



Exploring consumer single-use plastic reduction behaviour: A conceptual framework

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Abstract

Single-use plastics waste, when not properly managed and discarded, poses a threat to both the environment and human health. In the next 30 years, the global plastics waste crisis will exacerbate if the current consumption pattern and their production continue. The plastics crisis is seen as an anthropocentric problem that requires the understanding of consumer consumption patterns in order to encourage its alleviation. Thus, this paper proposes a conceptual framework to examine the predictors for adopting single-use plastics reduction activities among young urban consumers in Malaysia. Rather than assuming the homogeneity of the consumer's single-use plastics reduction pattern, the current framework posits that different consumers are at different stages of behavioural readiness and adoption. It also explores the underlying factors and specific social referent groups at each stage using the integration of the Transtheoretical Model and Theory of Planned Behaviour. Consumer segmentation based on the theoretical integration could be used to create a more targeted behavioural change efforts that align with the characteristics and drivers of each stage. It is hoped that the present research can help to support efforts in reducing single-use plastics as outlined in the Malaysia's Roadmap towards Zero Single-Use Plastics 2018-2030 policy.

Keywords: conceptual framework, digital influencers, single-use plastics, social referent groups, theory of planned behaviour, transtheoretical model

Introduction

Since its introduction more than seven decades ago in the 1950s, plastic is arguably one of the greatest human inventions in the modern world (UNEP, 2018). Its cost-effectiveness, versatility, and availability have revolutionized various industries and transformed human life in general

(Andrady et al., 2015). Despite its superior characteristics, the usage of plastics is a double-edged sword. Single-use plastics or lightweight plastics, such as a plastic bag or plastic packaging, is typically discarded after a single-use (UNEP, 2018). The devastating impact of poorly managed plastics waste on both the environment and human health has been well documented. Plastics waste is an environmental threat both on land and in the ocean but it has a distinct impact on marine life, as it largely ends up in the ocean. Plastic debris have harmed several hundred species of animals, including marine life, via entanglement and choking (Ritch et al., 2009; UNEP, 2018). Moreover, plastics debris disintegrates into microplastics that can enter our food chain via marine life ingestion. The toxicity of such components has been associated with various health complications in human (Ritch et al., 2009).

Up until 2015, almost half of the global plastic waste stream consisted of plastic packaging, which is categorized as a single-use plastic (Geyer et al., 2017; UNEP, 2018). ‘Single-use plastics’ is a term used to broadly categorize disposable plastic items such straws, cutleries, plastic packaging, drinking bottles, et cetera. (UNEP, 2018). Asia has been one of the major contributors of single-use plastics waste, accounting for almost half of the total global generation (Geyer et al., 2017). It is estimated that in less than 30 years, the plastic waste crisis will worsen if the current consumption and production of plastic continues. The current waste management system will not be able to sustain the projected 12 billion tonnes of plastics waste generation (Geyer et al., 2017).

In Malaysia, around 38, 000 tonnes of solid waste are generated daily, consisting mostly of organic, paper, and packaging plastic, which is a type of a single-use plastic (SWCorp, 2019). Although plastics waste only consists of 20% of the waste stream in Malaysia (SWCorp, 2019), it has constantly been highlighted due to its adverse impact on the environment and human health (Geyer et al., 2017; Ritch et al., 2009). The already strained waste management system was further aggravated by the Covid-19 pandemic announced in 2020. Global solid waste generation, especially from medical facilities, consumer face masks, and disposable plastic consumption have increased considerably following the pandemic (Sarkodie & Owusu, 2020).

In spite of national 3R campaigns and efforts conducted both internationally and nationally, the impact on solid waste reduction (e.g., plastics) has been modest in Malaysia (Moh & Abd Manaf, 2017; Sakawi et al., 2017; Wong & Farha, 2019). While the lack of effectiveness of such efforts could be attributed to various factors, Muralidharan and Sheehan (2017), and Steg et al. (2015) argued that campaigns that are too generic, psychologically ineffective, and locally irrelevant are significant contributing factors. A well-designed, empirical-based effort should be undertaken in order to design an effective campaign that encourages waste reduction efforts, including single-use plastic waste, especially among household consumers. At nearly 70% of total solid waste production, the domestic sector is the largest contributor to the current waste stream in Malaysia (PEMANDU, 2015; SWCorp, 2019).

Changing people’s mind-set and eventually behaviour with regards to single-use plastic waste reduction is a challenging endeavour and may take a considerable time to realize. It is however, one of the most fundamental ways of mitigating the crisis (UNEP, 2018). The call for consumers to reduce plastic use and the strategies to implement behavioural change require insight into their consumption pattern, as it is viewed as one of the root causes of the crisis (Haider et al., 2019; Heidbreder et al., 2019; Wong & Farha, 2019). Employing an effective policy instrument which results in long term behavioural change would require an understanding of the human psychographic, social, and contextual factors underlying plastic consumption. Although legal instruments such as a levy or ban have been implemented in various nations worldwide, including

Malaysia (MESTECC, 2018; UNEP, 2018), its long term effectiveness has been called into question (Afroz et al., 2016; Heidbreder et al., 2019; Wong & Farha, 2019; Zen et al., 2013).

Muralidharan and Sheehan (2017), Heidbreder et al. (2019) have highlighted the importance of further research on the psychographic factors that influence single-plastics consumption reduction such as attitude, values, and wider social factors in general. Consumer behavioural studies have usually been approached from various behavioural theoretical foundations and perspectives. However, Darnton (2008) argued that classic behavioural models are too generic for the creation of more targeted interventions. Inspired from such criticism, this study draws the insights from two major social psychology theories, the Transtheoretical Model (TTM) and the Theory of Planned Behaviour (TPB) to propose a conceptual framework. The proposed conceptual framework could be applied to examine consumer's single-use plastics reduction according to their stages of readiness and adoption as well as to determine the underlying drivers at each stage. Based on the TTM, the conceptual framework highlights consumer heterogeneity by proposing that different consumers are at different stages of readiness and adoption with regards to single-use plastics reduction. By integrating the TPB constructs, the framework also posits that the underlying drivers will become differently salient at the different stages. The proposed conceptual framework primarily focuses on young urban consumers. According to the ESCAP (2017) report, majority of the populace in the Asia Pacific region will dwell in the urban areas by 2050. It will also be home to 60 % of young individuals between the ages of 18 and 40. Due to their sheer number, spending power, and consumption pattern, they are an important demographic group to study.

Furthermore, the different stages could potentially be used to create a more refined basis of population segmentation. From the perspective of social interventional studies, such research would yield information essential to the creation of a targeted message to the population of interest. CEPA (Campaigns, Education and Public Awareness) efforts aligned with the audiences' readiness and adoption stages and psychographic factors could contribute toward an effective behavioural change initiative. Creating targeted messages requires that the population of interest are meaningfully segmented.

Literature review

Theoretical underpinnings

Golob and Kronegger (2019) asserted that segmentation based on a combination of demographics, psychographic, and other types of profiling may provide a nuanced insight for marketers and policy makers, as it will be more informative and relevant. Classic rational theory, such as Ajzen's Theory of Planned Behaviour, along with other social-psychological theories such as the Triandis's Theory of Interpersonal Behaviour (1977), Stern's et al.'s Value Belief Norm Theory (1999), have been widely applied in sustainable consumption studies (Attiq et al., 2021; Ghazali et al., 2019; Gkargkavouzi et al., 2019) due to its explanatory and predictive power especially with regards to values and personal factors. These theories, however, focus on a single or extended temporal aspect of behaviour, for example, at the threshold point of intention and/or adoption. The proposed framework of study adopts a slightly different perspective as it does not assume the homogeneity of consumer's behavioural intention and adoption. Considering the popularity of the single-use plastic reduction campaign, plastic waste reduction behaviour may have gained traction, but

among limited sectors of society (Afroz et al., 2016; Zen et al., 2013). Presumably not everyone is at the same level regarding single-use plastic reduction adoption. As such, it is worth exploring the different stages of adoption (or readiness), as well as the key psychographic factors underlying each stage.

This section reviews two major theories underpinning the conceptual framework of this study. The conceptual framework for the current study involves the integration of Ajzen's Theory of Planned Behaviour (TPB) and the Transtheoretical Model Of Change (TTM) developed by Prochaska & DiClemente (1983).

Transtheoretical Model of Change (TTM)

Prochaska and DiClemente (1983) postulated that people transition gradually through several stages of behaviour before the target behaviour is firmly adopted. The TTM is composed of the following five stages of behavioural change (Sutton, 2001):

- 1) Precontemplation (PC) Stage: At the precontemplation stage, people are largely unaware of the problem and typically have no intention to take action. They may even become defensive towards the suggestion of a behavioural change (Forward, 2014).
- 2) Contemplation (C) Stage: People at the contemplation stage are starting to become aware of the problem and are weighing options for adopting the target behaviour but have not yet taken concrete steps.
- 3) Preparation (P) Stage: Individuals at the preparation stage are prepared to take action and move towards the target behaviour.
- 4) Action (A) Stage: Individuals at the action stage have taken concrete action but there is still the possibility of relapsing into the former behaviour.
- 5) Maintenance (M) Stage: At the maintenance stage, the target behaviour becomes a well-entrenched habit.

Thus, instead of a one-size-fits-all approach, TTM incorporates five stages of behavioural readiness and adoption, as intervention could be designed to target individuals at each stage. The transition of people from one stage to another however, involves complex processes. The model also does not assume a linear transition to subsequent stages, as one might revert to the previous stage, termed as relapse (Prochaska & DiClemente, 1983). Due to its applicability to create stage specific interventions for patients, the TTM remains widely used in the health domain studies, for example drinking abstinence (Dahal & Koirala, 2021) cancer screening (Akbari et al., 2020) and obesity prevention (Bolognese et al., 2020).

Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour developed by Icek Ajzen in 1985 is an established cognitive based theory in social psychology, explaining behavioural intentions and behaviour in various contexts (Conner & Armitage, 1998) such as the health domain (Li et al., 2019), consumer behavior (Olya et al., 2019) and various pro-environmental engagements (Yuriev et al., 2020). With the inclusion of the perceived behavioural control construct to predict both behaviour and behavioural intention, TPB was extended from the Theory of Reasoned Action (TRA). TRA was developed by Icek Ajzen and Martin Fishbein in 1975 (Conner & Armitage, 1998). (1991) posited that an individual's behaviour is the function of his/her preceding intention and perception of his/her ability towards engaging in the behaviour. According to the theory, intention refers to

one's readiness to engage in a specific behaviour. Intention is influenced by three constructs which stem from the corresponding behavioural, normative, and control beliefs, namely:

- 1) Attitude which refers to one's evaluation towards the target behaviour which might fall on the positive – negative spectrum.
- 2) Subjective norm/subjective norms, which refers to the perceived social pressure from important people in one's life to act in a certain way, and the need to conform to such pressure.
- 3) Perceived behavioural control which refers to the perception that one has over his/her ability and the resources to engage in the target behaviour

Integration of TTM and TPB

Despite the success and broad applicability of TPB, critics argued that the nature of TPB is basically 'static' (Bamberg, 2013; Schaffner et al., 2017) in that it does not account for the heterogeneity and nuance of the individual's readiness and adoption of a behaviour. Even with various criticisms levelled against it (Sutton, 2001), TTM is thought to be more organic and fluid. The model assumes that different individuals are at different stages of behavioural adoption and that they may transition to subsequent stages or even revert to previous stages (Grubor et al., 2019; Prochaska & DiClemente, 1983). The TTM was originally a complex model which does not only account for the transitory nature of the stages, but explains the intricate processes and catalysts underlying each stage of behavioural change. However, such processes were often viewed as too complex (Boonroungrut & Fei, 2018) and may be unessential in many research contexts. As such, the parsimonious version of TTM which highlights only the stages of change is often utilized. However, the parsimonious version of the theory has been criticized for its lack of explanation regarding the underlying factors that influence the five stages (Boonroungrut & Fei, 2018; Forward, 2014).

Theoretically, the components of TPB, namely, attitude, subjective norms, perceived behavioural control, and intention could be integrated into the TTM to explain the influencing factors that distinguish one stage from the other (Forward, 2014; Tölkes & Butzmann, 2018). Although TTM-TPB integration is relatively prevalent in the health and well-being domain, its use is just emerging in the pro-environmental behavioural domain. However, the numbers of studies are scarce, especially in the Asian context (Forward, 2014; Grubor et al., 2019; Mair & Laing, 2013; Tölkes & Butzmann, 2018). Considering its robust potential for creating consumer segmentation, more studies should pursue this line of inquiry.

Previous studies integrating TPB components and TTM

Various researchers have found that individuals in the precontemplation stage typically display a rather negative attitude towards the target behaviour, for example, the Israeli products boycott among Malaysian consumers (Hamzah & Mustafa, 2018), pro-environmental engagement (Tölkes & Butzmann, 2018), and biking as a sustainable transportation option (Forward, 2014). Interestingly, in Forward's (2014) studies, the respondents across all five stages shared positive views about the environment. However, the precontemplators displayed a negative attitude towards biking as a sustainable behaviour. Compared with respondents at subsequent stages, the precontemplators perceived more uneasiness about adopting the target behaviour in question.

Constructs like perceived behavioural control or subjective norms may become differentially salient depending on the readiness and adoption stage. Barth et al. (2016) posited

that people tend to refer to external norms in making their decision as they lack prior experience in the new undertaking. Their study demonstrated that various subjective norms positively influenced the initial adoption of a newly introduced green vehicle. Subjective norms, however, did not strongly influence people at the precontemplation stage of the Israeli products boycott in Malaysia (Hamzah & Mustafa, 2018). Considering that the Israel product boycott might be seen as largely ineffective, the precontemplators in the study might lack reference groups with boycotting experience who could influence them to act.

The influences of subjective norms and perceived behavioural control at different stages have also been broadly contrasted in several studies. In these studies, it was generally found that subjective norms exerted a stronger influence on precontemplators relative to perceived behavioural control, which exerted more influence on those who were at the maintenance stage (Forward, 2014; Grubor et al., 2019; Lippke et al., 2007). For example, potential patrons were much more inclined to stay in eco-friendly accommodation, due to social influence, relative to experienced patrons who relied on their perceived control in making such a choice (Grubor et al., 2019). Similarly, in a study conducted by Lippke et al. (2007), subjective norms showed a strong influence on those without fitness experience. Respondents with fitness experience, by contrast, demonstrated more confidence and performed fitness activities more frequently.

Debates on the impacts of subjective norms

One of the most contested constructs in the TPB is the influence of subjective norms. In their meta-analytical study, Conner and Armitage (1998), Heidbreder et al. (2019) found that subjective norms were a weak predictor in a wide range of pro-environmental engagements. Other researchers (Ding et al., 2018; Moons & Pelsmacker, 2015) by contrast, have attested to the significance of social norm in such a domain.

The impact of subjective norms have also been highlighted and largely debated based on the collectivistic-individualistic spectrum (Markus & Kitayama, 1991; Mintz et al., 2019; Tam & Chan, 2017). Relative to an individualistic culture, people in a collectivistic culture perceive the self as part of the wider collective and are more subject to societal pressure (Mancha & Yoder, 2015; Markus & Kitayama, 1991; Tam & Chan, 2017). Consistent with this view, subjective norms have been found to exert a more dominant influence within these societies in various pro-environmental studies (Alhassan et al., 2017; Ghazali et al., 2019; Mintz et al., 2019). However, in a meta-analytical study of various pro-environmental engagements across 30 nations, Morren and Grinstein (2016) found that subjective norms exerted a similar impact on people's pro-environmental engagements irrespective of cultural differences.

Researchers such as Varshneya et al. (2017) and Whitmarsh et al. (2017) have argued that the type of pro-environmental engagement has more bearing on whether subjective norms exert a significant influence. For an established pro-environmental engagement like recycling, societal pressure has been shown to bear a significant influence in a number of studies in the Malaysian context (Ghazali et al., 2019; Sujata et al., 2019) and abroad (Alhassan et al., 2017; Mintz et al., 2019; Passafaro et al., 2019). On the contrary, subjective norms did not significantly impact niche or low visibility pro-environmental undertakings (Varshneya et al., 2017; Wang et al., 2018; Whitmarsh et al., 2017) which might be driven more by one's personal values and contextual factors.

Conceptual framework and discussion

This study seeks to apply the theoretical integration of TPM and TTM in the plastic reduction behaviour domain. This study hopes to contribute to the body of literature in several ways.

Firstly, the integration of TTM AND TPB yields a more nuanced understanding about consumers' stages of readiness or behavioural adoption and the underlying factors that may distinguish one stage from another (Forward, 2014; Mair & Laing, 2013; Tölkes & Butzmann, 2018). The stage model could potentially provide greater insight into consumers' heterogeneity and how different TPB variables become distinctly salient (or irrelevant) at different stages of behaviour adoption.

There have been an emerging number of studies that have integrated TTM and TPB to study pro-environmental engagements. However, these studies were mostly conducted in the culturally individualistic western setting, dominated by respondents living primarily in post material nations (Forward, 2014; Grubor et al., 2019; Mair & Laing, 2013; Tölkes & Butzmann, 2018). Such theoretical integration involving plastic reduction research in the Asian setting is relatively rare (see Chib et al., 2009, for example). How subjective norms function at different stages, especially in collectivistic societies living in developing countries like Malaysia, is still inconclusive. Much debate has been highlighted around the construct and has raised several questions worth exploring.

Previous researchers have argued that subjective norms tend to have its strongest impact on precontemplators (Barth et al., 2016; Forward, 2014; Grubor et al., 2019; Lippke et al., 2007). However, norms accompanying niche pro-environmental behaviour might not be widespread enough to establish a significant social cue. Nevertheless, in Malaysia, single-use plastic reduction has started to gain traction among consumers. (Afroz et al., 2016; Zen et al., 2013). However, it remains inconclusive as to what extent it is practised. It is unclear whether subjective norms influence pre-contemplators (or even consumers at other stages) due to conflicting evidence. From a wider perspective, it is unclear as to which of the five stages most urban consumers are in terms of single-use plastic consumption reduction practice, due to the dearth of studies that apply TTM to the urban demographic in Malaysia.

Secondly, the subjective norm construct is typically undifferentiated (Terry et al., 1999). As such, the construct of is further refined by delineating it into specific groups. Studies that examined subjective norms as conceptualized by the TPB did not necessarily delineate it into specific social referent groups (Carfora et al., 2017; Ghazali et al., 2019). In contrast, Passafaro et al. (2019), Blankenberg and Alhusen (2018), highlighted the influence of specific social referent groups that played a part in consumer patterns of sustainable consumption. Internal social referent groups such as peers, family members and external social referent groups such as public figures and teachers were found to influence youth consumption behaviour to varying degrees, highlighting that youth may have their unique point of reference (Salazar et al., 2012; Swaim et al., 2014). Although the findings demonstrated a significant influence of specific social referent groups on various pro-environmental engagements, most of these studies did not apply the stage of change model. It remains inconclusive whether specific social referent groups exert a similar (vs. different) influence on consumers at different stages of change. This study hypothesized that consumers at different stages are influenced differently by specific social referent groups.

Thirdly, the concept of social referent group is extended with the inclusion of another group, namely, the digital influencer. Digital influencers are personalities with a considerable following and influence on social media platforms (Goldsmith, 2015; Nascimento et al., 2020).

The inclusion of a digital influencer was inspired by Elizabeth Goldsmith's (2015) extensive work on social media influence and pro-environmental behaviour. Beyond other 'traditional' social referent groups such as peers or family members, Goldsmith (2015) demonstrated that digital influencers play a considerable role in youth sustainable consumption pattern. However there is still a need for more studies to examine such an influence on low involvement products and consumption (Salazar et al., 2012) including niche plastic reduction behaviour.

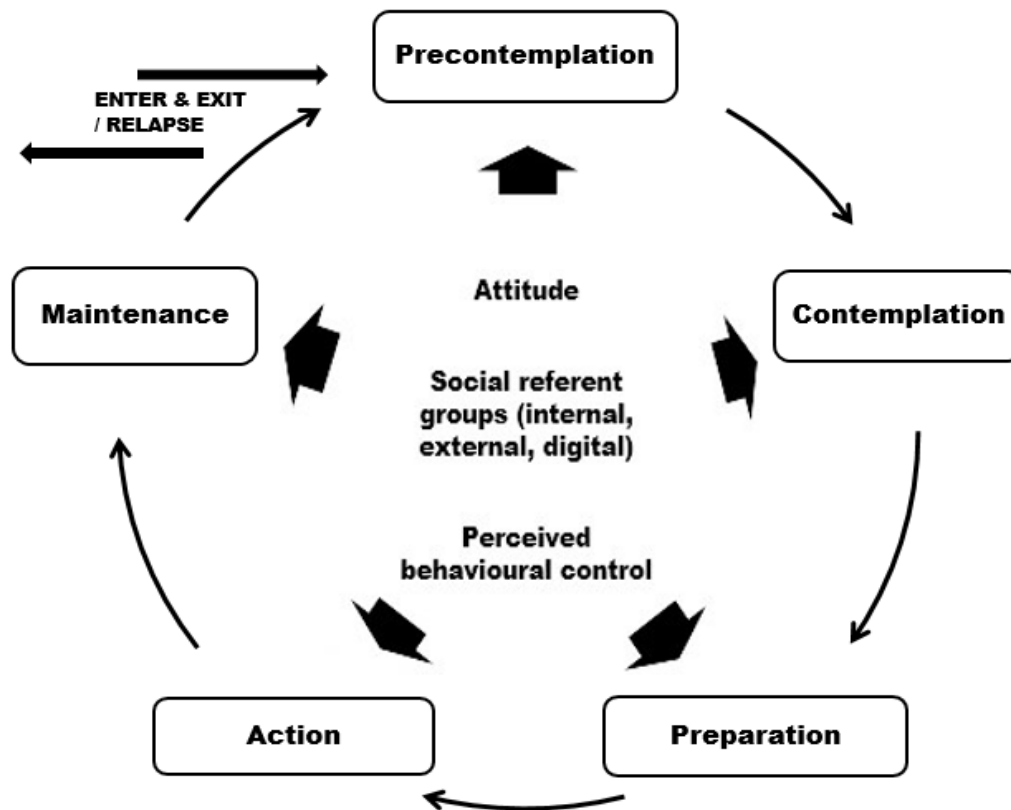


Figure 1. Conceptual framework of single-use plastic reduction behaviour using the integration of transtheoretical model and theory of planned behaviour.

Implication

Heidbreder et al. (2019), Afroz et al. (2016) argued that broad based pro - environmental campaigns were less effective in inducing behavioural change, and required more intensified campaigns and a mixture of policy instruments. Although such arguments are justified and leave little room for debate, there are still nuanced questions worth highlighting. Should campaigns that focus on awareness creation be intensified or should it move beyond awareness creation? Sustaining green engagement is a challenging endeavour that requires supportive intervention. In light of this fact, should more efforts be concentrated to facilitate consumers to adopt or even maintain their green endeavour?

Answering these questions might be useful if targeted campaigns that focus on audience psychographic, urgency, and current realities are to be developed. Interestingly, by integrating the stage perspective into their conceptual framework, Mair and Laing (2013), Tölkes and Butzmann

(2018) found that, contrary to their objectives, their campaigns appealed more to individuals who were already green. While reinforcing the resolve of the already green consumers is impactful, amplified impact may be achieved if interventions could create behavioural change among those who lean towards green action, but have yet to take actions. Such findings might lend an important insight both to theory building and practice.

As such, the conceptual framework proposes to study the five stages and the drivers. It is proposed that different TPB components may influence the single-use plastic reduction intention and behaviour, depending on the stage the person is in. For example, components like perceived behavioural control (vs. social norm) may impact the respondents' intention to prevent the purchase of single-use plastic differently depending on their respective stage. In contrast to perceived behavioural control which consistently increases with advancing stage (Forward, 2014; Grubor et al., 2019; Lippke et al., 2007), further research is required to ascertain the impact of subjective norms on single-use plastic reduction intention and behaviour.

Insights from such finding might contribute towards developing CEPA designs that align with consumer's specific stage of readiness, adoption, and key social referent group(s). Such segmentations may help policymakers and others to create a more targeted behavioural change intervention. Specifically, it may facilitate them to develop specific message content, select suitable CEPA channels and highlight key referent groups according to the main characteristics and drivers of each stage.

Conclusion

To encourage single-use plastic reduction among the consumers, this paper highlights the importance of consumer segmentation based on their stage of readiness and adoption for a more enhanced CEPA efforts. By integrating two major social psychology theories, the TTM and the TPB, this study has achieved its objective in proposing a conceptual framework for the analysis of consumer's single-use plastics reduction. Briefly, the conceptual framework proposes the five stages of consumer readiness and adoption based on the TTM, consisting of the precontemplation, contemplation, preparation, action and maintenance stage. It also integrates the TPB construct namely attitude, perceived behavioural control and delineating subjective norms into specific referent groups as the underlying drivers at each stage. Subsequently, the framework will examine the saliency of these drivers at the five stages. It hopes to support a more targeted CEPA effort that facilitates Malaysia's Single-use Plastics Policy and the Sustainable Development Goal No. 12 (Sustainable Consumption and Production). However, the limitation of this conceptual framework is, it only proposes the parsimonious version of the TTM. Furthermore, the TPB constructs integrated in the framework as the underlying drivers are mostly cognitive and rational based. As such, the conceptual framework does not take into account contextual factors such as policy or the availability of alternatives. In light of the current COVID-19 pandemic, embarking on or even maintaining single-use plastics reduction is more challenging than ever. A long-term perspective on this challenge and a more supportive intervention is therefore needed. Further extension of the current proposed framework integrating these external factors is thus warranted.

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