



## Research article

## From single-use to multi-use: Study of consumers' behavior toward consumption of reusable containers

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## ABSTRACT

This study advances the theory of planned behavior (TPB) to identify the mechanism that underlies the consumption of reusable containers. A questionnaire including context, motivation, subjective norms, attitudes, perceived behavioral control, intentions and behavior items was developed and pre-tested on 180 students in a Canadian and a Chinese university respectively. Subsequently, the questionnaire was implemented in the form of an online survey and 1221 effective responses were collected from Western ( $n = 549$ ) and Asian ( $n = 672$ ) consumers. The findings revealed that the context and motivation variables are important antecedents to several TPB constructs. Context strongly impacts perceived behavioral control and motivations as well as attitudes. Motivation is clearly distinct from intentions and has a significant influence on both attitudes and intentions. In addition to the standard variables of perceived behavioral control, subjective norms and attitudes, motivation does have a significant impact on intentions. Furthermore, there are cultural differences in the way context impacts intentions and behavior in that Asians (Westerners) are influenced by context to increase reusable containers consumption through motivation (attitudes). Attitude is a significantly stronger predictor of intentions for Westerners than Asians.

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## 1. Introduction

The management of waste is of increasing importance (Inglezakis and Moustakas, 2013; Wagner et al., 2013). Past research has mostly focused on reduce and recycle, but largely ignored reuse. Reuse refers to any activity that lengthens the life of an item (Allegrini et al., 2015) and is among the most critical strategies for long-term sustainability based on waste reduction (Haws et al., 2013). Reuse is known to be more effective than recycling in waste reduction, resource conservation and sustaining quality of life.

Despite the critical role of reuse in the optimum use of raw materials, past research has exclusively focused on the external factors influencing reuse, such as political, social, and economic (e.g. Suthar et al., 2016), but ignored the psychological factors on consumers' reuse behavior. Behavioral perspectives on consumer's consumption of reusable containers are sparse, a remarkable oversight given the criticality of reuse (Haws et al., 2013). There is a gap of research on consumer behavior insights and solutions that put consumer reuse at the center of attention. Furthermore, there is a lack of research utilizing behavioral perspectives to understand consumers' consumption of reusable containers. This paper addresses these gaps. We focus on consumer reuse as a key to waste reduction and sustainability; analyzing the role of context, motivation, and culture in how consumers consume reusable containers.

By studying the role of context and motivation variables in relation to reuse behavior, the current research addresses two gaps in the literature. First, it answers previous calls to augment the examination of pro-environmental behavior from an intra-psychic

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viewpoint, with extra-psychic variables, such as context (Steg and Vlek, 2009; Ertz et al., 2016). Second, the long tradition of motivational studies in psychology has produced a rich theoretical corpus about motivation which may be drawn upon to foster pro-environmental behavior such as re-use.

Disposable single-use containers are at the origin of various environmental as well as social problems. According to Botsman and Rogers (2010), the Great Pacific Garbage Patch in the Pacific Ocean is composed of many single-use containers such as plastic bags, in addition to other discarded materials, and it has been estimated to be as large as a continent. To-go cups (e.g. coffee) are essentially made of paper, yet they incur a thin coating of plastic or wax which makes the recycling process much more difficult than office paper (Earth911, 2014). Despite company claims and the presence of store recycling bins in many outlets, many to-go cups actually go into landfills and do not get recycled (Johnson, 2015). These different containers need also considerable amounts of natural resources (e.g. oil) to be produced and transported.

The situation is deteriorating in Western industrialized countries but also in emerging fast-growing countries especially in Asia (e.g. China). In an attempt to tackle escalating waste generation issues from single-use containers, a ban came into effect on June 1, 2008 that prohibited stores throughout China from giving out free plastic bags. Despite avoiding the consumption of at least 40 billion bags and saving an equivalent of 1.6 million tons of petroleum (Worldwatch Institute, 2013), this ban did not affect the use of plastic bags at restaurants for take-out meals, nor did it extend to to-go cups or single-use boxes (e.g. in cardboard, or paper) (Upton, 2013). Also, while, state-enforced regulation tends to be effective in China (Zhang and Wen, 2008), it is debatable whether a government ban could be as effective in a Western context.

While responsibilities to curb garbage from single-use containers are equally shared between policy-makers, businesses, local authorities and consumers, this study focuses on consumers and explores how to instill a change in consumers' behavior. Specifically, we advance the theory of planned behavior (TPB) to explain consumers' consumption of reusable containers. This study makes three contributions to the literature. First, distinct from past research on pro-environment behavior, this study focuses on *reusable containers consumption* and explores how to encourage consumers to use *undisposable multi-usage containing solutions* such as thermal bottles, coffee mugs, refillable bottles or reusable bags. To the best of our knowledge, this is the first study dedicated to exploration of consumer reusable container consumption behavior. Our second contribution is to augment the TPB model with two additional constructs which are highly relevant for predicting reusable containers consumption. The first is perceived contextual factors which are typically excluded from the TPB. The second is consumer motivation, which we propose as clearly distinct from intentions, as opposed to being conflated with them as theorized (Ajzen, 1991). Our third contribution is the examination of variations in the proposed consumer behavior model between Asian and Western cultures.

## 2. Background research

Four types of alternative containing solutions may be distinguished: (1) single-use; (2) disposable multi-use; (3) hybrid-use; and (4) undisposable multi-use. The three former types are provided with the content in them upon purchase. In contrast, undisposable multi-use containing solutions are sold without any content in them upon purchase and are therefore not in their end-of-life but rather at the beginning of their lifecycle. They constitute a generic multi-use packaging which is specifically conceived to be reused over time (Numata and Managi, 2012) and include

containers of liquid (e.g. beverages) or solid (e.g. fabric) elements. Examples include thermal bottles, drinking bottles or coffee mugs.

Historically this latter category prevailed but was nonetheless restrictive in that it required maintenance and transportation from organizations and consumers, and often lacked mobility capacities. For example, coffee mugs need to be rewashed, repaired if broken, carried and stored. This may represent several hindrances for the sale of contents. First, reuse practices may generate cues on the container which trigger negative contamination and decrease the value of the product (Nemeroff and Rozin, 1994). According to the laws of sympathetic magic (Frazer [1890] 1959; Mauss [1902] 1972; Tylor [1871] 1974), which has been amply used as a theoretical framework in consumer behavior studies (e.g. Roux and Korchia, 2006), when consumers become cognizant that another consumer has previously touched a product, their evaluation of and purchase intentions for the product decrease (Rozin et al., 1994).

Second, although consumers have more free time than previous generations, there is an increasing perception of time shortage (Lambert, 2015). This is because consumers not only consume products and services but they also contribute to their production and delivery (Denegri-Knott and Zwick, 2012; Ritzer and Jurgenson, 2010). Consumers “prosume” or perform “shadow work” whenever they do jobs that used to be done by paid employees but have now been outsourced to the consumer (e.g. booking a flight, pumping gas; Ritzer, 2014; Lambert, 2015). Prosumption processes involve increasingly single-use containing solutions for convenience and efficiency.

Third, and related to the second point, with the conjunction of increased time pressure and technological advances, modern consumption behaviors has evolved toward an alarming increase in waste due to the disposal of containers (Accorsi et al., 2014) particularly for consumer goods purchases, and the growing demand for restaurant, fast-food, catered and take-out meals.

In order to increase sales of various types of contents, by decreasing potential perceptions of negative contamination, improving the efficiency of business processes and take advantage of technological advances, increased recourse to single-usage containers has given way to “irrationalities of rationality<sup>5</sup>” such as growing disposal of finite resources in a wasteful manner. One of such irrationalities resides in the increasing recourse to single-use containers which inherently increase waste production. Influencing consumer behavior to favour pro-environmental behavior constitutes an interesting approach to curb waste production (Leisman et al., 2013). The Theory of Planned Behavior (TPB) has been used to a great extent to study multiple forms of environmental consumer behavior (e.g. Bamberg and Möser, 2007; Klöckner, 2013; De Leeuw, Valois, Ajzen, and Schmidt, 2015). Drawing on the proven reliability and validity of this theoretical framework, we use an adapted version of the TPB in order to model the consumer process underlying reusable container consumption, with the purpose of identifying specific variables to promote such a behavior.

## 3. Conceptual model

Ajzen (1991)'s Theory of Planned Behavior (TPB), has been one of the most influential theories in explaining and predicting a wide range of behaviors. TPB is the extension of Ajzen and Fishbein (1980)'s Theory of Reasoned Action (TRA).

<sup>5</sup> The expression is borrowed from George Ritzer's article “Shadow work and prosumption” written on August 12, 2015 and accessible on: <https://georgetitzer.wordpress.com/author/gritzer2012/> (retrieved 11-03-2016).

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