

Systematic Literature Review On Recycling Waste Cooking Oil Using Public Service Announcement

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ABSTRACT

Cooking oil has attained significant importance and is regularly consumed on a global scale, encompassing both beneficial as well as negative practices. Nevertheless, the management of waste cooking oil (WCO) has been implemented through various methods that have resulted in significant environmental concerns. This article undertakes an analysis of the public service announcement (PSA) campaign aimed at promoting the management of waste cooking oil. This study employs a qualitative methodology and utilises a systematic literature review (SLR) approach to identify relevant scholarly articles pertaining to waste cooking oil. The acquired data is subjected to analysis through the use of a document analysis methodology in order to elucidate the significant information derived from the journal. The screening methodology has identified a total of four (4) articles published between 2019 and 2023 that are relevant to the investigation of the utilisation of public service announcements in the promotion of waste cooking oil. The findings indicate a significant dearth of prior scholarly investigations concerning public service announcements related to the recycling of waste cooking oil. It is strongly advised that future research be conducted to investigate the influence of public service announcements (PSAs) on waste cooking oil, particularly in the context of Malaysia.

Keywords: *Systematic Literature Review (LSR), Public Service Announcement, Creative Advertising, Waste Cooking Oil Management*

INTRODUCTION

Cooking oil, an essential ingredient found in kitchens across the globe, assumes a substantial role in our everyday existence, providing not only culinary advantages but also presenting environmental complexities (Suzihaque et al., 2022). The issue of waste cooking oil (WCO) management has become a

significant concern due to the large volumes generated on a global scale. As the field of culinary practices undergoes development, there is a corresponding emergence of issues pertaining to the disposal and recycling of WCO (Suzihaque et al., 2022).

This study undertakes a thorough investigation of a new strategy to tackle this problem: employing public service announcements (PSAs) as a method to advocate for responsible waste and chemical waste management. During the period characterised by rising environmental awareness, PSAs became known as powerful instruments for enhancing public consciousness and advocating for sustainable practices (Ftanou et al., 2021). This research employs a qualitative methodology by utilising a systematic literature review (SLR) approach to select and analyse academic papers that explore the use of PSAs in promoting responsible WCO management. Our systematic literature review, spanning from 2019 to 2023, has revealed a limited body of research concerning the involvement of PSAs in the recycling of WCO. In spite of the growing significance of ecologically responsible practices, there seems to be a lack of scholarly discourse in this particular field. The lack of study in this area highlights the importance and urgency of our investigation. In the present introductory segment, we shall furnish a comprehensive outline of seminal scholarly articles that have made significant contributions towards developing a more comprehensive comprehension of PSAs, their efficacy, and their impact on diverse behavioural modifications. Furthermore, the present study will address the weaknesses found in the current body of literature, as outlined by Suzihaque et al. (2022).

In order to gain insight into the potential of PSAs in the context of waste and recycling management, we will analyse several scholarly articles. These articles include "Recycling as a planned behaviour: the moderating role of perceived behavioural control" by Liu et al. (2021), "Bi-objective design of household e-waste collection with public advertising and competition from informal sectors" by Shi et al. (2020), "Developing Public Service Announcements to Help Prevent Suicide among Young People" by Ftanou et al. (2021), and "Neuroelectrical indices evaluation during antismoking public service announcements for a young population." In the remaining pages, an in-depth study will be conducted on the previously mentioned studies, covering an exploration of their respective techniques, outcomes, and implications. By means of this rigorous investigation, our objective is to offer a comprehensive comprehension of the present level of knowledge on this particular topic and pinpoint potential areas for future research. As we explore this unfamiliar domain, we recommend an expanded focus on the significance of PSAs in advancing responsible environmental preservation and oversight, particularly within the Malaysian setting, where an intersection of culinary customs and ecological considerations is evident. The subsequent portions of this manuscript will explore the chosen literature, examining its discoveries, methodology, and implications. The systematic literature review conducted by Suzihaque et al. (2022) serves the purpose of providing a comprehensive and informative overview of the topic. Additionally, it contributes to the advancement of future research in the fields of PSAs and WCO recycling. Collectively, we undertake an expedition to investigate the profound capacity of PSAs to confront the environmental obstacles presented by the management of WCO.

LITERATURE REVIEW

Even though many writers have written extensively about creative advertising and PSA, on our part we shall try to gather and examine as much as we can on these subjects from past articles that study PSA efforts on WCO management.

Recycling as a planned behaviour: the moderating role of perceived behavioural control

The study by Liu et al. (2021) examines the effectiveness of PSA video using the theoretical framework of planned behaviour, also known as TPB, in stimulating individuals to adopt appropriate recycling practices. The researchers used a one-way between-subjects experimental design and a diverse

sample of 707 participants in New York State. The study analysed survey responses on attitudes, subjective norms, perceived behavioural control, recycling intention, and demographics.

TPB is developed based on the theory of reasoned action (TRA), which proposes that behavioural intention is a function of attitude and subjective norms. However, the TRA is only confined to predicting behaviours under volitional control (i.e., an act based on the power of one's will). When it comes to behaviours that are not under volitional control, the TRA becomes less useful. That is to say, when people lack the required skills or resources to perform a behaviour, attitude and subjective norms may not predict behavioural intention well. To improve the predictive power of the TRA, Ajzen (2020) proposed the TPB by adding perceived behavioural control as another determinant of behavioural intention.

Not surprisingly, in recycling research, attitude has been found to be the most consistent predictor of behavioural intention (Knussen et al., 2004; Tang et al., 2011). In this research context, people who have a favourable attitude toward recycling are more likely to maintain this behaviour and be better recyclers in the long run. Beyond the recycling context, in a meta-analysis of 185 TPB-based studies, Armitage and Conner (2001) found that attitude accounts for 24% of the variance in behavioural intention, followed by perceived behavioural control (18%) and subjective norms (12%).

The researchers found that the PSA video positively impacts individuals' intentions to recycle by influencing their attitudes towards recycling, especially among those who perceive themselves to have low control over their recycling behaviour. This effect has significant implications for environmental campaigns and highlights the crucial role of perceived behavioural control in influencing the theory of planned behaviour. The study's findings have significant implications for environmental campaigns and the role of perceived behavioural control in influencing the theory of planned behaviour.

Bi-objective design of household E-waste collection with public advertising and competition from informal sectors

The research paper "Bi-objective design of household E-waste collection with public advertising and competition from informal sectors" by Shi et al. (2020) focuses on the issue of effectively managing electronic waste (e-waste) in the context of technological progress and environmental consequences. The paper proposes an innovative methodology for developing effective household e-waste collection systems, integrating public advertising strategies to enhance efficiency and addressing challenges posed by informal recycling sectors. The proposed framework uses a mixed-integer nonlinear programming model to optimise e-waste collection while minimising costs related to network development and advertising campaigns.

The methodology incorporates a decomposition-based, multi-objective meta-heuristic algorithm to extract Pareto solutions, which provide optimal trade-offs between objectives. The authors conduct a case study in Changsha, China, to examine the complex dynamics between network infrastructure investments and public awareness campaigns. The paper's contributions extend beyond optimization and encompass wider consequences for environmental awareness and policy-making. The study highlights the importance of residents' environmental consciousness in shaping e-waste collection campaigns and the significance of its methodology as a valuable tool for policymakers dealing with limited collection networks and informal e-waste collectors, especially in developing nations.

The paper acknowledges potential avenues for further exploration and expansion, emphasising the importance of addressing uncertainties related to informal collection sites and prices. Further research should explore challenges associated with multi-period location and advertising strategies. The research's focus on future research aims to stimulate conversations and advancements in e-waste management and its associated domains.

Developing Public Service Announcements to Help Prevent Suicide among Young People

The primary objective of this research paper is to investigate and address the critical issue of suicide prevention among the youth population in Australia. The study aims to eliminate a spotlight on the various factors contributing to this distressing phenomenon and propose effective strategies to minimise its prevalence. By examining the current state of suicide rates among young individuals in Australia, the research efforts to identify the behind causes and risk factors associated with suicidal behaviors. Furthermore, the paper aims to develop and evaluate the efficacy of PSAs as a potential assistance tool for preventing suicide among this vulnerable demographic. Through a comprehensive analysis of existing literature, empirical data, and expert insights, the study seeks to provide valuable insights and recommendations for policy makers, mental health professionals, and other stakeholders involved in suicide prevention efforts. Ultimately, the research paper attempts to contribute to the existing body of knowledge on suicide prevention and open the way. The present study includes a sample size of 15 individuals, ranging in age from 18 to 24 years, who actively participated in workshops conducted in the city of Melbourne. The primary objective of this research endeavor was to investigate the suitability and relevance of three significant suicide prevention PSAs, namely "Talk to someone," "Find what works for you," and "Life can get better." The participants were actively engaged in the evaluation process, offering valuable insights regarding the content, format, and design of the PSAs. Additionally, they provided their perspectives on the potential impact that these PSAs could have on the target audience.

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The employed methodology for evaluating the study is qualitative in nature, mainly relying on workshop discussions and direct input obtained from the participants. The results of the study indicate that the younger participants showed a positive perception towards all three PSAs, considering them to be valuable and beneficial in nature. Notwithstanding, there have been raised concerns regarding the suitability of these treatments for non-western cultural groups, the potential risk of minimizing psychological distress, and the accidentally recommendation of unattainable or remote actions for young people dealing with suicidal ideation.

The present study is related to the overarching subject of formulating successful suicide prevention tactics, with a particular focus on the adolescent demographic. By actively engaging the target demographic in the developmental phase, the study aligns with the overarching goal of formulating messages that are both relatable and influential. The qualitative evaluation approach places significant emphasis on the capture and analysis of personal perspectives and experiences. This is done to ensure the effectiveness of PSAs in establishing a meaningful connection with the intended audience.

Neuroelectrical Indices evaluation during antismoking Public Service Announcements on a young population

This research study seeks to examine the effects of anti-smoking PSAs on individuals' electroencephalographic (EEG) rhythm variations (Modica et al., 2017). It is important to note that a significant proportion, specifically 90%, of individuals initiate smoking before the age of 18. By investigating participants' responses to these PSAs, we aim to gain insights into the potential impact of such interventions on smoking behaviour. The utilisation of EEG technology allows for the measurement and analysis of brain wave patterns, providing valuable data on the neural processes underlying individuals' reactions to anti-smoking messages.

The study employs a quantitative approach, wherein PSAs are classified into three categories: effective, ineffective, and awarded, based on their communication style. Neuroelectrical indices, such as the effort index and approach withdrawal index, are commonly employed in the field of cognitive and affective neuroscience to assess and measure cognitive and affective responses. These indices provide valuable insights into the underlying neural processes associated with various cognitive and affective states. By quantifying and analysing neuroelectrical signals, researchers are able to gain a deeper understanding of the intricate interplay between cognition and the present study incorporates the utilisation of analysis of variance (ANOVA) and logistic regression techniques to investigate the

variations in responses and EEG signals across various types of PSAs and among participants with diverse smoking attitudes. The present study employs a multidisciplinary approach by integrating principles derived from the fields of neuroscience and experimental design. Its primary objective is to evaluate the effectiveness of PSAs by examining the reactions and responses of a specific target audience, namely the youthful demographic. By employing a rigorous methodology, this research aims to provide valuable insights into the impact and efficacy of PSAs in influencing the attitudes and behaviours of young individuals.

RESEARCH METHODOLOGY

This article studied PSA efforts on WCO management through a systematic literature review (SLR). The main objective of a systematic literature review (SLR) is to enhance the understanding of the existing scientific information and research efforts concerning ecosystem services and their significance in maintaining human well-being. Additionally, this study aims to identify the primary limitations and shortcomings that limit the assessment of ecosystem services, while also suggesting a direction for future research efforts in this domain (Mengist et al., 2020). Del Amo et al. (2018) described Systematic Literature Review (SLR) as a thorough and objective approach used to systematically identify, assess, and combine the available database of finished and documented research, scholarly contributions, and practical work conducted by researchers, scholars, and practitioners. To perform a systematic literature review, this study uses four main phases: plan the review, execute the search, analyse the research choices, and present the results. These steps are also known as SALSA: search, appraisal, synthesis, and analysis (Dewey & Drahota, 2016).

Studies on literature selected from the last five years, ranging from 2019 to 2023, were conducted to obtain the latest information about PSA in the WCO management campaign process. The selection of keywords was based on the objective that had been decided. The suitable keywords for the search procedure were chosen based on the objective. This study employed sophisticated manual searching on four major databases: Web of Science, IEEE, Scopus, and ProQuest Search. In their advanced keyword search, the researcher additionally used the phrase searching function and the Boolean operator or/and to combine terms. The keywords that have been used are "Public Service Announcement (PSA)" and "Creative Commercial" and "Waste Cooking Oil (WCO)."

This study aimed to explore the current situation regarding creative advertising efforts through PSAs used in WCO management. To conduct this research, the researcher sets one objective: to identify past public service announcement efforts relating to WCO management. To answer the objective, researchers ask one question: What is the current practice of creative advertising in promoting WCO management campaigns?

FINDINGS

Table 1 shows the electronic databases that have been used for this study, namely Web of Science, IEEE, Scopus, and ProQuest. The present investigation was conducted in the year 2023. In order to maintain an expectation of outstanding performance, this study exclusively incorporated peer-reviewed materials that contained finished research or surveys pertaining to PSA initiatives on WCO management between the timeframe of 2019 and 2023. A total of six hundred and twenty two ($n=622$) papers were obtained. The abstracts were thoroughly reviewed in order to identify the papers that were relevant to the research purpose. The papers should provide an up-to-date analysis of the current state of affairs pertaining to the use of PSAs in the promotion of cooking oil management. Ultimately, only four publications met the established criteria for admission. Table 2 provides a concise overview of the review papers that have

satisfied the established criteria. The concluding stage of the review entailed the synthesis of findings derived from the papers that were incorporated into the study.

Table 1 Summary of Research Result

Items	Data Summary			
	Electronic Data Base	Search Result	Include	Relevant Paper
1	Web of Science	382	63	3
2	IEEE	197	21	1
3	Scopus	1	0	0
4	ProQuest	42	2	0

Table 2. Summary of Research Result

Items	Summary Data			
	Authors	Objective	Design & Development Methodology	Evaluation Method and Data Capture
1	Liu et al. (2021).	The study examined a PSA video's recycling effectiveness using planned behaviour theory. PSAs promoted proper recycling in New York State. The video emphasised recycling's benefits, proper recycling, and community efforts. The video's script stressed recycling correctly and following local guidelines. Researchers used a one-way between-subjects experiment to test their hypotheses. Participants were randomly assigned video or control.	Experimental	<p>An effective recycling PSA video is assessed using theory of planned behaviour (TPB) variables. Attitude, subjective norms, and perceived behavioural control affect recycling intention. The video, attitude, and recycling intention are mediated by perceived behavioural control in the study.</p> <p>A representative sample (N = 707) of New York State residents is surveyed. Ipsos Knowledge Panel® recruits. Attitude, subjective norms, perceived behavioural control, recycling intention, and demographics are surveyed. Participants join PSA video or control groups. From January 14 to 29, 2021, responses will be collected.</p>
2	Shi et al. (2020)	This study aims to develop efficient electronic waste collection systems by integrating public advertising and addressing challenges from the informal sector. It aims to achieve cost reduction, environmental consciousness enhancement, and	Mathematical Modelling Case Study Meta-heuristic Algorithm	<p>This research evaluates network expansion-advertising balance using multi-objective metaheuristic to identify Pareto solutions for optimising collection efficiency and reducing costs.</p> <p>This paper analyses data from a case study in Changsha, China, focusing on costs, environmental awareness, and</p>

		a harmonious equilibrium in developing nations.		informal collection sites. The data aids in developing modelling and simulation techniques, enabling informed decision-making and practical context.
3	Ftanou et al. (2021)	The study emphasizes how crucial it is to involve youth in the production of suicide prevention PSAs in order to ensure their relevance and efficacy. It implies that collaborating on message design with young people might result in more specialised messaging. Despite their particular focus on campaigns for the management of WCO, the findings point to the need for more research to evaluate the impact of these PSAs.	Qualitative	<p>The three suicide prevention PSAs were well-received by the participants, but they expressed concerns about their cultural relevance, the potential trivialization of psychological suffering, and the effectiveness of the suggested actions. They emphasised the value of including young people's inspirational stories.</p> <p>Workshops were used in the project to acquire qualitative information about participants' perceptions of the effectiveness and suitability of the PSAs, which were then improved for further assessment.</p>
4	Modica, E., et al. (2017)	This study examines the impact of anti-smoking Public Service Announcements on individuals' EEG rhythms, aiming to understand their cognitive engagement and emotional responses, and provide insights into their effectiveness.	Quantitative Experimental Design	<p>The study evaluates EEG rhythm variations, Effort Index, and Approach Withdrawal Index responses to different smoking attitudes and types of smoking, examining their variation in relation to perception and engagement.</p> <p>Young high school students show higher effort values for images and videos, indicating difficulty understanding stimuli, and differ in perception based on communication styles.</p>

The main obstacle found in this study related to the difficult task of obtaining relevant research papers from the past that were associated with the subject matter at hand. A total of 622 research papers have been published throughout the time frame of 2019–2023 across four electronic databases. However, there are only four relevant papers that are directly related to the chosen research subject. A considerable quantity of papers, specifically 86 papers, were incorporated into the study. However, their inclusion is considered irrelevant because of their diverse subject matter, which encompasses several fields of study such as chemical and physics response, politics and culture, law, and media. The previously mentioned categories are not aligned with the primary study focus, which encompasses PSA, WCO, sustainability, and/or recycling. This observation highlights a significant deficiency in the existing body of research, specifically the lack of scholarly discussion on the topics of PSA and WCO.

Two scholarly articles, named "Recycling as a planned behaviour: the moderating role of perceived behavioural control" and "Bi-objective design of household e-waste collection with public advertising and competition from informal sectors," have been identified as highly relevant to the research field. These studies investigate the intricate dynamics involved in fostering deliberate recycling behaviours and improving public advertising techniques for waste management. The combination of findings from these academic publications underscores the potential effectiveness of tailored PSAs in shaping individuals' intentions and actions related to recycling.

However, in spite of the valuable insights offered by these articles, there exists a noticeable void in research relevant to the recycling of WCO through PSAs. The current body of literature primarily centres on the collection and recycling practices of electronic trash (e-waste) in general. However, there is a noticeable lack of scholarly investigation relating to the specific domain of waste collection and organisation (WCO) management. The presence of this research gap highlights the need for more investigation into the design, execution, and outcomes of PSAs that particularly target the recycling of WCO.

DISCUSSION & CONCLUSION

The discussion starts by looking into the difficulties encountered in carrying out this systematic literature review. One of the primary difficulties encountered was the limited availability of research specifically relating to PSA efforts in WCOs. Despite conducting an extensive search across major electronic databases, the number of relevant papers that were discovered was found to be low. The limited availability of resources can be related to several variables, including limitations in search algorithms, challenges in database categorization, and the possibility of finding false titles or abstracts in certain publications.

Among the limited literature available, two publications were identified as important due to their relevance to the larger discourse on recycling behaviour and public advertising methods. The articles provide insights into the possible influence of PSAs on recycling behaviour and trash management. Nevertheless, the previously mentioned research generally centred its attention on general recycling behaviours and e-waste collection, respectively, without looking into the unique details of WCOs and their management.

The primary focus that arose from our discoveries is the necessity for additional investigation and examination of PSAs within the framework of WCOs and their management, especially related to the recycling of WCO. The current body of literature offers useful insights into the broader domain of recycling behaviour and public advertising. However, it falls short in fully addressing the different challenges and opportunities found by WCOs in their efforts to promote responsible management of WCOs. Future research efforts should be directed towards addressing this gap in knowledge by examining the design, execution, and effects of customised PSAs that specifically focus on promoting the recycling of waste cooking oil within the domain of conservationist organisations. This research has the capacity to generate substantial contributions towards the goals of environmental sustainability, enhancing public awareness, and safeguarding the integrity of our natural ecosystems.

In conclusion, our systematic literature review has identified a lack of existing research in this particular domain. However, this highlights the significance of further investigation into the efficacy of PSA as a means of promoting responsible WCO management within nature preservation organisations. As the effort to safeguard and conserve our natural environment remains, there is a notable prospect for further investigation and environmental activism in understanding and utilising the power of PSAs.

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REFERENCES

- Ajzen, I. (2020). The theory of planned behaviour: Frequently asked questions. *Human Behavior and Emerging Technologies*, 2(4), 314–324. <https://doi.org/10.1002/hbe2.195>
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40(4), 471–499. <https://doi.org/10.1348/014466601164939>
- Del Amo, I. F., Erkoyuncu, J. A., Roy, R., Palmarini, R., & Onoufriou, D. (2018). A systematic review of Augmented Reality content-related techniques for knowledge transfer in maintenance applications. *Computers in Industry*, 103, 47-71.
- Dewey, A. & Drahota, A. (2016), Introduction to systematic reviews: Online Learning Module Cochrane Training. [Online] Available: <https://training.cochrane.org/interactivelearning/module-1-introduction-conducting-systematic-reviews>
- Ftanou, M., Reavley, N., Robinson, J., Spittal, M. J., & Pirkis, J. (2021, April 14). *Developing Public Service Announcements to Help Prevent Suicide among Young People*. *International Journal of Environmental Research and Public Health*; Multidisciplinary Digital Publishing Institute. <https://doi.org/10.3390/ijerph18084158>
- Knussen, C., Yule, F., MacKenzie, J., & Wells, M. (2004). An analysis of intentions to recycle household waste: The roles of past behaviour, perceived habit, and perceived lack of facilities. *Journal of Environmental Psychology*, 24(2), 237–246. <https://doi.org/10.1016/j.jenvp.2003.12.001>
- Liu, Z., Yang, J. Z., Clark, S. S., & Shelly, M. A. (2021, October 15). *Recycling as a planned behaviour: the moderating role of perceived behavioural control*. *Environment, Development and Sustainability*; Springer Science+Business Media. <https://doi.org/10.1007/s10668-021-01894-z>
- Mengist, W., Soromessa, T., Legese, G., (2020). Method for conducting systematic literature review and meta-analysis for environmental science research. 7. <https://doi.org/10.1016/j.mex.2019.100777>.
- Suzihaque, M.U.H., Syazwina, N., Habsah, A., Umami, K.I., Sureena, A., and Normah, H. (2022). A sustainability study of the processing of kitchen waste as a potential source of biofuel: biodiesel production from waste cooking oil (WCO). *Materials Today: Proceedings*, 63(1), 484–489. <https://doi.org/10.1016/j.matpr.2022.04.526>.
- Modica, E., Rossi, D., Maglione, A. G., Venuti, I., Brizi, A., Babiloni, F., & Cartocci, G. (2017). Neuroelectrical indices evaluation during antismoking public service announcements on a young population. In 2017 IEEE 3rd International Forum on Research and Technologies for Society and Industry (RTSI) (pp. 1-5). Modena, Italy. <https://doi.org/10.1109/RTSI.2017.8065949>
- Shi, J., Wang, R., Chen, W., Xing, L., & Jin, M. (2020, February 1). *Bi-objective design of household E-waste collection with public advertising and competition from informal sectors*. *Waste Management*; Elsevier BV. <https://doi.org/10.1016/j.wasman.2019.10.018>
- Tang, Z., Chen, X., & Luo, J. (2011). Determining socio-psychological drivers for rural household recycling behaviour in developing countries: A case study from Wugan, Hunan China. *Environment and Behavior*, 43(6), 848–877. <https://doi.org/10.1177/0013916510375681>