MITIGATING WATER POLLUTION ON IMPLEMENTATION OF GREEN INNOVATION IN KELANTAN

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I

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ABSTRAK

Penyelidikan ini adalah berkenaan menangani isu pencemaran air di Kelantan yang berleluasa, yang menjejaskan penduduk di Kelantan. Ketidakpuasan hati yang berpunca daripada pencemaran air ditambah lagi dengan keperluan untuk lebih kesedaran tentang potensi inovasi hijau untuk mengurangkan masalah ini. Memfokuskan kepada penduduk berumur 15 hingga 36 tahun ke atas di Kelantan, kajian ini menggunakan Teori Tingkah Laku Terancang (TPB) dan Teori Pemodenan Ekologi (EMT) sebagai kerangka teori, dengan mengambil kira hubungan antara Inovasi Hijau, Kesedaran Alam Sekitar Hijau, Tingkah Laku Hijau. Niat, dan Nilai Produk Hijau. Kajian menggunakan kaedah kajian kuantitatif untuk mengedarkan 400 soal selidik melalui persampelan mudah. Ia menggunakan alat statistik seperti analisis kekerapan, analisis deskriptif, kebolehpercayaan, ujian normaliti, dan korelasi Pearson untuk analisis data. Penemuan menunjukkan korelasi yang tinggi (kuat) (positif) antara Pelaksanaan Inovasi Hijau dan Elemen Utama: Kesedaran Alam Sekitar Hijau, Niat Tingkah Laku dan Nilai Produk Hijau. Penyelidikan ini juga memberikan pandangan demografi yang berharga tentang umur, jantina, bangsa dan pekerjaan. Walaupun mengakui batasan yang berkaitan dengan berat sebelah responden dan ketepatan data, kajian ini mengesyorkan hala tuju penyelidikan masa depan, menekankan kajian membujur, analisis perbandingan dan penglibatan komuniti dalam inisiatif hijau. Implikasi penyelidikan ini meluas kepada penggubal dasar alam sekitar, perniagaan dan inisiatif yang mencari penyelesaian mampan untuk pencemaran air. Secara keseluruhannya, penyelidikan ini menyumbang secara signifikan pandangan tentang hubungan antara Inovasi Hijau, Kesedaran Alam Sekitar Hijau, Niat Tingkah Laku Hijau dan Nilai Produk Hijau, membuka jalan untuk membuat keputusan dan amalan termaklum dalam kelestarian alam sekitar.

ABSTRACT

This research addresses the pervasive issue of Kelantan water pollution, affecting residents in Kelantan. The dissatisfaction stemming from water pollution is compounded by a need for more awareness about the potential of green innovation to mitigate this problem. Focusing on residents aged 15 to 36 years and above in Kelantan, the study employs the Theory of Planned Behaviour (TPB) and Theory of Ecological Modernization (EMT) as a theoretical framework, considering the relationship between Green Innovation, Green Environmental Awareness, Green Behavioural Intentions, and Green Product Value. The study uses quantitative research methods to distribute 400 questionnaires through convenience sampling. It employs statistical tools such as frequency analysis, descriptive analysis, reliability, normality tests, and Pearson correlation for data analysis. The findings demonstrate a high (strong) (positive) correlation between the Implementation of Green Innovation and Key Elements: Green Environmental Awareness, Behavioural Intentions, and Green Product Value. The research also provides valuable demographic insights into age, gender, race, and occupation. While acknowledging limitations related to respondent biases and data accuracy, the study recommends future research directions, emphasizing longitudinal studies, comparative analyses, and community involvement in green initiatives. The implications of this research extend to environmental policymakers, businesses, and initiatives seeking sustainable solutions to water pollution. Overall, this research significantly contributes insights into the relationship between Green Innovation, Green Environmental Awareness, Green Behavioural Intentions, and Green Product Value, paving the way for informed decision-making and practices in environmental sustainability.

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Water pollution is a major global problem that affects human health and the environment. It is estimated that over 2 billion people worldwide lack access to safe water and that waterborne diseases cause over 1.4 million deaths each year. As for the role of Green Entrepreneurship (GE), it plays an essential role in the development and implementation of new business ventures that offer innovative solutions to environmental problems through the development of new technologies, products, and services, Bibi S et al (2016). For example, some green entrepreneurs are developing new water treatment technologies to remove pollutants from wastewater and drinking water, Khan N et al (2013). Others are developing new products, such as water filters and purification systems, that can help people protect themselves from the health effects of water pollution. In the context of water pollution, heterogeneity disease means some people are more sensitive to the health effects of water pollution than others, Pawari MJ and Gawande S (2015). For example, people with weakened immune systems are at increased risk of developing infections from exposure to contaminated water.

This research also states that water pollution occurs as a result of unwanted substances entering the water and changing the quality of the water to become dangerous to the environment and human health, Briggs D et al (2003). Based on research by the World Health Organization (WHO), as many as 80% of diseases are caused by water, Khan N et al (2013). The effects of water pollution come from human activities themselves; studies also state that human activities include industrial waste disposal, water tank leaks, marine waste, radioactive waste, and atmospheric deposition. Metals or waste materials such as radioactive or industrial waste can accumulate in rivers or seas, which can cause harm to human health

and the environment, including animals and plants. Each of these wastes has its toxins and is the leading cause of human immune suppression, reproductive failure, and leads to poisoning. A variety of diseases can also occur as a result of water pollution, Juneja T et al (2013). Dangerous diseases such as cholera, typhoid fever, skin problems, kidney, and gastroenteritis can also threaten human health, Khan MA and Ghouri AM (2011).

According to Show KY et al (2012), the increase in the population of a country is also one of the leading causes of the issue of water pollution. The increase in population leads to an increase in the generation of solid waste and industrial activities, Jabeen SQ et al (2011). Every generation of solid and liquid waste will be thrown into the river, and even the water can be contaminated with human excrement. Therefore, it has resulted in bacteria that can threaten human health, Desai N and Vanitaben (2014). Based on this research, we examined the government's recommendations as well as the ability of young entrepreneurs to supply more influential and essential technological needs on this water pollution issue. This is because it is estimated that water pollution causes various crises and can threaten economic, political, and health factors, according to Kamble SM (2014), the study also found that a quarter of the country's population is susceptible to disease from water pollution issues.

In addition, the government or the entrepreneurs need to have a high awareness and always be aware of the water pollution problem. It is recommended that waste disposal be eliminated using a more controlled system and that the waste disposed of should be treated first before it is dumped into the river or sea. The government can also hold early education and awareness programs for students or the community about the importance of taking care of the environment. Entrepreneurs can also use their advantage to create a more

2

sophisticated, innovative product with a green-friendly concept to control this water pollution.

In this research, we focus on data that will be collected can help explain the hypothesis of this study, where various factors influence on implementation of green innovation through water pollution. This research also aims to explore this intention factor in more detail. By conducting this research, we provided a new perspective on the topic that future researchers could use. It is also crucial for us to know the intention factors that influence on implementation of green innovation through water pollution.

1.2 PROBLEM STATEMENT

Water pollution can have a devastating impact on human health. Exposure to contaminated water can cause a range of diseases, including diarrhea, allergies, typhoid, and hepatitis A. Water pollution can also lead to long-term health problems such as cancer, neurological disorders, and reproductive problems, Chowdhary et al (2020). For example, children and pregnant women are more particularly vulnerable to the health effects of water pollution.

Water is also one of the leading resources for human survival. According to World Water Development 2021, a report from UNESCO, global water use has increased and grown by about 1% per year since 1980. Therefore, since water use has become widespread, it has created severe challenges to water quality. Water pollution occurs due to human activities in industry, agricultural production, and urban development. It has harmed environmental pollution, including rivers and oceans. Because of this pollution, it has affected human and social health, Xu et al (2022). This water pollution is caused by industrial wastewater and radioactive waste dumped uncontrollably without prior treatment. Therefore, it has adversely affected human health and ecosystems.

Various research conducted state that unclean water harms human health. According to UNESCO 2021 World Water Development, reports have stated that more than 80% of the death rate is due to water pollution through various diseases encountered, such as diarrhea due to unsafe drinking water. The research also stated that almost 5.3% of the deaths of children under the age of 5 died due to water pollution. In this research, the water produced should have good quality and not be contaminated; if the water is not clean, it will cause various dangerous diseases, Yassin et al (2006). Therefore, the research also found that when using water filters, people can avoid using unclean water. However, the rate of use of water filter sanitation has increased for a variety of diseases such as cholera, schistosomiasis, and helminthiasis. Therefore, this research emphasizes in more detail that water pollution is interconnected with human health, Gundry et al (2004). In addition, unclean drinks in an unsafe environment will worsen human health in terms of gastrointestinal diseases, and it harms human health, especially children.

In addition, there are also green entrepreneurial efforts in providing various benefits to the environment. However, some green entrepreneurship also has the potential to be one of the causes that contribute to water pollution directly or indirectly, Hultman NE et al (2012). Among the green businesses that contribute to water pollution is biofuel production. These biofuels are made from renewable sources such as corn or soybeans. Although biofuel can reduce greenhouse gas emissions, its production can also cause water pollution, Portale E (2012). For example, the use of fertilizers and pesticides in the use of biofuels can contaminate water supplies. The research also states that green businesses, such as solar panel production, contribute to water pollution. These solar panels are made of materials such as silicon, cadmium, and lead; these materials can be harmful to human health if they are released into the environment. For example, cadmium release into the water supply can cause cancer and other health problems, Singh G. et al (2021). Therefore, this green business

4

can not only help, but it is also one of the main causes leading to the risk of water pollution. Therefore, the study also found that each green business differs and depends on the specific business and the technology used.

Water pollution from green businesses can also have a significant impact on human health through exposure to contaminated water. Humans can face various diseases if they use an unclean water supply. Therefore, green entrepreneurship also has the potential to reduce water pollution. For example, green entrepreneurship can use sustainable practices and technologies to reduce its impact on water quality or use ideas to produce innovative products to overcome water pollution problems, such as "Wash Fit" (Water and Sanitation for improving health facilities) UN-WATER (2021).

1.3 RESEARCH QUESTION

1. What is the **level of awareness** of residents in Kelantan regarding **the importance of water treatment** systems to the implementation of green innovation?

2. What are **the factors** that encourage residents in Kelantan **to use water treatment systems for the implementation of green innovation**?

3. How does **green product value** positively a**ffect the implementation of green innovation in the water treatment system**?

1.4 RESEARCH OBJECTIVES

1. To identify **level of awareness** on the importance of **implementation of green innovation towards water treatment systems**.

2. To determine the influence **behaviour intention** on **implementation of green innovation on water treatment systems.**

3. To investigate the **green product value** on **implementation of green innovation towards water treatment systems**.

5

1.5 SCOPE OF THE STUDY

The research conducted by us focuses on the youth group and adults in Kelantan aged between 15 and 60 years. This research also focuses on the satisfaction of residents, foreign tourists, and students towards water problems in Kelantan. This research focuses on the state of Kelantan because the state of Kelantan often faces the issue of unclean, dirty, and smelly water. Although residents often use advanced technology such as purification systems and water filters, the water problem in Kelantan still cannot be contained. These water pollution factors can cause harm to human health. It causes various problems, such as chronic diseases and skin problems. In this research, the issue of water pollution should be emphasized because it is essential to use a clean water supply. If people use an unclean water supply, it can cause heterogeneous diseases that can threaten human life and health. In addition, this water pollution not only threatens human health but can also destroy the environmental ecosystem, including harming animals and plants. The implications for the country's economic growth can also be affected if the country's environment needs to be cleaner. Therefore, the scope of this research focuses on the youth group, as well as adults in the state of Kelantan, because they tend to be influenced by water pollution. In this research, local people in Kelantan aged 15 to 60 can participate as respondents to give feedback by answering the questionnaire through the Google Form link provided. In addition, this research also aims to Implementation of Green Innovation (Water Treatment Systems) among residents in the state of Kelantan.

1.6 SIGNIFICANCE OF STUDY

According to Hassan M et al (2023), the significance of the study explains the advantages that various stakeholders will experience as a consequence of this examination. The goal of this research is to "Mitigating Water Pollution on Implementation of Green Innovation in Kelantan". The outcomes of this study will be valuable in promoting and

teaching young groups and future generations about water pollution. Green entrepreneurship supports sustainable practices, which can have long-term good effects on green innovation and the environment in Kelantan described by Thomas N et al (2022). This proposed research aims to investigate the "Mitigating Water Pollution on Implementation of Green Innovation in Kelantan" is multifaceted and can be outlined as follows:

The first proposed topic of this study is environmental preservation**.** According to Mohamad et al (2023), this research is significant in addressing the critical issue of water pollution, which adversely affects the environment. Investigating the role of green entrepreneurship in mitigating water pollution contributes to environmental preservation and sustainability. The enhancement of water quality through the implementation of green innovation and entrepreneurship plays a pivotal role in fostering the development and adoption of sustainable practices. This is essential for safeguarding the well-being of aquatic ecosystems, preserving biodiversity, and guaranteeing the accessibility of safe and clean water to meet both human and ecological requirements.

Followed by that is human health implications. The examination of human health implications follows, acknowledging that water pollution often leads to various health problems, including waterborne diseases. The study's focus on understanding how green entrepreneurship, facilitated by the implementation of green innovation in Kelantan and mitigates water pollution provides valuable insights into the potential health benefits and improvements in public health resulting from pollution reduction. This understanding is crucial for recognizing the interconnectedness between environmental conservation efforts and human health. As highlighted in the study, the reduction of water pollution directly contributes to enhanced public health by minimizing exposure to harmful contaminants. The accessibility of clean water sources, vital for drinking, agriculture, and recreational

activities, becomes integral in diminishing the risk of waterborne diseases and consequently contributes to the overall well-being of the community.

The following are proposed economic development. According to Muyibi (2007), Green entrepreneurship initiatives not only help protect the environment but can also stimulate economic growth. The study's findings can highlight the economic advantages of such initiatives, including job creation and the growth of sustainable industries. The introduction of green innovation and entrepreneurship holds the potential to generate new employment opportunities, particularly in sectors aligned with environmental technology, sustainable agriculture, and eco-friendly industries. This not only fuels local economic growth but also nurtures the development of a green economy.

Next is policy and decision-making. The examination of policy and decision-making is crucial in providing valuable information to both local and national policymakers regarding the efficacy of green entrepreneurial practices in mitigating water pollution. This knowledge serves as a foundation for the development of policies and regulations that promote environmentally responsible business practices. The research not only offers pertinent insights but also equips policymakers with the necessary understanding to formulate and implement effective environmental policies. By comprehending the dynamics of green innovation and entrepreneurship in the context of water pollution mitigation, the research enables the creation of focused and impactful regulations, ultimately facilitating informed decision-making in the realm of environmental governance.

After that is community engagement. The exploration of community engagement within the study serves to illuminate the pivotal role of communities in addressing water pollution through entrepreneurial initiatives. It has the potential to advocate for increased community involvement and engagement in endeavors related to environmental protection,

as highlighted by Jinadasa (2018). The study's overarching focus on empowering local communities underscores the significance of promoting community engagement and awareness. This strategic approach is designed to empower local residents, fostering their active participation in environmental conservation efforts. Through the cultivation of a sense of responsibility and collective action, the study contributes to the advancement of sustainable water management within the community.

Lastly is knowledge transfer. Concluding with knowledge transfer, the research holds the potential to facilitate the transfer of valuable insights and best practices in "Mitigating Water Pollution on Implementation of Green Innovation in Kelantan" with similar challenges. This contribution extends beyond the immediate study area, offering a means to enhance environmental and public health outcomes on a broader scale. The study's significant role in knowledge dissemination, encompassing information on sustainable practices, green technologies, and the crucial role of entrepreneurship in environmental conservation, forms the basis for this potential knowledge transfer. This educational impact spans various domains, including academic institutions, training programs, and community awareness campaigns, fostering a wider understanding of environmentally sustainable practices and encouraging active involvement in initiatives promoting ecological well-being.

In summary, the importance of investigating "Mitigating Water Pollution on Implementation of Green Innovation in Kelantan" lies in its potential to foster a more sustainable, economically vibrant, and environmentally conscious community. The findings of this research have the potential to serve as a model for other regions grappling with similar environmental challenges, thereby contributing to global initiatives for a more sustainable future.

1.7 DEFINITION OF TERM

An academic study article with the title "Mitigating Water Pollution on Implementation of Green Innovation in Kelantan" has been published. This title can be explained as follows in this context:

1.7.1 Implementation of Green Innovation (Water Treatment System)

The meaning of "Implementation of Green Innovation" is associated with the consciousness and dedication of members of the Kelantan community to actively participate in these sustainable endeavors. People that care about the environment on a personal level typically support and take part in projects like the adoption of green technology, the reduction of pollution, and the encouragement of sustainable business practices. By enhancing water quality and lowering the danger of pollution in Kelantan, this understanding and personal dedication may play a significant role in improving human health. To put it another way, the study's objectives of lowering water pollution on implement green innovation into water treatment system.

The result of integrating "Design + Product", is innovation. Therefore, since green innovation involves the development of ecological products or processes, employing technological innovations involving energy saving, pollution avoidance, and ecological product design, it can be characterized as the sum of "Eco-Design + Eco-Production", Bersatto et al (2021).

Similarly, green innovation is innovation that exploits the creation of greener goods and services to promote sustainable development and the preservation of natural resources described by Wang et al (2021). In a similar vein, certain writers characterize green innovation as the creation of environmentally friendly raw materials or sustainable products and processes during the design or production phases. Albort et al (2016).

1.7.2 Green Environmental Awareness

Green Environmental Awareness has mostly focused on issues related to the environment, such as pollution and energy conservation. Kinnear et al (1974). Present research, however, focuses on total GEA. Environmental concerns are widespread among the general public and younger clients. Consumer environmental awareness on a range of topics has been measured using several scales in previous research. Synodinos et al (1990). It includes the New Environmental Paradigm (NEP). NEP scales are utilized in a variety of research contexts, such as marketing, tourism, and behavioral research, to ascertain environmental awareness factors. M. Cordano et al (2003). The enlarged TPB model is suggested to measure green consumption using generic GEA. Once more, environmental consciousness influences the TPB framework's outcomes. Thus, to estimate young consumers' environmental behavior, this study considers awareness to be essential. A. Rustam et al (2020).

1.7.3 Green Behavioral Intentions

In recent years, consumer values have come to light as a critical factor in predicting environmentally conscious or green buying behavior. Paauw et al (2013). Concur that value plays a significant role in influencing environmental consciousness and behavioral intentions for green products. Customers' generativity and self-enhancement values are direct and positive antecedents of their environmentally conscious consumption behavior and eco-friendly intents, according to research by Urien et al (2011).

Furthermore, it was discovered that they impact consumers' intentions to make green purchases when examining the connections between their traits, such as their internal locus of control and social influence factors, such as collectivist values. They examined how

11

personal attributes like product confidence and values influence consumer intentions toward sustainable purchase. Vermeir et al (2008).

1.7.4 Green Product Value

Products with long-term benefits to the environment are beneficial. The customer's overall evaluation of the final profit after costs or the cost of a good or service is known as the "Green Product Value". Patterson et al (1997). What is accepted and supplied is determined by the consumer's expectations, needs for sustainability, and environmental preferences. Green consumers prefer sustainable and environmentally friendly products. Direct advantages, for instance, bring up environmental concerns, and consumers are urged to purchase eco-friendly goods due to their positive health effects. Yaacob et al (2011). Specific studies on green product value claim that it can forecast consumers' intentions to make green purchases and behavior.

1.8 ORGANIZATION THE PROPOSAL

Few chapters have to be included in this proposal to explain the information that has been gathered and reviewed for this proposal. Based on our layout in this research, the global problem of water contamination and its effects on human health, highlighting how pertinent the study in Kelantan is discussed. The specific concerns with water contamination in Kelantan, emphasizing the value of investigating how green innovation might be used to solve these problems, are also described.

In the first chapter are the study's background, problem statement, research questions, research objectives, scope of the study, significance of the study, and definition of the term that has been used in this proposal. There is also the organization of the proposal, which explains the readers about the content of the submission.

12

When reviewing the literature, the relevant academic research on water pollution, its effects on health, and the contribution of green entrepreneurship to resolving environmental issues are discussed. Chapter two also explains the underpinning theory, previous studies, hypotheses statement, conceptual framework and the literature review summary.

The third chapter explains the research methods that are used for this proposal. This includes the research design, data collection methods, study population, sample size, sampling techniques, research instrument development, measurement of the variables, and procedure of data analysis. The research study's solid and well-defined framework is established in chapter three.

An introduction is included in Chapter 4, which provides context for the analyses that follow. The preliminary analysis section gives an overview of the data and a description of any early patterns or trends found. The respondents' demographic profile is then displayed. In order to provide a statistical summary that facilitates data interpretation, descriptive analysis entails analyzing important variables. A validity and reliability test to evaluate the precision and consistency of the research tools is included in this chapter. A normality test is performed to determine if the data has a normal distribution. The research topics are assessed in the section on hypothesis testing. The chapter ends with a summary that highlights the most important lessons learned.

In chapter five, the key findings section presents the most significant discoveries, the discussion delves into a detailed exploration and interpretation of the findings, and the discussion delves into a detailed exploration, implications of the study are examined to understand the broader impact of the findings, followed by a reflection on the study's limitations. Recommendations and suggestions for future research contribute insights for further exploration in the field, and the chapter concludes with an overall summary.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

According to McCombes et al (2022), a literature review is a thorough and critical analysis of the existing literature, and other academic sources, or research issues. This process involves summarizing, synthesizing, and evaluating relevant materials to provide a comprehensive understanding of the current knowledge and identify gaps or opportunities for further investigation within that particular field.

The literature review for this research aims to furnish a comprehensive overview of existing research on the subject. This review will undertake the analysis and synthesis of pertinent studies, policies, and initiatives addressing water pollution and the application of green innovation through green entrepreneurship, with a specific focus on the potential of green entrepreneurship as a mitigation strategy. Moreover, it will scrutinize the distinctive environmental and socio-economic characteristics of Kelantan and their influential role in shaping the dynamics of this relationship. The overarching goal is to establish a robust foundation for comprehending key concepts, challenges, and opportunities in this research domain, thereby setting the stage for the subsequent research and analysis within the paper.

This chapter is dedicated to elucidating the theoretical framework adopted in this research. The study anticipates that the dependent variable will likely serve as a metric or indicator of green innovation in Kelantan. Subsequently, the chapter delves into an exploration of independent variables that are anticipated to be connected. The interrelation between the independent variables and the dependent variables is then examined, with the chapter further encompassing the theoretical framework and hypotheses of the study. The chapter concludes by summarizing its key points and findings.

2.2 UNDERPINNING THEORY

2.2.1 Theory of Ecological Modernization (EMT)

Ecological Modernization Theory (EMT) is used differently in various contexts, according to Mol and Spaargaren (2000), the theory of this study is used to explain self-transformation in green ideology. This theory also argues that environmental problems can be solved through technological innovation and economic development. Green entrepreneurship can help achieve ecological modernization by developing and implementing new technologies and solutions to water pollution. Ecological Modernization Theory (EMT) is also known as a Movement that leads to transformation in environmental policymaking, Dabson (2007). In addition, the theory of Ecological Modernization (EMT) has various conflicts between the economy and the environment. In sustainable solutions, this theory of Ecological Modernization (EMT) is used to solve environmental issues. It is responsible for environmental problems and acts radically to ensure that the restoration of the environment can be maintained sustainably. Furthermore, the theory of Ecological Modernization (EMT) is a system that is used for environmental issues without changing the economic system by setting strict demands on the environment, Carter (2007).

Based on the theory of Ecological Modernization (EMT), this is also to ensure that the environment globally lives in good conditions without any pollution occurring to the environment, Bludorn (2009). In addition, this theory of Ecological Modernization (EMT) has an approach with science and technology. Science and technology are essential factors in the transformation towards a sustainable ecology. As a solution in the science and technology approach, this theory can use technological innovation that will allow the industrial world to maintain a standard life as well as develop the country in an orderly manner and take care of the environment sustainably, Carter (2007).

15

Ecological Modernization Theory (EMT) is related to the research done because this research focuses on more controlled environmental care. This research emphasizes the water pollution faced by the people of Kelantan. Water pollution experienced by residents in Kelantan can cause various adverse effects on human health. Therefore, by using this theory of Ecological Modernization (EMT), this research can use this theory to solve the issue of water pollution in stages. In addition, in the theory of Ecological Modernization (EMT), it is also stated that the use of green innovation is beneficial in dealing with the issue of water pollution. Therefore, it is a beneficial measure that can be used to overcome the issue of water pollution that can cause adverse effects on human health.

2.2.2 Theory of Planned Behavior (TPB)

The Theory of Planned Behaviour (TPB) is derived from the theoretical framework known as the theory of reasoned action (TRA). The Theory of Planned Behaviour (TPB) was initially conceptualized as the Theory of Reasoned Action in 1980 to forecast an individual's intention to partake in behavior within a specific temporal and spatial context, LaMorte (2022). The hypothesis was formulated to provide a comprehensive description of the range of acts that individuals can exert self-control over. The Theory of Planned Behaviour (TPB) has demonstrated efficacy in accurately forecasting and elucidating various behaviors, encompassing several categories. The Theory of Planned Behaviour (TPB) encompasses six constructs that collectively capture an individual's genuine influence over their behavior. These constructs are attitudes, behavioral attention, subjective norms, social norms, perceived power, and perceived behavior control, LaMorte (2022).

The theory of Planned Behavior (TPB) it is one of the best theories for analyzing or understanding human behavior. It helps to understand the complex dynamics of each individual's behavior towards green products and the environment. This theory relates to this

16

study by examining individual attitudes in expressing positive and negative values towards the green environment. In addition, the intention also expresses one of the personal views and social aspects of environmental care. Intention and behavior show individual power in making decisions, Ajzen (1991). Therefore, the study found that it has the potential to be used as a prediction by environmental research, Hagger (2019). Logically, the decision-making process is carried out by each individual by supporting each set of behaviors based on the systematic use of knowledge users. Therefore, this theory is used empirically and developed to strengthen and improve the understanding of what impacts green behavior, Paul et al (2016).

2.3 PREVIOUS STUDIES

2.3.1 Implementation of Green Innovation (Water Treatment Systems)

Based on the theory of Planned Behavior (TPB), intention includes individual behavior in the desire to do something and perform a behavior that tends toward goodness. In particular, the intention is determined by the individual's attitude towards the behavior of an individual, Ajzen (1991). Based on research, the intention is one of an individual's beliefs about the benefits that come from the behavior itself. Therefore, with the intention that affects the behavior of an individual, the individual can think rationally to use their intention for something that can have a good effect on their environment, whether on other individuals, the environment, or future generations, Vuorio et al (2018).

Innovation is a product that adds value to produce a better quality of product, Ziegler and Nogareda (2009). The study also linked green innovation and environmental care, Demirel and Kesidou (2011). Green innovation is one of the products that has added value and becomes a product that does not contain harmful and toxic substances that can affect the environment. This is because the products produced are to protect against climate change

17

and global pollution and raise awareness of the importance of protecting ecosystems. Thus, green innovation becomes one of the important aspects and critical factors for firms, Chiou et al (2011). According to Calza et al (2017). Green innovation refers to an innovative approach taken by industry to transform traditional practices by society towards a more sustainable one. Green innovation also differs from product management, production, and innovation carried out by organizations, Chen (2008).

Based on research by Zhu and Sarkis (2004), adopting green practices will result in increased environmental care. The green environment measures the interaction between business and the environment, Olsthoorn et al (2004). Product innovation can be used as idea generation, creating something new and making changes in products and services by the firm, Prajogo and Ahmed (2006). Previous studies have found a link between innovation and performance, as it proves the importance of innovation for organizational performance, Danneels (2002). The study also clarifies that more practical studies on green innovation can help Environmental Conservation, Singh et al (2020). There is also a link between the environment, innovation, and performance of firms in the environment over nature, Carrion-Flores and Innes (2010). Therefore, it shows that green innovation is crucial in eco-innovation activities and business performance and considers that it plays a crucial role in environmental care, Pujari (2006).

2.3.2 Green Environmental Awareness

Nowadays, the world faces a critical environmental issue, O. Ogiemwonyi (2022). This is due to the impact of human activity, J. Watts (2019). It has caused several adverse effects on the environment, including human health. Various challenges arise in the aspect of solving environmental issues as well as conserving the environment, N. Zhang and H. Xie (2015). Therefore, environmental awareness is essential and should be emphasized, and

the community should be aware of the importance of environmental awareness, V. Veleva (2001). Awareness of green consumption refers to environmentally conscious consumption, where the community is very concerned about the environmental impact of purchasing, using, and developing various green facilities that affect environmental sustainability, J. Moisander (2007). In this study, green consumers can help in green transformation. This is because it is essential in the future and has great implications for the environment, society, and economy, R. Wijekoon (2021). Suppose they have a greater level of awareness about the benefits of environmental care. In that case, it will foster a more caring attitude of society, as well as provide better benefits to the ecosystem environment.

According to research by Y. K. Lee (2017), Green environmental awareness is called community knowledge towards understanding environmental issues. People who are guided by nature will use and buy green products. They are concerned about three important components: health, economy, and environmental conservation, N. Ahmed et al (2021). The research was also carried out to ensure that products are fond of or have a general awareness of environmentally friendly products and show awareness when buying green products to promote a green lifestyle to preserve the environment. Previous studies have also shown that people prefer green products to show that they care about the environment. P. Khoala et al (2014). The previous study also conducted several studies on the community to examine the scale of public awareness of environmental care. The New Environmental Paradigm (NEP) studies communities to test their awareness of environmental care. Therefore, this study considers environmental awareness important in various aspects, including health and the economy. Therefore, the government and educational institutions should be concerned about environmental issues and provide early awareness to the community and students on environmental care.

2.3.3 Green Behavioral Intentions

Green behavior also affects society on the importance of environmental care. This green behavior is a plan or motivation to reduce environmental pollution and protect human health, U.W Adrita (2020). Based on the research conducted shows that the relationship of behavior to green-friendly factors greatly affects environmental sustainability, R. Yadav (2017). In addition, limited research also shows that people have concerns about environmental pollution. Therefore, society tends to have green behavior concerned with environmental sustainability, W. Qazi et al (2020). Therefore, green environmental awareness is used in this study to examine the green behavior of society toward more sustainable environmental conservation.

Based on research by O. Ogiemwonyi (2022), this study on green behavior aims to study that green practices applied within the community are highly aware of environmental care. Behavioral change also encourages the implementation and preservation of the environment. It also improved community health, D. C. Dabija (2018). Green behavior also refers to direct actions that benefit the environment, such as society buying green products. Therefore, consumers' intention to engage in green behavior is to demonstrate community action in supporting and protecting the environment and public health by purchasing green products, W. I. Askadilla (2017). For example, society buys green products or uses resources in a controlled manner to ensure that the environment is well cared for, G. Liobikiene (2019). Green behavior also involves ecologically responsible methods of purchasing goods and services that are environmentally friendly. Thus, previous studies have characterized green behavior as unidimensional in that it is used to analyze the priorities and actions of society toward the green environment, Y. K. Lee (2017).

2.3.4 Green Product Value

Green products nowadays are increasing, especially in urban areas, M. Nekmahmud (2020). Green products are an alternative where this product adds value to the product to benefit the environment. It includes product design, materials, and technology, O. Ogiemwonyi (2022). Green products can help in taking care of the environment. These green products are also mostly bought by the elderly as the main buyers; young buyers also like to buy green goods because they are considered to be prospective buyers, M.M. Hassan et al (2019). Based on research done by I. Chowdhury and M. Alamgir (2021), these buyers are considered to be nurturers in the green economy of the ongoing ecological crisis. These people are said to help in dealing with environmental issues as well as bringing new sustainability and advancing the green sector. Therefore, this green product has a good impact on the environment through green purchases, O. Ogiemwonyi (2022).

Based on the research done, products and services have their benefits as well as weaknesses, K.S. Choir (2016). This green product has its value in having a good environmental effect. Based on M.R. Yaacob and A. Zakaria (2011), the environment needs a useful product value to ensure the sustainability of the environment is always maintained. The study also states that buyers of green goods prioritize goods that are concerned with environmental protection. For example, they think that by buying green products, they will get benefits such as better health. Some studies conducted also say that the purchase of green products shows good results. Based on Y. Chen and C. Chang (2013) said that green product manufacturers produce products that have environmentally friendly qualities. Therefore, green consumers always appreciate green products and accept them in the environment.

Based on previous research, the community likes to buy green products, M. Nekmahmud (2020). Therefore, every green purchase is influenced by the buyer's behavior

towards green products. It has increased the public's perception of green products towards the environment. In addition, through psychological understanding, it is intended to target factors that influence green behavior. In practice, green behavior develops a marketing strategy that emphasizes awareness of environmental sustainability. Therefore, green products have their benefits and influence society in caring for the environment. It also contributes to environmental solutions and environmental responsibility, O. Ogiemwonyi (2022). It also encourages the community to practice green behavior and buy green products to maintain the sustainability of the environment.

2.4 HYPOTHESES STATEMENT

Hypothesis 1: There is a positive relationship between Kelantan inhabitants' understanding of the value of water treatment systems and their willingness to incorporate green innovation into these systems.

Explanation: This hypothesis is based on the supposition that as citizens of Kelantan become more cognizant of the significance of water treatment systems, they will also become more aware of the advantages of green innovation. According to the hypothesis, people are more likely to understand the importance of using eco-friendly procedures in water treatment as awareness increases, which will help promote the adoption of green innovation.

Hypothesis 2: The behavioral intention of Kelantan inhabitants to adopt water treatment systems for the goal of implementing green innovation is highly influenced by factors including perceived environmental impact, convenience of access, and financial incentives.

Explanation: The premise of this hypothesis is that a variety of factors influence how residents want to use water treatment systems for green innovation in their behavior. It is suggested that the previously described elements such as perceived environmental impact, financial incentives, and accessibility have a significant impact on motivating locals to actively engage in green entrepreneurship pertaining to water treatment systems.

Hypothesis 3: The adoption of green innovation in Kelantan's water treatment systems is positively and statistically significantly impacted by the perceived value of green products, which includes their environmental sustainability and efficacy in water treatment.

Explanation: The third hypothesis is predicated on the idea that a key factor in the effective integration of green innovation in Kelantan's water treatment systems is the perceived value of green products. According to this theory, locals are more likely to accept and incorporate green products into their systems and support overall green innovation initiatives if they value them and recognize their benefits for the environment and water treatment efficiency.

2.5 THEORETICAL FRAMEWORK

Figure 2.1 depicts the theoretical framework for this study. It consists of three variables designed to examine the relationship between the Implementation of Green Innovation (Water Treatment System) towards Green Environmental Awareness, Green Behavioral Intention, And Green Product Value. The proposed approach is founded on the Ecological Modernization Theory (EMT) and the Theory of Planned Behavior (TPB). Green Environmental Awareness and Green Product Value are used in the philosophy of Ecological Modernization (EMT). In this study, researchers employ Green Behavioral Intention for Theory of Planned Behavior (TPB) variables. This usually necessitates a thorough examination of each setting under consideration. It can be utilized in a variety of work areas to generate a useful overview of the investigation. Furthermore, this theoretical framework is utilized to isolate concepts and organize ideas so that readers and researchers comprehend the study's major goals. The following is the theoretical framework for this research:
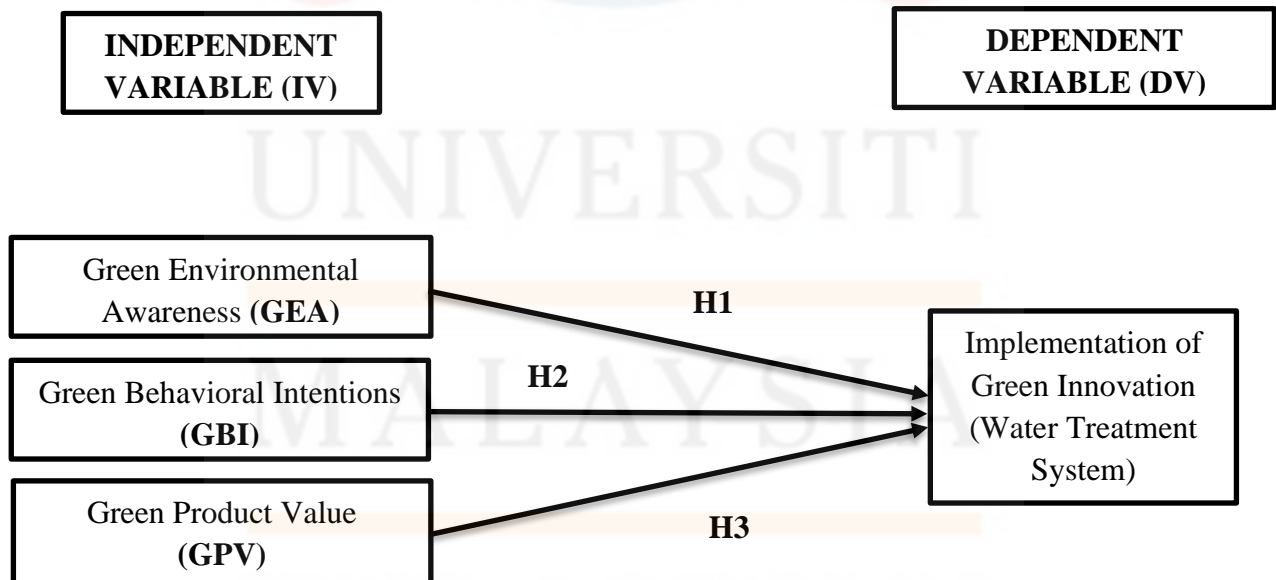
Figure 2.1: The Theoretical Framework

24

2.6 SUMMARY

In conclusion, this chapter thoroughly examined the variables that influence the components under study. The proposed theoretical framework is being developed in response to a comprehensive survey of the literature. The researchers aim to investigate the relationships among all the independent and dependent factors identified. As outlined in the preceding chapter, the literature review has been extensively discussed, beginning with an introduction to green entrepreneurship and "Mitigating Water Pollution on Implementation of Green Innovation in Kelantan". Additionally, this chapter elucidates the underlying theories utilized in this research, specifically EMT and TPB. The main components of the study, including the dependent variable and independent variable, have been discussed. Furthermore, a theoretical framework has been presented, accompanied by the formulation of hypotheses. The researchers aspire to collect data that will not only contribute to the current research but also serve as a valuable reference for future research endeavors. The subsequent chapter (Chapter 3) will delve into the study's research design and methodology in more intricate detail, offering additional insights based on the information presented.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

The research methodology serves as a comprehensive exploration and analysis of how the researcher obtained and analyzed data. This section, whether within a thesis, dissertation, or paper, is of paramount importance as it sheds light on the researcher's approach to the research process McCombs et al (2022). The two predominant research methodologies are inductive and deductive. Inductive methods are commonly applied in research investigations, while deductive approaches are utilized in scientific experiments and mathematical modeling M. Hassan et al (2023).

Furthermore, the methodology delineates analytical techniques, incorporating details about the sampling process, pre-test investigations, the application of Structural Equation Modeling (SEM), and the use of Statistical Software (SPSS), along with the Implementation of Partial Least Squares (PLS) analysis. Given the predominant focus on business research in this paper, quantitative methods are given preference. However, it is noteworthy that the collection and analysis of qualitative data, such as through interviews and observations, play a central role in qualitative research, often characterized as an inductive approach to theory development.

As observed in Mattia Casula's investigation (2020), he employed quantitative or deductive research methodologies to assess and refine his hypotheses. Similarly, in this paper, deductive techniques are employed for data analysis and subsequent discussion of results. The study focusing by establishing itself in existing theory and empirical evidence to strengthen the conceptual framework. It then transitions to exploratory research, with a primary focus on addressing "Mitigating Water Pollution on Implementation of Green Innovation in Kelantan".

3.2 RESEARCH DESIGN

The term "Research Design", as highlighted by Shona (2021), refers to the systematic arrangement of conditions for both data collection and analysis, with the goal of aligning research objectives with economic considerations and chosen research methodologies. This concept is further emphasized by a recent study, which underscores that research design involves structuring the parameters for data collection and analysis to harmonize research goals with economic constraints and chosen research methods, Analysis of Research Methodology and Research Methodology (2022).

In the context of this specific research project, primary data was obtained and subjected to analysis through the application of Structural Equation Modeling (SEM). To collect primary data, a methodology was employed that included the distribution of self-administered questionnaires using a random sampling approach. This method was selected for its simplicity and its efficiency in saving respondents' time.

The survey was conducted with the explicit goal of addressing issues related to "Mitigating Water Pollution on Implementation of Green Innovation in Kelantan". It is crucial to acknowledge that, in quantitative research, the design of the questionnaire and the methods employed for data collection are of paramount importance. In this research, primary data collection was executed through the distribution of self-administered questionnaires utilizing a random sampling approach, primarily chosen for its simplicity and its ability to optimize respondent time.

3.3 DATA COLLECTION METHODS

Data collection is defined as the systematic process of acquiring and measuring data for research purposes, as elucidated by Chai et al (2018). Dudovskiy (2011) has categorized data collection methods into two primary categories: primary and secondary methods. In this specific study, the research questions were explored and evaluated through the utilization of primary data.

The empirical investigation undertaken in this paper is predominantly reliant on the utilization of primary data. To ascertain the mode of engagement or communication for data collection, a random sampling approach was employed due to its straightforward application. A simple random sample entails the random selection of a subset from the population, ensuring that each member of the population has an equal opportunity to be selected. This method is regarded as the most fundamental probability sampling approach, necessitating only a random sample and some prior knowledge about the population Thomas (2022). Previous research has affirmed that random sampling is the most effective method for swiftly and efficiently collecting accurate data.

To achieve the research objectives and effectively address the research inquiries, the study requires a primary data collection strategy. It is important to highlight that primary data collection demands more time and effort compared to secondary data collection Malhotra (2004). Various methods are available for gathering information from respondents, and one of the most commonly used techniques is the questionnaire. Researchers frequently favor this tool for its effectiveness and efficiency in swiftly collecting data. Questionnaires serve as the primary means for gathering opinions, information, explanations, and insights into consumer attitudes.

In addition to the questionnaire, the researcher in this study with a quantitative design also employed a secondary data collection method, which involves gathering existing data through a review of documents such as journals and previous studies from library and online reference materials.

3.3.1 Questionnaire

To facilitate the completion of this research, a questionnaire was utilized as the primary data collection tool. The Google Form was randomly distributed exclusively to residents of Kelantan, tourist, outstation worker, and students. Participants provided their responses virtually through the questionnaire, designed by the researcher using Google Forms and disseminated through social media platforms such as WhatsApp and Instagram. The use of questionnaires serves a dual purpose: it aids in identifying potential biases in respondents' answers and encourages them to approach sensitive topics with seriousness, as suggested by Phrita (2021).

The questionnaire played a pivotal role in collecting primary data from respondents to achieve a comprehensive understanding of the intricate relationship between the Implementation of Green Innovation (Water Treatment System) towards Green Environmental Awareness, Green Behavioral Intention, And Green Product Value. The ultimate objective is to enhance the well-being of the local population while promoting environmentally sustainable practices. To streamline the questionnaire completion process, a Likert response scale was incorporated. This research will utilize a self-administered questionnaire, wherein respondents independently answer questions using the Google Forms platform, aligning with the approach described by De Leeuw (2008).

Moreover, the questionnaire was selected for its ability to efficiently reach a large pool of potential respondents, thereby enhancing both the speed and accuracy of data

collection while simplifying subsequent data processing. The questionnaire items were primarily adapted from previous studies and tailored to suit the specific requirements of this research, drawing on the insights of Peterson (2000) for guidance. The structure of the questionnaire was also informed by previous works from Cheung (2019).

To improve the layout and comprehensibility of the questionnaire, it has been meticulously crafted in clear and straightforward English, complemented by a Malay version to aid in the interpretation of questions and stimulate logical thinking. This approach plays a crucial role in ensuring greater accuracy in respondents' responses by minimizing potential misunderstandings in answering the questions.

3.4 STUDY POPULATION

A population is a group of individuals, objects, or occurrences that have similar qualities to the subject under study. According to Rohana Yusof et al (2004), any individual or entity in a community may differ in a multitude of ways, but they must all share at least one characteristic. The research methodology used in this study was non-probability sampling, which is the selection of individuals from a population to represent the population.

The term "Population" refers to both the entire human population and any serious issue that the ruling class must address. Sekaran et al (2009). The population is the total number of survey participants who will be used to collect data. The "Population" refers to all individuals, and the "sample" is a subset of that population. This study mainly focused on residents of Kelantan, student, and visitors.

3.5 SAMPLE SIZE

Any specific study's sample size depends on a number of criteria, such as the degree of overdetermination of the factors and the communality of the variables. In order to explain and forecast these impacts, the writers offer a theoretical and mathematical framework. A sample investigation with synthetic data confirms the predicted effects. The findings support the establishment of criteria for sample size in factor analysis and show that popular rules of thumb are invalid, MacCallum et al (1999).

Moreover, a study's sample size can be defined as the total number of respondents or participants. The number of participants chosen to reflect the population in a research study in order to meet the study's goals is known as the sample size. Since the full population cannot be tested, it is preferable to use the sample size to examine the population and finish the research study. In statistical analysis, one of the most crucial decisions is choosing the right sample size. Leku et al (2021). Any research study that is conducted must carefully consider the sample size that will be used. That will be adequate for a legitimate inference and a broad conclusion. In order to meet the objectives of the research study, the researcher might calculate the sample size and the required confidence width using the study by Ahmad et al (2017).

This paper addresses the demand for a representative statistical sample in empirical research by offering an effective sample size determination technique. Krejcie and Morgan (1970) developed a useful reference table for estimating sample size for certain populations. In this research, a purposive quantitative sampling strategy was used to obtain data without the researcher's physical presence during questionnaire completion. This technique is especially beneficial for large groups when using enumerators is impractical.

Table 3.1: Determining Sample Size for a Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Note: N is Population Size; S is Sample Size   Source: Krejcie & Morgan, 1970

Sources: Krejcie and Morgan (1970)

3.6 SAMPLING TECHNIQUES

In this research, convenience sampling will be done. Convenience sampling gives the same chance of selection as a random sample. Convenience sampling is also known as non-probability sampling used in research. Researchers select a sample of a group of individuals representative of a large population. Therefore, this sample was not randomly selected. For researchers, each population has a different opportunity to participate in the study.

In this sampling, the sampling method we used convenience sampling techniques on this research. Researchers will assign quotes to a set of people to create subgroups that accurately reflect the characteristics of the target population. Some things are included, such as gender, age, where a person lives, education, or money an individual earns. Many research

studies will select subjects from each subgroup to follow their preferences in making the final sampling. Researchers should ensure that the proportions are correct to represent the entire population. For example, the final sample should show how the population is divided between men and women, with percentages like 60% women and 40% men.

For this research, youth and adults were selected as target respondents, and the sample of this study was explicitly selected from youth and adults aged between 15 and 60 who have experience with environmental issues. Therefore, due to the variety of behaviors and community intentions being different, convenience sampling was chosen as the sampling technique for this research study.

3.7 RESEARCH INSTRUMENT DEVELOPMENT

In this research, the researcher conducted a bilingual questionnaire in English and Malay to make it easier for each respondent to answer and understand the questions asked. This questionnaire has three different parts. Part A is for the researcher to collect data from the demographics of the respondents, such as gender, age, race, education, and occupation. Part B is a question for the dependent variable, which is Implementation of Green Innovation (Water Treatment System). For this section, there are five questions in the questionnaire. Last is Part C. Part C is related to 3 independent variable questions, namely Green Environmental Awareness, Green Behavioral Intentions, and Green Product Value. Each of the four questions asked has five questions related to variables. The questions in Part B are quoted and adopted from Munoz (2018). While Part C has been quoted and adopted from O. Ogiemwonyi (2022).

In educational and social science research, the Likert scale is one of the most basic and widely used psychometric tools, Joshi et al (2015). This Likert-type scale is usually used in survey instruments, and practitioners and researchers should understand how to use the

midpoint in this scale correctly, Roberts et al (2017). The seven Likert scales were presented with a value of 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Neither Agree or Disagree. 5 = Somewhat Agree, 6 = Agree, and 7 = Strongly Agree. These seven Likert scales will be used in part B and part C. From this scale, the researcher can know the attitude, behavior, and opinion of the respondent towards the question, whether they are agreeing with it or disagreeing. This research source is also a primary source because the data collected from the questionnaire is categorized as first-hand information.

3.8 MEASUREMENT OF THE VARIABLES

The practice of giving numerical numbers or categories to the traits or qualities under study in a research setting is known as "Measurement of Variables". Based on their nature and qualities, variables in the fields of research and data analysis can be categorized into many types, such as nominal, ordinal, interval, and ratio scales. Researchers can efficiently quantify and evaluate data by choosing the right scale for each variable throughout the measurement procedure.

3.8.1 Nominal scale

Nominal scale consists of categorizing or labeling variables that have no numerical value. It is applied to qualitative data that is categorized or grouped into discrete units. Age, gender, race, and occupation and a question on what social media platform does the respondent often use. The nominal scale is the simplest measurement scale and is the lowest form of measurement. The nominal scale is also in the form of numbers to indicate different categories.

3.8.2 Interval scale

A real zero point is present on an interval scale, which measures variables with equal intervals between values. However, ratios cannot be understood because they lack a meaningful zero point.

3.8.3 Ratio scale

This type of scale is comparable to an interval scale but has a true zero point that makes it possible to discern ratios between values. It is the kind of measurement scale that is most accurate and instructive.

3.9 PROCEDURE OF DATA ANALYSIS

Data cleaning and preparation are the first important phases in the data analysis process, which guarantees the accuracy and completeness of the dataset. Then, to comprehend the primary features of the data and provide preliminary findings, Exploratory Data Analysis (EDA) procedures are utilized. The next step in the process is statistical analysis, which involves testing hypotheses and determining associations between variables using a variety of methods such as regression analysis, ANOVA, t-tests, and correlation analysis. Charts and graphs are used to effectively communicate the results by reporting the findings and visualizing them in relation to the research objectives. In addition to guaranteeing the authenticity and dependability of the research findings, this methodical approach is critical for extracting significant insights from the information. Donald R. Cooper and Pamela S. Schindler's "Business Research Methods" (2019) offers a thorough explanation of the data analysis process.

3.9.1 Pilot Test

Before the major research project, a small-scale preparatory study known as a "pilot test" is carried out to evaluate the viability, efficacy, and practicality of the research concept, methods, and data collection tools. A pilot test's main goal is to locate and resolve any possible concerns or issues that might surface during the main research project, enabling researchers to make the required modifications and enhancements before the actual data collection stage.

3.9.1.1 Reliability

In research methodology, validity and reliability testing are essential steps that guarantee the correctness and consistency of measurements and data. The degree of consistency and stability in the outcomes of an evaluation or measurement is referred to as reliability.

Table 3.2: Rule of Thumb on Cronbach Alpha

ALPHA COEFFICIENT RANGE	STRANGE OF ASSOCIATION
0.90 and above	Excellent
0.80 to less than 0.90	Very Good
0.70 to less than 0.80	Good
0.60 to less than 0.70	Moderate
Less than 0.60	Poor

Sources: Hair et.al (2003): Essential of Business Research Method

3.9.1.2 Validity Test

The degree to which a test or research tool accurately measures what it is intended to measure is known as validity, in contrast. Establishing the validity and reliability of study findings requires both ideas. To ensure that study findings are reliable, a thorough understanding of validity and reliability testing is essential. Louis Cohen, Lawrence Manion, and Keith Morrison's "Research Methods in Education" (2018) is a frequently recognized source on this subject.

3.9.2 Descriptive Analysis

Examining and summarizing data to characterize the traits, trends, and features included in a dataset is known as descriptive analysis. To give a thorough grasp of the data distribution, statistical metrics like mean, median, mode, range, variance, and standard deviation are used. Researchers can give a clear and succinct summary of the key characteristics of the data without inferring or drawing conclusions beyond what is plainly visible in the dataset by using descriptive analysis to find central tendencies, variations, and relationships within the data.

A statistical method for analyzing data distribution is frequency analysis, which determines how frequently different values or categories appear in a dataset. It makes it easier for researchers to compare the relative frequencies of various groups or subgroups and helps them comprehend the prevalence of particular characteristics or responses. This method is often applied in social sciences, economics, and other research domains to summarize qualitative data and develop frequency tables, histograms, and other visualizations that aid in expressing significant findings from the data analysis. Ghauri, P, and Gronhaug, K. (2005). Research methods in business studies: A practical guide. Pearson Education.

37

3.9.3 Pearson Correlation

A statistical tool used to assess the direction and strength of a linear relationship between two continuous variables is Pearson correlation. It evaluates the degree to which one variable varies in connection to another, offering information about how they are related. The Pearson correlation coefficient, sometimes known as "r," is a statistical measure that goes from -1 to 1. A perfect positive linear link is represented by a value of 1, a perfect negative linear relationship by a value of -1, and no linear relationship by a value of 0. This technique is a fundamental tool in statistical analysis and is frequently used to investigate the degree of relationship between variables. The book "Biostatistics: A Methodology for the Health Sciences" by Gerald van Belle, Lloyd D. Fisher, and Patrick J. Heagerty (2003) provides a thorough description of the Pearson correlation and its uses.

Table 3.3: Rule of Thumb for Interpreting the Size of a Correlation Coefficient

RANGE OF CORRELATION COEFFICIENT VALUES	LEVEL OF CORRELATION
0.80 to 1.00	Very Strong Positive
0.60 to 0.79	Strong Positive
0.40 to 0.59	Moderate Positive
0.20 to 0.39	Weak Positive
0.00 to 0.19	Very Weak Positive
-1.00 to -0.80	Very Strong Negative

-0.79 to -0.60	Strong Negative
-0.59 to -0.40	Moderate Negative
-0.39 to -0.20	Weak Negative
-0.19 to -0.01	Very Weak Negative

Sources: Meghanathan, Natarajan. (2016). Assortativity Analysis of Real-World Network Graphs based on Centrality Metrics. Computer and Information Science

3.9.4 Regression Analysis

A statistical technique called regression analysis is used to look at the relationship between one or more independent variables and one or more dependent variables. Finding the correlation between changes in the independent variables and changes in the dependent variable is the main goal. Regression equations, which are useful for predictive modeling and hypothesis testing, are the end outcome. Whereas multiple linear regression incorporates two or more independent variables, basic linear regression only looks at one. By revealing the type and intensity of links, the analysis offers important information about how different factors affect the desired result. Regression analysis yields coefficients that express the relative weights of each independent variable and the dependent variable.

3.10 SUMMARY

This chapter describes and examines the research design and methods. The goal is to assist researchers in gathering information through proper methods and in collecting, analyzing, and reporting sufficient data to accomplish the study's objectives. The purpose of this research is to determine the role of "Mitigating Water Pollution on Implementation of Green Innovation in Kelantan". In this research, quantitative research was conducted using a deductive technique, which is typically connected with statistical analysis. Furthermore, primary data was acquired through the distribution of questionnaires to collect data and assess respondents' viewpoints. Researchers believe that using questionnaires to obtain data on thoughts regarding the consequences of water contamination on human health in Kelantan is the most effective method. Furthermore, the researcher noted that a probability-based sampling technique, which is a basic random sample technique, was employed, and that the questionnaire was distributed to respondents who included Kelantan locals, students, and tourists. Furthermore, the data analysis technique, which is to collect, evaluate, and present data, motivates researchers to undertake pre-test studies utilizing computer programs such as SPSS. This is an important factor that the researcher prioritizes in determining whether or not the questionnaire that will be provided to the respondents is simple to grasp. Finally, this exploratory research study concludes that this study investigates the research issue in depth and detail.

CHAPTER 4: DATA ANALYSIS AND FINDINGS

4.1 INTRODUCTION

The researchers will explain the data analysis and findings in this chapter. A Google Form questionnaire was created and distributed to the Kelantan populace, who served as the study's responders. The statistical package for social science (SPSS) software application has assessed the data gathered from the questionnaire. Initially, the researcher carried out a preliminary analysis of 40 respondents. Subsequently, the investigators examined the information regarding the demographic makeup of 400 participants. In the third, researchers tested hypotheses, normalcy, validity, and reliability by descriptive analysis. The researcher presents the summary and conclusion from this chapter as a conclusion.

4.2 PRELIMINARY ANALYSIS

This section will include a reliability analysis that tests the validity of the questionnaire for follow-up questions using the Cronbach Alpha method.

4.2.1 Reliability Analysis

This study states that 40 respondents were chosen at random by the researcher for a pilot test. The researcher conducted the reliability test to assess the dependability of the data acquired after the pilot test. Pilot tests let the investigator assess whether the research approach is valid.

Table 4.1: Reliability Test (Pilot Test)

NUMBER OF ITEMS	STUDY VARIABLE	CORNBACH'S ALPHA	REMARKS
5	Implementation of Green Innovation (Water Treatment System)	.965	Excellent
5	Green Environmental Awareness	.968	Excellent
5	Green Behavioural Intentions	.950	Excellent
5	Green Product Value	.954	Excellent

Sources: SPSS (2023)

The study evaluated multiple dimensions associated with green initiatives. Using Cronbach's alpha to examine internal consistency revealed robust reliability across multiple constructs. The Cronbach's alpha for the Implementation of Green Innovation (Water Treatment System) showed a very good level of reliability, at .897. In contrast, Cronbach's alpha for Green Environmental Awareness demonstrated an excellent level of internal consistency, at .914. Likewise, Green Product Value and Green Behavioral Intentions

42

demonstrated excellent reliability, with Cronbach's alpha values of .891 and .879, respectively, confirming the consistent measurement of these constructs in the study setting.

4.3 DEMOGRAPHIC PROFILE OF RESPONDENTS

The demographic profile is the part that will be collecting the data of respondents that include the age, gender, race, occupation, have you ever visited Kelantan? If yes, as what?, and are you familiar with green innovation in water treatment systems?

4.3.1 AGE

Table 4.2: Age of Respondents

AGE/UMUR					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	15 - 20	39	9.8	9.8	9.8
	21 - 25	208	52.0	52.0	61.8
	26 - 30	89	22.3	22.3	84.0
	31 - 35	50	12.5	12.5	96.5
	36 – Above (Keatas)	14	3.5	3.5	100.0
	TOTAL	400	100.0	100.0	

Sources: SPSS (2023)

43
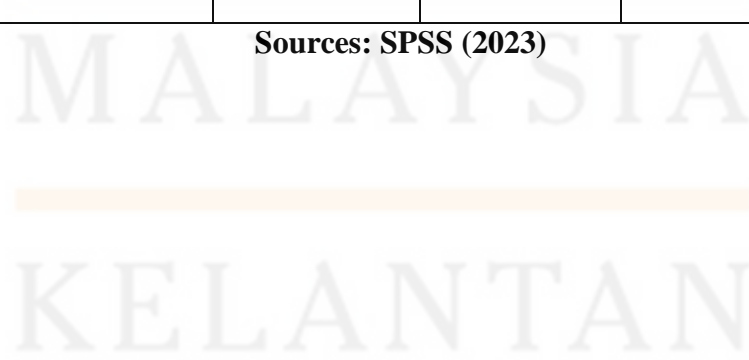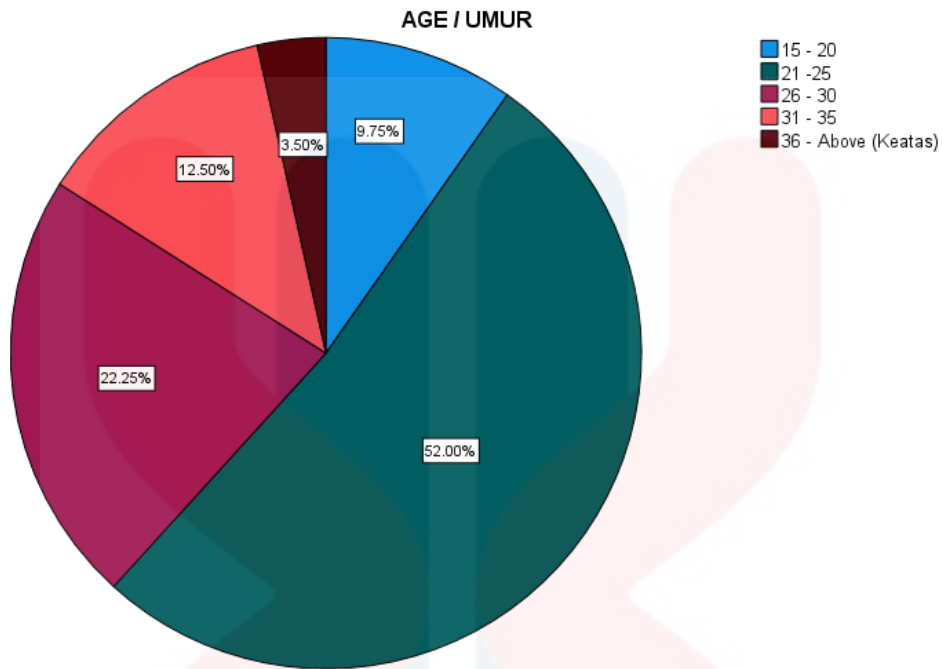
Figure 4.1: Pie Chart Age of Respondents

The study, which involved 400 participants, reveals a wide range of ages in the sample. 52% of those surveyed are between the ages of 21 and 25, which is the majority. The next group, which makes up 22.3%, is those who are 26 to 30 years old. The percentages of people who are 15 to 20 years old (9.8%), 31 to 35 years old (12.5%), and 36 years old and above (3.5%) are less but still noteworthy.

4.3.2 GENDER

Table 4.3: Gender of Respondent

GENDER/ JANTINA					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	FEMALE / PEREMPUAN	208	52.0	52.0	52.0
	MALE / LELAKI	192	48.0	48.0	100.0
	TOTAL	400	100.0	100.0	

Sources: SPSS (2023)
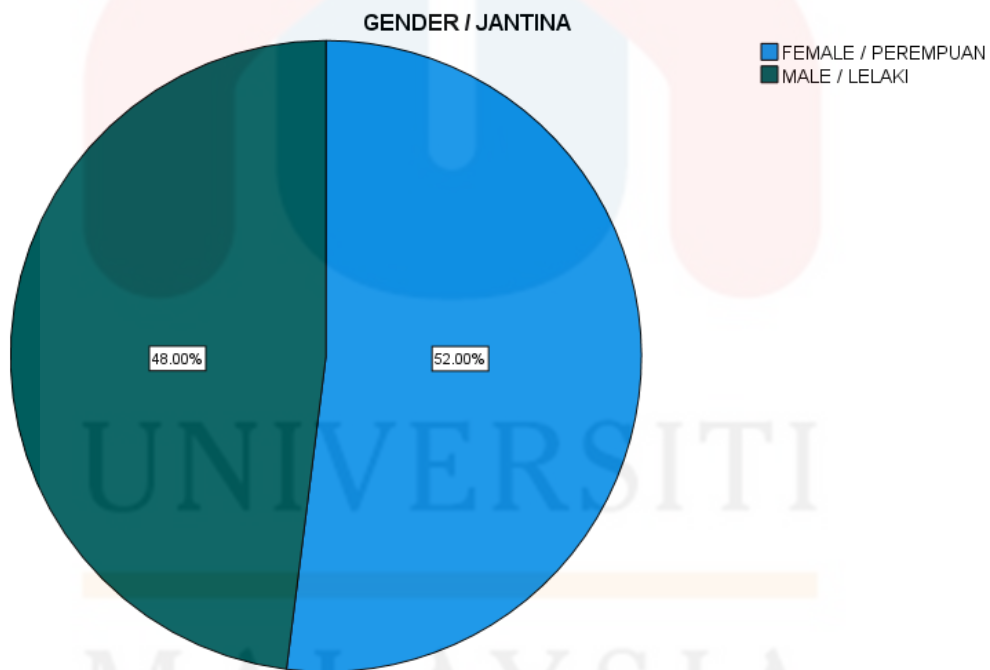
Figure 4.2: Pie Chart Gender of Respondent

The gender distribution of the 400-person sample, as reported by the survey, was 52% female and 48% male. This indicates a balanced representation of both genders in the cohort under study, with a slightly higher percentage of females than males.

45

4.3.3 RACE

Table 4.4: Race of Respondent

RACE/BANGSA					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CHINESE / CINA	53	13.3	13.3	13.3
	INDIAN / INDIA	56	14.0	14.0	27.3
	MALAY / MELAYU	287	71.8	71.8	99.0
	OTHER / LAIN-LAIN	4	1.0	1.0	100.0
	TOTAL	400	100.0	100.0	

Sources: SPSS (2023)
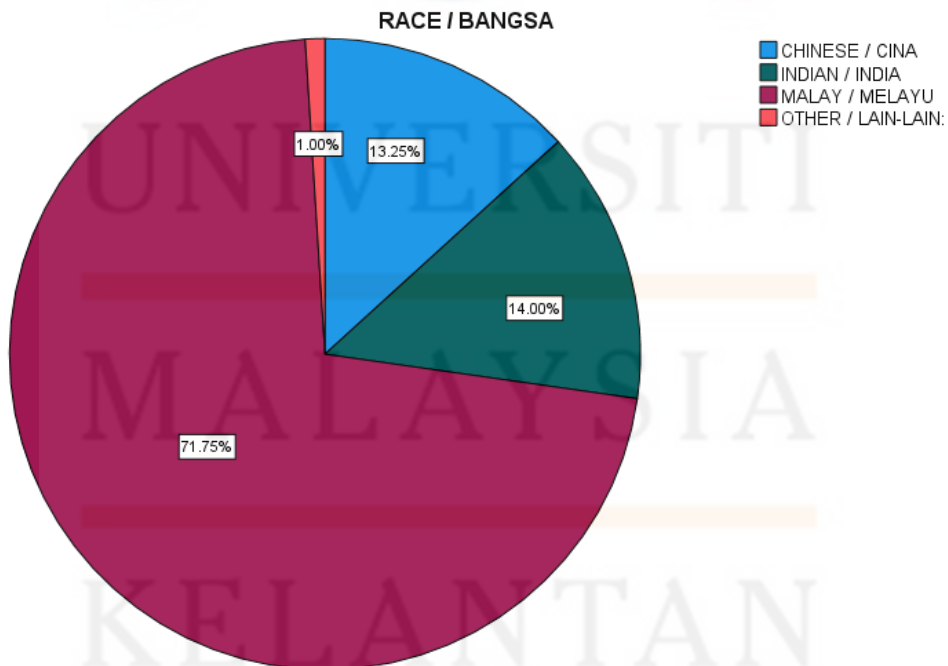
Figure 2.3: Pie Chart Race of Respondent

46

Based on the table and figure above, an analytical analysis of the 400 respondents to the survey reveals a heterogeneous racial composition, with the Malay population accounting for 71.8% of the sample, the Indian population at 14%, and the Chinese population at 13.3%. As the data notably indicates, a lesser but significant 1% of respondents were classified as "Other," demonstrating a rich tapestry of cultural diversity within the sampled population.

4.3.4 OCCUPATION

Table 4.5: Occupation of Respondent

OCCUPATION / PEKERJAAN					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	GOVERMENT EMPLOYEE / PEKERJA KERAJAAN	38	9.5	9.5	9.5
	OTHER / LAIN-LAIN:	5	1.3	1.3	10.8
	PRIVATE EMPLOYEE / PEKERJA SWASTA	98	24.5	24.5	35.3
	SELF-EMPLOYEE / BEKERJA SENDIRI	66	16.5	16.5	51.7
	STUDENT / PELAJAR	193	48.3	48.3	100.0
	TOTAL	400	100.0	100.0	

Sources: SPSS (2023)

OCCUPATION / PEKERJAAN
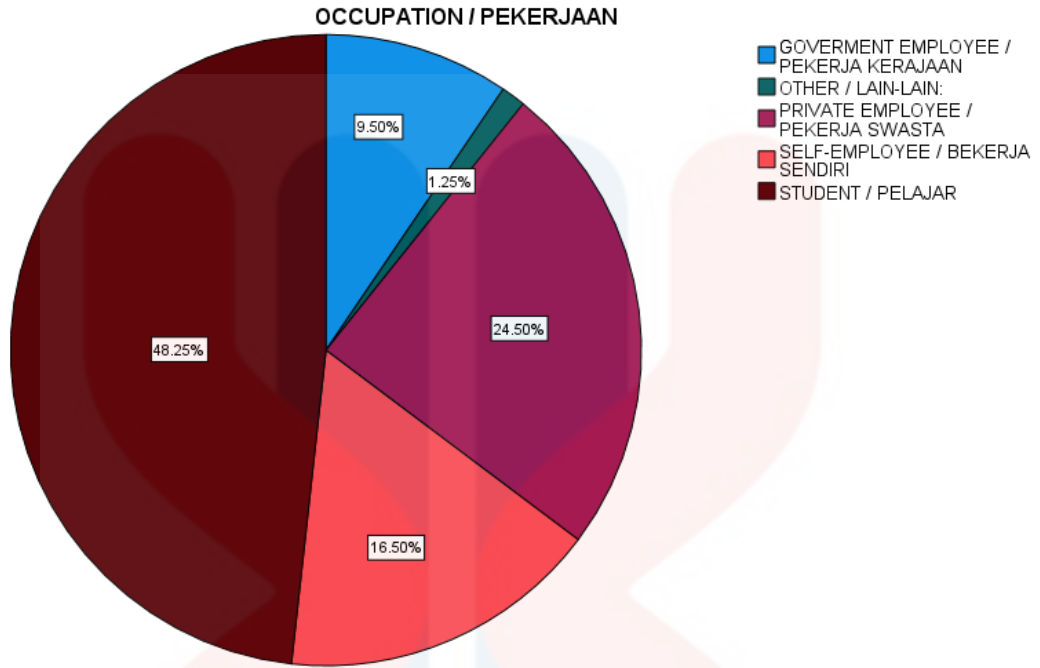
Figure 4.4: Pie Chart Occupation of Respondent

Examining the job descriptions of the 400 respondents in the sample, the data reveals a wide range of occupations, with students making up the biggest group at 48.3%, private employees at 24.5%, and self-employed people at 16.5%. In addition, 9.5% of the population comprises government employees, and 1.3% belongs to the "Other" occupational category, suggesting that the population under study has diverse occupations.

4.3.5 HAVE YOU EVER VISITED KELANTAN? IF YES, AS WHAT?

Table 4.6: Have You Ever Visited Kelantan? If Yes, As What?

HAVE YOU EVER VISITED KELANTAN? IF YES, AS WHAT? / PERNAHKAH ANDA MELAWAT KELANTAN? JIKA YA, SEBAGAI APA?				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LOCALS / PENDUDUK TEMPATAN	126	31.5	31.5	31.5
	OTHER / LAIN LAIN:	8	2.0	2.0	33.5
	OUTSTATION WORKER / PEKERJA LUAR	36	9.0	9.0	42.5
	STUDENT / PELAJAR	145	36.3	36.3	78.8
	Tidak pernah ke kelantan	1	.3	.3	79.0
	TOURIST / PELANCONG	84	21.0	21.0	100.0
	TOTAL	400	100.0	100.0	

Sources: SPSS (2023)

49

HAVE YOU EVER VISITED KELANTAN? IF YES, AS WHAT? / PERNAHKAH ANDA MELAWAT KELANTAN? JIKA YA, SEBAGAI APA?
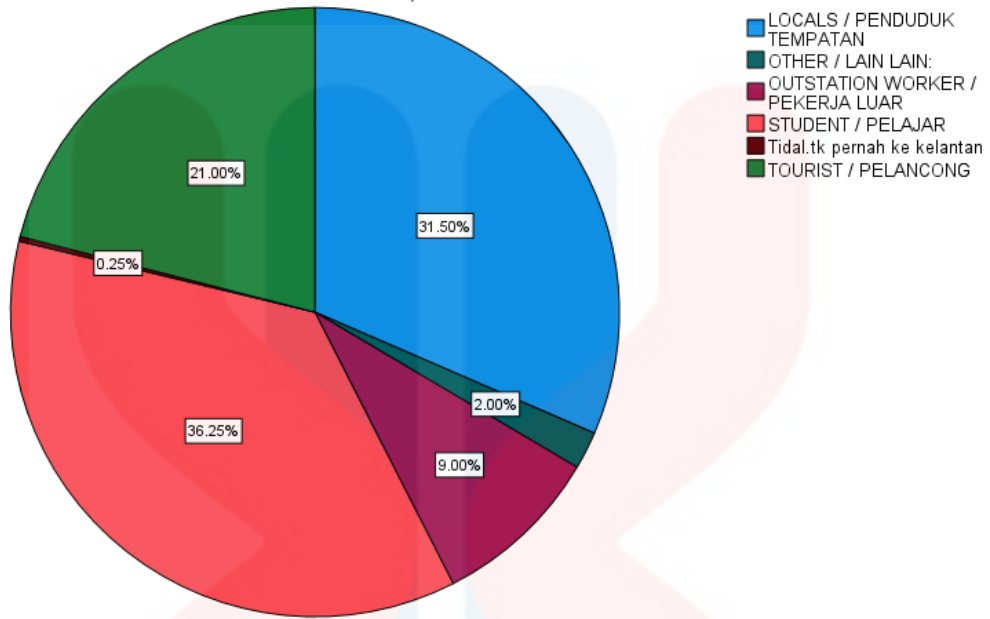
Figure 4.5: Pie Chart of Have You Ever Visited Kelantan? If Yes, As What?

After the dataset containing 400 respondents was analyzed, the distribution of associations with Kelantan revealed a varied representation: 31.5% of respondents are locals, 2% are classified as "Other," 9% are out-of-town workers, and a significant 36.3% are students. Furthermore, a small percentage of 0.3% claim that they have never been to Kelantan, while 21% identify as tourists. These figures provide a complex and diverse picture of the relationships and experiences people in this poll have had with Kelantan.

4.3.5 ARE YOU FAMILIAR WITH GREEN INNOVATION IN WATER TREATMENT SYSTEMS?

Table 4.7: Are You Familiar with Green Innovation in Water Treatment Systems

ARE YOU FAMILIAR WITH GREEN INNOVATION IN WATER TREATMENT SYSTEMS? / ADAKAH ANDA MENGENALI INOVASI HIJAU MENGENAI SISTEM RAWATAN AIR?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NO / TIDAK	82	20.5	20.5	20.5
	YES / YA	318	79.5	79.5	100.0
	TOTAL	400	100.0	100.0	

Sources: SPSS (2023)
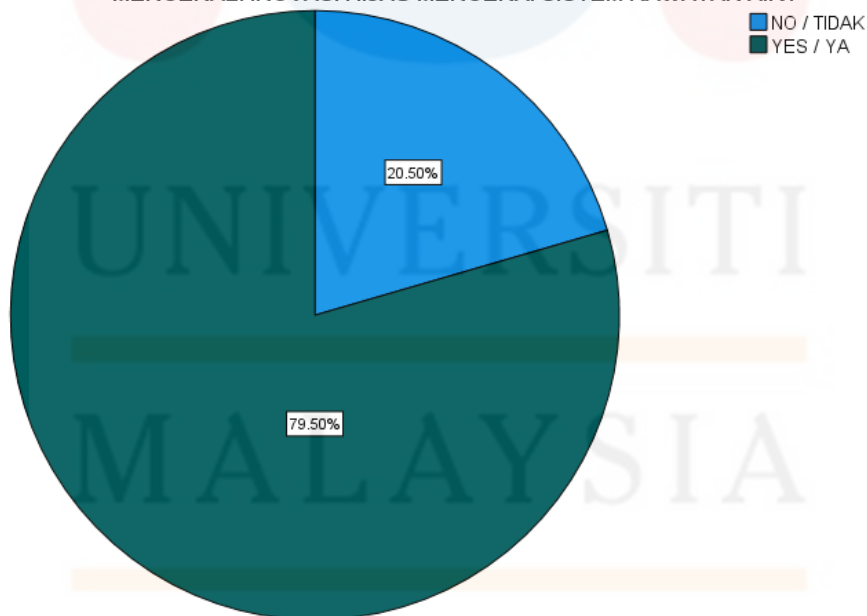
Figure 4.6: Pie Chart of Are You Familiar with Green Innovation in Water Treatment Systems

51

The table and figure above show the results. Are you familiar with green innovation in water treatment systems? The majority of respondents agree and recognize green innovation. A total of 79.50% of respondents answered "Yes", while a total of 20.50% of respondents answered "No" to the question of Are you familiar with green innovation in water treatment?

4.4 DESCRIPTIVE ANALYSIS

Descriptive analysis, also known as descriptive statistics, is a data analysis process that utilizes statistical techniques to describe or summarize a set of data. According to Mishra et al. (2019), there are three main types of statistics involved in descriptive analysis: measures of frequency (frequency percent), measures of central tendency (mean, median, and mode), and measures of variation (standard error, quartile, interquartile range, percentile, range, and coefficient of variation). In research studies, frequency measures are typically employed for categorical data, while other types are used for quantitative data. Descriptive analysis enables researchers to assess frequency, central tendency, variation, and position.

In this research study, demographic data obtained from respondents will undergo a frequency distribution, summarizing the frequency in the form of a table or graph. This aids the researcher in obtaining variables in terms of number or percentage. Additionally, to measure the central tendency of the dataset, the researcher will calculate mean, median, mode, and various variability measurements such as standard deviation, variance, minimum and maximum variables, skewness, and kurtosis.

Table 4.8: Mean and Standard Deviation

VARIABLES	DIMENSIONS	MEAN (SD)
Dependent Variable	Implementation of Green Innovation (Water Treatment System)	6.0815 (0.9135)
Independent Variable	Green Environmental Awareness	6.1770 (0.8946)
Independent Variable	Green Behavioral Intentions	6.2380 (0.8196)
Independent Variable	Green Product Value	6.0750 (0.9156)

Sources: SPSS (2023)

The table above presents each variable's mean and standard deviation, including both independent and dependent variables. The mean for the dependent variable, "Implementation of Green Innovation," is reported as (6.0815). In comparison, the mean values for the independent variables are as follows: for Green Environmental Awareness, (6.1770) for Green Behavioral Intentions, and (6.2380) for Green Product Value (6.0750).

4.5 VALIDITY AND RELIABILITY TEST

According to Middleton (2022), reliability and validity are concepts employed to assess the quality of research. They indicate how well a method, technique, or test to measures something.

Table 4.9: Rule of Thumb on Cronbach Alpha

ALPHA COEFFICIENT RANGE	STRANGE OF ASSOCIATION
0.90 and above	Excellent
0.80 to less than 0.90	Very Good
0.70 to less than 0.80	Good
0.60 to less than 0.70	Moderate
Less than 0.60	Poor

Sources: Hair et.al (2003); Essential of Business Research Method

Table 5: Reliability Test

VARIABLE	DIMENSIONS	CRONBACH'S ALPHA	N OF ITEMS	SAMPLE SIZE	REMARKS
Dependent Variable	Implementation of Green Innovation (Water Treatment System)	0.897	5	400	Very Good

Independent Variable	Green Environmental Awareness	0.914	5	400	Excellent
Independent Variable	Green Behavioral Intentions	0.879	5	400	Very Good
Independent Variable	Green Product Value	0.891	5	400	Very Good

Sources: SPSS (2023)

The figure and table above illustrate the results of the reliability of Cronbach's alpha for each variable. According to the rule for Cronbach's alpha, the scale measures acceptance values ranging from excellent, good, good, moderate, and poor. As indicated in the table, Cronbach's alpha for Implementation of Green Innovation (Water Treatment System) is 0.897, Green Environmental Awareness is 0.914, Green Behavioral Intentions is 0.879, and Green Product's Value is 0.891. Therefore, the data will be used for further analysis. As a result, all the variables show a very good scale for testing the hypotheses because they fall within 0.80 to less than 0.90, as shown in the Alpha Coefficient Range.

4.6 NORMALITY TEST

Table 6: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
TESTS OF NORMALITY						
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
PIGI	.157	400	.000	.858	400	.000
GEA	.179	400	.000	.834	400	.000
GBI	.176	400	.000	.823	400	.000
GPV	.156	400	.000	.867	400	.000
a. Lilliefors Significance Correction						

Sources: SPSS (2023)

The table above presents the results of the normality test conducted in the study. The Kolmogorov-Smirnov (KS) and the Shapiro-Wilk (SW) tests were employed to assess normality. These tests, commonly used for determining normality, provide valuable insights into the distribution characteristics of the data.

The significance values for the Kolmogorov-Smirnov and Shapiro-Wilk tests in this study are indicated as (p=.000), as shown in the table above. This significance level is less than 0.05 (p<0.05). Consequently, the study suggests that the relationship between the dependent and independent variables is statistically significant. The p-value less than 0.05 indicates that there is evidence to reject the null hypothesis, supporting the presence of a significant relationship.

The study employs a parametric test known as Pearson correlation coefficient analysis. This choice is supported by the significant value being less than 0.05 (<0.05), specifically indicated as p=0.00 in the table. The inference drawn is that the data exhibits a

56

regular distribution, validating the use of the Pearson correlation coefficient analysis in examining the relationships between variables.

4.7 HYPOTHESES TESTING

Hypothesis testing is to evaluate the relationship between the independent variable and the dependent variable. In this study, researchers used Pearson's correlation coefficient analysis. The Pearson correlation test assessed the linear relationship between the two variables. This test aims to establish statistical significance for the correlation coefficient. According to Bhandari (2022), a value between -1 and 1 represents the degree and direction of the relationship between two variables. In other words, it shows how two or more measurements of a variable compare across data sets.

Table 7: Rules of Thumbs about Correlation Coefficient Size

SIZE OF CORRELATION	INTERPRETATION
.90 to 1.00 (-.90 to -1.00)	Very High Positive (Negative) Correlation
.70 to .90 (-.70 to -.90)	High Positive (Negative) Correlation
.50 to .70 (-.50 to -.70)	Moderate Positive (Negative) Correlation
.30 to .50 (-.30 to -.50)	Low Positive (Negative) Correlation
.00 to .30 (.00 to -.30)	Little If Any Correlation

Sources: Hinkle et al (2003). Applied Statistics for the Behavioral Sciences (5th

Edition).

The table below shows Pearson's correlation coefficient analysis, which was analyzed through SPSS. The analyzed data shows the relationship that can be achieved

between the two analyzed data. Based on Pearson's correlation coefficient analysis data, the researcher studied two data, the independent variable and the dependent variable. Independent variable consists of Green Environmental Awareness (GEA), Green Behavioral Intentions (GBI), and Green Product Value (GPV). In contrast, the dependent variable is the Implementation of Green Innovation (Water Treatment System) (PIGI).

Table 8: Pearson Correlation Coefficient Analysis

CORRELATIONS					
		PIGI	**GEA**	**GBI**	**GPV**
PIGI	Pearson Correlation	1	.735**	.733**	.715**
	Sig. (2-tailed)		.000	.000	.000
	N	400	400	400	400
GEA	Pearson Correlation	.735**	1	.836**	.808**
	Sig. (2-tailed)	.000		.000	.000
	N	400	400	400	400
GBI	Pearson Correlation	.733**	.836**	1	.851**
	Sig. (2-tailed)	.000	.000		.000
	N	400	400	400	400
GPV	Pearson Correlation	.715**	.808**	.851**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	400	400	400	400
**. Correlation is significant at the 0.01 level (2-tailed).					

Sources: SPSS (2023)

Based on table of the independent and dependent variables above, the researcher examines the hypothetical relationship between the two data being accepted or not as below:

4.7.1 Hypothesis 1 (GEA)

H0: There is no significant relationship between Implementation of Green Innovation (PIGI) and Green Environmental Awareness (GEA)

H1: There is a significant relationship between Implementation of Green Innovation (PIGI) and Green Environmental Awareness (GEA)

According to the table above results, there is a strong correlation between Green Environmental Awareness and Implementation of Green Innovation ($p<0.05$, $r=0.735$). The relationship between Green Environmental Awareness and Implementation of Green Innovation has a 73.5% significance level. The positive r-value demonstrated the existence of a positive linear connection. It demonstrates that the two variables have a high positive strength connection. Green Environmental Awareness and Implementation of Green Innovation are significantly correlated, as shown by the p-value of 0.000, which is less than 0.01. As a result, the research rejected hypothesis HO, according to which there is no connection between Green Environmental Awareness and Implementation of Green Innovation. Consequently, the hypothesis Hl is accepted because the two variables have a substantial connection.

4.7.2 Hypothesis 2 (GBI)

H0: There is no significant relationship between Implementation of Green Innovation (PIGI) and Green Behavioral Intentions (GBI)

H2: There is a significant relationship between Implementation of Green Innovation (PIGI) and Green Behavioral Intentions (GBI)

According to the table above, there is a significant correlation between Green Behavioral Intentions and Implementation of Green Innovation (p0.05, 1=0.733). Both variables have a high positive correlation since 0.733 falls between 0.70 and 0.90. The significance values for both variables are 0.000, indicating that they are both highly significant. As a result, there is a strong correlation between Green Behavioral Intentions and Implementation of Green Innovation. As a result, the researcher accepted alternative H2 hypotheses while rejecting the original HO assumptions.

4.7.3 Hypothesis 3 (GPV)

H0: There is no significant relationship between Implementation of Green Innovation (PIGI) and Green Product Value (GPV)

H3: There is a significant relationship between Implementation of Green Innovation (PIGI) and Green Product Value (GPV)

The correlation research between Green Product Value and Implementation of Green Innovation resulted in the following for the final hypotheses: (p0.05, r=0.715), which indicated a high positive strength of the link. The r-value for this correlation is positive, indicating a positive linear connection. It also demonstrated a significant association between two variables when the p-value is less than 0.01. As a result, this research accepts the H3 hypotheses that demonstrate a strong association between Green Product Value and Implementation of Green Innovation while rejecting the HO hypotheses.

Based on the results above, the Pearson Correlation Coefficient Analysis shows a strong positive correlation between Implementation of Green Innovation and Green

Environmental Awareness, Green Behavioral Intentions, and Green Product Value. As a result, the researcher summarized the hypotheses as below,

Table 4.14: Summary of Hypotheses Testing Results

	HYPOTHESES	RESULTS
H1	H0: There is no significant relationship between Implementation of Green Innovation and Green Environmental Awareness. H1: There is a significant relationship between Implementation of Green Innovation and Green Environmental Awareness.	Accepted H1
H2	H0: There is no significant relationship between Implementation of Green Innovation and Green Behavioral Intentions. H2: There is a significant relationship between Implementation of Green Innovation and Green Behavioral Intentions.	Accepted H2
H3	H0: There is no significant relationship between Implementation of Green Innovation and Green Product Value. H3: There is a significant relationship between Implementation of Green Innovation and Green Product Value.	Accepted H3

The Pearson Correlation Coefficient Analysis table is used as the summary for the hypotheses testing shown in the table above. According to the Pearson Correlation Coefficient Analysis, the dependent variable, Implementation of Green Innovation, and the independent factors, Green Environmental Awareness, Green Behavioral Intentions, and Green Product Value, show a substantial relationship. Therefore, for H1, H2, and H3, the hypotheses are accepted at a p-value of less than 0.05.

4.8 SUMMARY

In conclusion, through this chapter, the researcher goes through the data, including the preliminary analysis, demographic profile of the respondents, descriptive analysis, validity, reliability testing, normality testing, and hypotheses testing. The data that had been collected from respondents via a questionnaire built in Google Forms was examined by the researcher. For the preliminary analysis, the researcher has done a pilot test with a total of 40 respondents. After that, the researcher proceeded to the actual data, which needed 400 respondents.

First of all, the demographic profile of the respondents is about the background of respondents. The researcher evaluated the mean between the dependent values and the independent variables factors for each of the questions in this research for the descriptive analysis of dependent and independent variables. Thirdly, validity and reliability tests were done by using Cronbach's Alpha. Lastly, Pearson Correlation Analysis was used in order to test the hypothesis. Hypothesis testing aims to determine the link between the dependent variable and independent variables.

As the results, Chapter 4 briefly summarizes the data analysis, the outcomes of the data obtained from the respondents, and the results utilized to interpret the data.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.1 INTRODUCTION

The conclusions of chapter four are continued in chapter 5. Within this chapter, the researcher will address the main conclusions drawn from the investigation and the implications, limitations, and suggestions for future research. The three hypotheses will also be discussed—finally, the study's ultimate conclusion.

5.2 KEY FINDINGS

Table 5.1: Summary of Hypotheses Testing Table

RESEARCH QUESTIONS (RQ)	RESEARCH OBJECTIVES (RO)	HYPOTHESES RESULTS	FINDINGS
What is the level of awareness of residents in Kelantan regarding the importance of water treatment systems to the implementation of green innovation?	To identify level of awareness on the importance of implementation of green innovation towards water treatment systems.	($p<0.05$, $r = 0.735$)	There is a significant relationship between Implementation of Green Innovation (PIGI) and Green Environmental Awareness (GEA)
What are the factors that encourage residents in Kelantan to use water treatment systems for the	To determine factors that influence behaviour intention on implementation of green	($p<0.05$, $r = 0.733$)	There is a significant relationship between Implementation of Green Innovation (PIGI) and

implementation of green innovation?	innovation on water treatment systems.		Green Behavioural Intentions (GBI)
How does green product value positively affect the implementation of green innovation in water treatment systems?	To investigate the green product value on implementation of green innovation towards water treatment systems?	(p<0.05, r = 0.715)	There is a significant relationship between Implementation of Green Innovation (PIGI) and Green Product Value (GPV)

5.3 DISCUSSION

According to Helmenstine (2020), a hypothesis is a suggested explanation for an observation. It is a proposed explanation or prediction that may or may not be tested through experimentation or further investigation.

5.3.1 Hypothesis 1 (GEA)

H1: There is a significant relationship between Implementation of Green Innovation (PIGI) and Green Environmental Awareness (GEA)

According to the findings of hypothesis 1 (H1), there is a substantial correlation between the implementation of green innovation (PIGI) and green environmental awareness (GEA). The results demonstrate a substantial positive connection ($p < 0.05$, $r = 0.735$). The H1 was approved as a result.

64

A few research have suggested a connection between the Implementation of Green Innovation (PIGI) and Green Environmental Awareness (GEA). Based on Haijun Wang et al. (2021), have indicated that there exists a positive feedback loop between the Implementation of Green Innovation and the development of Green Environmental Awareness. Organizations or individuals adopting environmentally friendly practices (PIGI) can increase awareness and understanding of environmental issues (GEA). Companies that invest in green technologies and sustainable practices often do so in response to a growing awareness of environmental concerns. These initiatives can contribute to greater awareness among employees, stakeholders, and the general public (Karalee Close, 2021). According to Xiaohua Li et al. (2023), institutions, governments, and non-profit organizations often implement programs to educate individuals and businesses about the benefits of green practices, fostering a deeper understanding of environmental issues. PIGI in product development and manufacturing processes can influence consumer behaviour. Consumers may prefer products and services that align with their green values as they become more environmentally conscious. This shift in consumer preferences, in turn, encourages businesses to invest in green innovation.

5.3.2 Hypothesis 2 (GBI)

H2: There is a significant relationship between Implementation of Green Innovation (PIGI) and Green Behavioural Intentions (GBI)

According to the conclusion of hypothesis 2 (H2), there is a strong correlation between the Implementation of green innovation (PIGI) and green behavioural intentions (GBI). The results demonstrate a substantial positive connection ($p < 0.05$, $r = 0.7.33$). The H2 was approved as a result.

A few research studies have suggested a connection between the Implementation of Green Innovation (PIGI) and Green Behavioural Intentions (GBI). According to Daniel Adu et al. (2021), green innovation refers to developing and implementing environmentally friendly practices and technologies, while green behavioural intentions refer to individuals' intentions to engage in environmentally friendly behaviours. Organizations that prioritize green innovation in their operations and products often influence not only their internal practices but also the behaviours of their stakeholders. Corporate sustainability initiatives, which involve the Implementation of green innovations, can positively shape the behavioural intentions of employees, customers, and investors. Next, educational programs and campaigns highlighting the positive impact of green innovations on the environment can influence individuals' attitudes and intentions. These initiatives create awareness and understanding, leading to pro-environmental behavioural intentions (Vanessa, 2022).

5.3.3 Hypothesis 3 (GPV)

H3: There is a significant relationship between Implementation of Green Innovation (PIGI) and Green Product Value (GPV)

According to the findings of hypothesis 3 (H3), there is a strong correlation between the Implementation of Green Innovation (PIGI) and Green Product Value (GPV). A positive, highly significant connection exists ($p < 0.05$, $r = 0.715$). The H3 was approved as a result.

Another researcher's study further demonstrated the connection between Implementing Green Innovation (PIGI) and Green Product Value (GPV). It has been demonstrated by Taofeeq and Gusman (2022) that implementing green innovations in the development and production of products can enhance their perceived value among consumers. Green features, such as eco-friendly materials, energy efficiency, or sustainable packaging, contribute to a positive perception of the product's overall value. Green

66

innovations that lead to resource efficiency, waste reduction, or cost savings in the production process contribute to the economic value of products. This economic value and environmental benefits enhance the overall green product value. According to findings, effective communication of green innovations is crucial in shaping consumer perceptions of product value. Companies that transparently communicate their sustainable practices and innovations can enhance the perceived value of their products by highlighting the positive environmental impact.

5.4 IMPLICATIONS OF THE STUDY

The study clarifies the severe water pollution problem that the area faces, focusing on Kelantan's adults from 15 to 60 years old. The issue still exists and poses severe environmental and human health risks, even with cutting-edge technologies like water filters and purification systems. The results highlight how urgently comprehensive water management plans are needed and how crucial it is for government and community organizations to work together. The research emphasizes the environmental impact on the ecosystem, which goes beyond health issues and shows the need for stronger laws and community involvement in conservation initiatives.

The study also highlights the potential financial consequences of water contamination, highlighting the need to maintain a clean environment from an economic standpoint. The report recommends launching educational initiatives and campaigns to increase public knowledge of the value of clean water and encourage the appropriate use of water treatment systems to address these issues. The study, which focuses on young people, promotes their involvement in environmental activities and uses their passion for technology to help them develop creative ideas. Finally, the study intends to leverage knowledge about individual aspirations regarding green innovation to customize interventions for inhabitants

of Kelantan, thereby laying the groundwork for well-informed policy development and decision-making.

5.5 LIMITATIONS OF THE STUDY

The study conducted a survey among the youth group and adults in Kelantan aged between 15 and 60 years. 400 Kelantan locals, foreign tourists, and students have answered this survey to complete this research. However, some things could be improved when conducting this research study. Among the limitations is the difficulty in ensuring that each group is focused on completing this survey questionnaire. This is because some groups do not want to take part in the survey conducted, and there are some groups who are afraid that the data taken through this survey will be exposed after they have answered the questionnaire that was asked of them. This is because they feel uncomfortable and worry that their data is exposed to irresponsible parties.

In addition, there is ambiguity and honesty in answering the research questionnaire. There were some things that the respondents needed help understanding in answering this questionnaire survey. Therefore, the researcher should explain this survey in more detail to the respondents to ensure that they can understand and answer the questionnaire survey correctly. Next, the data provided by the respondent is not verified as accurate. This is because some respondents answered the questions without carefully reading the questions asked through the Google form. These respondents continued to answer and choose answers without properly reading the questions asked in the survey. Due to this error, this study may also face the problem of the researcher's prediction about the perception and reaction of the respondents being different, and the data taken makes it difficult to make an accurate decision on whether this study can be accepted in general.

5.6 RECOMMENDATIONS OR SUGGESTIONS FOR THE FUTURE RESEARCH

Research in the future could gain from a more thorough strategy that includes qualitative methods and quantitative approaches. Even if most of the current study is quantitative, adding qualitative information from observations or interviews may help clarify the research issue.

To monitor changes and trends over a prolonged period, longitudinal studies should be considered. This would improve the capacity to evaluate the viability and efficacy of green innovation projects in tackling Kelantan's water pollution problems.

To increase the scope, comparison studies with other cities or regions dealing with comparable environmental issues may be part of future research. This would make it easier to comprehend how context differs and whether findings can be applied outside Kelantan.

With a focus on green innovation, future studies may examine certain technological advancements and how they affect the reduction of water pollution. Investigating how new technologies or environmentally friendly behaviours might help solve environmental issues is one way to do this.

We examine successful methods for including the community in environmental and green entrepreneurial projects. A key factor in the success of such initiatives is knowing how to promote and maintain community involvement.

Studies on how green innovation and entrepreneurship might reduce water pollution may offer useful information to decision-makers. More effective environmental policies may result from evaluating the regulatory environment and identifying any gaps or potential improvement areas.

5.7 OVERALL CONCLUSION OF THE STUDY

This study is about Mitigating Water Pollution on Implementation of Green Innovation Through Green Entrepreneurship in Kelantan. It emphasizes the significance of three independent variables: Green Environmental Awareness, Green Behavioural Intention, and Green Product Value. In Chapter 4, the researcher collected and analyzed a solid dataset of 400 replies by the parameters given in Chapter 3. Including research objectives in reliability, descriptive, and Pearson correlation studies improves precision in design and implementation and gives a complete understanding of the interaction between the discovered elements. The study's results clearly state implications, ramifications, and limits. The researcher's practical summary summarises essential insights and makes valuable recommendations for further research, resulting in a comprehensive comprehension of the topic. This study substantially adds to the issue of water pollution reduction, green innovation, and entrepreneurship in Kelantan by combining theoretical foundations, methodological precision, and practical analysis.

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APPENDIX A: DRAFT OF QUESTIONNAIRE

SECTION A: DEMOGRAPHICS

	VARIABLES
Age	- 15-20 - 21-25 - 26-30 - 31-35
Gender	- Male - Female
Race	- Malay - Chinese - Indian - Other:
Occupation	- Student - Government employee - Private employee - Self-employee - Other:
Have You Ever Visited Kelantan? If Yes, As What?	- Tourist - Student - Locals - Outstation Worker
Are you familiar with green innovation in water treatment system?	- Yes - No

SECTION B: DEPENDENT AND INDEPENDENT VARIABLES

QUESTIONNAIRE

VARIABLES	MEASUREMENT CONSTRUCT
Implementation of Green Innovation (Water Treatment Systems) **(PIGI)**	**PIGI1:** Using materials with the least pollution when choosing environmentally friendly products can overcome the problem of water pollution. **PIGI2:** Using the most energy-efficient, high-quality materials that have long-term effects can curb water pollution problems. **PIGI3:** Using products that are easy to recycle and reuse can avoid water pollution problems that often occur. **PIGI4:** Using highly innovative products can reduce environmental and water pollution. **PIGI5:** Conserving the environment by using environmentally friendly products with the best quality can curb the problem of water pollution.
Green Environmental Awareness **(GEA)**	**GEA1:** I feel responsible for protecting the environment, especially from water pollution. **GEA2:** Participating in volunteer activities to raise awareness of environmental pollution in the community can curb the environmental pollution that often occurs. **GEA3:** Problems such as water pollution can affect human health. **GEA4:** All communities should support an environmentally friendly way of life to impact the environment positively, especially against water pollution. **GEA5:** It is essential to support green products that help the environment stay healthy, especially against water pollution.
Green Behavioral Intention **(GBI)**	**GBI1:** I prefer to do good things (not throwing garbage into the river or sea) for the environment, especially against water pollution.

	GBI2: I know human actions can harm the environment, including damaging nature and causing water pollution.
	GBI3: I am willing to pay extra for products or services that are good for the environment, especially those that curb water pollution.
	GBI4: I am aware that dirty water can make people unhealthy.
	GBI5: I want to participate in volunteer activities to help spread the adverse effects of environmental pollution, especially on water pollution.
Green Product Value (**GPV**)	**GPV1:** Using green products can help with water pollution problems.
	GPV2: Green products will improve with advanced technology that can make them better for the environment especially in reducing water pollution.
	GPV3: Choosing green products is better for the environment than other products and will not harm water quality in the long run.
	GPV4: I buy green products because they are good for the environment.
	GPV5: I think buying green products can help reduce water pollution and support the environment for the long term.

RESEARCH ACTIVITIES MONTHS	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13
PPTA 1 and PPTA 2 briefing	▓												
CHAPTER1: INTRODUCTION	▓												
Starting up and progressing with Chapter 1 (PPTA 1)	▓	▓											
Submission and correction of Chapter 1		▓											
CHAPTER 2: RESEARCH METHODOLOGY		▓											
Starting up and progressing with Chapter 3		▓	▓										
Submission of a first draft Chapters 1, 2, 3			▓										
Do corrections on the Chapters 1, 2, 3			▓										
QUESTIONNAIRE			▓										
Build a questionnaire based on IV and DV			▓										
Submission of the questionnaire's first draft			▓										
SUBMISSION OF PPTA 1				▓									
PRESENTATION FOR PPTA 1				▓									

Task															
Do corrections on the Chapters 1, 2, 3				■											
FINAL SUBMISSION OF PPTA 1					■										
QUESTIONNAIRE DEVELOPMENT					■	■									
Build a questionnaire in Google Form						■									
Blast a questionnaire to the respondent						■	■	■							
CHAPTER 4: DATA ANALYSIS AND FINDINGS									■						
Starting up and progressing with Chapter 4 (PPTA 2)									■						
Submission and correction of Chapter 4									■	■					
CHAPTER 5: DISCUSSION AND CONCLUSION										■					
Starting up and progressing with Chapter 5										■					
Submission and correction of Chapter 5										■					
POSTER SUBMISSION										■					
KOLOKIUM PRESENTATION											■				
Final check for final research proposal PPTA 2											■	■			
FINAL SUBMISSION OF PPTA 2													■		

APPENDIX C: TURNITIN RESULTS

SAK22

ORIGINALITY REPORT

20%	16%	7%	7%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	discol.umk.edu.my Internet Source	9%
2	journals.grdpublications.com Internet Source	1%
3	Sanjoy Kumar Roy. "Impact of green factors on undergraduate students' green behavioral intentions: A hybrid two-stage modeling approach", Heliyon, 2023 Publication	1%
4	www.iujharkhand.edu.in Internet Source	<1%
5	Submitted to Universiti Malaysia Kelantan Student Paper	<1%
6	Submitted to Higher Education Commission Pakistan Student Paper	<1%
7	Osarodion Ogiemwonyi, Amran Bin Harun, Mohammad Nurul Alam, Bestoon Abdulmaged Othman. "Do We Care about Going Green? Measuring the Effect of Green	<1%