# ACCEPTANCE OF WASTE SEPARATION AT SOURCE PRACTICE AMONG HOUSEHOLDS: A LITERATURE REVIEW

Fitriyah Razali*, Choong Weng Wai, Dzurllkanian@Zulkarnain Daud and Chin Hon Choong

*Department of Real Estate, Faculty of Geoinformation and Real Estate*
*Universiti Teknologi Malaysia*
*81310 UTM Skudai Johor, Malalysia*
**Email: fit.triyah@gmail.com*

**Abstract**

The successful of waste separation at source depends on the willingness and good practices among the residents. The participation rate of waste separation in Malaysia is low and there is an urgency to foster waste separation practice among the household. Considering that, the Separation at Source Initiative (SSI) under Solid Waste and Public Cleansing Management Act 2007 (Act 672), effective on September 2015 mandatory require the resident to separate waste in their dwelling, but the SSI still received resistance from the households. A careful investigation of the factors and barriers that motivate and prohibit the waste separation practice at source should be conducted, this required further investigation on multiple acceptance dimensions, including: socio-political, community, market, and technology. This paper explains the rationale to investigate the multiple acceptance dimensions for fostering waste separation practice among the household.

**Keywords:** *Facilities Management, Waste Separation, Awareness, Social Acceptance, Education*

## 1.0 INTRODUCTION

The issue of solid waste accumulation in Malaysia is due to several causes, such as urbanisation, increasing of population, and among the major cause is due to the lacking of solid waste separation practice among the household. The reduction of waste accumulation will reduce the cost needed to process them and will able to recover recyclable materials, indirectly, mitigate greenhouse emission.

Enhancing resident participation in separating their generated waste is necessary for poor separation behaviour will increase the volume of solid waste and cause environmental degradation. The practice of waste separation at source becomes a critical component of a successfully integrated waste management system. The waste can come in many categories, recyclable such as paper, plastic, glass, aluminium and garden waste; non-recyclables including organic waste and food waste.

The successful of waste separation at source depends on the willingness and good environmental practices among the residents. Study conducted by Babaei *et al.* (2015) on recycling attitudes in developing countries concluded that there are high awareness level and positive perceptions on waste separation, but only a few participating. This statement suggested that there is a gap in between awareness and waste separation practice among the household.

The newly launched Separation at Source Initiative (SSI) under Solid Waste and Public Cleansing Management Act 2007 (Act 672), as effective on September 2015 by the Solid Waste Management and Public Cleanliness Corporation (SWCorp) will become the game changer that prompt for the needs of fostering waste separation behaviour among the household.

Most previous studies on waste separation behaviour focus on motivational factors, socio-economic status, environment, education and

religion-cultural factors. The identified factors in the previous study is general and difficult to be specified. Therefore, a more systematic analysis of waste separation practice is needed and crucial for the analysis of behavioural changing. Social acceptance, which includes politically acceptance, community acceptance and market acceptance is recognised as impediment to the achievement of a successful environmental related project at the implementation level (Wustenhagen *et al*., 2007; Van Alphen *et al.*, 2007). In a broader sense, the acceptance has been regarded as a passive approval by the public (Sauter and Watson, 2007).

The purpose of this paper is to extend the Triangular Model of Acceptance by Wustenhagen *et al.* (2007) in understanding the barrier of waste separation at source behaviour by considering the additional dimension, known as technology. Referred to the triangle model, the concept of acceptance is formed by three dimensions: socio-political acceptance, the community acceptance, and the market acceptance (Wustenhagen *et al*., 2007). This research intends to fine-tune in the existing model and further extend it, by adding a new dimension to the existing framework, known as technology. The technology in this context can be defined as convenience, notably if there are potential facilities and infrastructure that will encourage the residents to separate waste at source. The previous study indicated that willingness for waste separation increased if the recycling facilities such as recycling bins were reached within walking distance (Babaei *et al.*, 2015).

## 2.0 DEFINING SOCIAL ACCEPTANCE

The definition on social acceptance is still unclear; this term is usually used in practical policy review (Wustenhagen *et al*., 2007). It is clearer if the definition separated in two part that is "social" and "acceptance" itself. Social means the interaction between people, the term of social that usually be used in behavioural study is the social norm which mean a behaviour focused. It asks what a community does. The social norm explains more about the desire to just observe behaviour, without the need to understand it (Lessig, 1996). Next the term of "acceptance" also known as "psychological acceptance" is a behaviour that involves, allowing, tolerating and embracing some particular experiences or activities (James, 2001). The social acceptance in either form whether active or passive had generally been used to serve as an indicator for not rejecting an innovative technology (Wustanhagen *et al.*, 2007). As example the innovation in this case of study is the waste separation at source behaviour or the SSI implementation by the SWCorp. Therefore, from the above mentions, it can be indicated in this study that social acceptance is define as the behavioural changes of the specifics dimensions towards the technology or facilities that being implemented.

This paper will explain in details about the extended version of Triangular Model of Acceptance by Wustenhagen *et al*. (2007) which is the Multiple Acceptance Dimensions. Referring to the Triangular Model of Acceptance, the first dimension is the social-political acceptance, will cover the acceptance of policies in general; it is not limited to the acceptance by the general public but includes the acceptance by the key stakeholders and policy makers as well. The second dimension, community acceptance refers to the specific acceptance of the SSI at the local level which is the households. The third dimension, market acceptance referred as the process of marketing adoption of the SSI. It is referred to the market acceptance (adopt and support) of the SSI.

This research aims to access social acceptance of SSI from the three dimensions as addressed in the triangle model. The extended dimensions that is technology acceptance will cover the facilities and infrastructure that encourage the households to separate waste at sources.

## 3.0 ISSUES OF SOCIAL ACCEPTANCE IN WASTE SEPARATION AT SOURCE CONTEXT

Malaysia has put waste management as a priority action when the government, through The Solid Waste Management and Public Cleanliness Corporation launch the Separation at

Source Initiative (SSI). This act is aiming for the residents and retailers to separate waste in their dwelling. In the context of facilities management, waste management is grouped under the area of sustainability. Furthermore, sustainability in facilities management is a major concern for facilities manager to create a sustainable development (Khairusy, 2015) and one of the criterion in green building.

Since the waste is increasing every year, waste has to be managed properly especially in an urban area (Ngoc and Schnitnez, 2009). Approximately, 25,600 tons of waste are produced daily by Malaysian (Badgie *et at*., 2012) and expected to grow rapidly according to the development of the country (Uiterkamp *et al*., 2011). If it is not properly managed, it would lead to serious detrimental impacts to the environment (Rahji and Oloruntoba, 2009). For instance, poor solid waste management in Nigeria has caused adverse impacts such as flooding, traffic congestion, soil pollution, air pollution and other environment problems to their country (Agwu, 2012).

According to Agamuthu (2001), solid waste can be grouped into four categories: Municipal Solid Waste (MSW), Hazardous Waste, Agricultural Waste and Industrial Waste. The composition of the municipal solid waste is mainly household waste including commercial and institutional waste. Household waste may consist of garbage, fuel residues (e.g. ash), house sweepings and household discards (e.g. paper, glass, plastic or metal containers, garden wastes and animal dung) (Agamuthu, 2001).

Proper management of solid waste is considered as a sustainable waste management (Franklin Associates Ltd., 1997; Morrissey and Browne, 2004; United Nations Development Programme Malaysia, 2008) when the needed resources being managed efficiently. By doing so, it will reduce the adverse impact towards the environment. Solid waste management is considered as a great challenge among the local authorities in the developing countries, it may be due to the lacking of knowledge over a diversity of factors that affects the waste management (Liliana *et al*, 2013). This justify that the investigation of Multiple Acceptance Dimensions is important to identify the factors that affect the waste separation at source behaviour among households in Malaysia.

This paper aims to interpret waste separation at source among households, in the facilities management context as influenced by multiple dimensions of acceptance. This paper explains the importance of political, community, market and technology acceptance dimensions on separation at source practices. At the end of the study and with the integration of the four dimensions, a literature framework will be proposed to serve as a guide for future researcher and practitioners to engage in relevant study.

### 3.1 Socio-political Acceptance

Socio-political acceptance, as proposed by Wustenhagen *et al.* (2007), involve the policies or newly launched act by the government and local authorities. The policies involved are the Separation at Source Initiative (SSI) that managed by SWCorp. SSI started to come into force on September 2015 and there are 7 states where SSI policy being implement, known as Kuala Lumpur, Pahang, Johor, Melaka, Negeri Sembilan, Kedah and Perlis.

The study of socio-political acceptance will involve important parties such as the professional actors, including government official, industrial representative, and spokesman from non-government. It is important because they involved in policy making and in initiating projects. The analyses on socio-political acceptance will be more focus on the application of government policies, incentives, statement and reports to reveal existing controversy and opportunities for SSI.

In the political dimension, Malaysia had introduced the Solid Waste Management and Public Cleansing Act on the year of 2007. This act applies to Peninsular Malaysia, Putrajaya and Labuan Federal Territories. Under the provision of Act 672, the person in charge for the solid waste management and public cleansing is the Head Director who is elected from the member of the Solid Waste Management and Public Cleansing Corporation. Head Director will be the leader for each department, which have the power to propose new policies, plans and strategies about the solid waste management. The important role of the Head Director is to

establish standard, specification and codes of practice under the Act 672. Head Director will perform the Act 672 and provide license and approvals for respective corporation to handle the solid waste management such as the SWCorp and Alam Flora Sdn. Bhd. Further explanation on the roles of head director is stated in Act 672, Part II.

Moreover, the Solid Waste Management and Public Cleansing Act 2007, Act 672 stated that no one is allowed to manage the solid waste management facilities without the approval of the Head Director which may affect the environment, the quality and service level or brings harmful effect towards public health. It also stated that the approval to change the system or facilities of solid waste management only given if the Head Director satisfied with the solid waste management and facilities meet the requirement and will not bring negative impact towards the environment, quality, public health and level of waste management services in Malaysia.

Moreover, stated in Act 672 that the minister of Solid Waste Management and Public Cleansing have the authority to instruct any person to use environment-friendly materials in solid waste management. This aims to reduce the solid waste produced by the community or even the industrial parties. Minister also have the authority to come out with the method that can be used to reduce the solid waste and brings good impact towards environment. Based on Act 672, it shows that Malaysian government take into consideration about the solid waste management in Malaysia, in which it plays an important part to make Malaysia a more sustainable and clean country.

Malaysia also establishes The Waste Management Association of Malaysia (WMAM) which is a professional associate founded on March 2005. WMAM plays the role to keep the high standards in waste management services in Malaysia. Furthermore, the WMAM is a non-profit organization that provide technical and educational forum that will discuss the waste management. This association aims to keep the relation with local and international waste management related organisation. The WMAM will keep up with waste management issues and come out with the ideas and practical information about waste management services.

### 3.2 Community Acceptance

The professional actors in political dimension cannot easily predict the level of acceptance of local residents towards waste separation behaviour in related to the SSI even they are expected to represent the local residents interest. To gain into perspectives of local resident on SSI, the opinion of households and residents that stayed within the area where SSI being implemented should be taken into account. Three key area elements to be focused are procedural justice, distributed justice and trust, taken from the elements of Justice Theory by John Rawls (1999). Accordingly, the procedural justice focus on the way or method of the benefits being shared, then the distributed justice question on the fair decisions making for the distribution of opportunity to relevant stakeholders to participate and trust is where the local community will question the information and the intentions of the SSI being implement.

The involving of community which is the local resident in source separation at household level will raise resident's awareness and able to educate resident to be more responsible in separating the waste at source. Participation of local residents in recycling provides an intrinsic motivation that also known as personal satisfaction such as moral aspect of participating in an activity to save the resource and be prudent (Lober, 1996). This will foster positive feeling towards waste separation activities and promote satisfaction in giving contribution among local residents. It is therefore salient to propose an approach aims to understand the motivation influences local residents concern and willingness to conduct waste separation at source. The primary motivation is needed to generate the goal-oriented behaviour that is the desire to energise whereby it will direct the behaviour and the psychological state of a person.

This study is important to play the role in the community acceptance analyses, where it will involve most the residents and their acceptance behaviour towards their own waste management. As stated by Barr (2002) in his work on household waste in social perspective,

he found that there are three fundamental sets of variables that likely to influence environmental behaviour. First, 'environment values', in which an individual's orientation towards the value of nature and environment is linked to a person environmental behaviour. Second, 'situational' factors have been linked to a person environmental behaviour, comprising an individual's personal circumstances regarding the demographic position, access to key services and their awareness and experience of the relevant behaviour. Third, 'psychological' factors are linked to environmental behaviour.

Various researches had been conducted to understand recycling behaviour from variety points of view. In synthesis research of 67 empirical studies on recycling Hornik *et al.* (1995) had summarized that each discipline looks at different variables on recycling, economist looked at monetary rewards of incentives external, while environment psychologist looked at altruism of incentives internal (e.g., De Young, 1986). On the other hand, sociologist studied social pressure of external incentives (e.g., Burn & Oskamp, 1986) while legal researchers looked at legal mechanism (e.g., Lanza, 1983) and engineers investigated technologies and system of recycling (e.g., Noll, 1985).

Lately, a study had been carried out by Miafodzyeva and Brandt (2013). They examined different variables influencing households recycling behaviour from studies conducted within the period of 1990 to 2010 using meta-analysis. Among the examined variables, convenience, moral norms, information and environmental concern are the strongest predictors for households recycling behaviour. They further concluded that these variables can be divided into four theoretical groups, which are the socio-psychological, technical organizational, individual socio-demographic and study-specific.

Extrinsic motivation drivers are the desire or push to perform a particular behaviour based on the potential external rewards that may be received as a result. Monetary incentives have found to be successful reinforcement in activating behaviour but when the incentive ended recycling stopped (Reid et al., 1976). There were also literatures showing non-economic external factors strongly stimulate recycling including convenience (e.g. Cook and Berrenberg, 1981), social influence in term of support and commitment of family, friend and neighbours (e.g. Sia, Hungerford & Tomera, 1985-1986) as well as knowledge to convinced degree of belief and interest (Gamba and Oskamp, 1994). However, law and regulation were rarely investigated as an extrinsic incentive as the results are quite incompatible due to some challenges that encountered in the regulations (Lanza, 1983).

Intrinsic incentive, on the other hand, are autonomous motivations arise from internal feelings individually decided and more personal. Intrinsic motivation can be described as the motivation. There were studies reported that personal satisfaction derived from carefully using resources and avoiding waste (De Young, 1985-1986). Thogersen (1996) argue that recyclers have a high level of social responsibility, and other study suggests that personal satisfaction is associated with socially responsive professional behaviour (Harrison, 1982). However, De Young (1993) research has shown that intrinsic plus extrinsic motivation strategies produce the greatest effect in stimulating desired behaviour.

### 3.3 Market Acceptance

Another important key part of social acceptance is the market acceptance, the parties that involved is the consumers, investors, and intra-firm. The market acceptance, more about the market adoption of an innovation, which is in this study the innovation on the waste separation at source, SSI that being implemented by the local authority towards households in Malaysia.

This dimension will reveal the attributes (cost, location, return, incentive, etc.) that influence the waste separation behaviour at source among households in Malaysia. Considering price-demand relationship differs for different types of environmental behaviour, and when only a few features need to be considered, the analysis will be limited to households in SSI state. The markets acceptance analysis will help the stakeholders to understand how the 4P models (Product, Place, Promotion and Price) based on the concept of social

marketing in fostering waste separation behaviour.

The market dimension involves the consumers, investors or stakeholders, and industrial cooperation. Based on the market, the demand and supply chains of waste recycling may change and it may bring positive impact towards the economy. Wustanhagen *et al*. 2007 stated that the market acceptance is about whether the market support or otherwise declined the new invention or new facilities that being facilitated by the community. Social marketing plays an important part in the market dimensions, where this approach is used to develop new activities that aim to maintaining or changing human behaviour that will brings benefits towards the individuals or society as a whole. Social marketing would involve the policy, the strategy and the implementation of the facilities. Therefore, this social marketing will show how the new regulations SSI will affect the market as a whole.

In the market, the consumers must have the awareness and knowledge towards recycling. Many environmentalists believe that the fundamental problem in recycling is internal barrier due to consumer ignorance, misunderstanding, confusion, time consuming and inconvenient (Hornik *et al*. 1995). Knowledge is seen as a necessary condition related to the ability to recycle (Pieters, 1991). The lacking of understanding towards the procedures for waste separation has been acknowledge as one of the factors that prohibits waste separation among households (Dhokhikah et al., 2015). However, people who perceive that they to be knowledgeable may in fact not be as found in study conducted by Ellen (1994). Socio-demographic variables often use as indicator to seek correlation with recycling behaviour. However, it is difficult to determine which variables to describe the effect. Among investigated variables education, age and type of dwelling were most frequently studied (Hornik *et al.*, 1995).

### 3.4 Technology Acceptance

The new dimensions, known as technology is the extension of the Triangular Model of Acceptance. The research about technology acceptance can be done based on the existing literature and interview with the active industry players. It is important to know that the technology acceptance will cover the facilities and infrastructure that encourage the residents to adopt waste separation behaviour, it could be linked to the convenience factor in the marketing mix. Examples of the factors to be examined in technology acceptance include availability, convenience, accessibility and effects. The previous study indicated that willingness for waste separation increased if the recycling facilities such as recycling bins were reached within walking distance (Babaei *et al.,* 2015). This study shows that the technology element of facilities management is crucial in encouraging waste separation behaviour among households.

The Solid Waste Management and Public Cleansing Act 2007, Act 672 stated that solid waste management facility include any land, fixed or mobile plant and system that combines structure, equipment used for handling, storage, sorting, transporting, transferring, processing, recycling, treatment, and disposal of solid waste which also include transfer stations, landfill, incinerators and thermal processing, or other plants, recycling and composting plants. The facilities or infrastructure of solid waste management will be the main issue that shape the behavioural activities towards the separations or management of solid waste.

There are findings that shows the logistical factors such as the presence of recycling services and facilities will affect recycling activities. Minimization and reuse of waste point out that situational variables are significant in shaping recycling behaviour. The lack of facilities as a barrier to waste management is a common finding in the empirical literature (Coggins, 1994; Perrin and Barton 2001; Omran *et al*., 2009). The technology dimensions are important to be study as the facilities is one of the important factor that would encourage the households to practice waste separation at source (SSI). Lastly, a technology acceptance model will be formed to highlight which emerging and available technology as according to the criterion of availability, convenience, accessibility and effects preferred by the households.

## 4.0 CONCLUSION

As Malaysia pledged to reduce the greenhouse gases emission of 45% by the year of 2030, it is important for Malaysian especially households to separate waste in their dwelling because this will lead to better environment, and indirectly, able to contribute to the national carbon reduction target by reducing the gas emission emitted from solid waste.

This paper aims to explain the rationale and needs to investigate the Multiple Acceptance Dimensions for fostering waste separation practice among the household. Based on the literature review, an extended dimension from the social acceptance triangular model has been proposed, covering political, community, market and technology. Eventually, this paper will serve as a guide for future researcher and practitioners for references whether they want to conduct a study of the waste separation behaviour or the study about social acceptance among community towards the new policies and regulations.

## REFERENCES


Agamuthu, P. (2001). *Solid Waste: Principles and Management: With Malaysian case studies.* Institute of Biological Sciences, University of Malaya, Kuala Lumpur.

Agwu, M. O. (2012). Issues and challenges of Solid Waste Management Practices in Port-Harcourt City, Nigeria- A Behavioural Perspective. *American Journal of Social and Management Sciences, 3*(2), 83-92.

Babaei, A., Alavi, N., Goudarzi, G., Teymouri, P., Ahmadi, K., & Rafiee, M. (2015). Household recycling knowledge, attitudes and practices towards solid waste management. *Resources, Conservation & Recycling, 102*(1), 94-100.

Badgie, D., Samah, M. A. A., Manaf, L. A., & Muda, A. B. (2012). Assessment of Municipal Solid Waste Composition in Malaysia: Management, Practice, and Challenges. *Polish Journal of Environmental Studies, 21*(3), 539-547.

Barr, S. (2017). *Household waste in social perspective: values, attitudes, situation and behaviour*. Taylor & Francis.

Backstead, C. L. (2008). *The Social Acceptance of School-based Solar Photovoltaic Projects: An Ontario, Canada Case Study*. University of Waterloo, Ontario, Canada.

Burn, S. M. & Oskamp, S. (1986), Increasing Community Recycling with Persuasive Communication and Public Commitment. *Journal of Applied Social Psychology, 16*(1), 29-41.

Coggins, P. C. (1994): Who is the recycler? *Journal of Waste Management, 52*(1), 317-325.

Cook, S. W., & Berrenberg J. L. (1981). Approaches to Encouraging Conservation Behavior: A Review and Conceptual Framework. *Journal of Social Issues, 37*(2), 73-107.

De Young, R. (1985-1986). Encouraging Environmentally Appropriate Behavior: The Role of Intrinsic Motivation. *Environmental System. 15*(4). 281-290.

De Young, R. (1986). Some Psychological Aspects of Recycling. *Environment and Behavior. 18*(4). 435-449.

De Young, R. (1993). Changing behavior and making it stick: The conceptualization and management of conservation behavior. *Environment and Behavior, 25*(1), 485-505.

Dhokhikah, Y., Trihadiningrum, Y., & Sunaryo, S. (2015). Community participation in household solid waste reduction in Surabaya, Indonesia. *Resources, Conversation and Recycling, 102*(1), 153-162.

Ellen, P. C. (1994). Do we know what we need to know? Objective and subjective knowledge effects on pro-ecological behaviors. *Journal of Business Research, 30*(1), 43-52.

Franklin Associates Ltd. (1997). *Solid Waste Management at the Crossroads.* KS: Prairie Village.

Fullerton, D., & Kinnaman, T. C. (1995). Garbage, Recycling, and Illicit Burning or Dumping. *Journal of Environmental Economics and Management, 29*(1), 78-91.

Gamba, R. J., & Oskamp, S. (1994). Factors influencing community residents' participation in commingled curbside recycling programs. *Environment and Behavior, 26*(5), 587-612.

Harrison, A. (1982). *The art of thinking: Strategies for asking questions, making decisions, and solving problems*. Melbourne: Business Library.

Hornik, J., Cherian, J., Madansky, M. & Narayana, C. (1995). Determinates of recycling behaviour: A synthesis of research results. *The Journal of Socio-Economics, 24*(1), 105-127.

James, V. C. (2001). *Acceptance in behavior therapy: Understanding the process of change.* University of Illinois at Urbana-Champaign, Champaign, USA. 213–226

Khairusy, S. (2015). *Development of Waste Minimization Awareness Model for University Campus*. Universiti Teknologi Malaysia, Malaysia.

Lanza, D. R. (1983). Municipal solid waste regulations: An ineffective solution to a national problem. *Fordham Urban Law Journal, 10*(1), 215-245.

Lessig, L. (1996). Social meaning and social norms. *University of Pennsylvania Law Review, 144*(5), 2181-2189.

Liliana Abarca Guerrero, Ger Maas, William Hogland (2013). Solid Waste Management Challenges for Cities in Developing Countries. *Waste Management, 33*(1): 220-232.

Lober, D. (1996). Evaluating the Environmental Performance of Corporations. *Journal of Managerial Issues, 8*(2), 184-205.

Miafodzyeva, S., & Brandt, N. (2013). Recycling behaviour among householders: synthesizing determinants via a meta-analysis. *Waste and Biomass Valorization, 4*(2), 221-235.

Ministry of Housing and Local Government Malaysia. (2005). The National Strategic Plan for Solid Waste Management.

Morrissey, A. J., & Browne, J. (2004). Waste management models and their application to sustainable waste management. *Waste Management, 24*(3), 297-308.

Ngoc, U. N. & H. Schnitzer (2009). Sustainable Solutions for Solid Waste Management in Southeast Asian countries. *Waste Management, 29*(6), 1982-1995.

Noll, K. (1985). *Recovery, recycle, and reuse of industrial wastes.* Chalsea, MI: Lewis Publisher.

Omran, A., Mahmood, A., Abdul Aziz, H., & Robinson, G. M. (2009). Investigating households attitude toward recycling of solid waste in Malaysia: a case study. *International journal of environmental research, 3*(2), 275-288.

Perrin, D., & Barton, J. (2001). Issues associated with transforming household attitudes and opinions into materials recovery: a review of two kerbside recycling schemes. *Resources, Conservation and Recycling, 33*(1), 61–74.

Pieters, R. (1991). Changing Garbage Disposal Patterns of Consumers: Motivation, Ability, and Performance. *Journal of Public Policy & Marketing, 10*(2), 59-76.

Rahji, M. A. Y., & Oloruntoba, E. O. (2009). Determinants of households' willingness-to-pay for private solid waste management services in Ibadan, Nigeria. *Waste management & research, 27*(10), 961-965.

Rawls, J. (1999). A Theory of Justice. *Criticism*, 1–6.

Reid, D. H., Luyben, P. D., Rawers, R. J., & Bailey, J. S. (1976). The Effects of Prompting and Proximity of Containers. *Environment and Behavior, 8*(3), 471-481.

Reschovsky, J. D., & Stone, S. E. (1994). Market incentives to encourage household waste recycling: Paying for what you throw away. *Journal of policy analysis and management, 13*(1), 120-139.

Sauter, R., & Watson, J. (2007). Strategies for the deployment of micro-generation: Implications for social acceptance. *Energy Policy, 35*(5), 2770-2779.

Sia, A., Hungerford, H. & Tomera, A. (1985–86). Selected predictors of responsible environmental behavior: An analysis. *Journal of Environmental Education, 17*(2): 31–40.

The Solid Waste and Public Cleansing Management Act 2007, Act 672.

Thogersen, J. (1996). Recycling and morality. *Environment and Behavior, 28*(4). 536-558.

Uiterkamp, B. J. S., Azadib, H., & Hoc, P. (2011). Sustainable recycling model: A comparative analysis between India and Tanzania. *Resources, Conservation and Recycling*, *55*(1), 344–355.

United Nations Development Programme Malaysia. (2008). *Malaysia Developing a Solid Waste Management: Model for Penang*.

Van Alphen, K., Voorst, Q. V. T., Hekkert, M. P., & Smith, R. (2007). Social acceptance of carbon capture and storage technologies. *Energy Policy*, *35*(8), 4368-4380.

Wustenhagen, R., Wolsink, M., & Burer, M.J. (2007). Social acceptance of renewable energy innovation: An introduction to the concept. *Energy Policy*, *35*(5), 2683-2691.