THE STUDY OF SOCIODEMOGRAPHIC IN THE ASPECT OF KNOWLEDGE, ATTITUDE, PRACTICE AND READINESS OF COMMUNITY IN PENAMPANG, SABAH RELATED TO GOVERNANCE AND WASTE MANAGEMENT PRACTICE

SITI YASMIN BINTI BADRUM

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UNIVERSITI MALAYSIA SABAH

FACULTY OF SOCIAL SCIENCE AND HUMANITIES
UNIVERSITI MALAYSIA SABAH
2023

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THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

FACULTY OF SOCIAL SCIENCE AND HUMANITIES
UNIVERSITI MALAYSIA SABAH
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JUDUL : **THE STUDY OF SOCIODEMOGRAPHIC IN THE ASPECT OF KNOWLEDGE, ATTITUDE, PRACTICE AND READINESS OF COMMUNITY IN PENAMPANG, SABAH RELATED TO GOVERNANCE AND WASTE MANAGEMENT PRACTICE**

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DECLARATION

I hereby declare that the material in this thesis is my own except for quotations, equations, summaries, and references, which have been duly acknowledged.

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DEGREE	:	**DOCTOR OF PHILOSOPHY IN EARTH SCIENCE**
FIELD	:	**GEOGRAPHY**
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Signature

SUPERVISOR
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ABSTRACT

Malaysia, one of Asia's developing nations, also faces challenges with regard to technology, human resources, land shortages, inadequate facilities, and Malaysians' attitudes and lifestyles in light of the country's rising rate of waste generation. Understanding the society's personal values, experiences, opinion and sociodemographic factors that could assist in anticipating environmentally ethical attitude and action is crucial. The aim of this study was to evaluate the effect of sociodemographic characteristics on the knowledge, attitude, practice and readiness on waste management practices and government-led initiatives. Since there are minimal known data and statistics on this subject in Sabah, Malaysia, this study was mostly exploratory, especially in the region of Penampang. A total of 400 respondents participated in this study. A quantitative research design was employed and both descriptive and inferential analyses were conducted, namely calculation of frequency and mean, multiple linear regression, logistic regression and Spearman Rho correlation. This study has found out that sociodemographic factors have low to moderate effect on the respondents' knowledge, attitude, practice and readiness level regarding waste management practices and government-led waste management initiatives. Age has a positive effect to only one of the dependent variables, namely the readiness variable. Gender has no effect to all of the dependent variables. Education is the only independent variables that has both positive and negative effect to knowledge, attitude, practice and readiness level. Household income has both positive and negative effect to attitude and readiness level but not the knowledge and readiness level of the respondents. Interestingly, it was also found that although majority of the respondents have high knowledge and attitude level on waste management practices and government-led programs, their practice and readiness is still at a low level. Their intention to participate in government-led waste management initiatives were found to be influenced by their educational attainment and age. Finally, the relationship between the dependent variables were not as straightforward as what have been studied by previous researcher as it was found that there is an association between knowledge, attitude and readiness but not with practice. Conclusively, the findings of this study may aid municipal and national governments in better targeting policies and campaigns aimed at encouraging environmentally responsible behaviour among certain demographic groups or regions that practice waste management less, as well as supporting those who already practice consistently. Finding a link between sociodemographic factors and waste management performance could be important in the development of new infrastructure and the knowledge on how to encourage people's participation. If the results are linked to population estimates for certain municipalities or regions, infrastructure is better provided at a larger scale, future waste stream production can be forecasted, investments will be allocated efficiently, and people's participation could be improved.

ABSTRAK

PENILAIAN/KAJIAN SOSIODEMOGRAFI ASPEK PENGETAHUAN, SIKAP, AMALAN DAN KETERSEDIAAN MASYARAKAT DI PENAMPANG, SABAH BERKAITAN GOVERNAN DAN AMALAN PENGURUSAN SISA

Sebagai salah sebuah negara membangun di Asia, Malaysia juga menghadapi masalah dari segi teknologi, sumber manusia, kekurangan tanah, kemudahan yang tidak mencukupi serta sikap dan tabiat rakyat Malaysia dalam mengendalikan kadar penjanaan sisa yang semakin meningkat. Justeru itu, memahami nilai peribadi, pengalaman, pendapat dan faktor sosiodemografi masyarakat yang boleh membantu dalam menjangka sikap dan tindakan beretika alam sekitar adalah penting. Matlamat kajian ini adalah untuk menilai kesan ciri sosiodemografi terhadap pengetahuan, sikap, amalan dan kesediaan terhadap amalan pengurusan sisa dan inisiatif yang diterajui kerajaan. Kajian ini bersifat penerokaan kerana data dan statistik mengenai isu ini di daerah Penampang, Sabah masih berada di tahap yang minimum. Seramai 400 orang responden telah memberi kerjasama sepanjang kutipan data melalui soalan kaji selidik dilaksanakan. Reka bentuk kajian kuantitatif telah digunakan dan kedua-dua analisis deskriptif dan inferensi telah dijalankan, iaitu pengiraan kekerapan dan min, regresi linear berganda, regresi logistik dan korelasi Spearman Rho. Hasil kajian mendapati bahawa faktor sosiodemografi mempunyai kesan yang rendah hingga sederhana terhadap pengetahuan, sikap, amalan dan tahap kesediaan responden mengenai amalan pengurusan sisa dan inisiatif pengurusan sisa yang diterajui kerajaan. Pendidikan adalah satu-satunya pembolehubah bebas yang mempunyai kesan positif dan negatif kepada tahap pengetahuan, sikap, amalan dan kesediaan. Pendapatan isi rumah mempunyai kesan positif dan negatif terhadap sikap dan tahap kesediaan tetapi tidak kepada tahap pengetahuan dan kesediaan responden. Menariknya, didapati bahawa walaupun majoriti responden mempunyai tahap pengetahuan dan sikap yang tinggi terhadap amalan pengurusan sisa dan program yang diterajui kerajaan, amalan dan kesediaan mereka masih pada tahap yang rendah. Hasrat mereka untuk mengambil bahagian dalam inisiatif pengurusan sisa yang diterajui kerajaan didapati dipengaruhi oleh pencapaian pendidikan dan umur. Akhir sekali, hubungan antara pembolehubah bersandar tidak berkaitan secara langsung seperti yang didapati oleh pengkaji terdahulu kerana kajian ini mendapati ada perkaitan antara pengetahuan, sikap dan kesediaan tetapi hubungan ini tidak ada perkaitan kepada amalan. Kesimpulannya, dapatan kajian ini boleh membantu dalam menyasarkan dasar dan kempen yang lebih berfokus bagi menggalakkan tingkah laku bertanggungjawab terhadap alam sekitar di kalangan kumpulan demografi tertentu; terutamanya yang kurang mengamalkan pengurusan sisa, serta menyokong mereka yang telah mengamalkannya secara konsisten. Meneroka hubungkait antara faktor sosiodemografi dan prestasi amalan pengurusan sisa adalah penting dalam perancangan pembangunan infrastruktur dan menggalakkan penyertaan masyarakat. Jika dapatan kajian menjurus kepada kumpulan demografi yang lebih spesifik, infrastruktur dapat diperuntukkan dengan lebih efisyen dalam skala yang lebih meluas, penjanaan sisa boleh diramalkan dengan lebih sistematik, pelaburan akan dibelanjakan dengan cekap dan penyertaan masyarakat boleh dipergiatkan.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter introduces the content and structure of the thesis by outlining the main theme of the research which is waste management; particularly the factors influencing its practices at the community level. The aim is to highlight the underlying issues in relation to the objectives of the study through relevant literature and the findings that will be deliberated in subsequent chapters. This includes specifying the relevant research questions, outlining the proposed contributions and detailing the content of the following chapters.

Waste management is a basic necessity and can even be considered a "basic human right" in the twenty-first century (UN, 1997). Sanitation and solid waste management are as important to society and the economy as providing drinkable water, shelter, food, electricity, transportation, and communications (UNEP, 2017). Waste management is a continuous process that encompasses managing waste from its inception through its final disposal, as well as preventing waste surplus through modification, reuse, and recycling of used items (UN, 1997).

Waste generation rates are rising rapidly due to the rise in population, industrialization as well as lifestyle enhancements. According to the World Bank (2018), annual waste generation is anticipated to rise by 70 percent from 2.01 billion tonnes in 2016 to 3.40 billion tonnes in 2050. This will burden countries worldwide in managing waste effectively and in timely manner, as the accumulation of waste is mounting in a fast and alarming rate.

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Managing waste proves to be more challenging for residents in the developing countries, in comparison with the developed nations. The impacts of unsustainably managed waste in developing countries are ruthless, particularly to the urban poor as they are more prone to be the victim of diseases, accidents and pollution (World Bank, 2019). As one of the developing countries in Asia, Malaysia also encounters problems in terms of technology, human resources, land scarcity, as well as insufficient facilities to handle with the growing rate of waste generation (Badgie *et al.*, 2011). The situation worsens when attitude and habits of Malaysian in handling their waste are not constructive and the usage of single use plastics and paper materials increases at an uncontrollable rate (Yiing & Latifah, 2016).

For years, the Malaysian government has improved waste management conditions in cities, towns and rural areas. However, owing to inadequate implementation and weak public engagement, most programs were unsuccessful. This problem was forecasted to deteriorate further as the waste generation scenario will continue to increase from 36,138 tons per day by 2020 to 49,670 tons per day by 2030. Unfortunately, as there are no official statistics on real waste creation in Malaysia, these figures are just estimations (Theng, 2020). The rate and characteristics of waste generation vary by country and are strongly linked to socioeconomic status, public opinion, cultural habits, energy resources, geographic location, regional service features, year season, and regulation (Srivastava *et al.,* 2020).

Waste mismanagement, such as illegal open dumping and open burning, is still practised openly, particularly in rural regions, resulting in pollution and other safety and health risks (Iacovidou & Kok, 2020). According to Wang *et al.* (2018), less attention was given to waste management in non-urban areas in developing countries such as China, India, and Malaysia. Waste generation in Malaysia's non-urban population is increasing at the rate of 2 per cent annually (Yiing & Latifah, 2016).

The limited adoption of sustainable waste management policies has been attributed to a number of factors, one of which is individual waste management

behaviour (Barr *et al.,* 2005). Several studies have found a disparity between reported and actual waste management practices (Tucker, 2001; Tonglet *et al*., 2004; Barr et al., 2005). The significance of involving the general public in sustainability initiatives is commonly recognised as a fundamental principle of sustainability development (Tucker, 2001). However, there are times that the general public does not feel well-informed or qualified enough to take the responsibility for action (Barr, 2005). Towards further comprehension of this matter, this study was implemented to assess individuals' sociodemographic variables and its effects towards their knowledge, attitude, practice and readiness level on waste management practices and the government-led initiatives in Penampang, Sabah.

1.2 Background of The Study

Waste is a global issue that, if not responsibly managed, poses a threat to human health and the environment. It is a growing issue that is linked to how society creates and consume goods, and it is something that everyone is concerned about (UNEP, 2017). In most countries, solid waste management is a local responsibility, and 70 percent of countries have established bodies to oversee waste policy formation and control (Kaza *et al*., 2018). In the current global policy frameworks, waste services are prominently featured in the targets and indicators of both Sustainable Development Goals (SDG) 11 and Sustainable Development Goals (SDG) 12, particularly with commitments to prevent, reduce, recycle, and reuse - as well as to properly collect and discharge - urban solid waste and to cut global food waste in half by 2030; and to properly handle and treat chemical and other hazardous waste through the whole life cycle in accordance with international standards by 2020 (Cibrario, 2018).

Managing waste proves to be more challenging for residents in the developing countries as the impacts of unsustainably managed waste are ruthless, particularly to the urban poor as they are more prone to be the victim of diseases, accidents, and pollution (World Bank, 2018). A significant contributor to air pollution and climate change is the release of greenhouse gases from solid waste, such as methane

(Kristanto & Koven, 2019). In developing nations, a large number of municipal solid waste disposal facilities are open dumping grounds that increase greenhouse gas emissions and land, water, and air pollution. While safe waste disposal and a decrease in open burning of waste are two of the most crucial climate change-related actions, this highlights the need to improve solid waste management across the majority of the world (Elsheekh et al., 2021). A good waste management system is expensive, and it will most certainly harm their financial standing. It is challenging to finance solid waste management systems, more so for ongoing operating expenditures than for capital investment (World Bank, 2018). Unfortunately, putting off or ignoring waste management could be enormously costly to society and the economy. Waste 'producers' will typically choose the cheapest and easiest choice if waste regulations and their stringent implementation and enforcement are not in place. To reduce the inconvenience of waste management at home, collected domestic waste may be dumped publicly in vacant land, drains, or rivers, or it may be burned (UNEP, 2017).

For years, the Malaysian government has taken a range of measures to improve waste management conditions in cities, towns and rural areas (Pariatamby *et al.,* 2011). They initiated the Action Plan for a Beautiful and Clean (ABC) Malaysia in 1988 which was unpopular because of the vague objectives and lack promotional activities. Years after that, they introduced the Reduce, Reuse, Recycle (3R) in 2001 until 2005 which was also fruitless regardless of the massive amount of spending by the government. To mitigate the failure, the government introduced the Master Plan on National Waste Minimization in 2006 until 2010. Owing to inadequate implementation and weak public engagement, most of these programs were unsuccessful (Pariatamby *et al.,* 2011).

In Sabah, solid waste management is under the purview of several state laws such as the Environment Protection Enactment 2002, Town and Country Planning Ordinance 1950/Town and Country Planning (Amendment) Enactment 2002, Public Health Ordinance 1960 and the Uniform (Anti-Litter) By-Laws 2010 (Chemsain Konsultant, 2007b). The Uniform (Anti-Litter) By-Laws 2010 is imposed under the jurisdiction of local authorities. The by-laws cover issues on abandoned vehicles,

building, garden refuse and litter (Ministry of Local Government and Housing, 2010). The state and local government of Sabah both have no clear documentation on solid waste management policies, but there are several initiatives done to tackle the matter. For example, the development of Solid Waste Management Master Plan Study in Sabah to cover a long-term solid waste plan programme for a period of 30 years from 2007 to 2036. It also consists of a detailed study of problems and practical solutions for 22 local authorities in Sabah (Chemsain Konsultant, 2007c).

In 2022, a new enactment on waste management, the Solid Waste Management and Public Sanitisation Enactment is said to be enforced (Geraldine, 2020). In Penampang, it was observed that most households disposed their garbage by open dumping in vacant places and the river and by open burning, since the waste collection services provided by the local government were insufficient. Additionally, there were no official facts and information regarding waste generation and its management at the time of writing.

Waste generation in Malaysia will continue to increase from 36,138 tons per day by 2020 to 41,035 tons per day by 2026, and to 49,670 tons per day by 2030 as forecasted in a study by Chua *et al.* (2019). Municipal solid waste mainly consists of household waste, and Malaysian household generate approximately 38,200 tonnes of it daily in 2016 and it was expected that 45,900 tonnes waste per day will be produced in the year 2020 (National Environmental Health Action Plan (NEHAP), 2016). In Sabah, the rate of municipal solid waste has been increasing and the latest information at the time of writing is for the year 2013 which recorded 2,062,390 million tonnes of waste collected (Ministry of Housing and Local Government of Malaysia, 2013). This problem is the result of collective failure from the public, mismanagement of public funding, and ineffective policies, among others. Poor public knowledge and awareness will lead to lack of participation and useless policies. To ensure the success of solid waste management programs, providing infrastructure is not sufficient, and more efforts should be put to understand public concerns, knowledge and behaviour (Babaei *et al.,* 2015).

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Household waste management is one of the behavioural areas that has gotten more attention than others. Household waste generation is becoming increasingly serious in both developed and developing countries. At the Rio de Janeiro Conference in the early 1990s, the United Nations (UN Conference on Environment and Development, 1992) acknowledged this, and successive levels of government around the world have worked to limit the amount of waste sent to landfills. Although economic tools can have an impact on the waste process (at both the pre- and post-consumer ends of the cycle), it is widely acknowledged that individual decisions about what to buy, how to use, and dispose of items are crucial if the waste problem is to be properly handled (Barr, 2007).

It's a difficult undertaking to change people's minds. As humans, we do not always make sensible decisions or behave consistently. Behavioural science, which includes behavioural economics, psychology, and other social sciences, will aid policymakers in developing policies that are more in line with human decision-making (UNEP, 2017). With behaviourally oriented policy instruments, consumers can better analyse costs and advantages and act on their expectations, boosting the efficacy of government interventions (UNEP, 2017). Long-term consumption sustainability requires an understanding of human behaviour. Unfortunately, many people in both developed and underdeveloped countries do not respond appropriately (EU, 2011). The effect of context (mental, social, and physical) and mental shortcuts used by the human mind may result in otherwise unanticipated results in our individual conduct, according to behavioural research (UNEP, 2017). Unsustainable resource usage has resulted in significant scarcities, as well as climate change and extensive environmental degradation, all of which have negative consequences for the planet's and people's well-being (EU, 2011).

In order to support the move towards inclusive green economy, new policies, redirected investment, environmentally sound technologies, international cooperation, and capacity development are essential (World Bank, 2018). Producers will need to alter their product design, sourcing, manufacturing, and marketing strategies. Consumers will have to factor in environmental and social considerations when making purchasing decisions, as well as adopting sustainable lifestyles (UNEP,

2017). There are, of course, some disagreements on the relative responsibilities of various actors and the most effective ways to bridge the "value-action gap" (Barr, 2007).

Recently, the gap between environmental values and actions, as well as attitudes and behaviours, has predominantly been discussed in social and environmental psychology (Barr, 2007; UNEP, 2017). While research has gotten more sophisticated and attentive to the social and constructed nature of environmental values (especially in Europe), it has mostly concentrated on cognitive explanations of how people create views and arrange their behaviour in a reasonable and often unproblematic manner. Although most observers agree that there is no apparent link between behaviours and attitudes (Sharma & Bansal, 2013), several research have proposed numerous causes for the disparity. They show that the attitude-behaviour relationship is governed by two important sets of variables: the nature of human attitudes and external or situational constraints. Situational constraints refer to whether an activity is consistent with the person's desired social norms, which are influenced by a variety of social, economic, demographic, and political factors (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980). A more precise understanding of the attitude-behaviour connection in environmental consumerism, according to Weigel (1983), would result from looking at personal and situational variables.

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The service systems or communities that could conduct effective preventative interventions are constrained by a lack of continuous resources and competing priorities (O'Connell *et al.,* 2009). The political atmosphere is always shifting and changing, making it difficult to design and implement any new initiative. Communities are constantly evolving, adapting, and expanding, and they can only be prepared for specific events at specific times. As a result, choosing the starting point is critical to the efficacy and long-term survival of any preventative programme (Edwards *et al.,* 2000).

The need to promote local, community and public engagement in environmental initiatives that places environmental values and behaviour within a wider social context is an emerging and pressing matter. Indeed, public engagement