

Consumer Choice and Food Waste: Can Nudging Help?

Laura Andreea Bolos, Carl Johan Lagerkvist, and Rodolfo M. Nayga, Jr.

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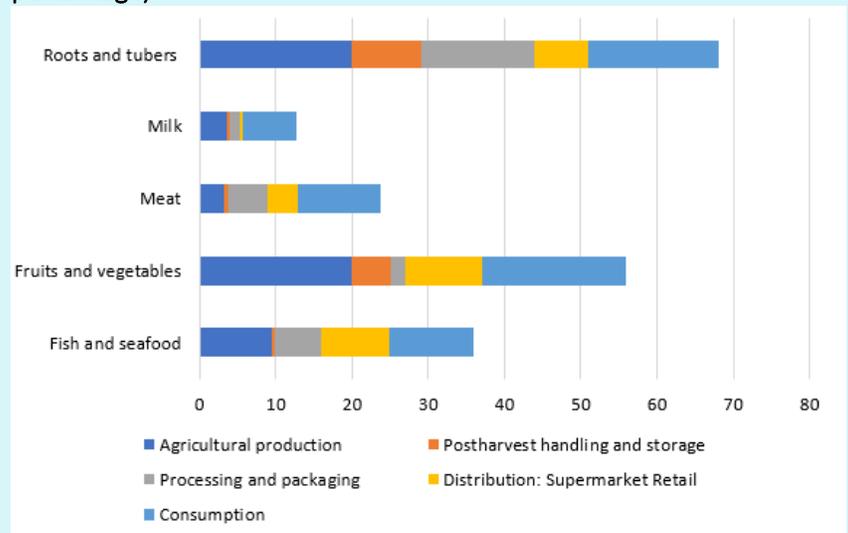
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Food waste—to a large extent a result of people’s consumption and purchase habits—is increasingly recognized as a challenge facing both developed and developing economies (Aschemann-Witzel et al., 2017b; Ellison and Lusk, 2018). Therefore, investigating opportunities to shift retail practices and influence consumers at point of purchase is important if food waste is to be reduced, which could have an impact on food security, nutrition, household budgets, the environment, and public health (Hall et al., 2009; Neff, Spiker, and Truant, 2015; Spiker et al., 2017).

Importantly, consumers’ propensity to not accept food that visually deviates from the norm because of cosmetic imperfections—such as being misshapen, off-color, or slightly damaged—contributes to consumer food waste (Aschemann-Witzel et al., 2015, 2017a,b; de Hooge et al., 2017). Products and produce not meeting ideal visual standards are disposed as waste downstream in the value chain and discarded at the point of purchase or at home.

According to the U.S. Department of Agriculture, a substantial amount of food waste occurs in retail and consumer settings (Buzby, Farah-Wells, and Hyman, 2014). In 2010, around 31% of food was wasted at the retail and consumer level in the United States, corresponding to approximately 133 billion pounds and \$161 billion worth of food (Buzby, Farah-Wells, and Hyman, 2014). Figures 1 and 2 summarize food waste across Europe, North America, and Oceania; with roots and tubers as well as fruits and vegetables (Gustavsson, Cederberg, and Sonesson, 2011). Some food waste is inevitable, but food waste at the current scale indicates inefficient resource use. For example, about 24% of total water and cropland use are, in fact, used to produce waste (Kummu et al., 2012). Importantly, food waste contributes to the environmental burden of food production owing to resources spent in vain (Kummu et al., 2012; Aschemann-Witzel, 2016).

Figure 1. Food Wasted in Europe across the Entire Supply Chain (in percentage)



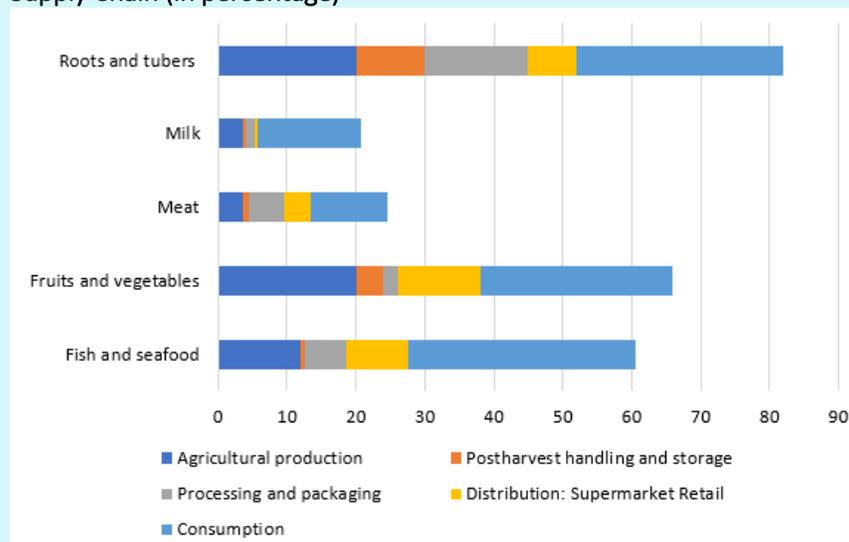
Source: Gustavsson, Cederberg, and Sonesson (2011, p. 26).

While recent studies show that U.S. consumers perceive themselves to be knowledgeable and engaged with the issue of food waste (Ellison and Lusk, 2018; Neff, Spiker, and Truant, 2015), many consumers do not purchase imperfect or blemished food in retail stores due to food safety misconceptions (Aschemann-Witzel, 2016). Since

supermarkets remain the main purchase point for food, they have the ability to influence which products make it on the shelves and the types of food consumers purchase (Escaron et al., 2013). Supermarkets also have the power to decide what happens to unsold food and how to encourage consumers to buy visually imperfect food to reduce food waste. Box 1 lists examples of recent retailer, nonprofit organization, and government agency initiatives to reduce food waste in Europe and the United States.

A number of studies have focused on food waste, but we argue that there remains a need for studies that examine the effectiveness of different strategies or initiatives that retailers can implement to increase consumers' acceptance of food with cosmetic imperfections. Retail initiatives (see Box 1) can only work as long as they relate to consumers' needs and wants and therefore instill sustained behavioral changes in favor of greater degrees of acceptance of visually imperfect food. Hence, an assessment of the effect of specific initiatives on consumer information processing, acceptance, and motivation is important.

Figure 2. Food Wasted in North America and Oceania across the Entire Supply Chain (in percentage)



Source: Gustavsson, Cederberg, and Sonesson (2011, p. 26).

The Inquisitive Eye: The Impact of Visual Appearance of Food on Decision Making

Before touching or tasting, consumers generally first analyze food visually (Lee et al., 2013), resulting in a first impression about the product's quality. According to the literature, consumers assess three characteristics of the visual appearance of fruit and vegetable relevant: (i) color, (ii)

Box 1. Examples of Initiatives to Reduce Food Waste in the US and Europe

United States:

Imperfect Produce works to reduce food waste by taking food with cosmetic imperfections (which would otherwise be wasted) from farmers and delivering it to customers for about 30% less than grocery store prices (Imperfect Produce, 2019).

Rethink Food Waste through Economics and Data (ReFED)—a multi-stakeholder nonprofit comprising experts from leading businesses and nonprofit, foundation, and government agency leaders—uses a data-driven approach to identifying concrete solutions to reducing U.S. food waste (ReFEd, 2019).

In 2019, grocery chain Kroger announced the launch of Peculiar Picks, a brand of food with cosmetic imperfections (Pomranz, 2018).

Europe:

More to Do More (Sweden) is an initiative from the Swedish National Food Agency—in collaboration with the Swedish Environmental Protection Agency and the Swedish Board of Agriculture—to provide concrete suggestions and solutions for reducing food waste (Swedish National Food Agency, Swedish Board of Agriculture, and Swedish Environmental Protection Agency, 2018).

Retailer MatSMART (Sweden) sells food that, for example, has been mislabeled, has a short or has already passed best-before date, or has other imperfections and could not have been sold in regular stores (MatSMART, 2019).

Inglorious Fruits and Vegetables is a marketing campaign conducted by the French supermarket Intermarché. Foods with cosmetic imperfections are sold at a 30% discount (Intermarché, 2019).

shape, and (iii) physical form (Blasco et al., 2007; Loebnitz, Schuitema, and Grunert, 2015; Salvador, Sanz, and Fiszman, 2007; Seppä et al., 2013). These attributes affect customers' purchase intentions, but only if they deviate significantly from the norm (Loebnitz, Schuitema, and Grunert, 2015). Since fresh fruit and vegetables are often not packaged, or are packaged in a way that allows the produce to be seen (Deng and Srinivasan, 2013), they offer an appropriate product to study consumers' preferences for food with cosmetic imperfections (see Table 1).

Table 1. Examples of Cosmetic Imperfections

Category	Picture	Category	Picture
Perfect		Imperfect shape	
Imperfect color		Imperfect physical form	

Examining visual appearance (with or without imperfections) fits with the established multi-attribute utility perspective, which implies that consumers derive their utility (or happiness) not from the item itself (e.g., the tomato) but from the attributes contained in that particular item, such as color, flavor, etc. (Lancaster, 1966). However, even though the multi-attribute perspective has come to play a significant role in understanding the decision-making process, there is a need for a more multifaceted understanding; hence, recent research has moved away from the Lancaster utility model (Marley and Swait, 2017; van Osselaer and Janiszewski, 2012). Studies that examine the effect of information related to food waste and goal setting could help bring about a better understanding of how consumers can be nudged to accept food with cosmetic imperfections.

The Contribution of Information Nudges and Goals on Decision Making

Many factors can influence decision making, and nudging is one of them. A nudge is a change in the way in which choices are presented, altering behavior in a predictable way without forbidding any options or significantly changing economic incentives. According to a recent meta-analysis by Cadario and Chandon (2017), nudging interventions can be divided into three categories:

1. An *attention-focused intervention* uses descriptive information of the product (e.g., pictures with information) or influences the visibility of certain types of food in the store (such as building a pyramid of fruits to make them more visible) to attract consumer attention.
2. An *interest-focused intervention* captures consumers' interest by targeting their emotions with messages (such as "How about grabbing a piece of fruit?" or "Make an environmentally friendly choice") or by boosting the appeal of a product with vivid sensory descriptions, beautiful packaging, or photographs.
3. Finally, the *action-focused intervention* is more hands-on and often implements techniques that consumers are not aware of, such as making it easier to select certain types of food products by placing them more strategically (e.g., a "grab and go" line where only a few products are presented, making them a more obvious choice).

The effectiveness of the intervention increases significantly as the focus shifts from attention to interest to action (Cadario and Chandon, 2017).

While many studies focus on the impact of nudges on consumers' perceptions about and willingness to buy certain types of food (Cadario and Chandon, 2017; McFadden and Huffman, 2017; Nayga, Aiew, and Nichols, 2005; Valente and Chaves, 2018) and whether information can guide consumers to make better-informed choices or

change behavior (Qi and Roe, 2017), there is scant literature on the impact of nudges in relation to food waste in retail settings.

Based on previous studies, we suggest that cognitive nudges could be used at the point of purchase. For this purpose, we need more research to determine whether providing information about the amount and consequences of food waste would change purchase behavior and increase acceptance of food with cosmetic imperfections. Whether framing the information in a positive or negative way might influence consumer behavior could also be evaluated. While information nudges have shown good results, it is behavioral nudges (such as convenience enhancements) that have been shown to have the greatest effects (Cadario and Chandon, 2017). Therefore, studies are needed on ways to assist retailers with developing business and marketing actions that can reduce food waste at their stores.

In addition to nudges, goals can also play an important role in decision making as we illustrate with this example inspired by Dellaert et al. (2018): Assume a person is buying a takeaway meal. Two personal goals play an important role in making this decision: (i) to avoid gaining weight and (ii) to eat something tasty. The person may set some minimum requirements for each goal to be fulfilled and choose a meal that satisfies these requirements (e.g., tasty and low in calories). Or, the person may decide to focus on fulfilling only one of the goals (e.g., choose a tasty meal that may be high in calories). At this stage in the decision-making process, the person only decides (reasoned or unreasoned) which goal to pursue without assigning any utility value to either of the two meal alternatives; hence, the person chooses a strategy without considering the two options. However, according to the established multi-attribute utility perspective, both meals have a utility value based on their attributes. Then, the person makes a decision based on which meal has the highest utility value without considering the trade-off between the two goals. Not considering the trade-offs between the two goals offers an incomplete picture about how consumers make decisions and what it might take to actually make them change those decisions (Dellaert et al., 2018).

According to goal-based theory, goals are seen as (i) drivers of choice, (ii) able to explain the choice of strategy, (iii) included in the constraint set, and (iv) able to help explain the effect of the decision context in the allocation of the decision maker's cognitive resources (van Osselaer and Janiszewski, 2012; Marley and Swait, 2017). Therefore, goals serve as reference points for consumers and direct the selection of means to their attainment—meaning that forming personal goals related to food waste will direct the means used by consumers to reduce waste (Lagerkvist et al., 2015). Research to develop and test behavioral nudges that target such goal-setting as well as the selection of “means to an end” is therefore needed. There are also reasons to expect that goal-setting relates to the affective and emotional post-purchase experiences. Hence, whether consumers are satisfied with their choice of a particular food product has to do with whether one or more goals can be attained (Lagerkvist et al., 2017). Future research on food waste behaviors using a goal-based approach can therefore contribute to a better understanding of consumer food waste behavior. Decision making can be difficult due to time or money limitations or due to too many food products being available. Personal goals can therefore help direct consumers to make choices in the presence of scarce resources, such as money or time (Dellaert et al., 2018).

In summary, we posit that a combination of cognitive and behavioral nudges should be tested in food-waste reduction campaigns that aim to encourage consumers to become more aware of the extent and consequences of food waste and how some behavioral changes, such as accepting food with cosmetic imperfections, can contribute to reducing food waste. This information will help retailers tailor actions to support consumers to consider or buy fruits and vegetables with cosmetic imperfections, thereby reducing food waste. Advertising imperfect or blemished fresh fruits and vegetables as safe and as something that should not be discarded could also work as goal priming that could potentially shift consumer motivation (Aschemann-Witzel, 2016). The hope is that by finding ways to encourage consumers to purchase fresh fruits and vegetables with cosmetic imperfections, food waste at the retail level can be significantly reduced.

For More Information

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Author Information

Laura Andreea Bolos (laura.andreea.bolos@slu.se) is PhD candidate, Department of Economics, Swedish University of Agricultural Sciences, Uppsala, Sweden.

Carl Johan Lagerkvist (carl-johan.lagerkvist@slu.se) is Professor in Business Economics, Department of Economics, Swedish University of Agricultural Sciences, Uppsala, Sweden.

Rodolfo M. Nayga, Jr. (rnayga@uark.edu) is Distinguished Professor and Tyson Chair in Food Policy Economics, Department of Agricultural Economics and Agribusiness, University of Arkansas, Fayetteville, AR.

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