable, when there is a 1 unit increase in the RP, on average, it will have a positive effect on the increase in the ATT by 0.358 units with statistical significance at the 0.01 level while holding constant with other variables.

In a nutshell, both Equation (3) & Equation (4) above showed clearly that the RP is a meaningful and critical influence on the IASWI. Therefore, it should be considered for further study or research while studying the waste incinerator. Furthermore, the independent variable of PJ for Kepong is also proven as one of the important variables on the intention the sitting up the waste incinerator in their neighbourhood. On that account, the data can support our alternative hypothesis of HA₁ for Kepong and Pulau Pangkor, so, the RP had a positive significant relationship towards the intention to accept sitting of the waste incinerator within their neighbourhood vicinities.

On another hand, the data from Kepong also allowed to support the alternative hypothesis of HA₃ which had a negative significant relationship towards the intention to accept sitting of the waste incinerator within their neighbourhood vicinities. This also proves that the risk perception is an important factor and variable that will affect the respondents' behaviour for Pulau Pangkor and Kepong, which is the same as the result found by Zeng et al. (2024).

4.7.3 Residual Analysis

In this part of the study, the residual analysis will be focusing whether the result of our study is normally distributed, and multicollinearity based on both hypotheses below.

H₀: Residuals are normally distributed.

H₁: Residuals are not normally distributed.

H₀: Residuals are no multicollinearity.

H₁: Residuals are multicollinearity.

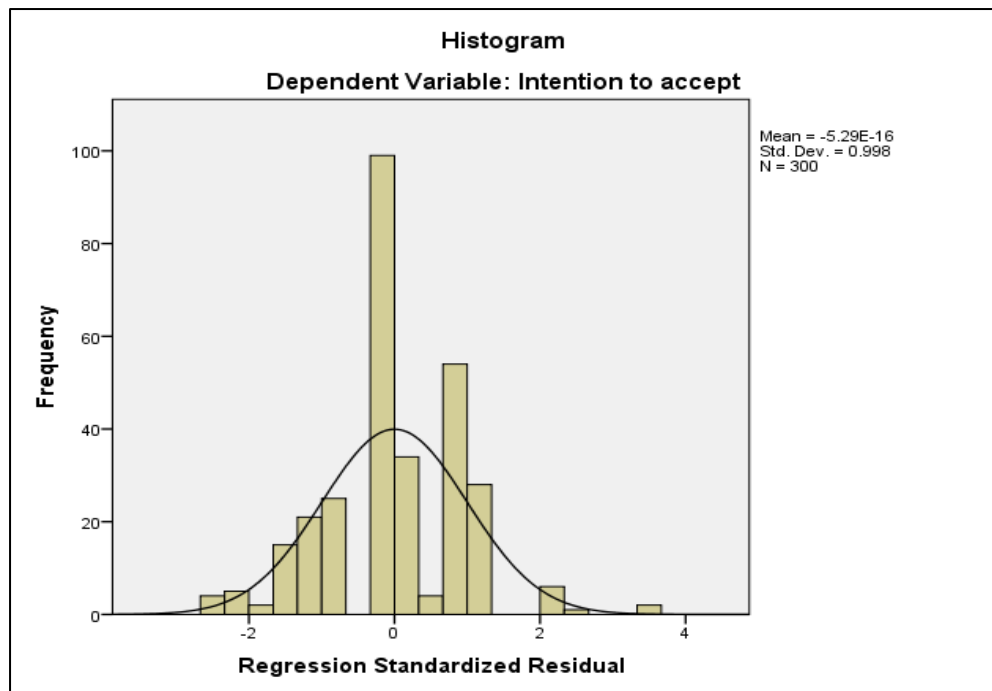
Firstly, refer to **Table 4.12** below, it was normality for residual analysis of multiple Equation (1) and (2) for the previous sub-chapter of 4.6: Multiple Regression Analysis. Based on the graphs, we can notice that it was a normal distribution. Therefore, the Equation (1) and (2) residuals were normally distributed. Hence, both do not reject H₀, and those residuals are normally distributed. Also, both Equations (1) and (2) showed that the ATT's VIF values were 1.000 for Kepong and Pulau Pangkor which were lesser than 5. Therefore, do not reject H₀, and residuals are not multicollinearity. For the better justification by figure on the residuals, kindly refer to the **Figure 4.1** and **Figure 4.2** below.

Table 4.12: VIF levels on variables for Kepong and Pulau Pangkor

List of variables	Kepong	Pulau Pangkor
	VIF Level	VIF Level
ATT	1.000	1.000
RP	2.443	1.808
Tr	1.382	1.311
PJ	4.750	1.971
DJ	2.630	1.420
SN	2.694	1.522
PBC	1.833	1.275

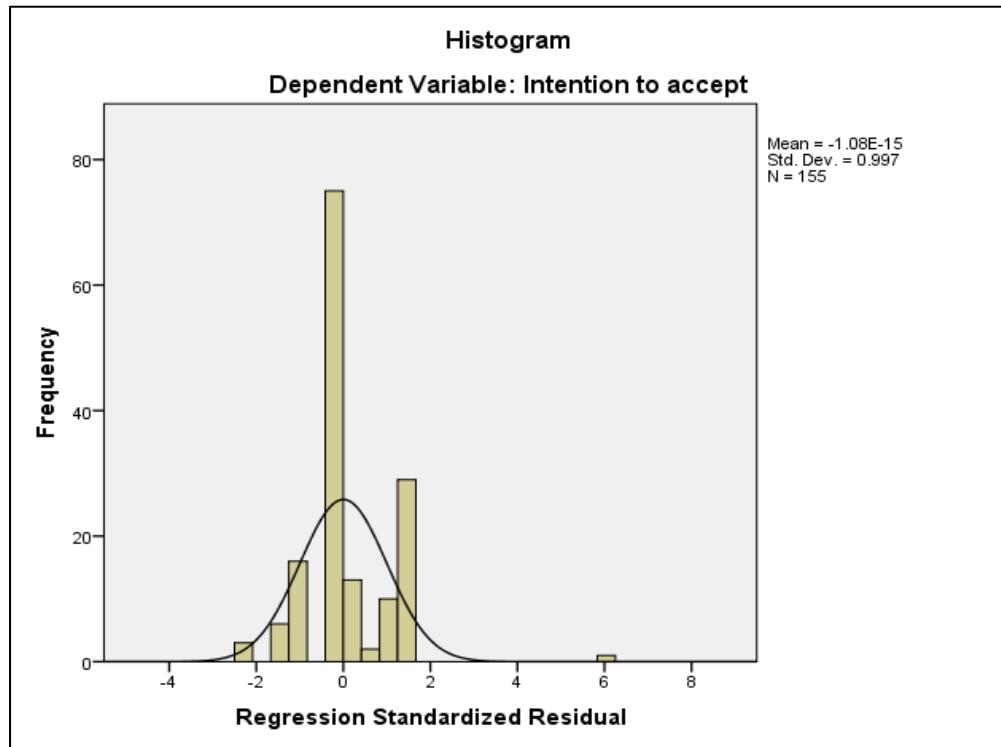
Source: Own findings

Figure 4.1: Normality for Multiple Regression Equation 1



Source: Own findings

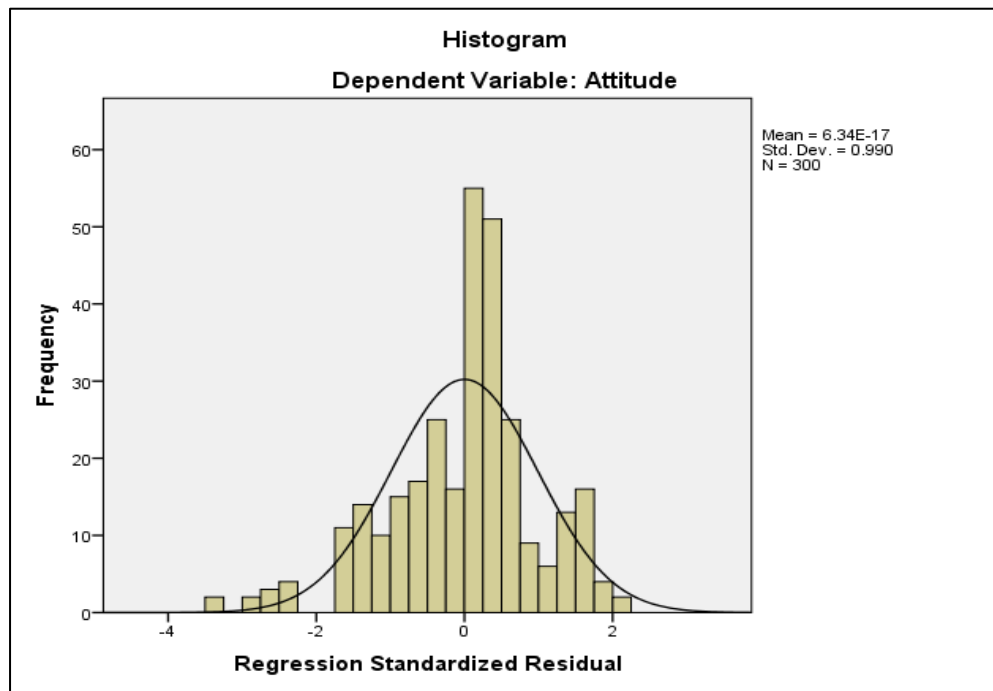
Figure 4.2: Normality for Multiple Regression Equation 2



Source: Own findings

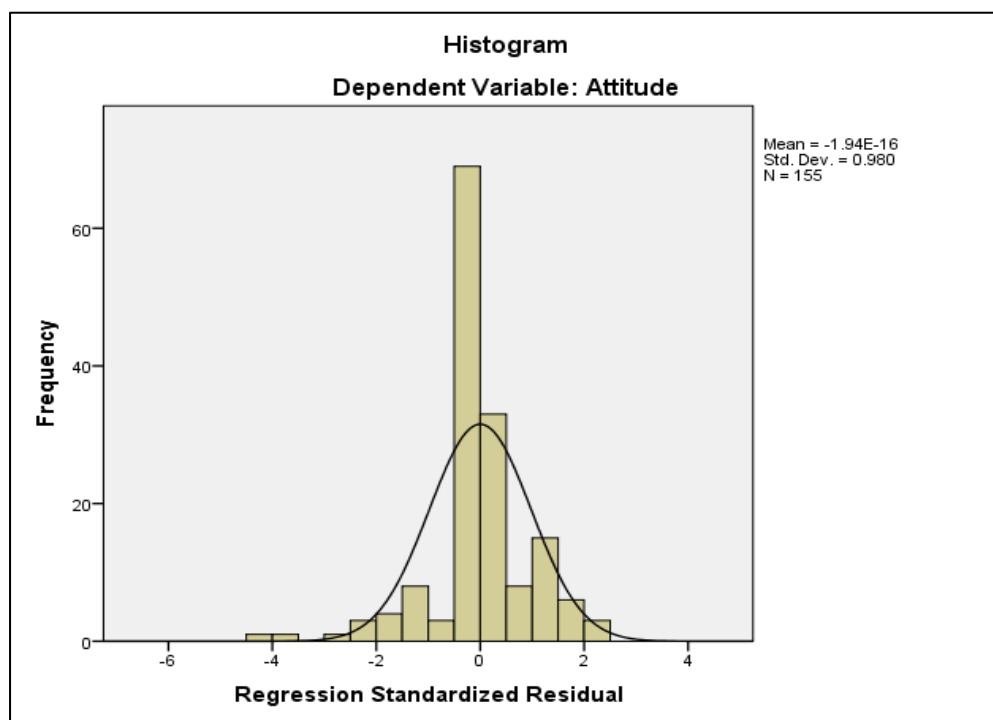
Besides that, the **Table 4.12** above also shown the normality for residual analysis of multiple Equations (3) and (4) shown previously for the ATT model, refer to **Figure 4.3** and **Figure 4.4** below. Following on the result shown, we can notice that both were a normal distribution. Therefore, the Equation (3) and (4) residuals were normally distributed. Hence, both also do not reject H_0 , and those residuals are normally distributed. The VIF value for the variables in Equation (3) was RP (2.443), Tr (1.382), PJ (4.740), DJ (2.630), SN (2.694) and PBC (1.833); in the variables in Equation (4) shown that RP (1.808), Tr (1.311), PJ (1.971), DJ (1.430), SN (1.522) and PBC (1.275). Therefore, both VIF values were less than 5. Hence, do not reject H_0 , and residuals are not multicollinearity.

Figure 4.3: Normality for Multiple Regression Equation 3



Source: Own findings

Figure 4.4: Normality for Multiple Regression Equation 4



Source: Own findings

4.8 Factor Analysis

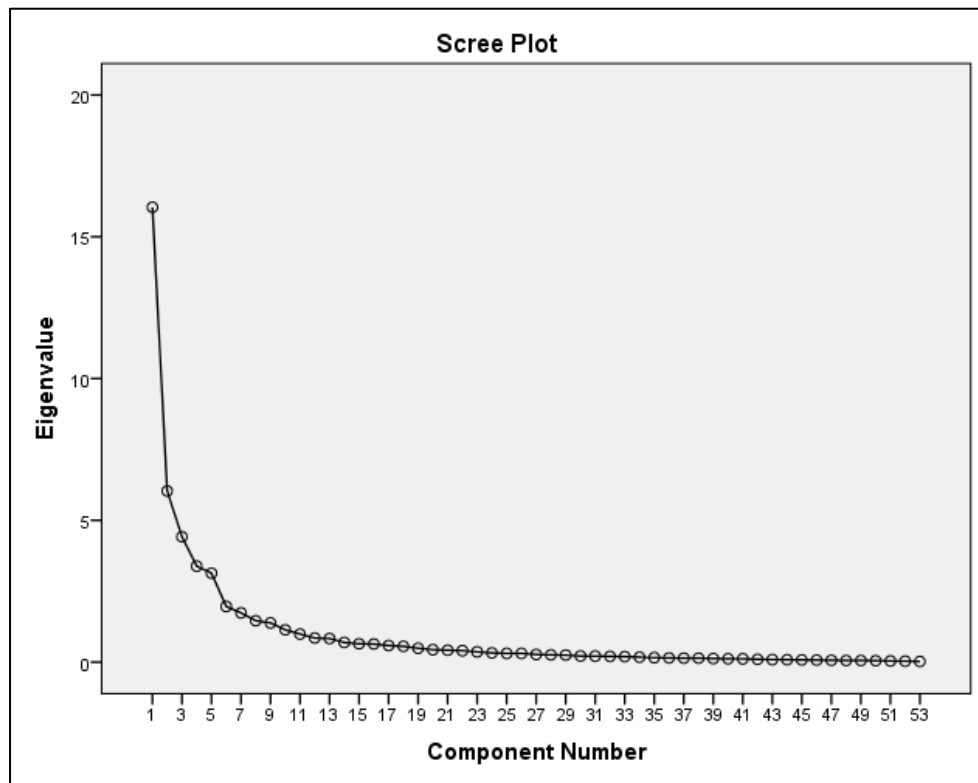
As mentioned in the previous chapter, factor analysis is an important tool that will help the researcher to determine the variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called factors.

4.8.1 Implementation of Waste Incinerators in Kepong

The eigenvalue of a factor represents the amount of the total variance explained by that factor. The principal components analysis revealed the presence of TEN (10) factors with eigenvalues exceeding 1.0 in Kepong. In total explained 76.78% of the variance.

- Factor 1 explained 30.26% of the variance.
- Factor 2 explained 11.38% of the variance.
- Factor 3 explained 8.34% of the variance.
- Factor 4 explained 6.39% of the variance.
- Factor 5 explained 5.92% of the variance.
- Factor 6 explained 3.70% of the variance.
- Factor 7 explained 3.28% of the variance.
- Factor 8 explained 2.75% of the variance.
- Factor 9 explained 2.61% of the variance.
- Factor 10 explained 2.15% of the variance.

Figure 4.5: Scree Plot for Kepong



Source: Own findings

Regarding to **Figure 4.5** above shows the result for the scree plot in Kepong, and it can used to determine the number of initials unrotated factors to be extracted. Besides that, the retain factor with eigenvalue needs to be greater than one among all the fifty-three variables. The result of the scree plot showed that there were ten factors for which the eigenvalue is greater than one and accounts for most of the total variability in data. Other factors account for a tiny proportion of the variability and are considered unimportant.

Table 4.13: KMO and Bartlett's Test for Kepong

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.852
Bartlett's Test of Sphericity	Approx. Chi-Square	16959.794
	df	1378.000
	Sig.	0.000

Source: Own findings

The Kaiser (1974) recommends that the accepting values Kaiser-Meyer-Oklin (KMO) values between 0.7 to 0.8 are good results, values between 0.8 and 0.9 are great results and values above 0.9 are superb results. Based on our study, the KMO values were 0.852 which is between 0.8 and 0.9, refer to **Table 4.13** as above. Thus, our result was acceptable and significant. Besides that, Bartlett's test of Sphericity reached statistical significance with a p-value of less than 0.01 level which supports the factor ability of the correlation matrix.

4.8.2 Structure Matrix for Kepong

The result for the structure matrix of the study in Kepong showed that TEN (10) loaded items of the variance among the 53 in the component 1 (PA3, PA2, PA4, PA1, RP1, RP2, IASWI4, IASWI5, IASWI6 and PBC5). Besides that, it also showed TEN (10) loaded items of the variance among the 53 items in component 2 (SN2, PBC4, DJ1, DJ4, SN1, DJ2, IASWI3, PJ1, DJ3 and PJ2). Furthermore, the component 3 (IASWI7, DJ5, PA5, SN3, PJ3, RP3, PJ4, PA6, PJ5 and RP4) having TEN (10) loaded items among the 53 variables.

For the coming components 4 (Tr5, SN5, Tr4 and Tr6), component 5 (Tr2, Tr1, Tr3 and SN4), component 6 (Tr7, Tr8, Tr9 and SN6) and component 8 (PBC1, IASWI1, PBC3 and RP5) were having a total of FOUR (4) loaded items of the variance among the 53 variables. Additionally, there were FIVE (5) loaded items of the variance among the 53 in component 7 (ATT4, ATT3, ATT1, ATT5 and ATT2).

Last but not least, the last two results from the structure matrix in the location of Kepong showed that ONE (1) loaded item of the variance among the 53 in component 9 (PBC2) and component 10 (IASWI2).

- Component 1 consists of TEN (10) loaded items of the variance in the 53 items.
 - PA3: It would be very hard for me to leave this neighbourhood.
 - PA2: I enjoy the relationships with my neighbours.
 - PA4: This is the ideal neighbourhood for me.
 - PA1: This neighbourhood is part of me.
 - RP1: The operation of waste incinerator will pollute the environment.
 - RP2: I believe that the operation of waste incinerator will create more harm to future generations, including children and grandchildren.
 - IASWI4: I am likely to move out from the neighbourhood if the waste incinerator is operating at the neighbourhood.
 - IASWI5: I would not recommend others to residing at this neighbourhood if the waste incinerator is operating at this neighbourhood.
 - IASWI6: I am likely to move out from the neighbourhood if the waste incinerator is operating at the neighbourhood.
 - PBC5: It is not difficult for me to accept or reject the siting of waste incinerator at my neighbourhood.

- Component 2 consists of TEN (10) loaded items of the variance in the 53 items.
 - SN2: I think my neighbours will approve the siting of waste incinerator at my neighbourhood.
 - PBC4: The decision of accepting or rejecting the siting of waste incinerator is entirely up to me.
 - DJ1: Local residents are receiving financial compensation for allowing the operation of waste incinerator at their neighbourhood.
 - DJ4: The operation of waste incinerator can increase the income of local residents.
 - SN1: I believe my family members will support the decision of allowing the siting of waste incinerator at my neighbourhood.
 - DJ2: The operation of waste incinerator will create employment opportunities.
 - IASWI3: I intend to join anti waste incinerator campaign, such as public protest and petition signing.
 - PJ1: My voice is being heard and considered in the decision process of the siting of waste incinerator.
 - DJ3: Local residents are treated equally in the process of project siting for waste incinerator.
 - PJ2: Local residents have plenty of opportunities to participate in the siting decision process.

- Component 3 consists of TEN (10) loaded items of the variance in the 53 items.
 - IASWI7: I can independently make my decision as to accept or reject the siting of waste incinerator at my neighbourhood.
 - DJ5: It is unfair to local residents for hosting the siting of waste incinerator as they need to bear all consequences.
 - PA5: I do not feel integrated in this neighbourhood after the waste incinerator is built.
 - SN3: I think people who are close to me will support the siting of waste incinerator at my neighbourhood.
 - PJ3: The truth is that everything is already decided without asking the communities.
 - RP3: I am worried for my safety (eg. explosion) if the waste incinerator is operating at my neighbourhood.
 - PJ4: I believe the decision process on the siting of waste incinerator has been fair.
 - PA6: I feel a strong sense of belonging to my residence.
 - PJ5: The local planning authority will make decision that considering residents' interest.
 - RP4: I am concerned on my health (eg. getting sick, respiratory problem and cancer) if the waste incinerator is operating at my neighbourhood.

- Component 4 consists of FOUR (4) loaded items of the variance in the 53 items.
 - Tr5: Information released by the operator on waste incinerator is transparent and comprehensive.
 - SN5: I can rely on information released by waste incinerator operator in making my decision in relation to the siting of waste incinerator.
 - Tr4: Information of waste incinerator released by the operator is trustworthy.
 - Tr6: Information of waste incinerator released by the operator is based on scientific evidence.

- Component 5 consists of FOUR (4) loaded items of the variance in the 53 items.
 - Tr2: Information released by NGOs (such as Kuala Lumpur Tak Nak Insinerator) on waste incinerator is transparent and comprehensive.
 - Tr1: Information of waste incinerator released by NGOs (such as Kuala Lumpur Tak Nak Insinerator) is trustworthy.
 - Tr3: NGOs (such as Kuala Lumpur Tak Nak Insinerator) released information of waste incinerator is based on scientific evidence.
 - SN4: I can rely on information released by NGOs (such as Kuala Lumpur Tak Nak Insinerator) in making my decision in relation to the sitting of waste incinerator.

- Component 6 consists of FOUR (4) loaded items of the variance in the 53 items.
 - Tr7: Information of waste incinerator released by government is trustworthy.
 - Tr8: Information released by government on waste incinerator is transparent and comprehensive.
 - Tr9: Government released information of waste incinerator is based on scientific evidence.
 - SN6: I can rely on information released by government in making my decision in relation to the sitting of waste incinerator.

- Component 7 consists of FIVE (5) loaded items of the variance in the 53 items.
 - ATT4: I want others to think of me as someone who is concerned about environmental issues.
 - ATT3: I make significant changes in my lifestyle for environmental reasons.
 - ATT1: I think of myself as an environmentally friendly person.
 - ATT5: Being environmentally friendly is an important part of me.
 - ATT2: I think of myself as someone who is very concerned with environmental issues.

- Component 8 consists of FOUR (4) loaded items of the variance in the 53 items.
 - PBC1: Participating in opposing events to stop the siting and operation of waste incinerator is wise.
 - IASWI1: I think opposing the siting and operation of waste incinerator is a right thing to do.
 - PBC3: Terminating the construction and operation of waste incinerator will be beneficial to local residents.
 - RP5: The incinerator will not cause any harm to local residents' health.

- Component 9 consists of ONE (1) loaded items of the variance in the 53 items.
 - PBC2: Campaign stopping the siting and operation of waste incinerator should be supported.

- Component 10 consists of ONE (1) loaded items of the variance in the 53 items.
 - IASWI2: No matter what happened, I will against waste incinerator.

Based on the findings we found the extra components have an eigenvalue above 1.0 and combined with KMO was > 0.8 in the total variance from our studies. Besides that, we also found that all the variables' factor loading values were above 0.6. Therefore, the factor analysis of Developing a Model to Facilitate the Implementation of Waste Incinerators in Kepong was able to justify it has adequacy, refer to **Table 4.14** below.

Table 4.14: Summarize for Factor Analysis of Developing a Model to Facilitate the Implementation of Waste Incinerators in Kepong

No.	Variables	IASWI	ATT	PA	RP	Tr	PJ	DJ	SN	PBC
1	Intention to Accept Sitting of Waste Incinerator									
	IASWI1	0.677								
	IASWI2	0.622								
	IASWI3	0.793								
	IASWI4	0.811								
	IASWI5	0.792								
	IASWI6	0.765								
	IASWI7	0.888								
2	Attitude									
	ATT1		0.784							
	ATT2		0.650							
	ATT3		0.794							
	ATT4		0.853							
	ATT5		0.721							
3	Place Attachment									
	PA1			0.866						
	PA2			0.875						
	PA3			0.888						
	PA4			0.867						
	PA5			0.865						
	PA6			0.771						

No.	Variables	IASWI	ATT	PA	RP	Tr	PJ	DJ	SN	PBC
4	Risk Perception									
	RP1				0.834					
	RP2				0.815					
	RP3				0.823					
	RP4				0.646					
	RP5				0.472					
5	Trust									
	Tr1					0.942				
	Tr2					0.955				
	Tr3					0.930				
	Tr4					0.917				
	Tr5					0.925				
	Tr6					0.906				
	Tr7					0.920				
	Tr8					0.895				
	Tr9					0.879				
6	Procedural Justice									
	PJ1						0.779			
	PJ2						0.747			
	PJ3						0.824			
	PJ4						0.798			
	PJ5						0.701			

No.	Variables	IASWI	ATT	PA	RP	Tr	PJ	DJ	SN	PBC
7	Distributional Justice									
	DJ1							0.827		
	DJ2							0.823		
	DJ3							0.778		
	DJ4							0.826		
	DJ5							0.871		
8	Subjective Norms									
	SN1								0.824	
	SN2								0.866	
	SN3								0.830	
	SN4								0.923	
	SN5								0.924	
	SN6								0.868	
9	Perceived Behaviour Control									
	PBC1									0.837
	PBC2									0.859
	PBC3									0.617
	PBC4									0.844
	PBC5									0.744

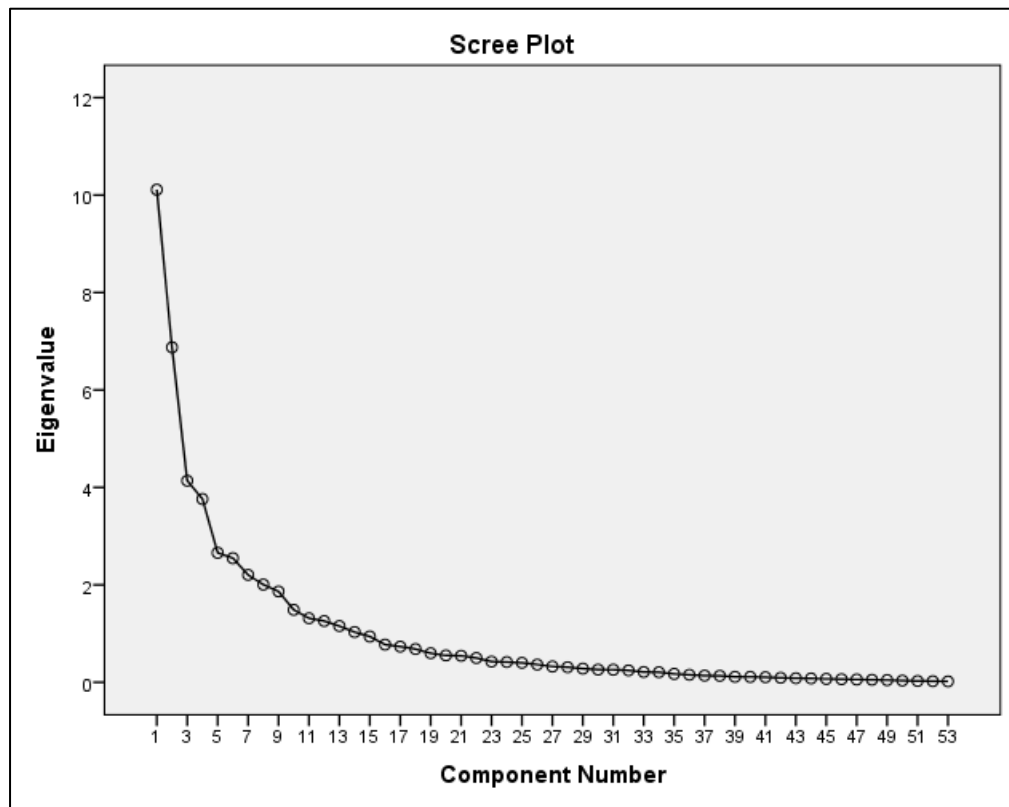
Source: Own findings

4.8.3 Implementation of Waste Incinerators in Pulau Pangkor

Similarly, we also went through the data analysis for Pulau Pangkor with the factor analysis method. The result showed that the eigenvalue of a factor represents the amount of the total variance explained by that factor. The principal components analysis revealed that the presence of FOURTEEN (14) factors with eigenvalues exceeding 1.0 in Pulau Pangkor. In total explained 80.01% of the variance.

- Factor 1 explained 19.08% of the variance.
- Factor 2 explained 12.97% of the variance.
- Factor 3 explained 7.81% of the variance.
- Factor 4 explained 7.10% of the variance.
- Factor 5 explained 5.01% of the variance.
- Factor 6 explained 4.81% of the variance.
- Factor 7 explained 4.16% of the variance.
- Factor 8 explained 3.78% of the variance.
- Factor 9 explained 3.52% of the variance.
- Factor 10 explained 2.81% of the variance.
- Factor 11 explained 2.48% of the variance.
- Factor 12 explained 2.37% of the variance.
- Factor 13 explained 2.18% of the variance.
- Factor 14 explained 1.95% of the variance.

Figure 4.6: Scree Plot for Pulau Pangkor



Source: Own findings

In the result for the Pulau Pangkor, there were fourteen for which the eigenvalue is greater than one and accounts along with the total of variables in this study, refer to **Figure 4.6** above. Hence, the scree plot shows that there were fourteen factors. The remaining factors account for a tiny proportion of the variability only, and it was counted as not so important.

Table 4.15: KMO and Bartlett's Test for Pulau Pangkor

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.700
Bartlett's Test of Sphericity	Approx. Chi-Square	7650.636
	df	1378.000
	Sig.	0.000

Source: Own findings

Corresponding to **Table 4.15** above, it was a result that showed the KMO and Bartlett's Test for Pulau Pangkor. Based on its result, it showed the KMO values were 0.700 which was between 0.7 and 0.8. Therefore, our result was able to count as a good result. Additionally, Bartlett's test of Sphericity reached statistical significance with a p-value of less than 0.01 level which supports the factor ability of the correlation matrix.

4.8.4 Structure Matrix for Pulau Pangkor

The result for the structure matrix of the study in Pulau Pangkor showed that there were six components were having FIVE (5) loaded items of the variance among the 53 in the components which were component 1 (DJ5, RP3, IASWI4, PJ3 and RP2), component 2 (Tr1, Tr2, Tr3, SN4 and IASWI2), component 3 (ATT3. ATT4. ATT2. ATT1. ATT5), component 5 (PA3, PA2, PA4, PA1 and PA6), component 6 (DJ2, DJ3, DJ4, DJ1 and PJ1) and component 7 (SN2, SN1, SN3, PJ5 and IASWI3).

Furthermore, it also showed that FOUR (4) loaded items of the variance among the 53 in components 4 (Tr5, Tr6, Tr4 and SN5), component 8 (TR9, TR7, SN6 and Tr8) and component 9 (PJ4, RP4, PBC4 and PBC1). However, there were only THREE (3) loaded items of the variance among the 53 in component 12 (IASWI7, IASWI1 and PBC2) and component 13 (RP1, PA5 and RP5). For the remaining components, component 10 (PJ2 and PBC5) AND component 11 (IASWI6 and IASWI5) were TWO (2) loaded items of the variance among the 53 variables. Lastly, there was ONE (1) loaded item of the variance among the 53 in component 14 (PBC3).

- Component 1 consists of FIVE (5) loaded items of the variance in the 53 items.
 - DJ5: It is unfair to local residents for hosting the siting of waste incinerator as they need to bear all consequences.
 - RP3: I am worried for my safety (eg. explosion) if the waste incinerator is operating at my neighbourhood.
 - IASWI4: I am likely to move out from the neighbourhood if the waste incinerator is operating at the neighbourhood.
 - PJ3: The truth is that everything is already decided without asking the communities.
 - RP2: I believe that the operation of waste incinerator will create more harm to future generations, including children and grandchildren.

- Component 2 consists of FIVE (5) loaded items of the variance in the 53 items.
 - Tr1: Information of waste incinerator released by NGOs (such as Kuala Lumpur Tak Nak Insinerator) is trustworthy.
 - Tr2: Information released by NGOs (such as Kuala Lumpur Tak Nak Insinerator) on waste incinerator is transparent and comprehensive.
 - Tr3: NGOs (such as Kuala Lumpur Tak Nak Insinerator) released information of waste incinerator is based on scientific evidence.
 - SN4: I can rely on information released by NGOs (such as Kuala Lumpur Tak Nak Insinerator) in making my decision in relation to the sitting of waste incinerator.
 - IASWI2: No matter what happened, I will against waste incinerator.

- Component 3 consists of FIVE (5) loaded items of the variance in the 53 items.
 - ATT3: I make significant changes in my lifestyle for environmental reasons.
 - ATT4: I want others to think of me as someone who is concerned about environmental issues.
 - ATT2: I think of myself as someone who is very concerned with environmental issues.
 - ATT1: I think of myself as an environmentally friendly person.
 - ATT5: Being environmentally friendly is an important part of me.

- Component 4 consists of FOUR (4) loaded items of the variance in the 53 items.
 - Tr5: Information released by the operator on waste incinerator is transparent and comprehensive.
 - Tr6: Information of waste incinerator released by the operator is based on scientific evidence.
 - Tr4: Information of waste incinerator released by the operator is trustworthy.
 - SN5: I can rely on information released by waste incinerator operator in making my decision in relation to the sitting of waste incinerator.

- Component 5 consists of FIVE (5) loaded items of the variance in the 53 items.
 - PA3: It would be very hard for me to leave this neighbourhood.
 - PA2: I enjoy the relationships with my neighbours.
 - PA4: This is the ideal neighbourhood for me.
 - PA1: This neighbourhood is part of me.
 - PA6: I feel a strong sense of belonging to my residence.

- Component 6 consists of FIVE (5) loaded items of the variance in the 53 items.
 - DJ2: The operation of waste incinerator will create employment opportunities.
 - DJ3: Local residents are treated equally in the process of project sitting for waste incinerator.
 - DJ4: The operation of waste incinerator can increase the income of local residents.
 - DJ1: Local residents are receiving financial compensation for allowing the operation of waste incinerator at their neighbourhood.
 - PJ1: My voice is being heard and considered in the decision process of the sitting of waste incinerator.

- Component 7 consists of FIVE (5) loaded items of the variance in the 53 items.
 - SN2: I think my neighbours will approve the siting of waste incinerator at my neighbourhood.
 - SN1: I believe my family members will support the decision of allowing the siting of waste incinerator at my neighbourhood.
 - SN3: I think people who are close to me will support the siting of waste incinerator at my neighbourhood.
 - PJ5: The local planning authority will make decision that considering residents' interest.
 - IASWI3: I intend to join anti waste incinerator campaign, such as public protest and petition signing.

- Component 8 consists of FOUR (4) loaded items of the variance in the 53 items.
 - Tr9: Government released information of waste incinerator is based on scientific evidence.
 - Tr7: Information of waste incinerator released by government is trustworthy.
 - SN6: I can rely on information released by government in making my decision in relation to the siting of waste incinerator.
 - Tr8: Information released by government on waste incinerator is transparent and comprehensive.

- Component 9 consists of FOUR (4) loaded items of the variance in the 53 items.
 - PJ4: I believe the decision process on the siting of waste incinerator has been fair.
 - RP4: I am concerned on my health (eg. getting sick, respiratory problem and cancer) if the waste incinerator is operating at my neighbourhood.
 - PBC4: The decision of accepting or rejecting the siting of waste incinerator is entirely up to me.
 - PBC1: Participating in opposing events to stop the siting and operation of waste incinerator is wise.

- Component 10 consists of TWO (2) loaded items of the variance in the 53 items.
 - PJ2: Local residents have plenty of opportunities to participate in the siting decision process.
 - PBC5: It is not difficult for me to accept or reject the siting of waste incinerator at my neighbourhood.

- Component 11 consists of TWO (2) loaded items of the variance in the 53 items.
 - IASWI6: I am likely to move out from the neighbourhood if the waste incinerator is operating at the neighbourhood.
 - IASWI5: I would not recommend others to residing at this neighbourhood if the waste incinerator is operating at this neighbourhood.

- Component 13 consists of THREE (3) loaded items of the variance in the 53 items.
 - IASWI7: I can independently make my decision as to accept or reject the siting of waste incinerator at my neighbourhood.
 - IASWI1: I think opposing the siting and operation of waste incinerator is a right thing to do.
 - PBC2: Campaign stopping the siting and operation of waste incinerator should be supported.

- Component 13 consists of THREE (3) loaded items of the variance in the 53 items.
 - RP1: The operation of waste incinerator will pollute the environment.
 - PA5: I do not feel integrated in this neighbourhood after the waste incinerator is built.
 - RP5: The incinerator will not cause any harm to local resident's health.

- Component 14 consists of ONE (1) loaded items of the variance in the 53 items.
 - PBC3: Terminating the construction and operation of waste incinerator will beneficial to local residents.

Based on the findings we found the extra components had an eigenvalue above 1.0 and combined with KMO is > 0.7 in the total variance from our Pulau Pangkor studies. Furthermore, its result also had a similar result from the Kepong which all the variables' factor loading values were above 0.6. In a nutshell, the factor analysis of Developing a Model to Facilitate the Implementation of Waste Incinerators in Pulau Pangkor can justify it has adequacy, refer to **Table 4.16** below.

Table 4.16: Summarize for Factor Analysis of Developing a Model to Facilitate the Implementation of Waste Incinerators in Pulau Pangkor

No.	Variables	IASWI	ATT	PA	RP	Tr	PJ	DJ	SN	PBC
1	Intention to Accept Sitting of Waste Incinerator t									
	IASWI1	0.646								
	IASWI2	0.659								
	IASWI3	0.649								
	IASWI4	0.738								
	IASWI5	0.629								
	IASWI6	0.774								
	IASWI7	0.761								
2	Attitude									
	ATT1		0.787							
	ATT2		0.802							
	ATT3		0.914							
	ATT4		0.827							
	ATT5		0.641							
3	Place Attachment									
	PA1			0.621						
	PA2			0.887						
	PA3			0.901						
	PA4			0.820						
	PA5			0.630						
	PA6			0.659						

No.	Variables	IASWI	ATT	PA	RP	Tr	PJ	DJ	SN	PBC
4	Risk Perception									
	RP1				0.729					
	RP2				0.619					
	RP3				0.791					
	RP4				0.710					
	RP5				0.623					
5	Trust									
	Tr1					0.905				
	Tr2					0.848				
	Tr3					0.840				
	Tr4					0.900				
	Tr5					0.939				
	Tr6					0.921				
	Tr7					0.857				
	Tr8					0.827				
	Tr9					0.893				
6	Procedural Justice									
	PJ1						0.662			
	PJ2						0.781			
	PJ3						0.737			
	PJ4						0.723			
	PJ5						0.645			

No.	Variables	IASWI	ATT	PA	RP	Tr	PJ	DJ	SN	PBC
7	Distributional Justice									
	DJ1							0.683		
	DJ2							0.773		
	DJ3							0.764		
	DJ4							0.712		
	DJ5							0.838		
8	Subjective Norms									
	SN1								0.746	
	SN2								0.787	
	SN3								0.651	
	SN4								0.801	
	SN5								0.893	
	SN6								0.849	
9	Perceived Behaviour Control									
	PBC1									0.657
	PBC2									0.638
	PBC3									0.823
	PBC4									0.683
	PBC5									0.667

Source: Own findings

4.9 Multivariate Analysis of Variance (MANOVA)

4.9.1 MANOVA for Developing a Model to Facilitate the Implementation of Waste Incinerators in Kepong

In the MANOVA, we ran through the analysis of the test of equality of covariance matrices for waste incinerators in Kepong with the dependent variables of IASWI and ATT, the independent as PA, and the covariate will be tested on income, refer to **Table 4.17** below. According to its result, it showed the Box's Test, [F= 4.013; sig-p value = 0.584 > α 0.05 level]. Therefore, do not reject H_0 . The tests showed that the observed covariance matrices of the dependent variables are equal across groups.

H_0 : The observed covariance matrices of the dependent variables are equal across groups.

H_A : The observed covariance matrices of the dependent variables are not equal across groups.

Table 4.17: Box's Test of Equality of Covariance Matrices^a for Waste Incinerators in Kepong

Box's M	49.561
F	4.013
df1	12
df2	20754.194
Sig.	0.584

Design: Intercept + PA

Source: Own findings

Table 4.18: Multivariate Tests^a for Waste Incinerators in Kepong

	Effect	Value	F	Hypothesis df	Error df	Sig.
IASWI	Pillai's Trace	0.987	10939.218 ^b	2.000	291.000	0.000
	Wilks' Lambda	0.013	10939.218 ^b	2.000	291.000	0.000
	Hotelling's Trace	75.184	10939.218 ^b	2.000	291.000	0.000
	Roy's Largest Root	75.184	10939.218 ^b	2.000	291.000	0.000
Income	Pillai's Trace	0.064	9.935 ^b	2.000	291.000	0.000
	Wilks' Lambda	0.936	9.935 ^b	2.000	291.000	0.000
	Hotelling's Trace	0.068	9.935 ^b	2.000	291.000	0.000
	Roy's Largest Root	0.068	9.935 ^b	2.000	291.000	0.000
PA	Pillai's Trace	0.713	26.962	12.000	584.000	0.000
	Wilks' Lambda	0.349	33.653 ^b	12.000	582.000	0.000
	Hotelling's Trace	1.693	40.906	12.000	580.000	0.000
	Roy's Largest Root	1.581	76.941 ^c	6.000	292.000	0.000

a. Design: Intercept + Income + PA

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Source: Own findings

In the result of the multivariate for Kepong showed that Pillai's Trace, Wilks' Lambda, Hotelling's Trace and Roy's Largest Root, refer to **Table 4.18** above, have a significant relationship while all the sig-p values = $0.00 < \alpha 0.01$ level of Income and PA. Therefore, the variable of place attachment is a significant relationship towards to developing a model to facilitate the implementation of waste incinerators in Kepong.

Table 4.19: Tests of Between-Subjects Effects for Waste Incinerators in Kepong

		Type I Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	IASWI	143.004 ^a	7	20.429	65.897	0.000
	ATT	54.316 ^b	7	7.759	8.211	0.000
Intercept	IASWI	4969.470	1	4969.470	16029.570	0.000
	ATT	6210.750	1	6210.750	6572.368	0.000
Income	IASWI	3.824	1	3.824	12.335	0.001
	ATT	6.590	1	6.590	6.974	0.009
PA	IASWI	139.180	6	23.197	74.824	0.000
	ATT	47.726	6	7.954	8.417	0.000
Error	IASWI	90.526	292	0.310		
	ATT	275.934	292	0.945		
Total	IASWI	5203.000	300			
	ATT	6541.000	300			
Corrected Total	IASWI	233.530	299			
	ATT	330.250	299			

a. R Squared = 0.612 (Adjusted R Squared = 0.603)

b. R Squared = 0.164 (Adjusted R Squared = 0.144)

Source: Own findings

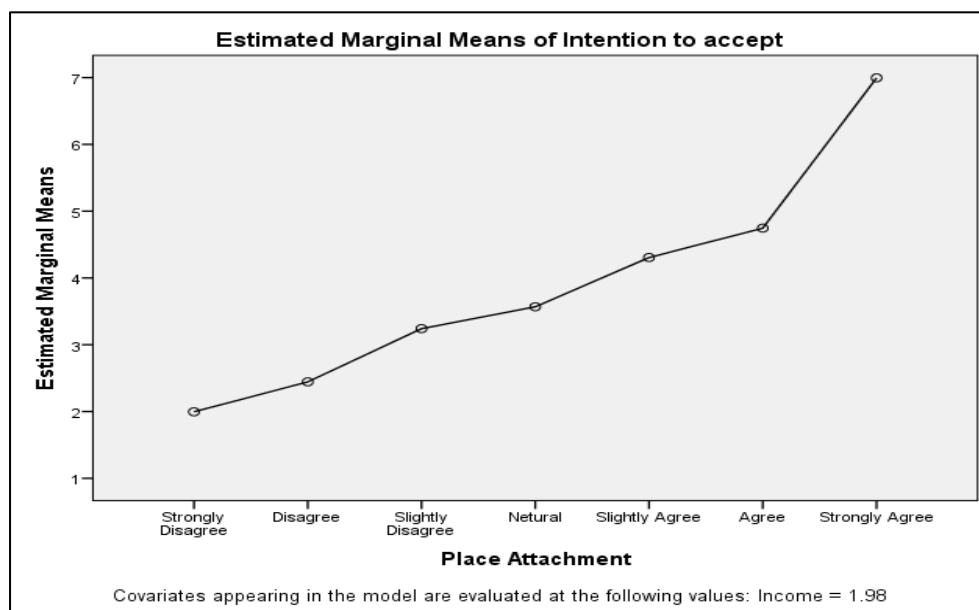
Based on **Table 4.19** above shows the result of the test of between-subjects effects for waste incinerators in Kepong. The result of the corrected model showed the dependent variable of intention to accept [$F= 20.429$; sig-p value = $0.000 < \alpha 0.01$ level] and attitude [$F= 7.759$; sig-p value = $0.000 < \alpha 0.01$ level] towards the PA variable.

The demographic profile of Income and PA in the source column in **Table 4.19** above showed that both have a statistical significance of the effect on our study. Both results were greatly significant [(Income; $F= 3.824$; sig-p value = $0.001 < \alpha 0.01$ level) & (PA; $F= 23.197$; sig-p value = $0.000 < \alpha 0.01$ level)] towards the dependent variable (IASWI). On the other hand, they also have tremendously significant [(Income; $F= 6.590$; sig-p value = $0.009 < \alpha 0.01$ level) & (PA; $F= 7.954$; sig-p value = $0.000 < \alpha 0.01$ level)] towards the mediator variable (ATT).

Although both results showed significant effectiveness on the ATT and IASWI. However, the PA variable played a more important role than the Income variable. Besides that, the variable of PA has a significant relationship towards the intention to accept of sitting waste incinerator and consumer attitude towards the waste incinerator at Kepong in Malaysia with $\alpha 0.01$ significant level.

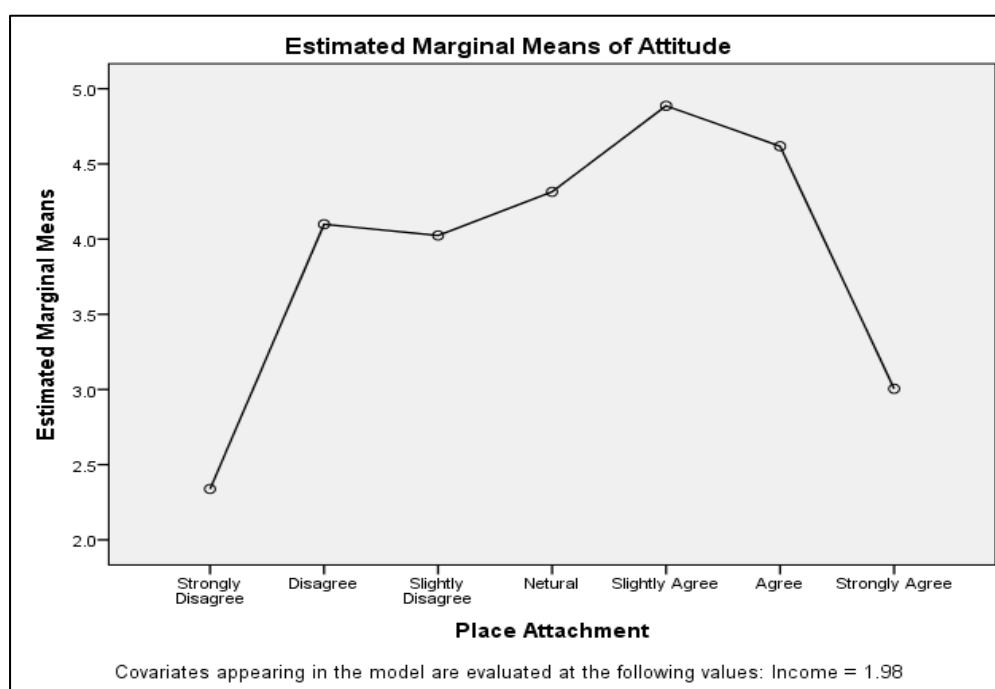
Therefore, we were going to show the graphical result to justify the importance of the place attachment in the current study. Based on the graphical result, the PA also showed that it was an effective variable on the IASWI with strongly agreed upon and ATT with slightly agreed in estimated marginal means, refer to **Figure 4.7** and **Figure 4.8** below. It means that the Kepong residents strongly believe and agree that the sitting of waste incinerators will have an impact on their neighbourhood vicinity.

Figure 4.7: Estimated Marginal Means of Intention to accept for Waste Incinerators in Kepong



Source: Own findings

Figure 4.8: Estimated Marginal Means of Attitude for Waste Incinerators in Kepong



Source: Own findings

Table 4.20: Tests of Pairwise Comparisons for Waste Incinerator in Kepong

Dependent Variable	(I) Place Attachment	(J) Place Attachment	Sig.	α level
Intention to accept	Strongly Disagree	Slightly Disagree	0.000	< 0.05
		Neutral	0.000	< 0.05
		Slightly Agree	0.000	< 0.05
		Agree	0.000	< 0.05
		Strongly Agree	0.000	< 0.05
	Disagree	Slightly Disagree	0.000	< 0.05
		Neutral	0.000	< 0.05
		Slightly Agree	0.000	< 0.05
		Agree	0.000	< 0.05
		Strongly Agree	0.000	< 0.05
	Slightly Disagree	Neutral	0.009	< 0.05
		Slightly Agree	0.000	< 0.05
		Agree	0.000	< 0.05
		Strongly Agree	0.000	< 0.05
	Neutral	Slightly Agree	0.000	< 0.05
		Agree	0.000	< 0.05
		Strongly Agree	0.000	< 0.05
	Slightly Agree	Agree	0.000	< 0.05
		Strongly Agree	0.000	< 0.05
	Agree	Strongly Agree	0.000	< 0.05
Other variables are not significant				
Attitude	Strongly Disagree	Disagree	0.005	< 0.05
		Slightly Disagree	0.004	< 0.05
		Neutral	0.001	< 0.05
		Slightly Agree	0.000	< 0.05
		Agree	0.000	< 0.05
	Disagree	Slightly Agree	0.006	< 0.05
	Slightly Disagree	Slightly Agree	0.000	< 0.05
		Agree	0.005	< 0.05
	Neutral	Slightly Agree	0.000	< 0.05
	Slightly Agree	Strongly Agree	0.007	< 0.05
	Agree	Strongly Agree	0.021	< 0.05
Other variables are not significant				

Based on estimated marginal means

*. The mean difference is significant at the 0.05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Source: Own findings

4.9.2 MANOVA for Developing a Model to Facilitate the Implementation of Waste Incinerators in Pulau Pangkor

Moreover, we ran the MANOVA testing for waste incinerators in Pulau Pangkor with the same dependent, independent variables and the covariate to the analysis of the test of equality of covariance matrices, refer to **Table 4.21** below. Based on the result that we get from, it showed that the Box's Test, [F= 2.325; sig-p value = 0.174 > α 0.01 level]. Therefore, do not reject H_0 . Therefore, we are able to understand that the observed covariance matrices of the dependent variables are equal across groups through the test result below.

H_0 : The observed covariance matrices of the dependent variables are equal across groups.

H_A : The observed covariance matrices of the dependent variables are not equal across groups.

Table 4.21: Box's Test of Equality of Covariance Matricesa for Waste Incinerators in Pulau Pangkor

Box's M	23.730
F	2.325
df1	9
df2	750.709
Sig.	0.174

Design: Intercept + PA

Source: Own findings

Table 4.22: Multivariate Tests^a for Waste Incinerators in Pulau Pangkor

	Effect	Value	F	Hypothesis df	Error df	Sig.
IASWI	Pillai's Trace	0.992	9435.897b	2.000	147.000	0.000
	Wilks' Lambda	0.008	9435.897b	2.000	147.000	0.000
	Hotelling's Trace	128.380	9435.897b	2.000	147.000	0.000
	Roy's Largest Root	128.380	9435.897b	2.000	147.000	0.000
Income	Pillai's Trace	0.009	0.684b	2.000	147.000	0.506
	Wilks' Lambda	0.991	0.684b	2.000	147.000	0.506
	Hotelling's Trace	0.009	0.684b	2.000	147.000	0.506
	Roy's Largest Root	0.009	0.684b	2.000	147.000	0.506
PA	Pillai's Trace	0.762	18.234	10.000	296.000	0.000
	Wilks' Lambda	0.374	18.674b	10.000	294.000	0.000
	Hotelling's Trace	1.309	19.114	10.000	292.000	0.000
	Roy's Largest Root	0.907	26.851c	5.000	148.000	0.000

a. Design: Intercept + Income + PA

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Source: Own findings

Moreover, regarding to the the result of the multivariate for Pulau Pangkor also showed that Pillai's Trace, Wilks' Lambda, Hotelling's Trace and Roy's Largest Root, refer to **Table 4.22** above, have a significant relationship while all the sig-p values = 0.00 > α 0.01 level (Intercept and PA). Therefore, the variable of place attachment is a significant relationship towards to developing a model to facilitate the implementation of waste incinerators in Pulau Pangkor.

Table 4.23: Tests of Between-Subjects Effects for Waste Incinerators in Pulau Pangkor

		Type I				
Source		Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	IASWI	18.190a	6	3.032	13.061	0.000
	ATT	42.582b	6	7.097	21.697	0.000
Intercept	IASWI	2759.458	1	2759.458	11888.681	0.000
	ATT	3865.006	1	3865.006	11815.904	0.000
Income	IASWI	0.090	1	0.090	0.388	0.534
	ATT	0.409	1	0.409	1.250	0.265
PA	IASWI	18.100	5	3.620	15.596	0.000
	ATT	42.173	5	8.435	25.786	0.000
Error	IASWI	34.352	148	0.232		
	ATT	48.411	148	0.327		
Total	IASWI	2812.000	155			
	ATT	3956.000	155			
Corrected Total	IASWI	52.542	154			
	ATT	90.994	154			

a. R Squared = 0.346 (Adjusted R Squared = 0.320)

b. R Squared = 0.468 (Adjusted R Squared = 0.446)

Source: Own findings

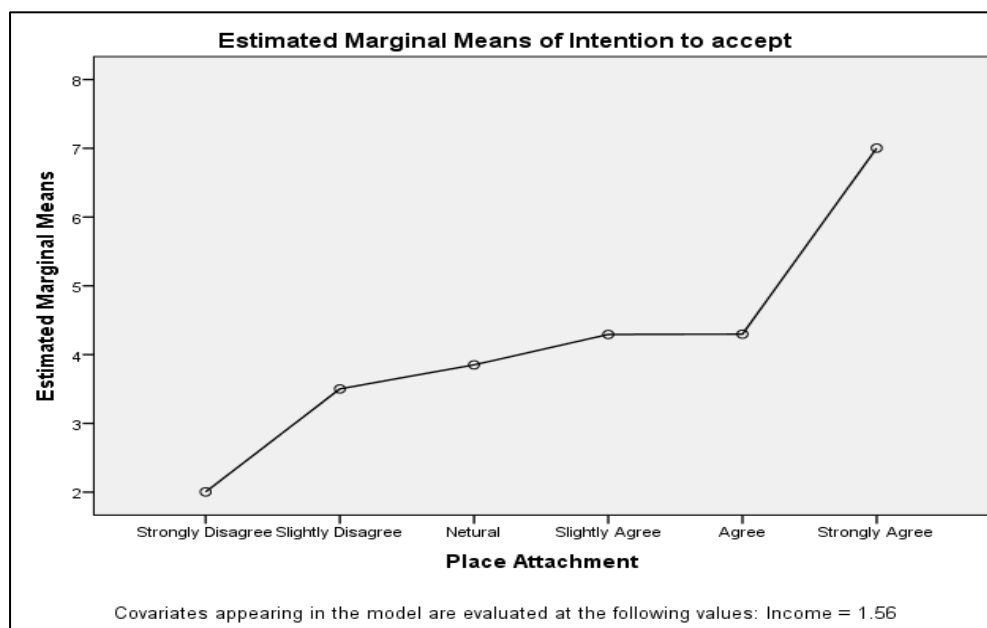
Last but not least, we also analysed the test of between-subjects effects for waste incinerators in Pulau Pangkor via MANOVA with the same variables as Kepong. According to the result, the corrected model showed the dependent variable of intention to accept [$F = 13.061$; sig-p value = $0.000 > \alpha 0.01$ level] towards the PA variable, refer to **Table 4.23** above.

As mentioned above, the testing variables were using the same variable to find out what is the difference between the two places of Kepong and Pulau Pangkor. Surprisingly, the income variable was insignificant towards the IASWI [$F = 0.388$; sig-p value = $0.534 < \alpha 0.10$ level] and ATT [$F = 1.250$; sig-p value = $0.265 < \alpha 0.01$ level] variables. However, the result of the PA variable showed that it was highly significant towards the IASWI [$F = 15.596$; sig-p value = $0.000 > \alpha 0.10$ level] and ATT [$F = 25.786$; sig-p value = $0.000 > \alpha 0.01$ level] variables. Furthermore, the PA also showed that it was an effective variable on the IASWI with strongly agreed upon and ATT with slightly agreed in estimated marginal means, refer to the graphical result of **Figure 4.9** and **Figure 4.10** below.

From the explanation from **Table 4.22** and **Table 4.23** above, we also clearly understand that the PA variable played a more important role than the Income variable which had a similar output result from the Kepong. Furthermore, the variable of PA has a significant relationship towards the intention to accept of sitting waste incinerator and consumer attitude towards the waste incinerator at Pulau Pangkor in Malaysia with $\alpha 0.01$ significant level.

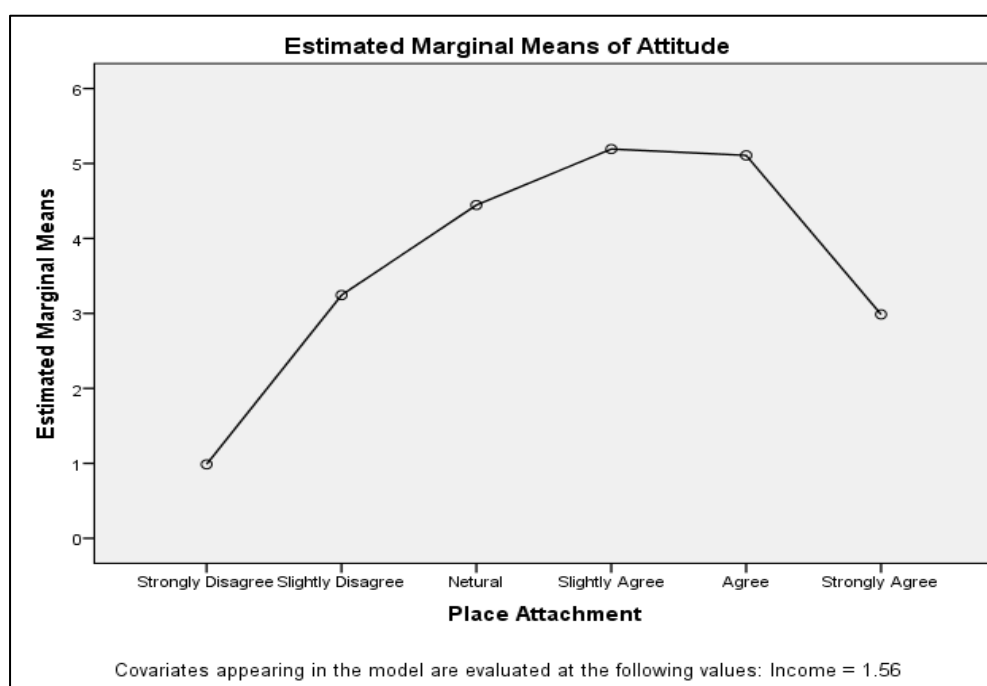
Considering the multifaceted aspects and complexities of the matter at hand, we can understand that the PA variable is the most important of all the demographic profile variables after we went through all the data and analysed above.

Figure 4.9: Estimated Marginal Means of Intention to accept for Waste Incinerators in Pulau Pangkor



Source: Own findings

Figure 4.10: Estimated Marginal Means of Attitude for Waste Incinerators in Pulau Pangkor



Source: Own findings

Table 4.24: Tests of Pairwise Comparisons for Waste Incinerator in Pulau Pangkor

Dependent Variable	(I) Place Attachment	(J) Place Attachment	Sig.	α level
Intention to accept	Strongly Disagree	Slightly Disagree	0.006	< 0.05
		Neutral	0.000	< 0.05
		Slightly Agree	0.000	< 0.05
		Agree	0.000	< 0.05
		Strongly Agree	0.000	< 0.05
	Slightly Disagree	Slightly Agree	0.002	< 0.05
		Agree	0.003	< 0.05
		Strongly Agree	0.000	< 0.05
	Neutral	Slightly Agree	0.000	< 0.05
		Agree	0.005	< 0.05
		Strongly Agree	0.000	< 0.05
	Slightly Agree	Strongly Agree	0.000	< 0.05
	Agree	Strongly Agree	0.000	< 0.05
	Other variables are not significant			
Attitude	Strongly Disagree	Slightly Disagree	0.001	< 0.05
		Neutral	0.000	< 0.05
		Slightly Agree	0.000	< 0.05
		Agree	0.000	< 0.05
		Strongly Agree	0.015	< 0.05
	Slightly Disagree	Neutral	0.000	< 0.05
		Slightly Agree	0.000	< 0.05
		Agree	0.000	< 0.05
	Neutral	Slightly Agree	0.000	< 0.05
		Agree	0.000	< 0.05
		Strongly Agree	0.014	< 0.05
	Slightly Agree	Strongly Agree	0.000	< 0.05
	Agree	Strongly Agree	0.000	< 0.05
	Other variables are not significant			

Based on estimated marginal means

*. The mean difference is significant at the 0.05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Source: Own findings

With reference to **Tables 4.18, 4.19, 4.22, and 4.23**, the MANOVA was conducted exclusively on **income** and **place attachment (PA)** variables. This decision was based on the results of the preliminary correlation analysis, which indicated that income and PA exhibited statistically significant correlations with **attitude (ATT)** and **intention to accept solid waste incineration (IASWI)** in both Kepong and Pulau Pangkor. Consequently, MANOVA was employed to further examine and confirm the multivariate relationships among these variables across the two study locations. By focusing on variables that demonstrated consistent significance in the correlation analysis, the MANOVA provided a robust assessment of group differences and interaction effects between income, place attachment, and the dependent variables.

4.10 Summary of Hypothesis Testing

Table 4.25: Summary of Hypothesis Testing

No.	Alternative Hypotheses	Supported/ Not Supported	
		Kepong	Pulau Pangkor
1	HA ₁ : There is a relationship between risk perception and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.	Supported	Supported
2	HA ₂ : There is a relationship between trust and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.	Not Supported	Not Supported
3	HA ₃ : There is a relationship between procedural justice and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.	Supported	Not Supported
4	HA ₄ : There is a relationship between distributional justice and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.	Not Supported	Not Supported
5	HA ₅ : There is a relationship between Subjective Norms and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.	Not Supported	Not Supported
6	HA ₆ : There is a relationship between perceived behaviour control and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.	Not Supported	Not Supported
7	HA ₇ : There is a relationship between the mediating effects of attitude of the residences opposition/support towards the intention to accept sitting of the waste incinerator within their neighbourhood vicinities.	Supported	Supported
8	HA ₈ : There is a correlation between the moderating effects of place attachment and the intention to accept sitting of the waste incinerator within their neighbourhood vicinities.	Supported	Supported

Supported – $\alpha < 0.05$

Not Supported - $\alpha > 0.05$

Source: Own findings

4.11 Conclusion

In this chapter, we went through and concluded that the findings accordingly based on the results of descriptive analysis, frequency analysis, correlation analysis, levene test & t-test analysis, reliability analysis, multiple regression analysis, residual analysis, factor analysis, and multivariate analysis of variance for the regions of Kepong and Pulau Pangkor. The coming chapter is Chapter 5 is the conclusion and the implications of this study will be discussed.

CHAPTER V

DISCUSSION, CONCLUSION, AND IMPLICATIONS

5.1 Introduction

In this chapter, we will discuss the important items and components we ran through in the research study of developing a model to facilitate the implementation of waste incinerators between Kepong and Pulau Pangkor. More than that, it will also include of the discussion the major findings from the previous chapter, implications, and limitations of this study. Lastly, this chapter will end with some of the recommendations for future research.

5.2 Summary of Statistical Analysis

Solid waste constantly rises in quantity and improves the complexity of the quality due to the globalised technology and economy being significantly more advanced, the same goes for Malaysia. Besides that, the constantly increasing population in globalization will also lead to solid waste. Although our country has provided a landfill method to solve the solid waste management issue this plan is not considered a long-term solution. As a result, the waste incinerator has been introduced to globalization solid waste management. Rahman (2013) also mentioned the importance of the waste incinerator can reduce the volume of garbage, especially in small cities where space is not sufficient for scarce landfill plots.

In the previous chapter, we had run through the study and understand from different perspectives of technology and economy view. We could understand the implementation of waste incinerators to be a spectacular achievement in improving municipal solid waste management. However, it is still being rejected by the community and residents around the facilities. Through enlightenment, we have different perspectives to look at these various cases, we should also pay attention to community acceptance towards the waste incinerator in their neighbours. That is the reason why we were using the theory of risk perception, the theory of planned behaviour, the theory of energy justice, and the theory of place attachment to study our dependent variable to compare two differences of place, Kepong and Pulau Pangkor. All of these independent variables, mediator variable, dependent variable and moderator variables will be using the SPSS software to analyse.

There were a few important things that have been observed, and they should be taken into our concern from the previous findings and the results. In a split among all the demographic profiles, the PA variable played an important role among all the demographic variables that we had been running through from the SPSS method. It showed that it had the highest frequency in the PA of the slightly agreed category with the numbers 121 (40.3%) and 109 (70.3%) in Kepong and Pulau Pangkor. Although other variables in the demographic profiles are not of the same frequency, the result of the income variable was displayed as a prominent frequency number. It showed that the income range of RM 2,001 - RM 5,000 with the number of 155 (51.7%) and 77 (49.7%) in Kepong and Pulau Pangkor. Both two demographic variables also had a significant correlation towards the dependent and mediator variables.

Comes to the multiple regression analysis, we concluded that our mediator variable has a greatly significant level with a 0.01 α level towards the IAWSI for Kepong and Pulau Pangkor. As the result of independent variables, RP plays an important role for both places with a highly significant value of 0.01 α level; it means that it will be increasing by 0.366 towards the ATT when there is a 1 unit increase in the RP in Kepong. The same goes for Pulau Pangkor, there will be an increase of 0.358 toward the ATT when there is a 1 unit increase in the RP in Pulau Pangkor. However, the variable of PJ was only significant with a 0.10 α level in the Kepong area only. It presents as it will be decreasing by 0.266 towards the ATT when there is a 1 unit increase in the PJ in Kepong.

In our study results for factor analysis, the principal components analysis has shown that there were ten factors with eigenvalues exceeding 1.0 in Kepong with a total explained 76.78% of the variance. All of the variables were important (> 0.5) for our study except RP5. Besides that, 7 questionnaire items were having greater than 0.9 which presented it as a key to our study which were Tr1, Tr2, Tr3, Tr4, Tr5, Tr6 and Tr7. In the result for Pulau Pangkor, the principal components analysis has shown that there were fourteen factors with eigenvalues exceeding 1.0 with a total explained 80.01% of the variance. However, the outcomes did not have an outstanding role in the questionnaire but all of them were important (>0.5) to our study in Pulau Pangkor. Last but not least, the result of MANOVA for Kepong and Pulau Pangkor showed the variable of PA had a significant value towards our dependent and mediator variables; however, the income variable only significant value towards our dependent and mediator variables in Kepong.

5.3 Discussions of Major Findings

According to our hypothesis testing mentioned in Chapter 3, it also had a transparency of the results obtained from the previous chapter, Chapter 4. It shows the number of independent variables in different locations will have different significant levels. Therefore, we are going to discuss the major findings in this part of the study.

HA₁: There is a relationship between risk perception and the attitude of the residents' opposition/ support towards the sitting of waste incinerators within their neighbourhood vicinities.

The hypothesis testing of HA₁ was supported by the results of Kepong and Pulau Pangkor which align with the Lin et al. (2018) findings. They mentioned that the result of their study found that risk perception has a negative correlation toward the waste incinerator for those residents who live near the waste incinerator; this is because people believe that the incinerator can operate safely. However, our study showed that there is a positive significance on the risk perception towards the waste incinerator in Kepong and Pulau Pangkor. This is because the residents who live in Kepong and Pulau Pangkor unable to feel secure in the operation of the waste incinerators.

In Kepong, the government proposed to replace the landfill transportation station with a large facility of waste incinerators which caused the residents to feel insecure. Although the government had provided the report of the waste incinerator and a trip to visit the waste incinerator in Japan. However, the residents are still unable to accept the proposal announced by the government as this will be a high uncertainty risk that affects their safety in their neighbourhood. Therefore, the variable of risk perception is supported in our study, but trust and distributional justice are not.

HA₂: “There is a relationship between trust and attitude of the residence’s opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HA₃: There is a relationship between procedural justice and attitude of the residence’s opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HA₄: There is a relationship between distributional justice and attitude of the residence’s opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

Furthermore, the hypothesis testing for energy justice in our studies included HA₂, HA₃ and HA₄. According to the multiple regression analysis result for Kepong, regarding to the hypothesis testing of HA₂, and HA₄ are not supported, but HA₃ is supported. Comes to the hypothesis tests of HA₂, HA₃, and HA₄ are not supported by the result for Pulau Pangkor. In the study by Shan et al. (2021), they mentioned that if the facilities of the waste incinerators can bring positive environmental benefits and institutional trust is incorporated, the residents would be more Willing to Pay (WtP) and lower willingness to participate in MSW treatment. The government needs to carry out procedural justice when they are working on the implementation of waste incinerators mentioned by Dauvergne (2023). In this procedural justice, they had to strive to ensure full and meaningful input and participation for the progression of the waste incinerator and the residents. However, our study shows that the variables of trust, and distributional justice are unable to be at a significant level in the location of Kepong and Pulau Pangkor; except the procedural justice for Kepong is supported.

There were some reasons received in the feedback from the residents. In Kepong, the people find it difficult to trust the government although they provided research studies and trips to waste incinerators in Japan. However, there is no successful operation for the large waste incinerator in Malaysia as a reference. Thus, the implementation of the waste incinerator failed, and the government chose to continue the operation of the transportation of waste management in the landfill area of Taman Beringin, Kepong. So, procedural justice can show the significance that the government provide the participant in the waste incinerator project for the residents and community but is unable to provide the operation

and benefit of the waste incinerator. Therefore, the variable of procedural justice is supported in our study, but trust and distributional justice are not.

Furthermore, there is a ripple effect towards the acceptance of waste incinerators from the perception of economic benefits, trust, and fairness (Zhou et al., 2022). As the mini waste incinerator was constructed in Pulau Pangkor, the residents did not have the chance to attend to the process of the implementation of the waste incinerator. Most of the residents are unable to feel what are the benefits provided by the facilities either. Besides that, they just understand that the facilities are just to burn the waste around their island from the feedback that gain from the survey. In addition, Subramaniam (2014) mentioned that the mini waste incinerator had been constructed by XCN Technology Sdn Bhd to manage the incinerator in Pangkor since the start of 2014. there were a few operations that failed in the facilities and caused environmental pollution that had been damaged previously due to the technology still not having matured. Since the residents of Pulau Pangkor are more concerned with risk perception instead of energy justice. Therefore, the variables of trust, procedural justice and distributional justice are unable to be supported by the result of Pulau Pangkor.

HA₅: There is a relationship between Subjective Norms and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

HA₆: There is a relationship between perceived behaviour control and attitude of the residence's opposition/ support towards the sitting of waste incinerator within their neighbourhood vicinities.

In our study, we also found out that the hypothesis of HA₅ and HA₆ were not supported by the results of Kepong and Pulau Pangkor. Based on the research study by Mu et al. (2018), the residents did not feel a strong norm as the waste source-separated collection has not been sufficiently established in Guili yet. The residents were not under significant social pressure for their waste separation behaviours. This also led to their variable of the Subjective Norms was not significant towards the intention of waste separation (one of the concepts from the MSW). Besides that, their study also mentioned that the PBC was not a significant determinant of the respondents' behavioural intentions which is aligned with our study. Based on our study, the SN and PBC are also insignificant towards the LAWSI for Kepong and Pulau Pangkor. The reason for the Kepong is that our respondents are more willing to accept the 3Rs concepts than waste incineration. Therefore, they can also not feel the SN and PBC from the facilities as they had failed to be implemented in Kepong.

Although the mini waste incinerator had been successfully built in Pulau Pangkor, the respondents also did not feel strong norms from the facilities. This is because the facilities did not provide an appropriate sharing about the importance of the waste incinerator to the residents. According to the feedback from the respondents, the job opportunity on that island is considered low and most of the educated young generation have travelled to other countries or states to seek better job opportunities, which caused most of them slightly higher in age and lower education level. They are unable to understand the objective and importance of waste incinerators. Although the facilities had provided a dustbin

to let the residents to incinerate waste, they just feel it is just another 3Rs concept. Therefore, the variables of SN and PBC were insignificant in our study.

HA7: There is a relationship between the mediating effects of attitude of the residences opposition/support towards the intention to accept sitting of the waste incinerator within their neighbourhood vicinities.

Furthermore, the development of technology in waste incinerators can transfer or reduce the negative impact of pollution in the surrounding areas around the residents, and it will be eliminated the public's concerns about NIMBY and prevent conflict (Liao et al., 2018). We understand that the negative impact of pollution such as air pollution, water pollution, road damage, etc. will be causing one of the uncertainty risks for the residents. It will lead to an increase in the risk perception towards the facilities. So, it matched without hypothesis testing of the mediator variable HA7. It also could be supported by our result testing by the Kepong and Pulau Pangkor. Therefore, our data is a match for what Liao et al. (2018) mentioned, the risk perception should be taken into account and concern while applying the project of the waste incinerators in their resident's area.

HA8: There is a correlation between the moderating effects of place attachment and the intention to accept sitting of the waste incinerator within their neighbourhood vicinities.

Lastly, Di Cosmo (2023) mentioned the issue of the NIMBY effect remains although the operator or government used the technical solutions as it had impacted on their place attachment. However, if they could shape the ‘architecture of place attachment’ to design the facility to help with the place attachment, it could provide the residents with opportunities to cultivate and renew their emotional bond with the site and their vicinity. The result of our hypothesis testing was supported by our data and matched with the findings by Di Cosmo (2023). Therefore, the variable of the place attachment present that it could have a high influence on the community's acceptance towards the implementation of the waste incinerator.

5.4 Implications of the Study

After successfully running through and generating the model in this research paper, it brings out multiple important notes that we should take into concern for community acceptance of the implementation of waste incinerators in Malaysia. Besides that, it is also shown that the significant variables of RP, PJ (only Kepong) and PA will be influencing the ATT for Kepong and Pulau Pangkor. the mediator of the ATT variable has a strong bond towards the intention to implement the waste incinerator in the neighbourhood vicinity. Therefore, this study can provide some benefits and ideas to the different operators of waste incinerators to study community acceptance.

Firstly, it can provide a different perspective and viewpoint on how to develop community acceptance while planning and implementing the waste incinerator in the future. There are a lot of studies or research that have proven that the waste incinerator can resolve lots of MSW issues with supporting data of economic and technological terms. In the short-term view, we could use the waste incinerator solution to solve or replace the landfill methodology as the land is a limited resource. But the people still continuously reject this approach. According to the result of our study, we understand that the RP plays a role that affects people's attitudes and leads to the behaviour of the intention to accept the waste incinerator.

This is because the respondents and residents will pay close attention to the outcome of the facilities. Most of them foresee or presume that the waste incinerator would cause a lot of uncertainty and risk compared to their current situation. Therefore, this study is a good approach and study to allow the operator to understand people's behaviour in the implementation of the waste incinerator in their neighbourhood vicinity.

The next benefit that provides from our studies research is it able to provide how should we understand community acceptance via the procedural justice perspective. Although distributional justice and trust are not significant towards our study. However, the variable of procedural justice had significantly shown importance while implemented in the waste incinerator. As mentioned, the variable of procedural justice unable to have a significant level is because the government had already decided to plan or build the facilities during the year 2014 without any process invitation with the residents there. Thus, they will be more concerned with the risk perception.

The residents in Kepong had a chance to form a community to observe this large facility waste incinerator that had been first proposed by the government on year 2014. According to the respondents of Kepong, they feel it will be an unprepared or not ready-to-go project because they could not believe in the local technology and operation. Notwithstanding that, our government has noticed the community is incapable of accepting it. So, they provided some of the programmers and suggestions for them like letting the community visit the operations of waste incinerators in Japan, and also knowledge sharing about the technology,

objectives and procedures for the waste incinerator in Taman Beringin. The community is still unable to accept it although it is good to approve of enhancing procedural justice because they feel the uncertainty risk is greatly higher after the implementation. Unfortunately, the waste incinerator project called for a stop in the year 2018 due to the protest issue in Kepong, but it can take this approach to apply to other waste incinerator projects in Malaysia.

The outcomes of this study can be effectively utilised to support national waste management and energy policies by providing evidence-based insights into the social factors influencing community acceptance of waste incinerator and waste-to-energy (WtE) projects. By identifying how risk perception, trust, energy justice, attitudes, and behavioural intentions shape public acceptance, policymakers can design more socially responsive policies that go beyond technical and economic considerations. Specifically, the findings can inform the development of transparent risk communication strategies, inclusive public participation mechanisms, and fair compensation or benefit-sharing frameworks for host communities. These measures can enhance procedural and distributional justice, thereby reducing public opposition and project delays. Furthermore, the results can be integrated into national planning guidelines and environmental impact assessment (EIA) processes to ensure that community perspectives are systematically considered in site selection and project approval. By aligning technological advancement with social acceptance, the study supports the formulation of sustainable, resilient, and publicly legitimate waste management policies in Malaysia.

Finally, we should not forget about the place attachment that plays an important role in the demographic profile that influences the intention to accept the implementation of waste incinerators. There are tons of number of residents around the area of Taman Beringin, Kepong, and there is a widely known travelling location, Batu Cave just an estimated 5-kilometre distance from the landfill transportation station. Thus, the place attachment will be negatively impacted if the waste incinerator is successfully built in the location proposed. The same goes for the mini waste incinerator that was built in Pulau Pangkor, and the residents on the island do not have the choice or option to stop on it. Pulau Pangkor also is a famous travelling location and selection for relaxation for the traveller, thus the operators of the facility found a solution and successfully prevented road damage and environmental pollution. Therefore, road damage and air pollution are minimized, and we are less likely to find a piece of rubbish beside the road. More surprisingly the reproductive capacity of anchovies has been greatly increased at the sea around the waste incinerator.

Therefore, the variables which have a significant towards on the implementation we found via the research study can help to understand more community perspective and acceptance of the facility. The government or executives of the facility will achieve twice the result with half the effort to understand the community acceptance towards the sitting of the facilities If they are willing to adopt the plans and clues that we provided.

5.5 Limitation of Study

There are some limitations found when we proceed with this research study in the Kepong and Pulau Pangkor. There is a difference in behaviour and response from the respondents while we were doing the data collection on the Kepong and Pulau Pangkor. For Kepong, the community and respondents will be different from those of Pulau Pangkor. Most of the respondents are well educated and easily understand the waste incinerator that is being introduced to construct in their neighbourhood. Thus, we did not need to have much time to make an introduction and explanation about the waste incinerator.

However, the challenges' part for this data collection is that most of the respondents who joined from the community of "KL Tak Nak Incinerator" are not staying around nearby in Kepong because of their job location. Based on the feedback from the head of the community of "KL Tak Nak Incinerator", Mr Lee had mentioned that most of the communities in the group had been moved to other states or countries to work. This challenge caused us to have a higher difficulty in collecting the actuarial responses who were staying nearby the waste incinerator at Kepong.

Besides that, Mr Lee also mentioned that most of the residents had moved out from that location and stay at least 5km distance from the waste incinerator. Even though we successfully reached some of them and could get general information on the reason for the protest and feedback on the survey. But we were still facing a high challenge to get their feedback from all the participants in the community to see an overall perspective.

Furthermore, we tried to collect the survey that was nearby the waste incinerator. However, we noticed that most of the owner of the houses do not belongs to Malaysians anymore. We realized that most of the ownership for the houses located nearby the facility is held by foreigners. This is significantly limiting us from collecting how Malaysians react to the waste incinerator. Most of the responders are in a hurry and busy with their job work and choose to refuse to answer any question from us. Besides that, we were successfully reaching some of the locals who live nearby the waste incinerator facility. However, there were just a few of them willing to make the response and provide valuable feedback for us to achieve this study.

Comes to the data collection in Pulau Pangkor, we have to provide guidance or explanation on the questionnaire while performing the survey with the respondents to achieve accurate feedback from them. As mentioned previously, some of the respondents hardly understand the questions in the questionnaire because most of the respondents on the island are golden-age citizens with a minimum education level.

Furthermore, some of the respondents will choose to reject answering the questionnaire form because they are scared to answer wrongly, which leads to contact with laws and regulations. Thus, we took a long period to interview them one by one to explain and make the translation for them to achieve an accurate response.

There are a lot of articles and journals regarding risk perception, the theory of planned behaviour and the theory of energy to study people's attitudes and behaviour on the MSW. However, the theory of planned behaviour and the theory of energy had limited articles and journals to study the waste incinerator, except for risk perception. Furthermore, there is also a limitation of the study that relates to the social perspective toward the waste incinerator; most of the studies that we found refer to the economic, technological and medical perspectives.

Although our current research study was focusing on the socio-psychological theories which are effective in explaining community behavior, attitudes, and resistance to change on the project waste incinerator in Kepong and Pulau Pangkor. However, they have limitations when applied to complex infrastructure projects. These theories had a better vision focusing on individual and group dynamics, such as the individual and group dynamics of the communities and management. Besides that, for this kind of large-scale project, a study should include multiple directions and perspectives to understand the whole picture, such as economic, technological, political and medical perspectives.

Last but not least, the last of the limitations that is going to be discussed is about the sampling method for this research study. In this study, we used the probabilistic sampling method, which limits the generalizability of the findings to the broader Malaysian population in Kepong and Pulau Pangkor. Therefore, we had a difficulty collecting the data from these 2 locations with more effectiveness and efficiency.

5.6 Recommendation for Future Research

One of the key recommendations for future research is to incorporate **additional independent variables** when examining the implementation of waste incinerators in Malaysia. In the present study, three well-established theoretical frameworks—**risk perception**, **Theory of Planned Behaviour**, and **energy justice**—were employed to examine residents' attitudes, intentions, and acceptance of waste incinerator siting in their neighbourhoods. These theories provide a strong foundation for understanding community behaviour; therefore, future researchers may adopt and extend these independent variables to gain a more comprehensive understanding of public acceptance from a community perspective.

To elaborate, **risk perception** is widely applied to explain how individuals respond to uncertainty and perceived threats in their daily lives, particularly when new infrastructure or technologies are introduced. Meanwhile, the **Theory of Planned Behaviour** and **energy justice theory** are commonly used in social behaviour research to examine attitudes, intentions, trust, and perceptions of fairness, including **procedural justice** and **distributional justice**. Integrating risk perception with these theories can enhance the explanatory power of acceptance studies and generate more meaningful insights into residents' behavioural responses toward waste incineration projects.

In addition, future studies may benefit from employing **qualitative research methods** to obtain in-depth insights into residents' concerns, beliefs, and lived

experiences related to waste incinerators. While qualitative approaches are effective for exploring complex social issues, they are often limited in their ability to generate findings that are generalisable to the wider population. Therefore, adopting a **quantitative approach**, or a **mixed-methods design** that combines qualitative and quantitative techniques, is recommended to balance depth of understanding with broader population-level analysis.

Regarding sampling strategies, this study acknowledges the limitations associated with convenience sampling. Although this approach is practical for collecting data efficiently with limited resources, it may not fully capture the diversity of attitudes, behaviours, and perceptions across Malaysia's heterogeneous communities. Future research may consider more representative sampling techniques to improve generalisability while still maintaining feasibility.

Furthermore, this study recognises that **financial and economic concerns** may also influence community acceptance of waste incinerators. Many residents experience financial stress, which may heighten fears related to job security, health risks, or long-term economic impacts associated with waste incineration facilities. Consequently, future research could integrate **economic and financial variables** with community acceptance theories to better explain tolerance and acceptance of waste incinerators in Malaysia.

In addition, **political and economic conditions** may shape public attitudes toward waste management infrastructure. Political instability and economic constraints can limit government investment in large-scale waste incineration projects, shifting national priorities toward alternative waste management strategies such as the 3Rs (Reduce, Reuse, Recycle). These macro-level factors may indirectly influence how residents perceive and respond to waste incineration initiatives and should be considered in future research frameworks.

Finally, future studies may consider employing **SmartPLS** to construct more comprehensive **acceptance models**. SmartPLS is particularly suitable for analysing complex relationships involving multiple latent variables, small to moderate sample sizes, and non-normal data distributions. By using partial least squares structural equation modelling (PLS-SEM), researchers can simultaneously assess measurement and structural models, thereby improving the robustness and predictive capability of community acceptance models for waste incineration and waste-to-energy projects.

5.7 Conclusion

In a nutshell, the main objectives of this study are to develop a model to facilitate the implementation of waste incinerators in the neighbourhood vicinity of the areas of Kepong and Pulau Pangkor. The variables of risk perception and attitude have a significant positive relationship towards our dependent variables for Kepong and Pulau Pangkor. However, the variable of procedural justice has a significant negative relationship towards our dependent variables for Kepong only. Finally, yet importantly, this study also identifies those variables that have a high correlation with the dependent variable.

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Publications

Conference

- 1) Han Man, Lau, Hon-Choong, Chin & Aye Aye Khin (2022). LOCAL RESIDENTS'S RISK PERCEPTION TOWARDS WASTE INCINERATOR PROJECT (Conference Presentation). International Real Estate Research Symposium (IRERS).
- 2) Han Man, Lau, Hon-Choong, Chin & Aye Aye Khin (2022). What a waste: A conceptual framework to examine local residents' acceptance towards the sitting of waste incinerator (Conference Presentation). International Accounting of Business Conference (IABC).
- 3) Han Man, Lau, Hon-Choong, Chin & Aye Aye Khin (2023). Factors Affecting the Consumer Attitude towards Intention to Accept Sitting of Waste Incinerator at PulauPangkor in Malaysia (Conference Presentation). World Conference on Waste Management (WCWM).
- 4) Han Man, Lau, Hon-Choong, Chin & Aye Aye Khin (2024). Developing a Model to Facilitate the Implementation of Waste Incinerators (5 Minutes Presentation), Universiti Tunku Abdul Rahman

Journal Articles

- 1) Han Man, Lau, Hon-Choong, Chin & Aye Aye Khin, "Resident's risk perception and acceptance towards the sitting of waste incinerator", Social & Management Research Journal (SMRJ), <https://myjms.mohe.gov.my/index.php/SMRJ/article/view/27437>, DOI: <https://doi.org/10.24191/smrj.v21i2.27437>
- 2) Han Man, Lau, Hon-Choong, Chin & Aye Aye Khin, "WHAT A WASTE A CONCEPTUAL FRAMEWORK TO EXAMINE LOCAL RESIDENTS' ACCEPTANCE TOWARDS THE SITTING OF WASTE INCINERATOR", Insight Journal UiTM Cawangan Johor, <https://myjms.mohe.gov.my/index.php/insightjournal/article/view/22347>, DOI: <https://doi.org/10.24191/insightjournal.v10i0.22347>
- 3) Han Man, Lau, Hon-Choong, Chin & Aye Aye Khin, "Factors Affecting the Consumer Attitude towards Intention to Accept Sitting of Waste

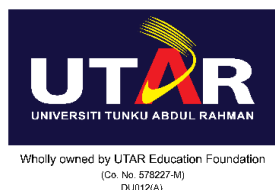
Incinerator at PulauPangkor in Malaysia”, 4th World Conference on Waste Management 2023 (WCWM 2023) - Virtual Conference, https://www.researchgate.net/publication/373819694_Factors_Affecting_the_Consumer_Attitude_towards_Intention_to_Accept_Sitting_of_Waste_Incinerator_at_Pulau_Pangkor_in_Malaysia,

Awards

- 1) Han Man, Lau, “What a waste A conceptual framework to examine local residents’ acceptance towards the sitting of waste incinerator”, The 7th International Accounting and Business Conference (IABC) 2022 - Best Presenter

Appendix I: Survey Questionnaire

Survey of the investigating the local resident's response towards the construction and operation of waste incinerators (waste-to-energy) within the neighbourhood vicinity.



Universiti Tunku Abdul Rahman

Introduction

This survey is aimed to investigate the local resident's response towards the construction and operation of waste incinerators (waste-to-energy) within the neighbourhood vicinity. To help us to have a better understanding of your view and opinion in relation to the waste incinerator operation in your vicinity, please take a few minutes (10-15 minutes) to complete and return this questionnaire. Your response will be kept confidential, and we will only share the compiled information from the many questionnaires we collected. For any suggestions and inquiries for this survey, please contact Lau Han Man at slamerious@utar.my or +60 16-638 5592. We will compile and share information from many questionnaires but will not link your name to any of the information.

Thank you for your time and your input in this research

I hereby consent on my voluntary participation in this survey which will be conducted anonymously. (As proposed accordingly by Personal Data Protection Statement - UTAR)

☐
☐

Yes - proceed to the questionnaire.

No - thank you for your time.

Section A: Please tell us more about your current habitat characteristic

1. Since when do you start to stay at this neighbourhood (eg. year 1999, 2002, etc)? _____

2. Do you own the house that you are currently staying?

☐
☐
☐
☐
☐

Yes. I am the sole owner for the house I am currently staying

Yes. I am co-owner for the house I am currently staying

No. Is owned by my family members (wife/husband, parents, brothers, etc)

No. I rent the house

No. I rent a room there

3. Do you consider your neighbourhood is a low-density or high-density neighbourhood?

☐
☐

Low density

High density

4. Will you move to other places within the following time period?

☐
☐
☐
☐

Yes, I plan to move out within 1-2 years' time.

Yes, I plan to move out within 3-5 years' time.

No, I wouldn't move out within short period of time, but, maybe someday in future.

No, I don't have the intention to move out.

5. In general,

	Strongly Disagree			Strongly Agree			
a) I think of myself as an environmentally friendly person	1	2	3	4	5	6	7
b) I think of myself as someone who is very concerned with environmental issues	1	2	3	4	5	6	7
c) I make significant changes in my lifestyle for environmental reasons.	1	2	3	4	5	6	7
d) I want others to think of me as someone who is concerned about environmental issues	1	2	3	4	5	6	7
e) Being environmentally friendly is an important part of me.	1	2	3	4	5	6	7

Section B: Please tell us more about your opinion towards waste incinerator

1. Do you aware that there is a proposed waste incinerator located near your neighbourhood?

- ☐ Yes, I am aware of it
☐ No, I do not aware of it

2. Do you know what is the purpose of constructing a waste incinerator?

- ☐ No. I have no idea.
☐ Yes, it is meant to burn the waste.
☐ Yes, it is meant to generate electricity.
☐ Yes, it is an alternative solution to landfill

3. In your estimation, what is the safe distance between your house and the waste incinerator? ____ km

4. In general, _____

4. In general, _____		Strongly Disagree			Strongly Agree			
		1	2	3	4	5	6	7
a)	I think opposing the siting and operation of waste incinerator is a right thing to do.	1	2	3	4	5	6	7
b)	I have a favorable feeling on the operation of waste incinerator	1	2	3	4	5	6	7
c)	Participating in opposing events to stop the siting and operation of waste incinerator is wise.	1	2	3	4	5	6	7
d)	Campaign stopping the siting and operation of waste incinerator should be supported.	1	2	3	4	5	6	7
e)	Terminating the construction and operation of waste incinerator will beneficial to local residents	1	2	3	4	5	6	7

5. In general, what do you think of the Environmental Impact Assessment system implemented in Malaysia?

	Strongly Disagree			Strongly Agree			
a) The EIA system is sound, and the assessment processes are standardized.	1	2	3	4	5	6	7
b) EIA assessors are authoritative and reliable	1	2	3	4	5	6	7
c) EIA information is open accessed through multiple channels.	1	2	3	4	5	6	7
d) The EIA information is disclosed timely.	1	2	3	4	5	6	7
e) Public participation in the EIA processes is high and there are variety of measures for the public to participate in.	1	2	3	4	5	6	7
f) Public participation can effectively influence the EIA decision.	1	2	3	4	5	6	7

6. In general, I will only support waste incinerator if

	Strongly Disagree			Strongly Agree			
a) There is enough compensation.	1	2	3	4	5	6	7
b) The incinerator is operated by a trustworthy entity.	1	2	3	4	5	6	7
c) The incinerator will not cause any harm to local resident's health.	1	2	3	4	5	6	7
d) The incinerator will not cause any environmental pollution.	1	2	3	4	5	6	7
e) The incinerator is not being constructed at my neighbourhood.	1	2	3	4	5	6	7
f) No matter what happened, I will against waste incinerator.	1	2	3	4	5	6	7

Section C: The followings are related to the operation of waste incinerator. Kindly inform us your concern and opinion on the followings.

	Strongly Disagree			Strongly Agree			
1. I intend to join anti waste incinerator campaign, such as public protest and petition signing.	1	2	3	4	5	6	7
2. I believe my family members will support the decision of allowing the siting of waste incinerator at my neighbourhood	1	2	3	4	5	6	7
3. The decision of accepting or rejecting the siting of waste incinerator is entirely up to me	1	2	3	4	5	6	7
4. The operation of waste incinerator will pollute the environment	1	2	3	4	5	6	7
5. Local residents are receiving financial compensation for allowing the operation of waste incinerator at their neighbourhood	1	2	3	4	5	6	7
6. I am likely to move out from the neighbourhood if the waste incinerator is operating at the neighbourhood	1	2	3	4	5	6	7
7. Public authorities protect residents from any damages arising from the operation of waste incinerator.	1	2	3	4	5	6	7
8. My voice is being heard and considered in the decision process of the siting of waste incinerator.	1	2	3	4	5	6	7
9. It is not difficult for me to accept or reject the siting of waste incinerator at my neighbourhood.	1	2	3	4	5	6	7
10. I believe the waste incinerator operator when they say that they do as much as possible to minimise the risks to residents	1	2	3	4	5	6	7
11. The operation of waste incinerator will create employment opportunities	1	2	3	4	5	6	7
12. Local residents are treated equally in the process of project siting for waste incinerator.	1	2	3	4	5	6	7
13. This neighbourhood is part of me	1	2	3	4	5	6	7
14. I would not recommend others to residing at this neighbourhood if the waste incinerator is operating at this neighbourhood	1	2	3	4	5	6	7
15. The operation of waste incinerator can increase the income of local residents	1	2	3	4	5	6	7
16. I believe that the operation of waste incinerator will create more harm to future generations, including children and grandchildren	1	2	3	4	5	6	7
17. I against the siting of waste incinerator at my neighbourhood	1	2	3	4	5	6	7
18. I think my neighbours will approve the siting of waste incinerator at my neighbourhood	1	2	3	4	5	6	7
19. Local residents have plenty of opportunities to participate in the siting decision process	1	2	3	4	5	6	7
20. I enjoy the relationships with my neighbours.	1	2	3	4	5	6	7
21. It would be very hard for me to leave this neighbourhood.	1	2	3	4	5	6	7
22. This is the ideal neighbourhood for me.	1	2	3	4	5	6	7
23. I can independently make my decision as to accept or reject the siting of waste incinerator at my neighbourhood	1	2	3	4	5	6	7
24. The truth is that everything is already decided without asking the communities	1	2	3	4	5	6	7

25. It is unfair to local residents for hosting the siting of waste incinerator as they need to bear all consequences.	1	2	3	4	5	6	7
26. I am worried for my safety (eg. explosion) if the waste incinerator is operating at my neighbourhood	1	2	3	4	5	6	7
27. I do not feel integrated in this neighbourhood after the waste incinerator is built.	1	2	3	4	5	6	7
28. I think people who are close to me will support the siting of waste incinerator at my neighbourhood.	1	2	3	4	5	6	7
29. The local planning authority will make decision that considering residents' interest.	1	2	3	4	5	6	7
30. I am concerned on my health (eg. getting sick, respiratory problem and cancer) if the waste incinerator is operating at my neighbourhood	1	2	3	4	5	6	7
31. I feel a strong sense of belonging to my residence	1	2	3	4	5	6	7
32. I believe the decision process on the sitting of waste incinerator has been fair	1	2	3	4	5	6	7

Section D: The following is related to your trust on information provided by the stakeholders in matters related to waste incinerator. Kindly inform your agreement on the following.

	Strongly Disagree  Strongly Agree						
1. Information of waste incinerator released by NGOs (such as Kuala Lumpur Tak Nak Insinerator) is trustworthy	1	2	3	4	5	6	7
2. Information released by NGOs (such as Kuala Lumpur Tak Nak Insinerator) on waste incinerator is transparent and comprehensive	1	2	3	4	5	6	7
3. NGOs (such as Kuala Lumpur Tak Nak Insinerator) released information of waste incinerator is based on scientific evidence.	1	2	3	4	5	6	7
4. I can rely on information released by NGOs (such as Kuala Lumpur Tak Nak Insinerator) in making my decision in relation to the sitting of waste incinerator	1	2	3	4	5	6	7
5. Information of waste incinerator released by the operator is trustworthy	1	2	3	4	5	6	7
6. Information released by the operator on waste incinerator is transparent and comprehensive	1	2	3	4	5	6	7
7. Information of waste incinerator released by the operator is based on scientific evidence.	1	2	3	4	5	6	7
8. I can rely on information released by waste incinerator operator in making my decision in relation to the sitting of waste incinerator	1	2	3	4	5	6	7
9. Information of waste incinerator released by government is trustworthy	1	2	3	4	5	6	7
10. Information released by government on waste incinerator is transparent and comprehensive	1	2	3	4	5	6	7
11. Government released information of waste incinerator is based on scientific evidence.	1	2	3	4	5	6	7
12. I can rely on information released by government in making my decision in relation to the sitting of waste incinerator	1	2	3	4	5	6	7

1. Gender : Male / Female

2. Age : _____

3. Household Size : _____

4. Do you have a child that is currently aged below 16? YES / NO

5. Highest Level of Education: _____

6. Monthly Income:

☐	Less than RM2,000
☐	RM2,001-RM5,000
☐	RM5,001-RM10,000
☐	RM10,001 – RM20,000
☐	More than RM20,000

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Appendix II: Ethical Form



UNIVERSITI TUNKU ABDUL RAHMAN

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Re: U/SERC/203/2022

28 September 2022

Sr Dr Chin Hon Choong
Department of Building & Property Management
Faculty of Accountancy and Management
Universiti Tunku Abdul Rahman
Jalan Sungai Long
Bandar Sungai Long
43000 Kajang, Selangor

Dear Sr Dr Chin,

Ethical Approval For Research Project/Protocol

We refer to your application for ethical approval for your research project (Master student's project) and are pleased to inform you that your application has been approved under Expedited Review.

The details of your research project are as follows:

Research Title	AN INVESTIGATION ON THE RESIDENTS' ACCEPTANCE TOWARDS WASTE INCINERATOR
Investigator(s)	Sr Dr Chin Hon Choong Lau Han Man (UTAR Postgraduate Student)
Research Area	Social Sciences
Research Location	Pulau Pangkor; Kepong
No of Participants	300 participants (Age: 18 - 60)
Research Costs	MOHE Fundamental Research Grant Scheme (MOHE FRGS)
Approval Validity	28 September 2022 - 27 September 2023

The conduct of this research is subject to the following:

- (1) The participants' informed consent be obtained prior to the commencement of the research,
- (2) Confidentiality of participants' personal data must be maintained,
- (3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines; and

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Website: www.utar.edu.my



- (4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

Should you collect personal data of participants in your study, please have the participants sign the attached Personal Data Protection Statement for your records.

The University wishes you all the best in your research.

Thank you.

Yours sincerely,



Professor Ts Dr Faidz bin Abd Rahman

Chairman

UTAR Scientific and Ethical Review Committee

c.c Dean, Faculty of Accountancy and Management
 Director, Institute of Postgraduate Studies and Research