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Review

Exploring Food Waste from a Segmentation and Intervention Perspective—What Design Cues Matter? A Narrative Review

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Abstract: Food waste is a global challenge and fits within the remit of the United Nations Sustainable Development Goal 12; hence, strategies to promote engagement, especially at an individual level, are key to maximise societal benefits. Accordingly, it is important to understand the relevant design cues from a segmentation and intervention viewpoint for food waste. This review aims to explore (i) common characteristics associated with food waste segmentation and (ii) delivery formats typically utilised in food waste interventions. Overall, it was apparent that food waste encompasses a broad term *per se*, resulting in varying quantification approaches, which subsequently contribute to heterogenicity of the findings. However, key themes emerged, such as gender, age, food waste level, motivation, engagement and environment as common components from the food waste segmentation. Visual (text, infographic, booklets), audio/oral (videos, door stepping, coaching), interactive (recipe, community engagement, diary/notepad) and touch (magnet, bins, stickers) were the dominant delivery formats used in food waste interventions; suggesting that a combination of senses is required to successfully promote engagement and behavioural effects. Going forwards, more consistency in measuring food waste is needed to enable comparison (within and between countries), coupled with the consideration of design cues, so that toolkits can be developed to meet the needs of differing consumer segments.

Keywords: food waste; segmentation; intervention; household; communication; consumer behaviour

1. Introduction

Sustainability incorporating economic, social and environmental aspects is a key global goal identified by the United Nations, with an emphasis on the needs of current and future generations [1]. More specifically, Sustainable Development Goal 12 "*responsible consumption and production*" identified food waste as a fundamental and urgent challenge to be addressed [2]. This is a worldwide problem, with approximately 931 million tons of food waste generated per annum [2]. In the UK, it is evident that the majority of food waste occurs in a household context (60%: household; 15%: on-farm; 13%: manufacturing; 10%: hospitality/food service; and 2%: retail (data reported by weight)) [3]. For example, the implications are noteworthy from an economic perspective, as food waste is valued at appropriately GBP 250 over a 12-month period per individual in the UK [3]. More broadly, the estimated total market value is EUR 132 billion at an EU level with 54% being generated from households [4]. In addition, the negative consequences of wasted food on the environment (e.g., greenhouse gases) are widespread [5]. Accordingly, embracing change at an individual level, coupled with the implementation of relevant government

policies and solutions from industry, can have notable societal impact as well as help consumers achieve a more sustainable lifestyle overall [2].

There are varying definitions and terminologies used to quantify food waste, leading to further complications [5]. This review will focus on food waste based on the definition used by the Food and Agriculture Organisation (FAO) of the United Nations [6]: "*decrease in the quantity or quality of food resulting from decisions and actions by retailers, food services and consumers*" from a household perspective.

The food waste journey, as noted by Principato et al. [7], is considered a dynamic process from planning, purchase, preparation and consumption to disposal. Therefore, it is important to understand the different barriers and drivers that can impact an individual's level of food waste in a household context, subsequently impacting behaviour at each step in order to enable the development of targeted interventions [7–10]. Overall, it is apparent that key food waste-related challenges from a household perspective are centred around a plethora of issues (such as storage, labelling, preferences, planning, awareness, skills and packaging) coupled with cost, health and environmental implications [5,7–14]. In addition, common food waste categories include vegetables, fruits, salads, meals (homemade/pre-prepared), bakery and dairy, with cited disposal reasons such as food safety (smell, not appropriate appearance), prepared too much, labelling (date on packaging) and inedible/preferences [13,15–17]. Food waste-related interventions are typically conducted in varying contexts and are perceived to have a moderate effect on consumer behaviour [18–21]. However, an emphasis on a more tailored approach capturing different consumer segments could be fundamental to encourage long-term engagement and a sustained reduction in food waste. Accordingly, this review aims to address such a research gap by breaking down the relevant components, predominantly in developed countries [6], focusing on consumer-centric articles (retrieved from Web of Science in a twenty-year timeframe: 2004–2024, adhering to pre-selected keywords such as *food waste, intervention, messaging, communication, segmentation, consumer behaviour, household, cross-cultural and Europe*) at a household level. The corresponding studies were reviewed and included based on relevance to answer defined review objectives: (1) explore food waste segmentation studies and (2) identify delivery formats used in food waste interventions in order to support future development of consumer-centric toolkits.

2. Food Waste Segmentation

Consumer segmentation is a process of identifying common characteristics shared by a sub-group so that a more tailored experience and/or practical application is possible [22]. This approach has been applied to food waste, and examples of such studies are outlined in Table 1 [23–51]. It is evident that most studies have utilised surveys to quantify consumers' food waste behaviour; hence, as has previously been noted in the literature, this can be associated with potential bias and mismatch with actual behaviour [24,27,31,37,43,49,51,52]. Recently, a few studies have tried to address such a limitation by supplementing survey data with additional data (e.g., interventions, bin audit waste and/or purchase data) to validate segmentations [27,41,42,48]. However, such analyses have only included a sub-set, not linked with segmentation or more retailer-focused approaches [27,41,42]. This suggests that future research should focus on tracking actual behaviour using repeated measures approaches (e.g., over time) in ecological settings to cluster consumers based on common food waste characteristics in order to help successfully implement positive behaviours.

Table 1. Examples of consumer-centric food waste segmentation studies.

Sample Description	Food Waste Measures	Segmentation
n = 530—Italy [23]	Food waste behaviour and psychological variables	Three segments: (1) proactive; (2) discouraged; and (3) self-indulgent
n = 848—Denmark [24]	Food waste-related lifestyle dimensions	Five segments: (1) cooking involved and spontaneous; (2) price versus quality-oriented and disliking cooking; (3) very involved and cooking engaged; (4) good food-involved and price-dismissive; and (5) least concerned, normative and social
n = 4214—Denmark, Germany, Norway, Sweden & Netherlands [25]	Food waste-related lifestyle patterns and self-reported food waste	Five segments: (1) uninvolved young male waster; (2) convenience/price-oriented low income; (3) well-planning cook/frugal food avoider; (4) young foodie; and (5) established
n = 1115—Poland [26]	Food preparation, buying, frequency, package, storage and discarding	Three segments: (1) saving food; (2) wasting vegetables and fruit; and (3) wasting food
n = 2803—Australia * [27]	Food waste behaviours (planning, shopping, storage, preparation, reason for non-eaten food, motivation, effort and acquisition)	Three segments: (1) over providers; (2) under planners; and (3) considerate planners
n = 150—Turkey [28]	Food waste-related practices, attitudes, preferences and self-reported food waste	Four segments: (1) conservers; (2) considerates; (3) reluctants; and (4) prodigals
n = 681—Switzerland [29]	Planning shopping, price/discount driven, thrift, food stock overview, leftover usage, environment impact, awareness and good providers identity	Six segments: (1) conservative; (2) self-indulgent; (3) short-termist; (4) indifferent; (5) consumerist; and (6) eco-responsible
n = 213—Italy [30]	Spending/consumption habits, food waste and awareness	Three segments: (1) non-aware; (2) unaware but not wasteful; and (3) conscious
n = 1001—Lithuania [31]	Food waste-related behaviours, attitudes and knowledge of date labelling	Two segments: (1) low food wasters; and (2) high food wasters
n = 2062—Ireland [32]	Ethical, environmental, purchasing behaviour, food preparation and expiry dates	Two segments: (1) uncaring and (2) caring
n = 817—Switzerland [33]	Food choice behaviour, food consumption frequency, food waste management, sharing behaviour and descriptive variables	Six segments: (1) meat and fish eaters; (2) origin-focused food savers; (3) ambiguous; (4) food waste reducing sharers; (5) renouncement aversives; and (6) consequent pro-environmental
n = 3087—Italy [34]	Eating, shopping and storage behaviours	Seven segments: (1) conscious–fussy; (2) conscious–forgetful type; (3) exaggerating cook; (4) frugal consumer; (5) unskilled cook; (6) confused type; and (7) exaggerated shopper
n = 1002—Hungry [35]	Pro-environmental/gardening attitude, food discard frequency, property type and composting practice	Four segments: (1) average composters; (2) uninterested urban citizens; (3) helpless apartment residents; and (4) active environmentalists

Table 1. *Cont.*

Sample Description	Food Waste Measures	Segmentation
n = 301—Italy [36]	Food waste aversion	Five segments: (1) frugal believers; (2) frugal seculars; (3) conscientious individuals; (4) casual females; and (5) casual males
n = 1086—USA [37]	Household food waste (amount/type), food purchasing, storage, management and preparation skills	Four segments: (1) conscientious conservers; (2) harried profligates; (3) unrepentant drink wasters; and (4) guilty carb wasters
n = 928—UK [38]	Food waste behaviour and lifestyle factors	Five segments: (1) epicures; (2) traditional consumers; (3) casual consumers; (4) food detached consumers; and (5) kitchen evaders.
n = 369—Poland [39]	Food waste intention	Three segments: (1) control-conscious young men from urban areas; (2) positive attitude young women from urban areas; and (3) planning seeking young women from rural areas
n = 3000—Italy & Netherlands [40]	Food waste-related behaviours	Four/five segments: (1) weakly adapting/unconcerned; (2) moderately adapting/unconcerned; (3) moderately adapting/concerned (Italy only); (4) strongly adapting/concerned; and (5) non-adapting/unconcerned (Netherlands only)
n = 165—Europe * [41]	Food waste levels, intentions and behaviours	Three segments: (1) traditional; (2) time-constrained; and (3) convenience lovers
n = 12187—Finland * [42]	Food waste emergence	Six segments: (1) no food waste; (2) trust in date labels; (3) safety first; (4) occasional wasters; (5) over purchasers/overprepares; and (6) family first
n = 939—Australia [43]	Food waste generation and sorting behaviour	Three segments: (1) warriors; (2) strugglers; and (3) slackers
n = 438—Denmark [44]	Food choice motives	Four segments: (1) familiarity sensitive; (2) unconcerned; (3) food for health/mood; and (4) unfamiliar
n = 944—Australia [45]	Food waste behaviour and food quality aspects	Four segments: (1) self-centred; (2) uninvolved; (3) concerned; and (4) passionate
n = 2541—Romanian [46]	Food waste habits and information	Three segments: (1) careless; (2) precautious; and (3) ignorant
n = 1023—Germany [47]	Emotions, environment/ethic, purchase behaviour, handling food, expiration dates and household food waste	Three segments: (1) guilty food wasters; (2) unwitting food wasters; and (3) careless food wasters
n = 456 *—Italy [48]	Food waste behaviour and intentions	Three segments: (1) virtuous; (2) moderate; and (3) waster
n = 376–Portugal [49]	Food waste levels, knowledge, behaviours and motivations	Four segments: (1) impulsive waster; (2) planner; (3) young waster; and (4) fan of leftovers

Table 1. *Cont.*

Sample Description	Food Waste Measures	Segmentation
n = 2205—Greece [50]	Food waste awareness, behaviour and practices	Seven segments: (1) 20s–40s—food waste fighters; (2) 20–40s—food wasters; (3) unaware consumers—food wasters; (4) total food wasters fighters; (5) typical young female food wasters; (6) aware consumers—food waste fighters; and (7) typical young male food wasters
n = 983—Italy [51]	Food waste (frequency/quantity), drivers, effects, factors and shopping habits	Three segments: (1) pragmatic consumers; (2) thrifty altruists; and (3) aware wasters

* denotes studies that used more than a survey to quantify food waste and validate segments (e.g., interventions, bin audit waste and/or purchase data).

In addition, studies have used varying sample sizes (n = 150 to 12,187) in different countries (USA: n = 1; Australia: n = 4; and Europe: n = 28), resulting in findings that could only be considered representative for the specific studies and/or country rather than globally relevant. Moreover, food waste challenges are present regardless of age for households; therefore, studies need to adopt balanced design for age and use a life-course approach. Studies have also used different numbers of segments with varying proportions within each cluster; thereby impacting the findings' potential representativeness. Studies have also utilised different food waste-related measures (e.g., behaviours, generations, lifestyles, levels, intentions, emergence, awareness, practices, drivers, attitudes, knowledge, motivations, etc.) to determine such segments and used their own terminology to describe such sub-groups; thus, comparisons between studies can be considered challenging. Despite the varying approaches and inconsistencies in naming segments, it is essential to map any commonalities from the various studies. For example, the following key trends have been identified across the literature:

(1) **Gender:** this was a common segmentation characteristic reported in various studies, such as female (e.g., *proactive, young foodie, carrying, average composters, active environmentalists, causal, 20–40s food waste fighters, 20–40s food wasters, typical, considerates, reluctants, positive attitude, planning, young waster, leftover fan, planner, impulsive waster, aware wasters, thrifty altruists*, etc.) and male (e.g., *discouraged, self-indulgent, uninvolved, indifferent, uncaring, typical, control-conscious*, etc.) [23,25,28,29,32,35,36,39,42,45,49–51]. Additional demographics (e.g., income, education, children, city vs. rural, etc.) have also been used in consumer food waste segmentation; however, such variables are associated with considerable variability between studies due to cross-cultural and country differences (hence not the focus of our review). Overall, it could be suggested that based on the resulting segmentations, females may display more conscious food waste behaviour than males.

(2) **Age:** it was a challenge to group consumers, as studies typically used different age-criteria and unbalanced age-related designs. More specifically, trends related to younger (e.g., *young waster/foodie, unaware, concerned, uninvolved, uncaring, food waste reducing sharing, causal females, control conscious, positive attitude, planning seeking, aware, pragmatic, convenience lovers, 20-40s food wasters/food waste fighters*, etc.) and older (e.g., *established, proactive, well-planning cook/frugal food avoider, no food waste, considerate planners, caring, helpless apartment residents, active environmentalists, traditionalists, total food waste fighters, thrifty altruists*, etc.) segments [23,25,27,32,33,35,36,39,41,42,45,49–51]. Based on such findings, older consumers could be more resourceful in terms of food waste approaches, potentially driven by experience gained over time.

(3) **Food waste level:** consumers can be grouped as lower (e.g., *proactive, considerate planners, frugal consumers/believers, uninterested urban citizens, conscientious conservers, unrepresented drink wasters, conservers, epicures, pragmatic, slackers, warriors, no food waste, planner*, etc.) or higher (e.g., *discouraged, self-indulgent, over providers, conscious fussy type, average composters, harried profligates, guilty carb wasters, prodigals, causal consumers, strugglers, uninvolved, impulsive buyer*, etc.) food wasters [23,27,28,31,33–38,42,43,45,48,49,51]. Similarly, this was also difficult to group due to the various parameters used to qualify waste levels. Overall, this suggests that a proactive consumer (e.g., regularly plans and conscious) is more likely to have lower food waste levels.

(4) **Motivation:** studies used different measures to understand perceived intention to change and/or concern levels. However, consumers could be grouped as having lower (e.g., *under planners, non-aware consumers, uncaring, convenience lovers, self-centred, uninvolved, careless, ignorant, unconcerned, reluctants, wasters, impulsive wasters*, etc.) or higher (e.g., *proactive, conscious, caring, frugal believers, traditional, concerned, precautious, involved, prodigals, considerates, virtuous*, etc.) motivation [23,24,27,28,30,32,35,36,41,45–49]. This suggests different interventions will be needed and tailored depending on the particular segment's perceived level of motivation, interest and/or willingness to successfully modulate future behaviour.

(5) **Engagement:** it was evident that some segments also noted consumers' engagement levels in food waste practices such as no (e.g., *short-termist, impulse buying, un-*

caring, conscious-forgetful type, convenience lovers, unaware consumers, waster, exaggerated cook, price-oriented, unconcerned, uninvolved, convenience, prodigals, etc.) or yes (e.g., *well-planning cook/frugal food avoider, caring, traditionals, warriors, total food waste fighters, spontaneous, involved, young foodie, conservers, food waste reducing sharer, virtuous, planner leftovers*, etc.) [24,25,28,29,32,34,41,43,48–50]. Consumers that regularly engage in planning (e.g., shopping lists, plan meals) were considered more organised and therefore more likely to demonstrate lower food waste levels.

(6) **Environment:** there was a trend demostratingthat segments had an environmental aspect (e.g., *eco-responsible, conscious consumers, consequent pro-environmental consumers, average composters, helpless apartment residents, active environmentalists, traditionalists, warriors, concerned*, etc.) [29,30,33,35,41,43,45]. Accordingly, such consumers were considered to be actively trying to minimise food waste due to environmental drivers.

In summary, despite the noted variability in the segmentation approach and/or terminology, there are overlapping trends (such as gender, age, food waste level, motivation, engagement and environment). However, future research would benefit from using validated measures to enable comparisons within and between countries as well as capturing relevant infrastructure differences. This would enable a more critical analysis of which food waste quantification measures are needed so as to better understand consumer-centric driven segmentation and how this subsequently modulates behaviour in a variety of contexts.

3. Food Waste Intervention Delivery Formats

Interventions play a fundamental role in establishing which delivery formats can modulate consumers' food waste behaviour [53]. Accordingly, it is important to understand the various approaches and food waste-related topics utilised as well as recognise key challenges to help inform future work and maximise impact. In this context, our sensory cues (e.g., five key senses: sight, hearing, taste, smell and touch) play a key role in how we perceive and engage with information [54]. Table 2 summarises different food waste intervention-related studies, focusing on the delivery content, format and rationale [48,55–74]. Similar to the food waste segmentation, the reviewed interventions represented a broad range of topics (e.g., awareness, reduction, disposal (separation, recycling), context (environment, taste, emotion, economic), education and societal) and used different intervention-driven study types (such as information strategies, message framing, randomised controlled trials and longitudinal field experiments). The latter also resulted in the variable sample sizes (from n = 40 to n = 33,716) as studies focused on individuals, households and/or areas within a specific location. It should be noted that the unbalanced design, variable study length (short vs long term), small sample size or lack of a control group may also contribute to the heterogenicity of the findings. There was also an "international" flavour, where half of the studies were conducted in American-based countries (Brazil, Canada, USA); hence, individual values and infrastructure differences may impact corresponding study findings as well as the application of intervention outcomes to other countries [75]. Therefore, it is important to understand design cues from a delivery format perspective to successfully modulate consumers' food waste behaviour. This is especially relevant since food waste studies are associated with variability; therefore, mapping the similarities and differences of delivery formats from interventions can enable a toolkit of resources to be developed in the future.
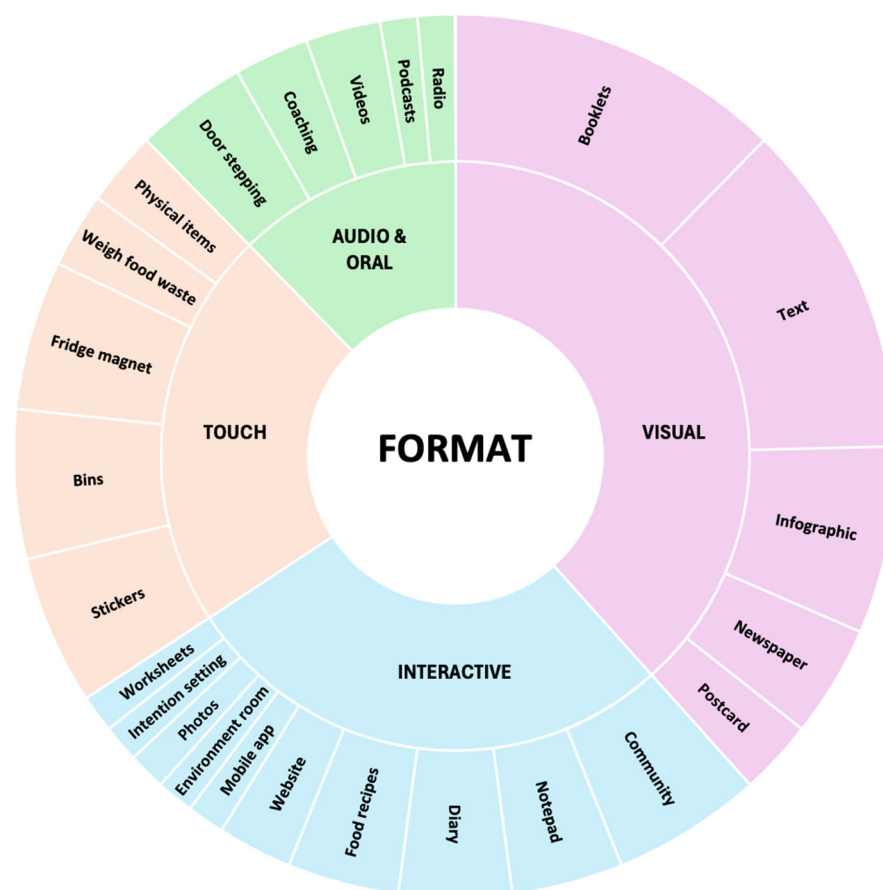
Figure 1. Overview of different food waste delivery formats commonly used in intervention-driven studies.

Table 2. Examples of food waste intervention studies by delivery content, format and rationale.

Summary	Content	Format *	Rationale
Door-stepping campaign—information strategies (food waste separation behaviour) [a] [55]	Waste separation and recycling	Visual and oral	Biogas production was introduced in the area
Effectiveness of messaging (food waste behaviour intentions) [a] [56]	Environment, taste and cost-based food waste messaging	Visual	Gap in the literature
Five-week randomised control trial (RCT)—self-reported food waste [b] [57]	Bonus meal—use up day	Visual, interactive and touch	Focus on recovery behaviours
Longitudinal field experiment—effectiveness of new curb-side collection and social innovations [b] [58]	Stimulate environmental changes	Visual, audio, interactive and touch	Experiments were designed based on implementation of curb-side collection
Coaching: face-to-face (F2F) vs online (avoidable food waste) [a] [59]	Improving awareness	Visual, interactive, oral and touch	Awareness and self-reflection to improve compliance
Best messaging strategies for tackling household waste (three studies) [b] [60]	Quick prompts, food waste consequences and combined messages	Visual	Aimed to test real-life situations
Three interventions focusing on food waste reduction: (1) information; (2) awareness; and (3) dissonance [a] [61]	Interventions for reducing food waste	Visual, interactive, oral and touch	Overcome self-reported concerns and behavioural focus

Table 2. *Cont.*

Summary	Content	Format *	Rationale
Measuring food waste via three groups: (1) control; (2) purchase planning; and (3) cooking planning [b] [62]	Food waste awareness via tips and reminders	Visual, interactive and touch	Role of measurement and modulating food waste over time
Measure/monitor food waste via four objectives: (1) weight-based monitoring; (2) data profiling; (3) measuring campaign activities; and (4) surveys/focus groups [a] [63]	Waste prevention	Visual, interactive, oral and touch	Inform next steps, raise awareness, guidance and opportunities for local involvement
Individually tailored pro-environmental behavioural interventions (RCT) focusing on food waste reduction in normal living conditions [b] [64]	Food waste reduction	Visual, interactive and oral	Evaluates in-home food waste reduction interventions
Education intervention (field experiment) improving perceived meal-planning skills [a] [48]	Tips and advantages of weekly menus	Visual and interactive	Positive focus and easy to implement
Source separation scheme: (1) short distance to drop-off point and (2) easy access to correct sorting information [a] [65]	Disposal focus (sorting)	Visual, interactive, oral and touch	Convenience and relevant information
Intervention strategy: (1) action knowledge; (2) public commitment; and (3) goal-setting technique [a] [66]	Improve performance of food waste behaviours	Visual and interactive	Improving performance of relevant food waste preventing behaviours
Three studies: positive emotion in messaging to promote change [b] [67]	Emotion, framing and food waste	Visual	Pilot study for establishing gratitude types
Two interventions with three groups (control, treatment: cost and environment) [a] [68]	Avoidable food waste—economic, cost and environmental impact	Visual	Build on existing recycling patterns
Effectiveness of stickers as visual prompts to encourage separation collection of household food waste [a] [69]	Waste separation	Touch	Encourage and remind consumers
Save more than food campaign (treatment vs. control) [b] [70]	Strategies for food waste reduction	Visual and touch	Recently launched food waste campaign
Food waste reduction via three interventions: (1) passive approach; (2) community-engagement; and (3) gamification [b] [71]	Educational campaigns	Visual, audio, interactive and touch	Raise awareness and change behaviour
Effectiveness of intervention—curb-side garbage [b] [72]	Encourage behaviour control to reduce food waste and save money	Visual, interactive and touch	Less research on changes in curb-side food waste disposal
Two interventions testing effectiveness: tool package + motivational message vs. tool package [a] [73]	Food waste reduction tool packages and motivation (social norms)	Visual, interactive and touch	Studies typically do not compare intervention types
Educational approach and role in food waste [b] [74]	Food waste generation	Visual, audio and interactive	Increase awareness to overcome lack of knowledge

Superscript relates to study location: [a]—Europe-based (Sweden, UK, Germany, France, Italy) and [b]—American-based (USA, Canada, Brazil); * format examples are outlined in Figure 1.

The delivery formats from the studies outlined in Table 2 were collated, and four key overriding delivery formats emerged (visual, audio/oral, interactive and touch), as summarised in Figure 1. For example, **<u>visual</u>** (sight driven) was mainly either text driven by ex-

plaining relevant information or combining text and images to convey its message [48,55–66,68,70–74]. **<u>Audio</u>** (information received by ear or hearing) incorporated radio, podcasts and videos, with the latter having a notable overlap with visual [58,71,74]. **<u>Oral</u>** (spoken via face-to-face contact) included door stepping and coaching [55,59,63–65]. **<u>Interactive</u>** (a task to complete or interaction with others) denoted a range of activities from recipes to apps [48,57–59,61–66,71–74]. **<u>Touch</u>** (tactical sensation) was similar to interactive; however, it included a more physical presence (e.g., bins, magnets, stickers, scales) [57,58,61–63,65,69–73]. Overall, it was apparent that most studies used a combination of senses per se in terms of delivery formats, whereas message framing approaches tended to focus more on visual formats. The effect of the intervention on modulating food waste intentions, interests, awareness, disposal and levels was relatively positive; however, the extent varied depending on the measured outcomes.

This suggests more consistency in methodology in terms of food waste quantification, topics, timeframes (short term vs long term), user involvement and the number of contact points as such factors can play a fundamental role in whether an intervention was successful. Such challenges have also been present in other reviews as well as in identifying key areas of interest (e.g., environment, cost, lack of awareness, labelling, packaging, improved dissemination, etc.) to modulate household food waste levels in the future [76]. In addition, it was evident from the delivery rationale (Table 2) that co-design elements were not typically considered in material development; therefore, this could be a key area to focus on in the future for toolkit creation to maximise impact.

4. Conclusions

This review demonstrated the importance of considering design components in order to maximise food waste-related engagement at an individual and household level. Broadly speaking, the lack of consistency, especially in terms of food waste quantification, poses a noteworthy challenge. Accordingly, overcoming this barrier would enable a more streamlined approach within and between countries as well as an understanding of the effect of country-specific infrastructure from a worldwide perspective. Food waste segmentation would also benefit from a more unified approach in terms of terminology (e.g., how researchers decided on naming a particular segment). It is likely that key characteristics of segments include gender, age, food waste level, motivation, engagement and environmental differences; such drivers need to inform subsequent design to maximise uptake. In addition, mapping the different delivery formats used to communicate information in interventions provided useful insights. This highlighted four overriding formats: visual, audio/oral, interactive and touch, with varying levels of overlap; therefore, involving a combination of different senses is fundamental to effectively communicate food waste-related information. Next steps should focus on employing co-design approaches to develop toolkits targeted at different consumer segments, with varying delivery formats, in order to overcome the one-size-fits-all model typically used with such resources. It is important that such resources are tested in ecologically valid settings and over varying timeframes so that uptake and impact can be captured appropriately. Overall, there is a need for a collective effort (such as from academics, government, food companies and supermarkets) to help drive a sustained shift in reducing food waste levels.

Author Contributions: Conceptualization, V.N., S.L., O.O.O., G.V., P.A.A. and N.A; writing—original draft preparation, V.N.; writing—review and editing, V.N., S.L., O.O.O., G.V., P.A.A. and N.A; visualization, V.N., S.L. and N.A.; supervision, S.L. and N.A. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: No new data were created in this review; therefore, data sharing is not relevant.

Conflicts of Interest: The authors declare no conflicts of interest.

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