

CONSUMER BEHAVIOR | RESEARCH ARTICLE

Reusable Container Usage on a Daily Basis: A Systematic Literature Review

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Abstract: The issue of plastic waste is a serious social, economic, and cultural issue. Many efforts have been made to reduce the use of disposable food containers and the environmental impact of plastic waste. This study aims to provide an overview of pro-environmental behavior in the context of the daily use of reusable cups. The literature review evaluated 53 scientific papers from Scopus, Publish or Perish and citation searches, released from 2014 to 2024, to analyze drivers, mediating factors, moderating factors, and outcomes related to the daily use of reusable containers. The study identifies key contextual, situational, psychological, and demographic factors influencing the daily use of reusable containers. It also highlights enablers and barriers to adopting this habit, such as environmental messaging, social norms, and financial incentives. The research provides a comprehensive overview of the enabler and barrier factors as well as other factors that influence the use of reusable containers and suggests that the impact of these factors can be understood through the stimuli-organism-response framework. Our findings add to the understanding of drivers that encourage pro-environmental behavior. Policymakers can use these insights to design more effective interventions to promote reusable container use, such as implementing financial incentives or stricter regulations on single-use plastics. Businesses can use these findings to align their marketing strategies with consumer preferences and behaviors related to environmental sustainability.

Keywords: consumer behavior, environmental concern, financial incentives, pro-environmental behavior, reusable containers

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PUBLIC INTEREST STATEMENT

The increasing environmental effect of disposable containers is a pressing issue on a global scale, playing a significant role in pollution and resource depletion. This article delves into the diverse elements that affect the acceptance of reusable containers, providing valuable insights into consumer conduct and potential measures. Through comprehending these elements, we can formulate more efficient strategies to promote sustainable behaviors, benefiting not only the environment but also public health and economic steadiness. Our discoveries underscore the significance of incorporating contextual, situational, psychological, and demographic elements in advancing environmentally friendly practices. This study is essential for policymakers, businesses, and environmental proponents aiming to nurture a sustainability-oriented culture, ultimately resulting in a healthier planet for upcoming generations.



1. Introduction

The issue of plastic waste is a serious social, economic, and cultural problem. Poor waste management can create an unfavorable environment for society. The habitual use of single-use packaging in Indonesia is one of the causes of the waste management problem. In 2020, the population of Indonesia reached 270.20 million people (Indonesia Central Bureau of Statistics). With such a large population, the amount of waste generated in 2020 was 33,133,277.69 tons. However, only 45.81% of this waste could be managed, and 17.07% was plastic. Plastic waste ranks second in terms of the most abundant type of waste in Indonesia (SIPSN).

Many efforts have been made to reduce the environmental impact of disposable food containers and plastic waste. Companies are transitioning to eco-friendly packaging, such as using sustainable materials for milk packaging (Zulfa et al., 2023). However, research on edible coffee cups showed they may contribute more to climate issues than single-use or paper cups due to the amount of land required for cocoa farming (Anand et al., 2024). Recycling of plastic waste is difficult both technically and socio-economically. Only 9% of 6,300 million metric tons of plastic waste is recycled, with most accumulating in landfills or the environment (Geyer et al., 2017). Single-use coffee cups are particularly challenging to recycle due to their low value and contamination with organic materials (Poortinga & Whitaker, 2018; Confederation of European Paper Industries, 2013).

The waste hierarchy model outlines a prioritized sequence of actions to reduce waste impact, starting with prevention, reuse, recycling, and finally disposal (Scottish Government, 2017). Reusable containers are prioritized as the second action after prevention (Solekah et al., 2022). Examples include initiatives like GOBOXPDX and reCIRCLE, which promote the use of reusable food containers. Reusable cups have a lower environmental impact compared to polystyrene cups, although they must be washed after use (Woods & Bakshi, 2014). They are made from durable materials like glass, metal, and plastic (Keller et al., 2021), reinforcing previous research on their sustainability benefits.

Several studies have been conducted to understand the factors influencing the habit of using reusable containers in daily life (e.g., Bertossi et al., 2023; De Groot et al., 2013; Dorn & Stöckli, 2018; Loschelder et al., 2019; Nicolau et al., 2022; Poortinga & Whitaker, 2018; Sandhu et al., 2021; Šuškevičė & Kruopienė, 2020; Thomas et al., 2019; X. Wang et al., 2022). A study conducted by De Groot et al. (2013) examined how normative messages such as activating an injunctive norm, personal norm, or both could boost the intention to use less free plastic bags from the supermarket. Discussion about the influence of environmental messaging has also been conducted by other researchers, such as strong ecological messaging and mimetic effects, which are the main reasons consumers choose to use environmentally friendly takeaway coffee cups (Sandhu et al., 2021).

However, Dorn and Stöckli (2018) showed that manipulated social norms did not affect the choice of reusable takeaway boxes. The research conducted by Poortinga and Whitaker (2018) indicated that environmental messaging promotes the use of reusable cups. Furthermore, two other variables affect the use of reusable cups, namely the provision of alternatives and monetary incentives. The provision of monetary incentives in the form of discounts was studied by Nicolau et al. (2022). Offering discounts makes consumers more willing to use reusable coffee cups in certain conditions. In contrast, Sandhu et al. (2021) found that monetary incentives are ineffective in promoting reusable cups. In addition to financial incentives, environmental messaging, and mimetic effects, Sandhu et al. (2021) also included barriers to use, such as the pervasiveness of takeaway

coffee culture and confusion about environmentally friendly options, as well as institutional change variables such as waste infrastructure and redemption values in their research.

In the study categorized the findings from previous research and mapped them into a model that can serve as a reference for better understanding the factors influencing the habit of using reusable containers in daily life, thus, offering a more integrated and systematic understanding. In the study, developed a theoretical model that categorizes and maps the various factors influencing the habit of using reusable containers in daily life, based on the input-moderator-mediator-output framework and a review of the current state of knowledge on pro-environmental behavior (PEB) related to using reusable containers, identifying research gaps and areas for improvement. The findings offer practical strategies for promoting reusable container usage and contribute to the theoretical understanding of PEB, particularly in the context of daily habits.

2. Literature Review

2.1 Pro-Environmental Behavior

Stern (2000) defines pro-environmental behavior (PEB) as actions carried out with the intention of altering the environment, typically for its benefit. This interpretation serves as the main criterion for assessing whether a specific action qualifies as PEB. Farrukh et al. (2023) classified PEB in the context of environmental psychology research. Environmental psychology identifies three forms of PEB: (1) environmental activism, (2) non-activist behavior in public settings, and (3) private-sphere environmentalism. Environmental activism is individual engagement in environmental matters, encompassing the demonstration, management, and promotion of PEB. Passive PEB entails activities where an individual does not actively participate in PEB but engages in less public and risky actions, such as reading PEB literature and corresponding with institutions or governmental bodies. The third category of PEB concerns actions in the private domain, involving individual behaviors in personal settings. This category is further divided into three categories: curtailment behavior, behavioral choices, and technological preferences (Farrukh et al., 2023).

The use of reusable containers can be categorized into the first and second types of PEB. An individual's habit of carrying and using a reusable container is both part of curtailment behavior and behavioral choice because previous studies found this action occurs as an effort to reduce the use of plastic waste or single-use containers that are difficult to recycle and negatively impact the environment (Nicolau et al., 2022; Poortinga & Whitaker, 2018; Vorwerk & Nilsson, 2023).

The use of reusable containers is one of the efforts consumers can make to contribute to addressing environmental issues. Implementing this habit is not limited to the use of reusable containers by consumers. There are other options that consumers can take as forms of PEB, such as the use of reusable packaging initiated by the business sector, including e-commerce, retailers, and others (Yue et al., 2024; Coelho et al., 2020; Mahmoudi & Parviziomran, 2020).

2.2 Stimuli-Organism-Response

The concept known as stimuli-organism-response (SOR) was introduced by Mehrabian and Russell in 1974. The SOR framework is frequently employed to elucidate the decision-making procedures of individuals amidst diverse contextual environmental factors (Chang et al., 2014). The stimulus component encompasses external factors that impact an

individual's internal state by eliciting specific actions. The organism component is the cognitive and affective state of the individual, manifested in the connection between stimuli and individual response. Finally, the response component signifies the individual's reaction, demonstrated through either positive or negative responses to external stimuli, contingent upon the individual's behavior (Zhu et al., 2020).

The SOR model has been applied by previous researchers in studying PEB or sustainable practices. Ilmalhaq et al. (2024) examined the direct and indirect influence of electronic word of mouth (EWOM) on mindful consumption in the context of purchasing local second-hand clothing. Ilmalhaq et al. (2024) placed EWOM as one of the factors influencing environmental attitudes and consumer engagement in the organism, and mindful consumption in the response. Other studies have applied the SOR model in the context of other PEBs, such as green participation (Chen et al., 2024), organic purchase intention (Neiba & Singh, 2024), and green agricultural products purchase intention (Song et al., 2024).

3. Conceptual Framework

In this study, we use the SOR framework to elucidate the factors affecting the utilization of reusable containers as identified in the literature review, and show how these factors align with the elements of stimuli, organism, and response. Furthermore, we classify the factors as contextual, situational, psychological, and demographic to explicate the elements contributing to the habits of using reusable containers daily. Pamidimukkala et al. (2024) categorized the factors gleaned from a literature review into four distinct groupings to clarify the factors that influence and impede consumer willingness to use electric vehicles. The SOR conceptual framework is illustrated in Figure 1.

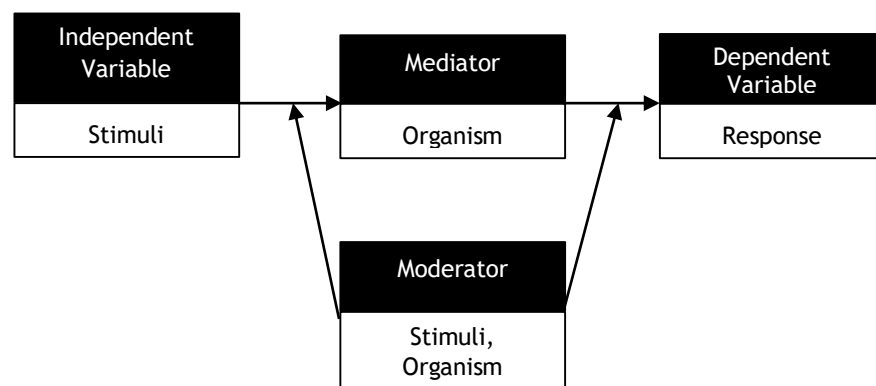


Figure 1. Stimuli-Organism-Response (SOR) conceptual framework reusable container usage on a daily basis

4. Methods

4.1 Search Strategy

A literature searches (up to May 2024) of the Scopus database, Publish or Perish, and citation searching techniques was undertaken. Before conducting the search in Scopus, we initiated a literature search using the keywords “reusable cup” and “pro-environmental behavior” to get a basic understanding of research related to reusable cup usage. After a preliminary analysis and discussion, we decided to expand the context to “reusable container” to gather a more substantial number of relevant studies.

This study used Publish or Perish for the second round of searches, conducting two separate searches: one using the keyword “reusable cup” and the other “reusable container”. From these two searches, we retrieved a total of 345 papers. However, after screening the titles, we found only about 25-30 papers directly related to the context of our study. To obtain a more comprehensive collection of literature, we proceeded with further searches through the Scopus database, using more search terms.

A keyword search was conducted in Scopus using the terms: “reusable cup,” “reusable container,” and some synonymous terms: TS= (“reusable package” OR “reusable packaging” OR “reusable bag” OR “single-use cup” OR “single-use container” OR “single-use bag” OR “plastic cup” OR “plastic bag” OR “disposable cup”). Articles published from January 2014 to 2024 in English in peer-reviewed journals were included, and literature reviews, conference abstracts, and book chapters were excluded. After the Scopus search, the results were combined with previous searches to ensure no relevant literature was missed.

4.2 Selection Criteria

The screening process focused on identifying relevant studies based on these criteria: (a) Studies evaluating influencing factors and interventions on reusable container usage were included, (b) Studies focusing solely on environmental hazards without analyzing their correlation with reusable container usage were excluded, (c) Both qualitative and quantitative studies measuring reusable container usage were included to assess correlations and intervention effectiveness, and (d) Studies that lacked a focus on reusable container usage were excluded.

4.3 Screening Process

As shown in Figure 2, 1,053 papers were collected in the initial search. Next, we screened to select papers on to the topic of PEB. The second screening selected papers that specifically discussed reusable cups and reusable containers, while the third screening eliminated papers that did not address factors related to the habit of using reusable containers. After completing the three screening stages, 53 remained for review.

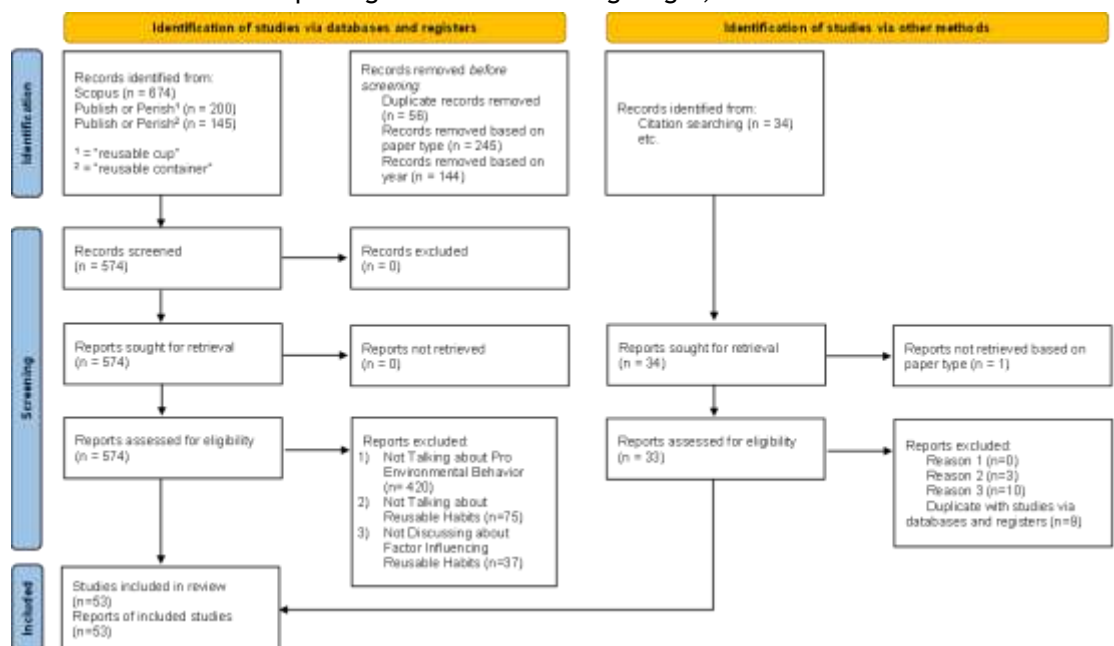


Figure 2. Process of identifying relevant literature (using model developed by PRISMA, 2020).

4.4 Exclusion Criteria

We applied keyword filters related to reusable container usage as outlined in the search strategy. Many of the 1,053 collected works were irrelevant and did not meet the inclusion criteria. The excluded literature included studies that did not discuss reusable container usage (Bryson et al., 2024; Demissie et al., 2024), focused solely on the negative impacts of single-use plastic (Boca & Saraçlı, 2023; Tan et al., 2023), or did not examine factors correlated with reusable container habits (Kasza et al., 2022; Macena et al., 2021). Ultimately, 53 studies were selected for in-depth analysis.

5. Findings

The amount of literature discussing this issue has not been substantial over the past ten years. However, there has been an increase in publications over the past five years (Figure 3).

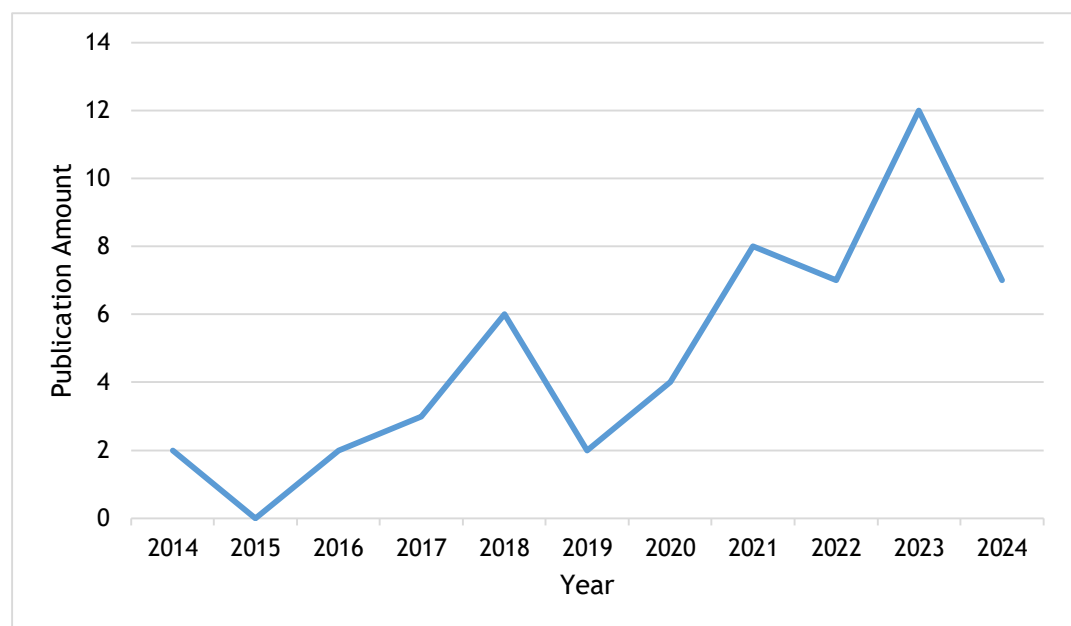


Figure 3. Number of publications 2014-2024

The methodological approach used in the studies was examined, and the results are presented in Figure 4. A variety of quantitative and qualitative methods were utilized, either individually or in conjunction, to explore consumers' daily use of reusable containers.

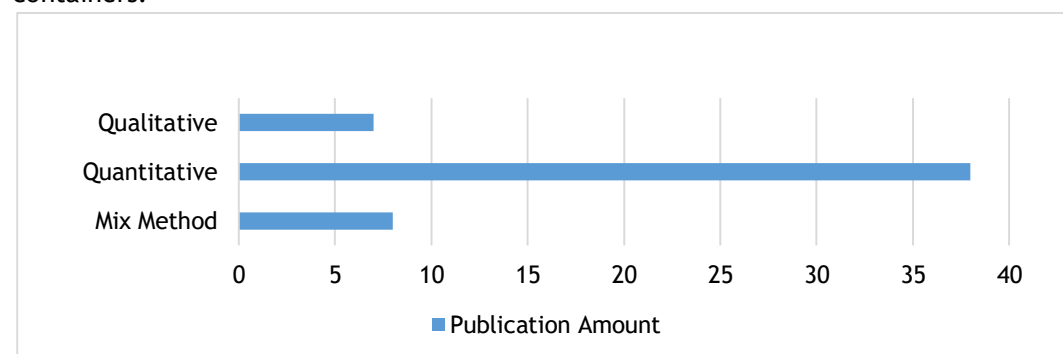


Figure 4. Research methodology used in the studies

The qualitative research methods included interviews, diary studies, and focus group discussions. Quantitative research designs comprised methods such as surveys, field studies, experiments, secondary data analysis, and mathematical models (Table 1).

Table 1. Data collection methods in the literature

Data Collection Method	QN	IV	DS	FS	EX	FGD	SDA	MM	CS
Research Methodology									
Mix Methods	8	7	1	1					1
Quantitative	28			3	7		1	1	
Qualitative		5	1			2			

Note: QN= Questionnaire; IV= Interview; DS= Diary Study; FS= Field Study; EX= Experiment; FGD= Focus Group Discussion; SDA= Secondary Data Analysis; MM= Mathematical Model; CS= Case Study

The questionnaire was the most frequently used research method, followed by experiments, interviews, and field studies. Questionnaires are popular for measuring consumer behavior, as they allow researchers to collect data on attitudes, preferences, and behaviors from large samples. They are effective for identifying trends but rely on self-reported data, which can be biased and may not capture actual behavior.

Field studies and experiments provide detailed data and are easier to understand in terms of process and outcomes. However, they face challenges in generalizing results and can be harder to control and more expensive (Poortinga & Whitaker, 2018; Field, 2017).

5.1 Summary of Studies

Due to the paucity of studies on this issue in previous years, discussion has been limited. However, there has been a notable increase in interest in this topic compared to previous years. The review process was conducted by dividing the paper into several areas, which included a summary of the study (authorship, published year, method, variables and key findings).

In the following subsections, we summarize the theoretical foundation used in the studies (Table 2). Several theories are used frequently, such as consumer behavior theory, theory of planned behavior, switching intention, consumer willingness, financial incentives, and PEB.

Table 2. Theoretical foundation in the literature

Theory	Studies	N
Attitude-behaviour gap	Yeow et al. (2014)	1
Attitudinal-contextual-behavioural (ABC) theory	Li et al. (2024)	1
Consumer behavior	Geetha (2022), Herweyers et al. (2021), Miao et al. (2023), Romero et al. (2018), Vorwerk & Nilsson (2023), Zambrano-Monserrate and Ruano (2020)	6
Consumer perceptions	Muralidharan and Sheehan (2017)	1
Consumer preferences	Collis et al. (2023), Dunn et al. (2014), Herweyers et al. (2023), Wang and Zhao (2024)	4
Consumer switching behavior	Dorn and Stöckli (2018), Jiang (2016), Loschelder et al. (2019), Novoradovskaya et al. (2021, 2023), Poortinga and Whitaker (2018), Truong et al. (2024)	7

Table 2. Theoretical foundation in the literature (Continue)

Theory	Studies	N
Consumer willingness	Baird et al. (2022), Madigele et al. (2017), Matthews and Webb (2023), Patreau et al. (2023), Schuermann and Woo (2022)	5
Financial incentives	Homonoff (2018), Li et al. (2023), Muralidharan & Sheehan (2017), Taylor & Villas-Boas (2016)	4
Interpersonal behavior	Solekah et al. (2024)	1
Lovemarks theory	Noh et al. (2024)	1
Pro-environmental behavior	Homonoff et al. (2021), Nicolau et al. (2022), Sandhu et al. (2021), Sisson et al. (2021)	4
Switching intention	Essl et al. (2021), Herweyers et al. (2024b), Novoradovskaya et al. (2020), Spranz et al. (2018), Terrier et al. (2020)	5
The stage model of Self-regulated behavioural change	Keller et al. (2021)	1
The theoretical domains framework (TDF) & capability-opportunity-motivation-behaviour (COMB)	Allison et al. (2021)	1
Theory of planned behavior	Ari and Yılmaz (2017), Asih et al. (2020), Geetha and Padmavathy (2023), Herweyers et al. (2024b) Muposhi et al. (2022), Nguyen (2022), Roy (2023), Sia et al. (2023), Solekah et al. (2024), Thomas et al. (2019), Wang et al. (2022)	11
Value-belief-norm (VBN) theory	Shah and Yang (2024)	1

Note: N = Number of studies

The studies were carried out in 23 countries, mostly in America, followed by Australia and Europe. The most frequent target countries were the United States, the United Kingdom, Australia and Belgium (Figure 5). Two of the studies (Herweyers et al., 2023; Thomas et al., 2019) investigated more than one country.



Figure 5. Geographic location of the studies

This section describes how we used qualitative analysis to summarize and analyze the reviewed literature. The main objective of this paper is to understand the enabler and barrier factors related to the habit of using reusable containers daily, as identified in previous studies. The author identified several independent variables representing both driving and inhibiting factors. However, not all these factors directly relate to the dependent variable. Additionally, mediating and moderating variables influenced the relationship between the independent and dependent variables.

5.2 Definitions of Reusable Container Usage Behavior

This study examines a form of PEB, focusing on the habit of using reusable containers. The review found four types of reusable containers: bags, cups, food boxes, and packaging, were identified in previous studies (Table 3). Some studies also specified the materials used for the container. Reusable containers are designed for multiple uses and are made from durable materials like glass, metal, or sturdy plastic (Zamani et al., 2018). They are typically used to sustainably store food, beverages, or other items.

Table 3. Types of reusable containers

Studies	Type of Reusable Container	Material
Arı & Yılmaz (2017); Asih et al. (2020); Dunn et al. (2014); Geetha (2022); Geetha & Padmavathy (2023); Homonoff (2018); Homonoff et al. (2021); Jiang (2016); Li et al. (2024); Madigele et al. (2017); Muposhi et al. (2022); Muralidharan & Sheehan (2017); Muralidharan & Sheehan (2018); Nguyen (2022); Romero et al. (2018); Spranz et al. (2018); Taylor & Villas-Boas (2016); Thomas et al. (2019); Truong et al. (2024); Zambrano-Monserrate & Ruano (2020)	Bag (20)	Cloth/ Fabric
Allison et al. (2021); Keller et al. (2021); Loschelder et al. (2019); Nicolau et al. (2022); Noh et al. (2024); Novoradovskaya et al. (2020); Novoradovskaya et al. (2021); Novoradovskaya et al. (2023); Poortinga & Whitaker (2018); Roy (2023); Sandhu et al. (2021); Sisson et al. (2021); Terrier et al. (2020); Vorwerk & Nilsson (2023); X. Wang et al. (2022)	Cup (15)	Eco- friendly polymers, Metals, Glasses
Baird et al. (2022); Collis et al. (2023); Dorn & Stöckli (2018); Essl et al. (2021); Li et al. (2023); Schuermann & Woo (2022); Sia et al. (2023); Wang & Zhao (2024)	Food Box (9)	Friendly polymers, Metals, Glasses
Herweyers et al. (2023); Herweyers et al. (2024b); Matthews & Webb (2023); Miao et al. (2023); Patreau et al. (2023); Shah & Yang (2024)	Packaging (6)	Grocery bags, Safety razors, Menstrual cups, Cloth diapers, Coffee cups, Water bottles

Reusable cups are made from various materials, including flexible synthetic materials, nylon rubber composites, and metal combinations (Abrams, 2015; Brooks, 2018). These materials enhance durability, insulation, and user convenience. Reusable bags replace single-use plastic bags and are made from several kinds of materials, such as fabric (Chen & Choi, 2022), recycled plastic waste (Huayu et al., 2021), and nylon-elastane fibers (González, 2021). Reusable packaging is used multiple times for storing and transporting goods, saving on materials and energy, and reducing emissions (Coelho et al., 2020).

5.3 Factors Affecting the Reusable Container Usage Behavior

The finalized database was carefully examined to identify the factors most influencing the use of reusable containers. Then, the factors were classified into contextual, situational, psychological, and demographic. Next, the frequency of each variable was calculated based on the number of the study.

5.3.1 Contextual Factors

Table 4 presents a list of the contextual and situational factors. According to the review results, environmental regulations such as bans on plastic and authority endorsement are enabling factors for the use of reusable containers. Plastic regulation is implemented in two forms: a ban on the use of single-use plastic packaging (Arı & Yılmaz, 2017) and the imposition of additional charges for each transaction that uses single-use plastic packaging (Dunn et al., 2014; Taylor & Villas-Boas, 2016; Thomas et al., 2019; Yeow et al., 2014). Authority endorsement has a positive effect on the use of reusable containers. According to Spranz et al. (2018), authority endorsement can encourage people's willingness to switch to using reusable bags. In their study, endorsement by authorities was manifested in the informal realm to recommend or mandate certain behaviors. Public trust and acceptance of the authorities enable authority endorsement to drive behavior change.

Table 4. List of contextual and situational factors

Factors	Classification	Num. of Studies
Contextual Factors		
Plastic regulations	Enabler	5
Waste infrastructure	Enabler	2
Authority endorsement	Enabler	1
Situational Factors		
Financial incentives	Enabler	12
Convenience	Barrier	3
Sign of use	Barrier	1
Cost of alternatives	Barrier	1
Confusion about the options	Barrier	3
Environment condition	Enabler	1
The provision of alternatives	Barrier	1
Guilt in advertising context	Enabler	1
Environmental messaging	Enabler	7
Product requirements	Barrier	6
Social influences	Enabler	6

5.3.2 Situational Factors

In classifying situational factors, we found that financial incentives are the most frequently studied independent factor, with 12 studies showing the effects of financial incentives on the use of reusable containers (Geetha & Padmavathy, 2023; Homonoff, 2018; Homonoff et al., 2021; Jiang, 2016; Madigele et al., 2017; Muralidharan & Sheehan, 2017; Nicolau et al., 2022; Poortinga & Whitaker, 2018; Sandhu et al., 2021; Truong et al., 2024; Wang & Zhao, 2024; Yeow et al., 2014). Financial incentives mostly, but not always take the form of subsidies, discounts, and promotions from businesses that aim to encourage this behavior. In their study, Miao et al. (2023) found that financial benefits were one of the factors driving participants to use reusable packaging. Reusable packaging helped them save money by adjusting product portions instead of being limited to predetermined package sizes.

Another aspect of financial incentives is environmental messaging. Poortinga and Whitaker (2018) found that environmental messaging influenced the study subjects to use reusable cups more frequently. This research used a field study method, with environmental messaging as one of the variables observed during the data collection process. The environmental messages were presented as posters encouraging subjects to use reusable cups. While understanding the environmental messaging factor, we found a study that discussed environmental messaging in terms of optimism and pessimism (MacKinnon et al., 2022). The results confirmed that optimistic (versus pessimistic) environmental messages increased expressions of optimism, contributing to PEB. The forms of PEB in this study included the intention to buy green products, donations to the World Wildlife Fund (WWF), and supporting geoengineering technology (MacKinnon et al., 2022). Additionally, factors such as guilt in the advertising context, have a positive effect on encouraging consumers to use reusable bags (Muralidharan & Sheehan, 2018).

Table 4 shows factors such as lack of convenience, reusable container's sign of use, cost of alternatives, confusion about the options, and the lack of alternatives are classified as barriers because they show a negative effect on the use of reusable containers (Herweyers et al., 2024b; Matthews & Webb, 2023; Poortinga and Whitaker (2018); Sandhu et al., 2021). Convenience is one of the factors consumers consider when adopting a habit or choosing a product. Herweyers et al. (2024b) highlighted a response from one of their participants, stating that lack of convenience and extra effort can be barriers to using reusable products. It was often found that reusable products like tumblers are heavier than plastic bottles or plastic cups. According to the participant, having to carry a reusable cup for coffee is considered annoying.

5.3.3 Psychological Factors

Kharbanda and Singh (2022) defined psychological aspects as key internal factors influencing green intention to purchase behavior. Psychological factors stem from an individual's personality, thoughts, and experiences. Attitudinal and cognitive factors, such as attention, knowledge, and perceived consumer effectiveness, also affect behavior toward eco-friendly products (Jaiswal & Singh, 2018).

In the reviewed literature, concern about the environment was the most frequently discussed psychological factor affecting the daily use of reusable containers (Table 5). The studies used different terms for concerns about the environment, including environmental interest, beliefs about consequences, awareness of consequences, and ascription of responsibility.

Table 5. List of psychological and demographic factors

Factors	Number of Studies
Psychological Factors	
Consumer experience	3
Intolerance of uncertainty	1
Behavior familiarity	1
Emotion	1
Optimism	1
Goals	1
Reinforcement	1
Need for structure	1
Conscientiousness	1
Environmental concern	23
Consumer knowledge	3
Consumer decision process	3
Self-regulated behavior change	4
Personal norm & social norm	6
TPB factors: attitude, subjective norm, perceived behavioral control	8
Self-identity	4
Demographic Factors	
Sex	2
Level of Education	1
Age	1
Income	1
Housing condition	1

Environmental concern refers to public awareness of environmental issues and the efforts and tendencies of consumers to contribute to solutions included environmental concerns as an independent variable to understand students' intentions to use reusable cups on campus (Landry et al., 2018; Waris et al., 2023; Wang et al., 2022). They did not directly link environmental concern to the dependent variable; instead, they incorporated aspects of the theory of planned behavior as mediating variables. Their results showed that environmental concern significantly impacted students' intentions to use reusable cups.

Nevertheless, it must be acknowledged that not all psychological variables benefit the adoption of reusable containers. In a study by Solekah et al. (2024), the correlation between consumers' consciousness of the ecological repercussions of plastic bags, and their inclination to utilize fabric bags was examined. The findings indicated that while there is environmental consciousness concerning plastic bags, it may not always foster the inclination to opt for eco-friendly alternatives. According to previous researchers, other psychological factors, such as the theory of planned behavior (TPB), personal and social norms, self-identity, and others, have also been found to be influential in the habit of using reusable containers in daily activities.

5.3.4 Demographic Factors

Many studies indicate that demographic factors can be determinants of PEB. Variables such as age, sex, and education level play an important role in shaping PEB. Research shows that women and older adults tend to exhibit higher PEB scores compared to men and younger individuals (Belachew et al., 2024). Besides age and gender, education level also plays a role in determining PEB. Razali et al. (2023) suggest that the higher the education level, the higher the PEB. Previous studies have included demographic characteristics as variables that measure consumers' behaviors when adopting a habit. Demographic variables must be assessed to facilitate the adoption of reusable containers in daily life. The study conducted by Schuermann and Woo (2022) included gender, age, education level, and income as factors predicted to influence the willingness to pay for reusable food containers. The results showed that gender and education had no significant impact, whereas age had a significant influence. Younger consumers showed a greater willingness to pay for reusable food containers. The study conducted by Schuermann and Woo (2022) included gender, age, education level, and income as factors predicted to influence the willingness to pay for reusable food containers. The results showed that gender and education had no significant impact, whereas age had a significant influence. Younger consumers showed a greater willingness to pay for reusable food containers.

Zambrano-Monserrate and Ruano (2020) also included socio-demographic factors to determine their influence on a household's decision to use disposable cups or reusable products. The study found that the use of disposable plastic bags in a household increased when the head of the household was male, and the older the head of the household, the less likely the household was to use disposable plastic bags, regardless of other demographic factors. Additionally, the findings indicated that when the head of the household had a postgraduate education, the likelihood of the family using non-plastic bags was higher than when the head had only completed primary education. However, this difference was not significant in rural populations. Moreover, as household income increased, the likelihood of using plastic bags decreased; however, this was also not observed in rural communities. These results are consistent with Zen et al. (2014), who concluded that higher-income households tend to have more pro-environmental attitudes.

5.4 An Overview of Reusable Container Usage Behavior Research

In this research, we provide a comprehensive and updated overview of PEB focused on the daily use of reusable cups. We developed a model based on the input-moderator-mediator-output model to illustrate the causality between the research constructs used and the theoretical models proposed by previous researchers. In addition to the contextual, situational, psychological, and demographic factors identified as independent variables, we also identified variables that can be classified as mediators, moderators, and dependent variables. Through a full-text analysis supported by conceptual models from various sources, these variables are organized into a new model to offer readers a clear understanding of the current position of research on the use of reusable containers (Figure 6).

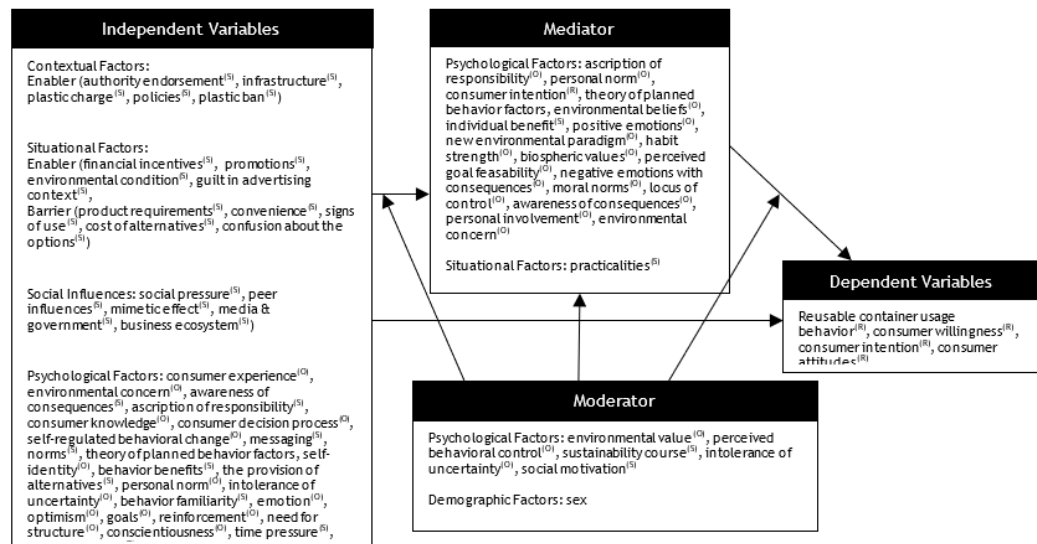


Figure 6. Overview of factors related to reusable container usage

6. Discussion

6.1 Factors Related to Reusable Container Usage on a Daily Basis

This study provides a comprehensive overview of PEB focused on the daily use of reusable containers. Similar to previous studies (Pamidimukkala et al., 2024), it categorizes influencing factors into contextual, situational, psychological, and demographic categories but offers a more structured classification into enablers and barriers.

Financial incentives emerge as a significant enabler. There are at least 12 studies that discuss financial incentives as a benefit consumers receive when they switch to reusable containers. The financial incentives took two forms: fines or additional charges when consumers continue to use single-use plastic (Homonoff, 2018; Madigele et al., 2017; Muralidharan & Sheehan, 2017; Poortinga & Whitaker, 2018) and rewards in the form of discounts when consumers are willing to bring reusable containers when purchasing (Homonoff, 2018; Madigele et al., 2017; Muralidharan & Sheehan, 2017; Nicolau et al., 2022; Poortinga & Whitaker, 2018). These studies show that offering financial incentives reduces the use of single-use plastic and encourages reusable containers. However, these studies have not been able to explain the exact number of incentives or additional charges that would reliably make consumers switch to using reusable containers. A previous study by Madigele et al. (2017) showed that 80.7% of respondents were willing to switch to environmentally friendly shopping bags when given monetary incentives of BWP 2.00. However, 70.8% of respondents in his study continued to use single-use plastic even when charged an additional fee of BWP 1.00. However, respondents were unwilling to use single-use plastic when the fee was increased to BWP 2.00.

When adopting new behaviors, consumers need different and greater benefits than those of their old behaviors. Poole (2019) found that while 85% of people desire to shop using reusable containers, only 16% do so, primarily due to inconvenience. The literature review reveals that inconvenience is a barrier to using reusable containers. Miao et al. (2023) noted that, despite positive attitudes toward reducing plastic waste, consumers remained skeptical about reusable packaging due to its inconvenience compared with single-use plastic. Factors such as product characteristics affect ease of use. It also highlighted the additional steps needed when using reusable containers, like washing and storing containers, compared to simply discarding single-use items (Herweyers et al., 2024a).

Furthermore, the most discussed variable is environmental concern. There are at least 23 studies that include environmental concern as a variable in identifying the behavior of using reusable containers in daily life. Environmental concern is found to have a positive impact on consumers' willingness to use reusable containers (Ari & Yılmaz, 2017; Schuermann & Woo, 2022; Truong et al., 2024; X. Wang et al., 2022; Yeow et al., 2014). Linking environmental concerns to measuring the use of reusable containers is an appropriate step. From these studies, it can be concluded that the higher the level of environmental concern, the higher the likelihood of consumers adopting PEB.

According to Plastic Pollution by Country 2024, Indonesia ranks 8th as the country producing the most plastic waste. We think using reusable containers is a key strategy to reduce plastic waste. We reviewed the literature on consumer habits, such as using reusable shopping bags and tumblers at coffee shops. Businesses such as Starbucks promote this habit, offering discounts to customers and using official Starbucks tumblers. Starbucks' strategy to reduce the environmental impact of single-use cups includes reducing the use of paper cups by encouraging customers to bring reusable cups (Chen & Lee, 2015; Starbucks, 2024). Other brands like Chatime and Fore Coffee also encourage the use of reusable cups (Chatime, 2022; Fore Coffee, 2024). However, these efforts are limited by allowing only the brands' official tumblers, restricting broader adoption. This limitation, alongside inconvenience and cost barriers, highlights a gap in research on the role of businesses in supporting PEB. Greater collaboration is needed to promote the daily use of reusable containers.

Other parties, such as educational institutions and government agencies, can also contribute to promoting the use of reusable containers in daily life. In 2019, the Coordinating Ministry for Maritime Affairs, the Ministry of Communication and Information Technology, and the Ministry of Environment and Forestry launched the "One Million Tumblers" movement. This initiative aimed to reduce plastic waste in Indonesia (Hendartyo & Silaban, 2019). Among other smaller campaigns, students from the Faculty of Veterinary Medicine at Gadjah Mada University (UGM) organized a campaign to reduce plastic waste by encouraging fellow students to always carry tumblers or reusable water bottles while on campus (Universitas Gadjah Mada, 2018).

These efforts certainly help encourage the public to become accustomed to using reusable containers in their daily lives. However, more detailed studies are needed to understand how the factors influencing this habit can be optimized, so that more people become aware of the need to switch to using reusable containers to significantly reduce plastic waste in Indonesia.

6.2 Managerial Implication

The implications of this study are multifaceted. Policymakers could use financial incentives as an enabler to promote the use of reusable containers. Educators and institutions can use these findings to develop programs that emphasize the importance and benefits of using reusable containers. Businesses could focus on reducing barriers related to convenience by making reusable containers more user-friendly and accessible, thereby increasing their adoption among consumers. Businesses can also incorporate social modeling and monetary incentives in their marketing model to encourage customers to switch to reusable options. Additionally, educational campaigns could be developed to inform consumers about the environmental impact of single-use containers and the advantages of switching to reusable options.

6.3 Theoretical Contribution

The findings of this study contribute to the understanding of PEB by providing a structured framework for categorizing factors influencing the daily use of reusable containers. By distinguishing between enablers and barriers, this study offers a nuanced perspective to guide future research and practical suggestions for promoting sustainable consumer behaviors.

In the broader context of PEB, the factors identified in this review are also found in other reviews. In a literature review conducted by Bhattarai et al. (2024), the authors identified similar factors, such as the demographic factors of age, gender, education level, and income level. However, that study did not classify the identified factors into contextual, psychological, and situational categories but rather into demographic, internal, and external categories. In the internal factors category, the authors also identified factors such as self-efficacy, perceived behavioral control, environmental concern, and responsibility. These factors are categorized as psychological factors in this paper. Additionally, Bhattarai et al. (2024) have an external factors category that includes social, cultural, regulatory, and technological factors. In this paper, these factors are classified as contextual factors. Bhattarai et al. (2024) identified these factors in their literature analysis to understand the factors influencing PEB in adolescents.

Pamidimukkala et al. (2024) conducted another literature study regarding the supporting and hindering factors for consumers in adopting electric vehicles, a form of PEB. In their study, they classified factors into four categories, which we have adopted in classifying the factors found in this study. Our study findings aligned with Pamidimukkala et al. (2024), who also identified factors influencing consumer decisions in adopting electric vehicles, such as policy incentives, infrastructure, environmental conditions, technology, environmental concern, and personal and social norms.

Identifying the factors influencing PEB is necessary to evaluate what has and has not been achieved in terms of PEB. However, explaining these factors in the context of more specific PEBs, such as using reusable containers or adopting electric vehicles, is better, as researchers can discover specific factors that only emerge when linked to certain PEBs.

6.4 Limitations

This study has several limitations. First, it focuses predominantly on the consumer perspective, with little extensive exploration of the roles played by businesses and regulators. Second, the study's findings are primarily based on research conducted in specific regions, which may limit the generalizability of the results. Lastly, while the concept of digital transformation is briefly mentioned, its role in promoting reusable containers is not deeply analyzed.

7. Conclusions

This literature review provides a comprehensive overview of previous research on pro-environmental behavior, specifically focusing on the daily use of reusable containers. Most previous studies employed quantitative methods, with questionnaires being the most common data collection tool. We categorized the factors influencing this behavior into contextual, situational, psychological, and demographic, with an additional classification into enablers and barriers to the desired behavior.

Financial incentives are the most frequently discussed external factor promoting the use of reusable containers. Financial incentives are believed to encourage environmentally friendly habits. Although, despite the potential benefits, the effectiveness of financial incentives remains mixed, with some studies showing positive effects under specific conditions, while others find no significant impact. However, inconvenience is identified as a significant barrier, with consumers finding single-use containers more convenient than reusable ones.

The review also highlights the influence of normative messages on reducing plastic bag usage, and the stronger impact of dynamic norms over static ones. Social modeling and mimetic effects, where consumers observe others using reusable containers, increase the likelihood of adopting similar behaviors, as does environmental messaging. These insights can inform the design of effective policies and campaigns to promote the use of reusable containers, suggesting that targeted messaging and marketing strategies can play a crucial role in encouraging pro-environmental behavior.

8. Recommendation

This literature review has revealed several gaps in knowledge, particularly regarding the use of reusable containers. Most research on PEB focuses on consumer behavior alone, but acquiring environmentally friendly habits requires involvement from three key entities: consumers, businesses, and regulators. Future research should explore the perspectives of businesses and regulators to gain a more comprehensive understanding of reusable container practices. Additionally, expanding studies to include diverse geographic locations will enhance the generalizability of the findings.

This literature review highlights a gap in research concerning the role of digital transformation in the use of reusable containers. Future studies should explore how digital tools and technologies influence sustainable consumer behaviors. The effectiveness of digital technology in promoting sustainable practices is shaped by factors such as accessibility and user-friendliness. Research could address areas like the integration of digital technologies, user engagement, accessibility, and collaboration in supporting environmentally friendly behavior, especially regarding reusable containers.

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