

Consultation project application

Funder: Malaysia Productivity Corporation (MPC)

Improving waste deposit behavior among the people of Semporna, Sabah: A behavioral insights perspective.

Resarch duration: 1 July 2020 – 28 February 2021

Research applicant details	
Name	: Rusyda Helma Mohd
Identity Card No.	: 811228-06-5556
Faculty	: Sains Sosial dan Kemanusiaan
Department	: Pusat Kajian Psikologi dan Kesejahteraan Manusia, Universiti Kebangsaan Malaysia, Bangi
Office No.	: 03-89215209
Mobile No.	: 017-4415987
E-mail	: rusyda_h@ukm.edu.my
Age	: 38 years old
Profession	: Lecturer
Education	: MSc. (2004)

Research Information

Research title

Improving waste deposit behavior among the people of Semporna, Sabah: A behavioral insights perspective.

Duration

9 months

Executive summary

Waste disposal is one of the most critical issues facing the world today and it has attracted global attention, particularly within the environmentalist movement and, most importantly, the government. The United Nations has underlined Goal 11 (sustainable cities and communities),

under the Sustainable Development Goals (SDG) which pays special attention to waste management by calling citizens, governments, business entities and non-governmental organizations to cooperate and achieve environmental sustainability (UNEP, 2017). Although several efforts have been coordinated on local and international levels, this goal has yet to be accomplished. Lobbying, campaigns, and awareness programs have achieved only minor improvements (Milford, Øvrum, & Helgesen, 2015).

Waste disposal refers to the removal of waste through recycling, landfill dumping, or burning (Jalil, 2010; Sun & Kurisu, 2019). Waste disposal is systemic and requires proper management in order to prevent contamination, which can harm individuals as well as the environment such as water contamination, and communicable disease. In addition, waste disposal can be difficult to regulate, especially in rural areas where enforcement differs from one state to another. Furthermore, proper regulation depends heavily on the policies and interests of local councils or authorities. In some rural areas where waste management is lacking, individuals are inclined to dispose of waste around their house and neighborhood (Jaafar, Azmina Ibrahim, Awanis Ahmad, Abdul Kadir, & Razali Md Tomari, 2018).

Proper waste disposal is imperative. However, the task is not always straightforward. The public must grasp the importance of disposing of waste properly, not only for their own benefit but for the health and safety of those living with or around them. Therefore, researchers must understand the population's demographics in order to direct their behaviour effectively. Certain factors, such as physiological and psychological needs, must not be neglected. Therefore, this research study will be guided by Glasser's Choice Theory, which focuses on behavioural change and needs fulfillment.

It is essential to note here that this study's research scope specifically addresses the population of Semporna, Sabah. The people of Semporna are underprivileged with limited access to education (Temkin, 2011). Considering this fact, our study will develop nudges that are straightforward and appealing. This research will be conducted with two research strategies, ethnomethodology and experimental design. Ethnomethodology design is key to understanding the public's waste disposal behaviour. In addition, experimental research design is more feasible for small samples. At the conclusion of this study, we hope to see an improvement in waste disposal behaviour.

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Problem statement

Waste disposal is a complex matter and is determined by various factors, including awareness, education, literacy, and social norms (Nielsen, Hasselbalch, Holmberg, & Stripple, 2020). In Malaysia, organic waste comprises the greatest portion of total waste at 46%, followed by plastic waste (15%), and paper waste (14%) (Jalil, 2010). Previous studies also confirmed that domestic waste or waste sourced from household activities plays a vital role in waste consumption (UNDP, 2008). This waste is derived from numerous activities, such as cleaning and cooking (Jaafar et al., 2018). Poor waste management is concerning because it can lead to various socio-economic and health issues (Ferronato & Torretta, 2019).

In the case of Semporna, Sabah, where the majority of the population is constituted by Malaysian citizens, stateless persons, refugees and immigrants, waste disposal is difficult and fragile. Although Semporna is known as one of the major tourist attractions in Sabah, with its beautiful islands and crystal-clear beaches, the region's high volume of cumulative waste tarnishes its reputation (Allerton, 2017). In most sectors where waste disposal is critical, the primary barrier that inhibits efforts to introduce waste management is a lack of awareness and understanding (Mashi, Subramaniam, & Johari, 2018). There are at least two major issues concerning poor waste management among the people of Semporna, namely, limited access to education due to inequality and poverty (Allerton, 2014) and a minimal sense of belonging

(Razali, Nordin, & Duraisingam, 2015).

The traditional approach of behavioural economics aims to alter the public's behaviour toward environmental issues through workshops, briefings, or town hall sessions. However, this approach has proven to be futile (Linder, Lindahl, & Borgström, 2018; Mckenzie-mohr, 2000; Parajuly, Fitzpatrick, Muldoon, & Kuehr, 2020). Following this logic, our research has diverged from the behavioural economics strategy. Instead, our research aims to achieve pro-environmental behaviour, in which an individual makes conscious decisions to reduce damaging effects on the environment and consequently improves their waste disposal behaviour (Kollmuss & Agyeman, 2010). Within the realm of behavioural insights, pro-environmental behaviour is achievable through the nudges technique, a system that is used to influence decision making by presenting options that encourage individuals to make the correct waste disposal choices (Ferronato & Torretta, 2019). The nudges technique is defined as the method used to maneuver individuals' behaviour in a predictable direction (Linder et al., 2018).

Given the demographic data of the people of Semporna (i.e. low education and sense of belonging), it is important to note here that this research is tailored to address the specific needs of the population. We believe that by adopting the EAST Framework (Easy, Attractive, Social, Timely) we could ensure that the people of Semporna are provided with sufficient options presented with persuasive language. Contrary to the conventional behavioural economics method that makes use of campaigns to increase awareness of environmental issues (Vlek & Steg, 2007), we are integrating the nudges technique as a form of intervention program, designed to incorporate local norms.

In addition, to address the low sense of belonging among the people of Semporna, which prohibited waste disposal behaviour, we will adopt Glasser's Choice Theory. This theory posits that fundamental human needs drive people to make certain choices and perform certain behaviours (Glasser, 1999). In Glasser's Choice Theory, the individual is driven to make decisions based on five distinct components of basic need: survival, love and belonging, freedom, fun, and power (Legorburu, 2012). Previous research indicated that two components, survival and love and belonging, are the most significant predictors of behavioural improvement (Glasser, 1996; Mason, 2019). Therefore, we believe that the interplay between two major components of Glasser's Choice Theory will be beneficial to this study.

Hypothesis:

- Ha1: Needs fulfillment will regulate waste disposal behaviour improvement
- Ha2: Nudges technique will catalyze improved waste disposal behaviour
- Ha3: Participants who receive more reinforcements are more inclined to make better decisions in regard to their waste disposal behaviour
- Ha4: Local norms will influence individuals' waste disposal decisions

Research questions:

1. What kind of nudges techniques can improve waste disposal behaviour?
2. Which human needs are best manipulated to improve waste disposal behaviour?
3. How can local norms be integrated into persuasive language?

Novelty:

There is unknown research that made use of behavioral insights and nudges technique on waste disposal behavior among people living in the rural area, specifically in Malaysia.

Research objectives:

1. To determine the most practical method of reinforcing waste disposal behaviour
2. To examine an expansion in knowledge and proper waste disposal behaviour
3. To examine pre- and post-effects of waste disposal behaviour

Research Methodology:**1) Phase 1-Data collection****Ethnomethodology research design**

Ethnomethodology was conducted as a form of qualitative research by concentrating on daily social activities but not on individuals themselves (Have, 2013; Jones, 1983; Pleasants, 1993; Rawls, 2008; Zeitlyn, 1990) to determine how the activities are constructed (Attewell, 1974; Dew, 2007). Ethnomethodology aims to understand everyday social activities by studying how individuals behave when following procedures in behavior engagement (Gidlow, 1972), to find the most appropriate solutions to issues (Button & Harper, 1995; Zeitlyn, 1990), and to express them in straightforward, accessible language (Attewell, 1974; Given, 2008; Have, 2005). Ethnomethodology locates itself within the sphere of qualitative research. Therefore, it eschews abstract theories and instead concentrates only on interpretable social orders in individuals daily lives (Dix, Finlay, Abowd, & Beale, 2004) that eventually lead to the production of sensible shared knowledge (Scheele, 1975). This methodology will help us understand participants' practices and patterns of waste disposal behaviour.

To collect data, we conducted semi-structured interviews and adopted the Critical Incident Technique (CIT) (Flanagan, 1954). CIT is a procedure designed to gather and identify data, as well as analyse and organise human behavioural patterns (Flanagan, 1954; Gremler, 2004). For our study, the CIT interview technique is compatible with the ethnomethodology research design because of similarities in its fundamental principle; both are procedural-based behaviour scientific research methods that focus on incidents, actions, outcomes, and perceived possible consequences (Dunn & Hamilton, 1986; Flanagan, Gosnell, & Fivars, 1963; Gershon et al., 2000; Norman, Redfern, Tomalin, & Oliver, 1992). A critical incident is a significant event experienced by individuals which motivates them to take action (Flanagan, 1954) and, if it is not immediately rectified, will potentially produce an irreversibly destructive effect (Wright, Mackenzie, Buchan, Cairns, & Price, 1991). The data will be analysed with Leximancer, an algorithmic analysis tool that uses text documents to create visual-lexical concept maps (Chiu & Tseng, 2018).

2) Phase 2-Intervention**Experimental Design**

Our research will employ Experimental Design for intervention. Experimental research is a form of design used to evaluate interventions in a natural setting by examining the causality between an intervention and outcome (Aguinis & Bradley, 2014). An experiment is best used in studies with a small sample where the sampling is not random (Cook & Campbell, 1976). The samples will be participants from four traditional villages on the mainland and island are of Semporna, Sabah.

We have identified several possible (subjected to change) nudges techniques for

intervention that can address the underlined objectives.

1. Short message service (SMS) to the participants
2. Flyers on sorting waste 'how-to.'
3. Monetary incentives
4. Feedback cards on achievement/completion of proper waste sorting
5. Infographics

Gantt Chart:

Activities	Month									
	July 2020	Aug 2020	Sept 2020	Oct 2020	Nov 2020	Sept 2020	Dec 2020	Jan 2021	Feb 2021	
Phase 1-Data collection	x									
Phase 1-Data analysis		x								
Phase 2-Intervention			x	x	x	x				
Phase 2- Data analysis							x			
Report								x	x	

Brief CV

Attached

References

Aguinis, H., & Bradley, K. J. (2014). Best Practice Recommendations for Designing and Implementing Experimental Vignette Methodology Studies. *Organizational Research Methods*, 17(4), 351–371. <https://doi.org/10.1177/1094428114547952>

Allerton, C. (2014). *Statelessness and the lives of the children of migrants in Sabah , East Malaysia*. <https://doi.org/10.1163/22112596-01902004>

Allerton, C. (2017). Contested Statelessness in Sabah, Malaysia: Irregularity and the Politics of Recognition. *Journal of Immigrant and Refugee Studies*, 15(3), 250–268. <https://doi.org/10.1080/15562948.2017.1283457>

Attewell, P. (1974). Ethnomethodology since Garfinkel. *Theory and Society*, 1(2), 179–210.

Button, G., & Harper, R. (1995). The relevance of "work-practice" for design. *Computer Supported Cooperative Work*, 4(4), 263–280. <https://doi.org/10.1007/BF01846695>

Chiu, W., & Tseng, W. (2018). What is in a concept? Mapping the history of sport management research in Taiwan and Korea using Leximancer text mining analysis Tourist experience View project Analysis of sport management research in What is in a concept? Mapping the history of sport ma. *Physical Education Journal*. <https://doi.org/10.3966/102472972018035101001>

Cook, T. D., & Campbell, D. T. (1976). The design and conduct of quasi-experiments and true experiments in field settings. *Handbook of Industrial and Organizational Psychology*, 223–326.

Dew, K. (2007). A health researcher's guide to qualitative methodologies. *Australian and New Zealand Journal of Public Health*, 31(1), 1–10. <https://doi.org/10.1111/j.1753-6405.2007.00201.x>

New Zealand Journal of Public Health, 31(5), 433–437. <https://doi.org/10.1111/j.1753-6405.2007.00114.x>

Dix, A., Finlay, J., Abowd, G. D., & Beale, R. (2004). Human-Computer Interaction. *Human-Computer Interaction*, Third(January), 834. <https://doi.org/10.1207/S15327051HCI16234>

Dunn, W. R., & Hamilton, D. D. (1986). The critical incident technique-a brief guide. *Medical Teacher*, 8(3), 207–215. <https://doi.org/10.3109/01421598609036857>

Ferronato, N., & Torretta, V. (2019). Waste mismanagement in developing countries: A review of global issues. *International Journal of Environmental Research and Public Health*, 16(6). <https://doi.org/10.3390/ijerph16061060>

Flanagan, J. C. (1954). The critical incident technique. *Psychological Bulletin*, 51(4), 327.

Flanagan, J. C., Gosnell, D., & Fivars, G. (1963). Evaluating Student Performance. *The American Journal of Nursing*, 63(11), 96–99.

Gershon, R. R. M., Karkashian, C. D., Grosch, J. W., Murphy, L. R., Escamilla-Cejudo, A., Flanagan, P. A., ... Martin, L. (2000). Hospital safety climate and its relationship with safe work practices and workplace exposure incidents. *American Journal of Infection Control*, 28(3), 211–221. <https://doi.org/10.1067/mic.2000.105288>

Gidlow, B. (1972). Ethnomethodology--A New Name for Old Practices. *The British Journal of Sociology of Sociology*, 23(4), 395–405.

Given, L. M. (2008). *The Sage Encyclopedia of Qualitative Research Methods*. Los Angeles: Sage publications.

Glasser, W. (1996). Then and Now. The Theory of Choice. *Learning*, 25(3), 20–22.

Glasser, W. (1999). *Choice theory: A new psychology of personal freedom*. HarperPerennial.

Gremler, D. D. (2004). The Critical Incident Technique in Service Research. *Journal of Service Research*, 7(1), 65–89. <https://doi.org/10.1177/1094670504266138>

Have, P. ten. (2005). The Notion of Member is the Heart of the Matter : On the Role of Membership Knowledge in Ethnomethodological Inquiry. *Historical Social Research*, 30(1).

Have, P. ten. (2013). Understanding Qualitative Research and Ethnomethodology. *SAGE Publications*, 212. <https://doi.org/10.1017/CBO9781107415324.004>

Jaafar, I., Azmina Ibrahim, T., Awanis Ahmad, N., Abdul Kadir, A., & Razali Md Tomari, M. (2018). Waste generation and characterization: Case study of Seberang Takir, Kuala Nerus, Terengganu, Malaysia. *Journal of Physics: Conference Series*, 1049(1). <https://doi.org/10.1088/1742-6596/1049/1/012029>

Jalil, M. A. (2010). Sustainable Development in Malaysia: A Case Study on Household Waste Management. *Journal of Sustainable Development*, 3(3), 91–102. <https://doi.org/10.5539/jsd.v3n3p91>

Jones, G. R. (1983). Psychological orientation and the process of organizational socialization: An interactionist perspective. *Academy of Management Review*, 8(3), 464–474. <https://doi.org/10.5465/AMR.1983.4284600>

Kollmuss, A., & Agyeman, J. (2010). *Mind the Gap : Why do people act environmentally and what are the barriers to pro-environmental behavior ? Mind the Gap : why do people act environmentally and what are the barriers to*. 4622. <https://doi.org/10.1080/1350462022014540>

Legorburu, N. (2012). Understanding Meaningful Involvement in Reality Therapy and Choice Theory in the Context of Empathy Research.

Linder, N., Lindahl, T., & Borgström, S. (2018). *Using Behavioural Insights to Promote Food Waste Recycling in Urban Households — Evidence From a Longitudinal Field Experiment*. 9(March), 1–13. <https://doi.org/10.3389/fpsyg.2018.00352>

Mashi, M. S., Subramaniam, C., & Johari, J. (2018). The effect of management commitment to safety, and safety communication and feedback on safety behavior of nurses: the moderating role of consideration of future safety consequences. *The International of Human Resource Management*, (March), 1–30. <https://doi.org/10.1080/09585192.2018.1454491>

Mason, J. (2019). *Human sociality as spheres of belonging*.

Mckenzie-mohr, D. (2000). *Promoting Sustainable Behavior: An Introduction to Community-Based Social Marketing*. 56(3), 543–554.

Milford, A. B., Øvrum, A., & Helgesen, H. (2015). Nudges to increase recycling and reduce waste. *NILF Discussion Papers*, 101, 1–27. [https://doi.org/10.1016/0022-0981\(86\)90267-4](https://doi.org/10.1016/0022-0981(86)90267-4)

Nielsen, T. D., Hasselbalch, J., Holmberg, K., & Stripple, J. (2020). Politics and the plastic crisis: A review throughout the plastic life cycle. *WIREs Energy and Environment*, 9(1). <https://doi.org/10.1002/wene.360>

Norman, I. J., Redfern, S. J., Tomalin, D. A., & Oliver, S. (1992). Developing Flanagan's critical incident technique to elicit indicators of high and low quality nursing care from patients and their nurses. *Journal of Advanced Nursing*, 17(5), 590–600. <https://doi.org/10.1111/j.1365-2648.1992.tb02837.x>

OECD. (2019). *Tools and Ethics for Applied Behavioural Insights: The BASIC Toolkit*. <https://doi.org/10.1787/9ea76a8f-en>

Parajuly, K., Fitzpatrick, C., Muldoon, O., & Kuehr, R. (2020). Resources , Conservation & Recycling : X Behavioral change for the circular economy : A review with focus on electronic waste management in the EU. *Resources, Conservation & Recycling: X*, 6(August 2019), 100035. <https://doi.org/10.1016/j.rcrx.2020.100035>

Pleasants, N. (1993). The Post-Positivist Dispute in Social Studies of Science and its Bearing on Social Theory.pdf. *Theory, Culture & Society*, 14(3), 143–156.

Rawls, A. W. (2008). Harold Garfinkel, ethnomethodology and workplace studies. *Organization Studies*, 29(5), 701–732. <https://doi.org/10.1177/0170840608088768>

Razali, R. M., Nordin, R., & Duraisingam, T. J. (2015). Migration and Statelessness : Turning the Spotlight on Malaysia. *Social Sciences and Humanities*, 23, 19–36.

Scheele, D. S. (1975). Consumerism comes to Delphi: Comments on Delphi assessment, expert opinion, forecasting, and group process by H. Sackman. *Technological Forecasting and Social Change*, 7(2), 215–219. [https://doi.org/10.1016/0040-1625\(75\)90060-8](https://doi.org/10.1016/0040-1625(75)90060-8)

Srun, P., & Kurisu, K. (2019). *Internal and External Influential Factors on Waste Disposal Behavior in Public Open Spaces in Phnom*. <https://doi.org/10.3390/su11061518>

Temkin, A. (2011). Out of school. In *Artforum International* (Vol. 49). <https://doi.org/10.4324/9781315677514-2>

UNDP. (2008). *Malaysia Developing a Solid Waste Management Waste Management*.

UNEP. (2017). *Sdg 11- Make cities and human settlements inclusive, safe, resilient and sustainable*.

Vlek, C., & Steg, L. (2007). *Human Behavior and Environmental Sustainability : Problems , Driving Forces , and Research Topics*. 63(1), 1–20.

Wright, D., Mackenzie, S. J., Buchan, I., Cairns, C. S., & Price, L. E. (1991). Critical incidents in the intensive therapy unit. *The Lancet*, 338(8768), 676–678. [https://doi.org/10.1016/0140-6736\(91\)91243-N](https://doi.org/10.1016/0140-6736(91)91243-N)

Zeitlyn, D. (1990). Professor Garfinkel Visits the Soothsayers: Ethnomethodology and Mambila Divination. *Man, New Series*, 25(4), 654–666.

A. TO CLIENT (UKMP 10% + SST 6%)			B. FOR PROJECT CONSULTANT (AFTER UKMP 10%)		
Item	Description	(RM)	Item	Description	RM
1	Total fees	94,339.00	1	Total balance (A3-A6)	84,905.00
2	Reimburse	-	2	Fee to consultant (from UKM)	35,000.00
3	Total	94,339.00	3	10% to PTJ and UKM	3,500.00
4	SST 6% of item 1	5661.00	4	Fee to consultant (non UKM)	17,500.00
5	GRAND TOTAL	100,000.00	5	10% to PTJ and UKM	-
6	UKMP Margin from total	9433.9	6	Final fee	56,000.00
	%from item 3	10.00%	7	Estimated balance for expenses	28,905.00

Budget and costing				
Kos BI intervention dan kutipan data				
A. Wage and allowance				
i. Research assistant	RM1,800.00 x 2 month x 1 pax	3,600.00	3,600.00	
	RM 1,800.00 x 1 month x1 pax	1,800.00	1,800.00	
B. Logistics and transportation				
i. Airfare KLIA-Tawau-KLIA	Phase 1-Data collection a.RM600.00 x 3 researchers and 2 research assistants	3,000.00		
ii. Ground transportation in Semporna	b. One car x RM150.00 x 4 days d. Petrol/gas for 4 days e. Food allowance RM 80 x 3 researchers x 4 days	600.00 400.00 960.00		

	f. Food allowance RM 60 x 2 research assistants x 4 days	480.00	
iii. Airfare KLIA-Tawau-KLIA for 4-week intervention program	Phase 2- Intervention and evaluation a. RM600.00 x 3 researcher x 2 times	3, 600.00	RM10,490.00
iv. Ground transportation for 4 week-intervention program	b. One car RM150.00 x 2 days x 2 times h. Petrol and Gas RM100 (2 day x 2 times)	600.00 400.00	
v. Transportation from UKM to the airport	RM 150 X 3 times	450.00	
C. Lodging/Hotel i. Hotel/lodging for researcher and research assistant	Phase 1: Data collection RM 250 x 2 rooms x 4 days Phase 2: Intervention follow up RM 250 x 1 room x 2 days x 2 times	2,000.00 1,000.00	RM 3,000.00
D. Research materials i. Office supplies	a. Voice recorder, batteries top-up prepaid, faks, A4 papers, post-it, marker pens, Mahjong paper, Go	2,000.00	RM2,000.00

	Pro Camera, Banner		
D. Research token and intervention management			
i. Token for the interview sessions	Interview with household representatives RM 50 x 10 families	500.00	
ii. Intervention techniques and application	Token of appreciation for the Head of the village RM 100 x 5 times	500.00	
iii. Photocopying materials	Token for Community Officers RM 50 x 4 pax	200.00	RM8,015.00
	Intervention techniques based on Experimental Design	6,315.00	
	Research documents and research output	500.00	
		Total	RM28,905.00
Grand Total (Kos konsultansi + kos BI intervention dan kutipan data)			RM100,000.00

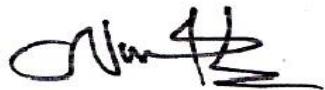
Researcher(s)			
NAME	IDENTITY CARD NO.	ORGANIZATION	ROLE
Prof. Madya Dr. Nor Ba'yah Abd Kadir	690123-01-5300	Universiti Kebangsaan Malaysia	Co-researcher
Prof. Madya Dr Normaliza Abd. Malik	731103-04-5594	Universiti Sains Islam Malaysia	Co-researcher

Declaration



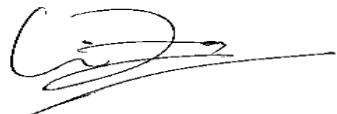
(Rusyda Helma Mohd-Principal investigator)
Lecturer

Pusat Kajian Psikologi dan Kesejahteraan Manusia
Fakulti Sains Sosial dan Kemanusiaan
Universiti Kebangsaan Malaysia
I.D No: 811228065556



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(Prof Madya Dr. Nor Bayah Abdul Kadir-Co-researcher)
Senior lecturer
Pusat Kajian Psikologi dan Kesejahteraan Manusia
Fakulti Sains Sosial dan Kemanusiaan
Universiti Kebangsaan Malaysia
I.D No: 690123-01-5300



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(Prof Madya Dr. Normaliza Ab Malik-Co-researcher)
Senior lecturer
Fakulti Pergigian
Universiti Sains Islam Malaysia
I.D No: 731103-04-5594