



Convenience or price orientation? Consumer characteristics influencing food waste behaviour in the context of an emerging country and the impact on future sustainability of the global food sector

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ABSTRACT

The extent of food waste raises concern about its effect on natural resource use, food security and future sustainability of the international food sector. It is expected that emerging countries with a growing middle class will exhibit a similar extent and pattern of consumer-related food waste, which is disturbing given that food waste coexists with food insecurity. However, the topic is yet under-researched, as are potential actions against food waste. Through an experimental survey, individual consumer characteristics explaining self-reported food waste at home and choice of price-reduced suboptimal food otherwise wasted in stores were explored among a sample of 1124 Uruguayan consumers. Results showed that food waste was higher among price and convenience-oriented, but lower for value conscious consumers. Choice of suboptimal food was more likely for price-oriented consumers and less likely for convenience-oriented ones. Gender and age explained wastage and choice of suboptimal food. Perceived norms did not play any role, but perceived quality of suboptimal food had a major effect. For packaged foods, value consciousness decreased suboptimal food choice likelihood, while convenience orientation decreased the latter for fresh foods. Consumer price orientation impacted food waste when related to eating food waste incidents more than to storage food waste incidents. The findings show that convenience orientation is a driver of food waste behaviours both when shopping and at home. However, findings imply that tackling food waste requires context-specific consumer-targeted strategies: food market stakeholders should appeal to value consciousness in the household, and perceived quality and price orientation in the store.

1. Introduction

1.1. Food waste as a sustainability challenge

Food waste in the agriculture and the food supply chain is regarded as a challenge to the sustainability of the sector. Wasting food is a waste of scarce natural resources (Foley et al., 2011), unethical in the light of food insecurity and inequality in access to food (Godfray et al., 2010). Moreover, it constitutes an economic loss (Buzby and Hyman, 2012). In terms of the extent of the problem, it has been assessed that one fourth to one third of world's food is wasted (FAO, 2013; Kummu et al., 2012). This impedes a more circular economy in the food sector (Jurgilevich et al., 2016). Subsisting on current world resources requires both behaviour change and waste reduction (Röös et al., 2017). However, it should be emphasized that food waste statistics have to be considered

as vague and uncertain estimates as they differ greatly by definition of food waste and data source used (Bellemare et al., 2017; Porter and Reay, 2016; Xue et al., 2017).

However, broad agreement on a number of observations on food waste can be observed in the literature. Firstly, food waste is a complex issue influenced by numerous factors (Quested et al., 2013; Aschemann-Witzel et al., 2015). Secondly, food waste is more likely related to factors in the early stages of the supply chain in developing countries, while it is mostly related to the last stages in developed countries (Bahadur et al., 2016; Parfitt et al., 2010; Porter and Reay, 2016; Vilariño et al., 2017). Thirdly, the consumption stage, and particularly consumer behaviour, plays a crucial role as economic value and natural resources invested accumulate throughout the chain (Williams and Wikström, 2011). Finally, food waste increases with the level of a country's gross domestic product (GDP) (Xue et al., 2017).

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1.2. Relation between food waste and global consumption trends

The complexities of consumer lifestyle and the consumption trends in affluent societies determine the potential to sustainably transform the food sector, which calls for market and policy action (Beverland, 2014; Prothero et al., 2011; Reisch et al., 2013; Thøgersen, 2014). It is apparent that worldwide trends and transitions (Shafiee-Jood and Cai, 2016), such as changes in dietary choices, increasing urbanisation, a growing middle class in emerging countries (de Koning et al., 2015), and an expanding culture of consumerism, impact food demand and the structure of the food supply chain.

Food waste influences the sustainability of the food sector in a number of ways. Firstly, some food waste definitions regard animal feed – to the extent that it could have been used for human consumption, e.g. soy, corn and wheat – as food waste. The same holds for excess food consumption (Parfitt et al., 2010). Both can be expected to increase in the future given the intensifying demand for meat (Jurgilevich et al., 2016; Stoll-Kleemann and Schmidt, 2016; Westhoek et al., 2014) and increasing overweight rates in emerging countries (WHO, 2014).

Secondly, the foods impact is growing. Animal-based food products entail extensive natural resource use (Williams and Wikström, 2011). Soon, a greater share of the population will be living in metropolises and cities (Zhang, 2016). As a result, long-distance transportation of foods and distribution in sophisticated urban supply chains may cause more emissions from transportation. Highly processed foods require intensive use of energy resources during processing and might result in a large by-product output. Food waste from these foods has a substantially negative impact on sustainability. However, ‘ultra-processed’ foods are becoming increasingly popular in emerging countries (Monteiro et al., 2013).

Thirdly, the growing middle classes enjoy greater affluence, which causes more diverse demands for food products and for higher levels of food security and quality. Factors such as consumers expecting full supermarket assortments at any time, discarding of foods close to the expiration date despite being perfectly edible (van Boxtael et al., 2014) as well as harmonised aesthetic standards (Loebnitz et al., 2015b; Loebnitz and Grunert, 2015a) have been named as causes of food waste. In addition, consumption culture changing towards the ‘throw-away’ culture is discussed as trends underlying the problem of food waste (Evans, 2014). In particular for consumers who have just recently joined the middle class, in both developing and emerging countries, it might also hold that they value food abundance to set themselves apart from the poor and as a symbol of status.

1.3. Individual consumer characteristics impacting food waste

Food waste is caused by a complex set of factors, among other macro-environmental, situational as well as social and individual (Quested et al., 2013). Policy makers are in a position to adjust certain macro-environmental context factors such as taxation or food legislation and information. However, it takes much more to influence individual consumer characteristics, e.g. via awareness campaigns. Interestingly, these approaches have been argued to be relatively more efficient (according to a cross country comparison exploring 44 countries: Chalak et al. (2016); see also Gutierrez-Barba and Ortega-Rubio (2013)). Awareness levels are high in countries where the food waste issue has been on the agenda in the media (Neff et al., 2015; Aschemann-Witzel, 2018). However, research also indicates that scepticism towards governmental actors suggests that approaches should rather be citizen-initiated (de Koning et al., 2015). At the same time, individual consumer factors, measured through psychographic variables, are rather decisive for sustainable consumption behaviour, particularly in the long run. Consequently, consumer behaviour is regarded as crucial in the food waste issue (Vilariño et al., 2017). Consumer behaviour models include individual consumer characteristics as part of the attitudinal factors impacting intentions (Ajzen, 2002; Armitage and

Conner, 2001). In addition, attitudinal factors exert influence on the norms that consumers perceive to exist in relation to a sustainable consumption issue such as food waste. They do so via beliefs about norms and the motivation to comply with norms.

As a consequence of this and on the background of the global consumption trends, a number of consumer characteristics appear of relevance in exploring consumer-related food waste at the level of the individual and in emerging countries. It is often critically discussed or assumed that marketing practices involving price offers (2 for the price of 1, lower prices when buying greater quantities) or triggering over-purchase, cause food waste (Qi and Roe, 2016; Schmidt, 2016; Silvennoinen et al., 2014; Stuart, 2009). Thus, consumers’ individual price orientation and deal seeking ought to be of importance, as it is the consumer response to the marketing action which ultimately causes the potential wastage. Given that food waste is discussed as related to appreciating food less due to affluence (Aschemann-Witzel et al., 2015), value perception of food and awareness of the price-value relationship should also be relevant. The same holds for consumer perception of the overall quality of food items they might buy or not buy. Affluence level, culture change, and dietary shift are connected to a greater perceived time scarcity (Jabs and Devine, 2006), equality in gender roles, and less importance given to meal preparation and consumption. All this results in a greater demand for convenience food (Brunner et al., 2010). Consumers’ appreciation of and orientation towards convenience might therefore impact food waste-related behaviours (Mallinson et al., 2016), as research in the UK has shown. Furthermore, consumers’ perception of social norms or the strength of personal norms connected to wastage of food or food waste-related behaviours might determine individual consumer behaviour (Stancu et al., 2016; Visschers et al., 2016).

1.4. Consumer-related food waste research in emerging and developing countries

In emerging or developing countries, research on food waste data and the issue of food waste is yet scarce (Xue et al., 2017). Overall, the existing studies focus on food loss or waste in the supply chain (e.g. Balaji and Arshinder, 2016; Naziri et al., 2014) or explore the quantity, type of food waste or related costs generated at various stages (e.g. Fehr and Romao, 2001; Liu et al., 2013; Nahman and de Lange, 2013; Song et al., 2015) or for certain categories such as perishables (Henz, 2017). Another research stream focuses on food waste in the hospitality sector in particular (Liu et al., 2016; Liwei et al., 2013; Painter et al., 2016; Papargyropoulou et al., 2016). Studies have discussed developing countries or ‘the global south’ as a whole. A number of studies can be found for China (Liu et al., 2013, 2016; Liwei et al., 2013; Song et al., 2015), India (Arivazhagan et al., 2016; Balaji and Arshinder, 2016), South Africa (Nahman and de Lange, 2013; Nahman et al., 2012; Oelofse and Nahman, 2013), Brazil (Bekin et al., 2007; Fehr and Romao, 2001; Henz and Porpino, 2017; Porpino et al., 2016) or Mexico (Gutierrez-Barba and Ortega-Rubio, 2013), but there is also work from a number of other Asian countries (Jereme et al., 2013; Grandhi and Singh, 2015; Papargyropoulou et al., 2014; Soma, 2017). So far, few studies have explored Latin-American countries, and work comparing developed versus developing countries (Bekin et al., 2007) or research on individual consumer characteristics and psychographics is still limited.

Overall, it has been found that increasing income levels and growing middle classes are causing food waste quantities to increase, as does population growth as a whole (Krishna et al., 1991; Somkun, 2017; Xue et al., 2017). Existing research on consumer households and consumer characteristics indicates that even in low income households, food is wasted for various reasons. These reasons include lack of capabilities or over-purchase (Porpino et al., 2015), the desire to fulfil the caretaker role and provide food abundance at home (Porpino et al., 2016), among other things. Possibly, the abundance of food could be a symbol of

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