



Full length article

## Can social media be a tool for reducing consumers' food waste? A behaviour change experiment by a UK retailer



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### ABSTRACT

This paper reports on a landmark study to field-test the influence of a large retailer to change the behaviour of its millions of customers. Previous studies have suggested that social media interaction can influence behaviour. This study implemented three interventions with messages to encourage reductions in food waste. The first was a social influence intervention that used the retailer's Facebook pages to encourage its customers to interact. Two additional information interventions were used as a comparison through the retailer's print/digital magazine and e-newsletter. Three national surveys tracked customers' self-reported food waste one month before as well as two weeks after and five months after the interventions. The control group included those who said they had not seen any of the interventions. The results were surprising and significant in that the social media and e-newsletter interventions as well as the control group all showed significant reductions in self-reported food waste by customers over the study period. Hence in this field study, social media does not seem to replicate enough of the effect of 'face-to-face' interaction shown in previous studies to change behaviour above other factors in the shopping setting. This may indicate that results from laboratory-based studies may over-emphasise the effect of social media interventions.

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### 1. Introduction

This study explores whether social media can be used to influence the behaviour of a large retailer's customers on food waste reduction in the household. Behaviour change approaches on environmental issues have tended to focus around central and local government initiatives. Typical activities include the provision of infrastructure (e.g., household recycling bins), legal structures (e.g., vehicle emission related taxes), incentives (e.g., such as renewable energy technology subsidies) and related information campaigns to change attitudes and behaviour (Auld et al., 2014). These all try to shift consumers to more sustainable lifestyles.

Companies also influence behaviour through the marketing of products to customers with declared green criteria (Shrum et al., 1995). What has emerged more recently is that companies are starting to influence the behaviours, habits, practices and actions beyond the traditional company–customer relationship (Morgan, 2015). This extension of the relationship from company

to consumer focuses on encouraging consumers to reduce the environmental impact of product use within their homes.

Company goals of influencing the way their products and services are consumed can be motivated by two broad perspectives. The first is that progressive companies found that for consumer goods the results of environmental lifecycle assessments often showed the 'use' phase having the highest environmental loads (Girod et al., 2014). Greenhouse gas emissions and product disposal are often more significant in this part of the lifecycle phase. Secondly, governments have seen that branded product companies have a closer relationship with, and hence potentially higher influence on, consumers than governments do with their citizens (Goworek et al., 2013). Therefore, companies are increasingly being coerced by government and quasi-autonomous non-governmental organisations (quangos) to be involved in cross-industry 'partnerships' and voluntary agreements, and to play a leading role in reducing the environmental impact of the use phase of their products and services (Bocken and Allwood, 2012; Spaargaren and Mol, 2008).

However, influencing the use phase means companies are entering the realm of asking their customers to consume less or at least consume differently, which is difficult for companies with a high volume economic business model. Indeed, the financial incen-

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tives especially for retailers point to increasing sales quantity, not reduction. There are, however, incentives for companies in that by encouraging consumers to reduce their environmental impacts in the use phase may result in stronger customer brand loyalty by aligning companies with the green intentions of their customers. This may be an effective mode of building brand loyalty because research has shown that consumer green attitudes are no longer a niche issue with European consumers and that the majority of consumers now have green attitudes (EC, 2014).

In this paper, we report on a field experiment with the UK supermarket Asda (part of Walmart) to reduce food waste generated by its customers through a number of behaviour change interventions. More specifically, a number of different mechanisms were employed with the aim to induce behaviour change, ranging from more traditional interventions such as information provided in magazines and e-newsletters, to the use of social media. It has been argued that social media approaches are more effective than conventional interventions, as they have the potential to replicate face-to-face interactions (Goldsmith and Goldsmith, 2011). Following social influence theory, face-to-face interactions can be seen as a crucial element of effective behaviour interventions (Abrahamse and Steg, 2013). Given that face-to-face interactions are extremely cost-, time- and resource-intensive, it is difficult to scale up these types of interventions to the level of a national supermarket with a customer base of tens of millions of people. In this context, social media interventions such as Facebook could be a promising alternative. This study aimed to test a large retailer's use of social media as a tool for reducing food waste in the home.

The remainder of this article is structured as follows. In the next section, we present environmental and socioeconomic challenges linked to the generation of food waste, with particular emphasis on household food waste and the potential roles played by major retailers in this context. Next, we review social influence theory as the analytical lens employed in this study. In the following section, we explain and justify the research design, including a description of the case organisation as well as the three behaviour interventions that were applied. We then present our findings, comparing the effectiveness of the three intervention types in terms of frequency and quantity of food waste and uncovering similarities and differences in their performance with regard to different sociodemographic factors. Before concluding, we present and discuss implications derived from this study.

## 2. Background

### 2.1. Food waste

After being largely ignored in the 1990s and early 2000s when recycling boomed, more recently there has been an increase in the focus placed on food waste (Metcalf et al., 2012), arguably due to the increasing awareness of food waste levels and associated impact. It is estimated that one-third of edible food produced for human consumption is lost or wasted globally each year (Goebel et al., 2015; Graham-Rowe et al., 2014). In the United Kingdom alone 15 million tonnes of food and drink are thrown away annually (WRAP, 2013a). However it is not solely the amount of food wasted that has increased interest in this waste stream but the impact it has economically, socially and environmentally.

According to Graham-Rowe et al. (2014), food waste exacerbates escalating food prices globally which causes food to be less attainable to the world's poorest, increasing the number of malnourished people and demonstrating the direct social impact of food waste. The associated economic impact of buying food that is never eaten and thrown away (Graham-Rowe et al., 2014) costs the average UK household £470 a year, growing to £700 for a family with chil-

dren (WRAP, 2013a). Possibly the most damaging impact of vast levels of food waste is the corresponding environmental effect. For example, production of food that is consequently wasted magnifies the pressure for diminishing forests that are inevitably altered for agricultural land (Graham-Rowe et al., 2014). Additionally, the disposal of food and drink to landfill adds to the avoidable release of gases like methane (Graham-Rowe et al., 2014) and CO<sub>2</sub> emissions (Goebel et al., 2015). Ultimately, it has become clear recently that minimising food waste is crucial for obtaining a sustainable food system as it has serious economic, social and environmental repercussions (Goebel et al., 2015).

This paper particularly focuses on 'avoidable' household food waste as Lebersorger and Schneider (2011) state the greatest potential for reduction of food waste in the developed world is with retailers, food services and in particular, consumers. 'Avoidable' household food waste is defined as "food and drink thrown away because it is no longer wanted or has been allowed to go past its best" (WRAP, 2013a, p.23).

In the UK, food waste derived from households accounts for 7 million tonnes of total food and drink wasted each year (WRAP, 2013a). UK households throw away approximately a third of the food they purchase for consumption (Evans, 2011) with the average annual household waste consisting of 17% food waste (Defra, 2015). However, much of the environmental impact associated with household food waste stems from the production and supply of the food wasted rather than the disposal of food. 4.2 tonnes of CO<sub>2</sub> eq. is avoided by preventing waste compared to 0.5 tonnes of CO<sub>2</sub> eq. avoided by treating waste (Quested et al., 2011). Thus, much of the work being carried out to reduce household food waste has focused on targeting the behaviours that create or exacerbate food waste.

There is a growing literature on the drivers of food waste (Priefer et al., 2016; Thyberg and Tonjes, 2016). According to Quested et al. (2011), household food waste transpires from the interaction of multiple behaviours called 'specific food behaviours'. These behaviours relate to planning, storing, preparing and consuming food (Quested et al., 2011). However, other studies have found it is more than just specific food waste behaviours that exacerbate household food waste. Goebel et al. (2015) argue that consumer expectations around availability, variety, and freshness cause food waste along the supply chain and in households. Conversely, a study by Evans (2011) argues that targeting the attitude and behaviour of consumers is illogical because there is no evidence to suggest consumers are careless or callous about the food they throw away. Instead, just targeting consumer behaviour continues to individualise responsibility and away from government and companies. Metcalfe et al. (2012) concur with this notion by stating that food waste is not caused by irrational excess that can be cut through everyday behaviours and practices.

However, it is our contention that we should be focusing on changing consumers actions that lead to environmental harm (Young and Middlemiss, 2012). This takes a multitude of interventions from many stakeholders with much focused on influence from local or national government on households (Schmidt, 2016). In this paper we examine if retailers can use social media as a tool to trigger changes to reduce food waste from households.

### 2.2. Retailers and food waste

Retailers produce less the 3% of food waste in the UK (Defra, 2015) and some research has been produced on this (Eriksson et al., 2016; Scholz et al., 2015). But due to their pivotal place in the supply chain, retailers can produce significant reductions by working with their suppliers and influencing their customers. Much retailer activity in the UK on food waste has been coordinated by the past quasi-autonomous non-governmental organisations (quango)

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