



Discounted suboptimal food: Consumer purchase and post purchase behaviour in Sweden

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Degree project • 30 credits
Swedish University of Agricultural Sciences, SLU
Faculty of Natural Resources and Agricultural Sciences
MSc Sustainable food systems
Molecular sciences, 2026:18
Uppsala, 2026



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Credits:	30 credits
Level:	Second cycle, A2E
Course title:	Master thesis in Food science
Course code:	EX0875
Programme/education:	The Master's Programme Sustainable Food Systems
Course coordinating dept:	Department of Molecular Sciences
Place of publication:	Uppsala
Year of publication:	2026
Title of series:	Molecular Sciences
Part number:	2026:18
Keywords:	Discounted suboptimal food, food waste, consumer behaviour, food retail, post-purchase behaviour, household food management

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Abstract

In the retail sector, discounting suboptimal food products that remain safe for consumption poses a potential strategy for reducing food waste. However, the effectiveness of this strategy can only be measured together with the outcome after purchase. This study examined consumer purchase and post-purchase behaviour related to discounted suboptimal food (DSF) in Sweden with particular attention to purchase motivations, planning, sociodemographic characteristics and subsequent household outcomes. A two-stage quantitative survey design was used to follow specific DSF products from purchase to post-purchase handling. Participants were recruited from several COOP stores in Stockholm, Uppsala and Scania County, with 123 respondents completing the initial and 94 participating in the follow-up survey six days later. Price (91%) was the most prominent purchase motivation, followed by perceived product safety (82.9%) and concern that the product might otherwise be discarded. DSF purchases in this study consisted of both planned and initially unplanned purchases, while many respondents with initially unplanned purchases subsequently developed a plan for usage of the product. Limited evidence was found of systematic differences in purchasing behaviour across sociodemographic groups or the main product categories, and the principal purchase motivations were not significantly associated with purchase planning. Post-purchase outcomes were generally positive: most followed products were reported consumed (89.4%), disposal rate was very low (3.2%) and satisfaction with the DSF purchase was high (96.7%). The findings indicated that DSF showed high post-purchase effectiveness among the products examined, when effectiveness is understood as purchased DSF being consumed rather than wasted. The study highlights the importance of evaluating retail food-waste-prevention strategies beyond the point of sale by considering the subsequent household outcome of discounted products.

Keywords: Discounted suboptimal food, food waste, consumer behaviour, food retail, post-purchase behaviour, household food management

Acknowledgement

I want to express my sincere gratitude to the people who have contributed, supported and guided me during this master's thesis journey.

First, I would like to express my deepest gratitude towards Dr. Nicklas Neuman for giving me the opportunity to become a part of this project. I am especially grateful that a former teacher has continued to be an academic mentor during the later stages of my studies. Your support is highly valuable to me both in this thesis and my continued academic journey.

A special thank you goes to Rosa Hellman for the extensive work that laid the foundation for the data collection used in this thesis. I am particularly grateful for your work in developing and setting up the questionnaire, recruitment materials, and data-collection process that made this study possible. Thank you for generously allowing me to build upon this work and for sharing your knowledge and experience throughout the process.

I would also like to express my sincere gratitude to my supervisor Dr. Sara Spendrup for her dedication, patience, attention to details and continuous involvement throughout this thesis process. Your thoughtful guidance, constructive feedback, and encouraging approach have been invaluable in developing this thesis. Thank you for your commitment and for continuously motivating me throughout this journey!

I would also like to thank my partner, Tim Granér Hellqvist, for the constant support, encouraging words, and much-needed cheers throughout this period!

Finally, I would like to thank all participating stores and, especially, all respondents who took the time to participate in the study. Your contributions provided the information on which this thesis is built.

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Abbreviations

Abbreviation	Description
DSF	Discounted Suboptimal Foods
FAO	Food and Agriculture Organization
FCPM	Food Choice Process Model
FLW	Food loss and Waste

1. Introduction

The introduction begins by outlining the scale and consequences of food waste globally before narrowing the focus to the Swedish context and the role of food retail. This progression establishes the context for understanding the emergence of discounted suboptimal food (DSF) as a retail-level food-waste-prevention strategy. The chapter then presents the study aim and research questions, followed by the significance of the study, its relation to the broader Follow the Food project, and its scope and delimitations.

1.1 Overview of food waste problem: Global and Swedish context

Food waste represents a substantial sustainability challenge since food that is produced but not consumed entails unnecessary use of economic and natural resources while also generating negative environmental and social consequences. The scale and causes of food waste vary across different stages of the food system and geographical contexts.

1.1.1 Global food waste

Food loss and waste (FLW) remain a major global challenge. According to estimates by the World Wildlife Fund, approximately 2.5 billion tons of food go uneaten worldwide each year (WWF, 2024). The issue is closely connected to several of the United Nations Sustainable Development Goals (SDGs), reflecting the importance of reducing FLW for improving food security, nutrition and environmental sustainability (Valentini et al., 2019). Addressing food waste therefore requires interventions from both public and private actors across the food system (FAO, 2019).

The economic consequences of FLW are substantial. Approximately USD 1 trillion worth of food is wasted globally each year, while around 14% of food produced is lost between post-harvest stages and the retail level (FAO, 2019; Principato et al., 2020). In addition to the direct economic value of wasted food, FLW generates broader social costs. FAO (2013) estimated these costs at approximately USD 900 billion, reflecting consequences including food insecurity, undernutrition and associated effects on human health and well-being. When economic, social, and environmental impacts are considered together, the estimated cost of FLW reached approximately USD 2.6 trillion in 2014 (Principato et al., 2020).

These losses are particularly significant in relation to global food security. Principato et al. (2020) report that approximately 821 million people were

undernourished in 2017. At the same time, the approximately 222 million tonnes of food wasted annually in high-income countries has been estimated to correspond to the total food production of Sub-Saharan Africa (Valentini et al., 2019). Although reducing food waste alone cannot resolve food insecurity, these figures illustrate the broader social and ethical implications of producing food that is ultimately not consumed.

Food waste also creates considerable environmental pressures because resources used throughout food production are lost when food is discarded. Approximately 8% of global greenhouse gas emissions are associated with food waste, while around 30% of the world's arable land is used to produce food that is ultimately wasted (Principato et al., 2020; Valentini et al., 2019). Food waste additionally contributes to biodiversity loss, eutrophication, soil degradation, and acidification (Brancoli et al., 2017; Thakur, 2024). More than 20% of the pressure on global biodiversity has been associated with food wastage (Thakur, 2024).

Reducing food waste is therefore recognised as an important component of efforts to create more sustainable food systems (FAO, 2015). However, where waste occurs and the factors contributing to it differ across food-system stages and national contexts. Understanding the Swedish context is consequently necessary for identifying where food-waste-reduction interventions may be particularly relevant to the present study.

1.1.2 Food waste in Sweden

A report by the Swedish Food Agency and Origo Group (2025) concluded that the individual waste in Sweden has decreased between 2018 and 2024. Despite this positive trend, the average Swede continues to discard approximately 34 kg of food waste each year, generating significant economic and environmental costs. Positive trends have also emerged, indicating that more people rely on their senses to assess food freshness and maintain safer refrigerator temperatures. Despite this progress, the category of fruits and vegetables continues to be the most frequently discarded items. The common reasons observed for this behaviour were related to concerns about food safety and perceived lack of freshness. The report further explains that while rising food prices have encouraged better household food waste management, additional joint effort across the food chain is required to reach sustainability goals. It was also revealed that targeted education for younger adults together with increased cooperation from retailers and restaurants is necessary for continued improvements.

While households remain a major source of food waste, the role of retailers is also significant, both as a source of waste and as an actor capable of influencing waste reduction across the food chain. According to The Swedish Environmental Protection Agency (2024), approximately 1.4 million tonnes of food waste were generated in Sweden in 2022 when food and drink disposed of through household

wastewater are included. Food retail stores accounted for approximately 89,000 tons of food waste in 2022, compared with approximately 100,000 tons in 2018 (Naturvårdsverket, 2024). According to this source, food waste in retail primarily arises from products approaching the best-before or use-by dates, deterioration in quality (e.g. damaged or spoiled fresh produce), over-ordering, demand forecasting errors (e.g. weather-dependent promotions), substandard deliveries and damaged packaging. In some cases, unsold products nearing expiration are sold to wholesalers or producers where the waste is subsequently managed (Andersson and Stålhandske, 2020; Hultén, 2024). The product category also appears relevant to the composition of retail food waste. As shown in Figure 1, fruit and vegetables accounted for the largest share of food waste in 2022 at retail level, representing 34% of the total volume. Dairy products (17%) and bread (14%) were also major contributors, while fresh fish and groceries/spices accounted for only a small proportion of the total food waste at retail level (Naturvårdsverket, 2024).

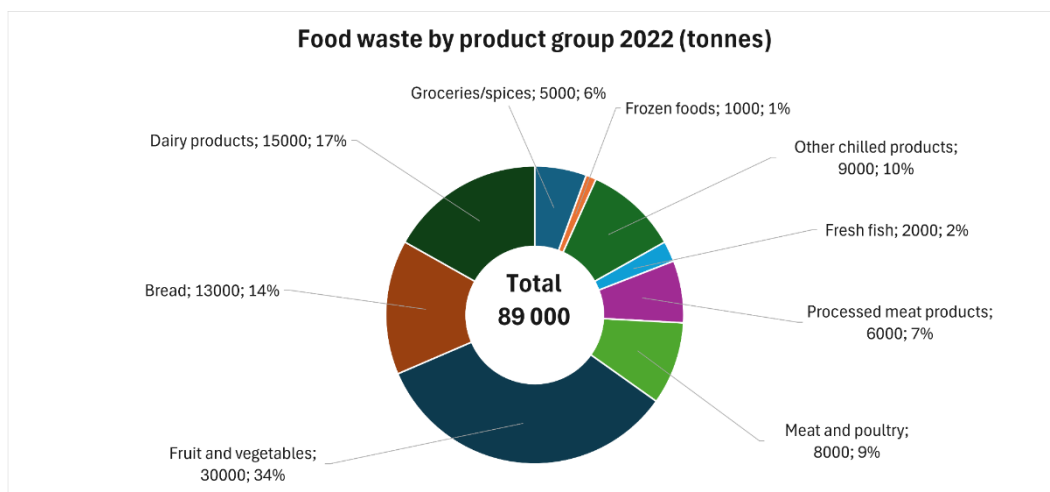


Figure 1. The proportion of food categories that are thrown away at retail level in Sweden 2022. Adapted from *Matavfall i Sverige*, by the Swedish Environmental Protection Agency (2022), p. 20

Figure 1. shows that grocery stores primarily throw away fresh produce such as fruit and vegetables by 34%, followed by dairy products 17% and bread 15%. Since some bread and other products are taken back by producers, these categories may be underestimated (Hultén et al. 2024).

Establishing a clear definition of suboptimal food is necessary for distinguishing products that are still suitable for consumption from those that have already become food waste, which in turn enables the analysis of how such products are managed at the retail level and subsequently handled by consumers. Section 1.2. dives deeper into the different definitions of the DSF.

1.1.3 Discounted suboptimal food (DSF) as a retail strategy

Given the variation in how suboptimal food is conceptualized in previous research, a clear definition is required to delimit the scope of the concept and ensure consistency in its use throughout this study. Szymkowiak et al. (2024) define “suboptimal food” as food products that meet safety and nutritional standards but fail to meet aesthetical, time-related or other similar market standards, making them less attractive to consumers. An important feature of this definition is that suboptimality is understood in relation to the standards and expectations against which consumers evaluate food products. Building on this perspective, Ammann et al. (2024) describe suboptimal foods in terms of deviations from conventional expectations, including visual characteristics, sensory attributes, and proximity to expiration dates. Tsalis (2020) uses the term non-compliant suboptimal foods (SOF) and has a similar definition to the previous ones mentioned. Accordingly, this thesis uses the term discounted suboptimal food (DSF) to refer to food products that remain safe and suitable for consumption but deviate from conventional retail or consumer expectations due to visual, sensory, or time-related characteristics and are consequently offered at a reduced price.

The adoption of selling food waste categorised as DSF is considered a strategy that allows retailers to prevent waste at store level which is a more resource efficient method than transporting unsold food to be processed into animal feed or biogas or to distribute at charities (Aschemann-Witzel et al., 2019; Tsalis, 2020). When DSF fulfills its purpose, and is consumed at household level, the environmental inefficiencies associated with food waste such as land use, water, and greenhouse gas emissions will be mitigated. Although DSF has raised concerns that food waste may simply be shifted from the retail to the household level, research suggests that it may instead encourage consumers to engage in proactive food-waste-prevention behaviours (Zhang et al., 2023). An additional identified positive aspect with DSF is that price-sensitive shoppers have the opportunity to get more value out of their limited budget (Tsalis, 2020). Blondin et al (2026) explains that introducing such initiatives allows consumers to save money while reducing food waste. At the same time retailers can strengthen goodwill and foster customer loyalty, which may provide a competitive advantage. In addition, findings suggest that DSF can entail revenue opportunities for retailers when priced strategically. Hall-Phillips and Shah (2017) found that food waste in retail is often experienced as a source of moral burden and discomfort among employees. Consequently, the implementation of DSF strategies may not only reduce food waste but also improve employee satisfaction, which is important for organizational success. In summary, DSF has emerged as a strategy for waste prevention in retail that evidently has plenty of environmentally, economically, and socially positive outcomes.

1.2 Aim and research question

The aim of this study is to examine consumer's purchasing and post-purchase behaviour related to discounted suboptimal food (DSF) in Sweden across multiple food categories. Specifically, the study investigates consumer's main motivations for purchasing DSF, their purchase planning and the relationship between these aspects of purchasing behaviour. The study also examines whether purchasing behaviour varies across sociodemographic characteristics and product categories. By tracking specific DSF products after purchase, the study further explores consumer's satisfaction with their purchases and whether the products are ultimately consumed or discarded. This provides insights into the effectiveness of DSF as a food-waste-prevention strategy beyond the point of sale, where effectiveness is defined as the extent to which purchased DSF products are consumed rather than wasted after purchase.

The following research questions guide the study:

RQ1: What characterises consumer's purchases of DSF in terms of product categories, purchase motivations, and purchase planning?

RQ2: How does purchasing behaviour vary across sociodemographic characteristics?

RQ3: How are purchase motivations and purchase planning related, and how do these factors vary across the main DSF product categories purchased?

RQ4: What characterises the post-purchase outcomes of DSF in terms of consumer satisfaction, household management, and product consumption or waste?

1.3 Significance of the study

The literature review conducted for this study identified several limitations in the existing research on DSF. First, previous studies have frequently focused on individual products or a limited range of categories, such as potatoes or bread rolls, making it difficult to determine whether observed consumer responses are transferable across different types of food (Aschemann-Witzel et al., 2019; Ammann et al., 2025; Szymkowiak et al., 2024; Aschemann-Witzel, 2018). Second, much of the available evidence has been generated in a limited number of geographical and cultural contexts, which restricts the applicability of existing findings to other markets and consumer groups (Zhang et al., 2023; Tsalis et al., 2024; Tsalis, 2020). Furthermore, existing research has primarily examined consumer's willingness to purchase, perceptions of, and responses to DSF at the point of purchase. Comparatively less attention has been paid to what happens to these products after purchase and within the household. This represents an

important research gap, as the waste-prevention potential of DSF depends not only on its sale at the retail level but also on whether they are ultimately consumed rather than discarded.

Recent research further demonstrates the growing interest in retailer-led interventions for reducing food waste. Blondin et al. (2026), for example, analyse 66 behaviour-change strategies available to food retailers and identify approaches such as positive communication combined with discounts on soon-to-expire products as potentially effective and feasible. Such findings demonstrate the important role retailers can play in encouraging consumers to purchase food that might otherwise be wasted. However, evaluating the success of these strategies requires consideration not only of whether consumers purchase DSF, but also of what happens to these products after purchase. If discounted products are subsequently wasted at the household level, their effectiveness as a retail waste-prevention strategy may be reduced. This creates a need for greater understanding of consumer post-purchase behaviour with DSF.

Against this background, the present study addresses identified gaps by examining consumer purchase and post-purchase behaviour related to DSF in Sweden across multiple food categories. By investigating whether DSF products are ultimately consumed or discarded after purchase, the study provides insight into the effectiveness of DSF as a food-waste prevention strategy beyond the point of sale. It further examines the main drivers of DSF purchasing and whether sociodemographic characteristics are associated with differences in purchase and post-purchase behaviour.

1.4 Study context and relation to the Follow the Food project

This thesis was conducted as part of the larger research project Follow the Food: Waste reducing retail actions; what happens when the food reaches the consumer? (Formas grant 2023-01912). The project runs from December 2023 to November 2026 and is funded by the Swedish Research Council for Sustainable Development (Formas). It is coordinated by Uppsala University and led by Dr. Nicklas Neuman. The research team also includes Dr. Jonas Bååth and Dr. Sara Spendrup, and Rosa Hellman, a PhD student at the Swedish University of Agricultural Sciences (SLU). Coop Butiker & Stormarknader AB participates as the project's non-academic partner.

The present thesis constitutes a sub-study within this larger project and focuses specifically on DSF sold in participating food retail stores in Sweden. Compared with the overall project, the scope of this thesis is narrower, concentrating on consumer purchase motivations and the post-purchase handling and outcomes of individual DSF products. Particular attention is given to whether products are consumed rather than wasted, and whether post-purchase outcomes vary across

product categories. In doing so, the thesis contributes to the broader project's objective of assessing whether retail-level food waste reduction measures remain effective after food has entered the household.

The data used in the thesis originates from the research infrastructure established by the broader project. Rosa Hellman developed the final survey questions and survey structure used for this part of the project. Within this thesis, the author contributed to additional store recruitment by contacting participating stores and facilitating the inclusion of stores and participants. The author was also responsible for implementing the recruitment material in a selection of participating stores as well as for the processing, analysis, and interpretation of the data used in this thesis. Data collection for the present study took place in Sweden between May 2025 and March 2026.

1.5 Scope and delimitations

This study focuses on discounted suboptimal food (DSF) in the Swedish retail sector. The geographical scope is limited to participating stores located in Stockholm, Uppsala, and Scania County, reflecting the scope of the project's collaboration. Furthermore, the study examines food waste at the level of individual products rather than total household food waste. The focus is on consumer short-term post-purchase behavior, including how purchased DSF products are handled and whether they are ultimately consumed or discarded. Consequently, long-term behavioural change and broader sustainability impacts at the societal level fall outside the scope of this study. Further details regarding these delimitations are provided in the methodology section.

2. Literature review

2.1 Definitions and measurement of food waste at household level

Definitions of food waste are not entirely uniform and vary according to the purpose and context of the research (Aschemann-Witzel et al., 2019). For example, the definitions applied by UNEP (2024) and the European Union (EU) include both edible and inedible parts of food within food waste (Eurostat, 2024). FAO (2013), in contrast, distinguishes between food loss, food waste, and the broader concept of food wastage. Food loss refers to a decrease in the quantity or quality of food originally intended for human consumption, primarily because of inefficiencies occurring along the food supply chain. Food waste refers to food that is suitable for human consumption but is ultimately discarded, for example because it has spoiled, exceeded its expiry date, or because of market conditions and consumer purchasing or consumption behaviours. Finally, the broader term food wastage encompasses both food loss and food waste (FAO, 2013).

Definitions used in household and consumer research may further differ due to the behaviour or outcome being examined. Zhang et al. (2023), for example, conceptualise household food waste as food intended and suitable for human consumption that is ultimately not consumed by people. Other studies operationalise household food waste through specific forms of disposal, including edible leftovers, plate waste, and unused food products (Tsalis et al., 2024). Some definitions adopt an even broader perspective. For example Aschemann-Witzel (2018), extends the concept of food waste to include over-nutrition, whereby food consumed beyond nutritional requirements is considered as a form of waste. These differences demonstrate that what is classified and measured as food waste is partly determined by the conceptual and methodological boundaries adopted in a given study.

For the purpose of the present study, food waste is defined as edible food intended for human consumption that is discarded rather than consumed. Inedible fractions, such as bones, peels, and other parts not normally intended for consumption, are therefore excluded. This delimitation is appropriate because the study examines the post-purchase handling of discounted suboptimal food (DSF), which remains suitable for human consumption at the point of purchase. The relevant outcome is consequently whether the edible DSF product is consumed or becomes household food waste after purchase. Restricting the definition to edible food waste therefore provides a definition that is consistent with the study's assessment of DSF effectiveness, where effectiveness concerns the extent to which purchased DSF is consumed rather than wasted.

In addition to differences in how food waste is defined, studies also vary considerably in how food waste is measured. These variations are important, as the chosen measurement approach can influence the amount and type of food waste recorded, thereby affecting comparisons between studies. At a broader food-system level, methodologies have been developed to quantify food loss and waste across different stages of the agri-food supply chain and to identify where inefficiencies occur (FAO, n.d.; Swinnen & Barrett, 2025). The European Commission's Joint Research Centre likewise identifies variation in food-waste measurement approaches and highlights challenges associated with differences in definitions, consumer behaviour, and gaps between research and practice (De et al., 2024).

At household level, food-waste measurement approaches can broadly be divided between self-reported and direct measurement methods (Blondin et al., 2026; Tsalis et al., 2024). Self-reported approaches rely on consumers providing information about their own food-waste behaviour, whereas direct approaches seek to quantify waste through more objective measurement. This distinction is particularly relevant because consumer's perceptions or reports of the amount of food they waste may differ from the amount of physical waste they actually generate (Tsalis et al., 2024). Consequently, estimates obtained through different measurement approaches are not necessarily directly comparable.

These methodological differences are particularly relevant to research on DSF, where the objective is not necessarily to estimate total household food waste but to determine what happens to specific food products after purchase. Previous studies have relied on self-reported measures of food waste, while research has also identified potential discrepancies between reported and actual levels of household food waste (Aschemann-Witzel et al., 2017b; Giordano et al., 2018; van Herpen et al., 2019). Consequently, the choice of measurement approach can influence conclusions regarding whether food purchased as part of a waste-prevention intervention is ultimately consumed or discarded. Approaches that follow specific food purchases over time may therefore provide a useful means of examining post-purchase outcomes at the product level.

2.2 Product category

Product categories differ in perishability and shelf life. These characteristics determine how much time consumers have to use a product after purchase and what storage or preservation it requires. Consequently, highly perishable DSF may place greater time and management demands on households than more shelf-stable DSF.

2.2.1 Perishability, shelf life, and post-purchase management

Perishability provides a particularly important connection between product category and post-purchase behaviour. Food categories differ in their vulnerability to deterioration and in the period during which they can be stored before consumption. Van Rooijen et al. (2024), for example, distinguish shelf-stable products from perishable products according to their usable shelf life.

Highly perishable categories, including fresh, fruit and vegetables, meat and dairy products, deteriorate comparatively quickly, making appropriate household storage and preservation important for maintaining their usability (Dobernig & Schanes, 2019; Martindale & Schiebel, 2017).

A shorter shelf life also limits the time available for households to incorporate a purchased product into consumption. Consequently, perishable products may require greater coordination between purchasing, storage, meal planning, preparation and consumption. Preservation practices can however extend this period. Refrigeration and freezing, for example, can extend the usability of perishable products, although these practices require consumers to actively manage food within the household (Dobernig & Schanes, 2019). Freezing is particularly relevant because it can extend the period available for consumption beyond the product's original refrigerated shelf life. However, household food management may also create challenges. Farr-Wharton et al. (2014) observe that food can become less visible or forgotten when refrigerators are crowded or poorly organised, increasing the possibility that perishable products deteriorate before they are used.

The relationship between perishability and waste is also reflected in comparisons between fresh and frozen products. Martindale and Schiebel (2017) report substantially higher waste rates for fresh foods than for frozen equivalents, although the magnitude of this difference varies across product categories. Their findings suggest that the physical form and preservation of a food product can affect the period available for consumption and, consequently, its vulnerability to household waste. Perishability should therefore not be understood solely as a product characteristic, but also in relation to the household's capacity to manage the time constraints associated with that characteristic.

Date labels further influence how consumers respond to limited shelf-life. Consumers may use expiration dates as indicators of whether a product remains suitable for consumption, particularly for categories perceived as carrying greater food-safety risks. Previous experiences of spoilage and uncertainty surrounding date labels can contribute to precautionary disposal of products such as meat, eggs and dairy products (Farr-Wharton et al., 2014; Ghinea & Ghiuta, 2019). Ghinea and Ghiuta (2019), for example, identify expiration dates as an important reported reason for household food disposal among the consumers examined in their study. Thus, the waste risk associated with perishability depends not only on physical

deterioration but also on how consumers interpret remaining shelf-life and food-safety information.

2.2.2 Product characteristics, purchasing, and waste risk

Price incentives and packaging formats may encourage consumers to purchase quantities that do not correspond to their anticipated consumption needs. Van Rooijen et al. (2024) find that consumers may accept larger quantities of perishable food in response to quantity discounts even when some subsequent waste is anticipated. Similarly, fixed package sizes can restrict consumer's ability to match the quantity purchased with household requirements (Farr-Wharton et al., 2014; van Rooijen et al., 2024). For perishable products, purchasing more than can reasonably be consumed within the available shelf-life may increase the subsequent need for planning, preservation, or changes to intended meals.

Taken together, the literature provides a conceptual explanation for why product categories may be associated with different post-purchase outcomes. Product categories differ in perishability, remaining shelf life, storage requirements, quality expectations, and perceived safety risks. For highly perishable DSF, a limited remaining shelf life may create greater time pressure because the product needs to be consumed, prepared, stored, or preserved within a comparatively short period. Appropriate planning and food-management practices, including refrigeration, freezing, and timely incorporation into meals, may help households respond to these constraints. Conversely, when the quantity purchased, available time and household food-management practices are poorly aligned, the risk of food remaining unused may increase. Product category may therefore influence DSF outcomes through the different time and management requirements associated with particular foods.

2.3 Food choice and purchase motivations of DSF

Consumer food choice is a complex process shaped by multiple individual, social, and contextual influences. The Food Choice Process Model (FCPM) developed by Furst et al. (1996) provides a conceptual framework for understanding this complexity. The model comprises three broad components: life course, influences, and the personal system. Life-course experiences shape five categories of influences on food choice: ideals, personal factors, resources, social frameworks, and the food context. These influences, in turn, inform the personal system through which food choices are made.

Within the personal system, consumers negotiate different values when making food choices. Furst et al. (1996) identify sensory perceptions, monetary considerations, convenience, health and nutrition, managing relationships, and quality as the most prominent values, while other considerations, including ethics and familiarity, may also enter the choice process. The relative importance of

these values can vary between individuals and situations, and food choices may involve either deliberate evaluation or more habitual and automatic processes.

This perspective is relevant to DSF because the choice of a discounted suboptimal product may similarly involve several considerations. A reduced price may increase the monetary attractiveness of the product, while its sensory characteristics, perceived quality and safety, convenience, and implications for food-waste prevention may also be relevant to the purchase decision. Individual and household circumstances and the retail food context may further shape how these considerations are evaluated. The Food Choice Process Model therefore provides a broad theoretical perspective for understanding DSF purchasing, while the following sections draw on DSF-specific research to examine the motivations most relevant to the present study.

2.3.1 Purchase motivations of DSF

Economic motives

Economic considerations are particularly relevant to DSF since the reduced price constitutes an explicit incentive for purchase. For consumers with limited financial resources or greater price sensitivity, discounted food can provide an opportunity to obtain greater value within an existing food budget (Tsalis, 2020; Blondin et al., 2026). Consumers may evaluate this opportunity in terms of perceived value, considering the financial utility expected from a product relative to its price (Farr-Wharton et al., 2014). In the context of DSF, a discount may therefore compensate for characteristics that otherwise reduce purchase attractiveness, such as limited remaining shelf life (Tsalis, 2020).

However, the relationship between discounts and food-waste prevention is not necessarily straightforward. Research on conventional retail promotions indicates that multi-buy offers, bulk discounts, and lower unit prices for larger packages can encourage purchases exceeding immediate household requirements (Dobernig & Schanes, 2019; Farr-Wharton et al., 2014; van Rooijen et al., 2024). This creates a distinction between perceived financial value at the point of purchase and the value ultimately obtained through consumption. A discounted purchase represents a saving only to the extent that the purchased food is subsequently used.

Nevertheless, purchasing discounted food does not necessarily correspond with greater household food waste. Tsalis et al. (2024) report an association between purchasing a larger proportion of food on discount and lower household food waste, suggesting that characteristics such as thriftiness, understood as a tendency to use resources carefully and avoid unnecessary expenditure or waste, together with food-management practices may also be relevant. Economic motives may therefore encourage DSF purchases, but their implications for waste prevention depend partly on what happens to the product after purchase.

Environmental and food-waste motives

Environmental concern and concern about food waste can provide a non-economic motivation for choosing DSF. Purchasing food that might otherwise remain unsold allows consumers to connect an individual purchasing decision with food-waste prevention. Consumers with stronger environmental commitment and conservation-oriented values have been found to display greater acceptance of suboptimal food alternatives (Aschemann-Witzel et al., 2019; Ammann et al., 2025). Awareness of food waste and pro-environmental attitudes have similarly been associated with greater acceptance of suboptimal products, including products approaching their expiration date (Aschemann-Witzel, 2018).

However, environmental concern does not necessarily translate directly into behaviour. Household food-waste research identifies an attitude-behaviour gap whereby consumers may express concern about food waste without consistently adopting corresponding waste-preventive practices (Dobernig & Schanes, 2019; Farr-Wharton et al., 2014; van Rooijen et al., 2024). Food waste may also be experienced as a practical issue involving shopping, cooking, food management, and financial resources rather than solely as an environmental concern (Romani et al., 2018). Environmental motivation should therefore be considered alongside other considerations such as price, convenience, perceived quality, and food safety.

Research also indicates that making the waste-prevention benefits of suboptimal food explicitly can influence consumer choice. Food-waste information has been found to increase selection of suboptimal produce (Ammann et al., 2025), while "zero waste" labelling can improve attitudes and willingness to buy, particularly among consumers with stronger environmental concern (Szymkowiak et al., 2024). Similarly, Zhang et al. (2023) indicate that pro-environmental framing can strengthen willingness to purchase DSF. Although communication and labelling are not examined in the present study, these findings provide contextual evidence that the perceived environmental benefit of DSF can contribute to its attractiveness.

Quality perceptions

Food choice is influenced by both the sensory characteristics of a product and consumer's expectations of its quality. Fernqvist and Ekelund (2014) distinguish between intrinsic quality attributes, such as taste, texture, and mouthfeel, and extrinsic cues, including price, brands, labels and packaging. While some intrinsic attributes can only be evaluated through consumption, extrinsic cues contribute to quality expectations before purchase. Fernqvist et al. (2024) further identify expected quality as an influence on purchase decisions, while consumer's beliefs, values, and attitudes may also shape subsequent sensory experiences.

These quality expectations are particularly relevant to suboptimal food. Products may deviate from conventional expectations through visual imperfections, unusual shapes or sizes, damaged packaging, or proximity to expiration despite remaining suitable for consumption (Tsalis, 2020). Consumers may interpret such characteristics as indicators of reduced quality, even when the product remains edible. However, different forms of suboptimality do not necessarily create equivalent concerns. In particular, products approaching their expiration date may involve greater perceived food-safety and spoilage risks than products that are suboptimal primarily due to aesthetic characteristics or packaging imperfections (Tsalis, 2020). Product characteristics may therefore affect both consumer's willingness to purchase DSF and their expectations regarding how quickly the product needs to be used.

Food safety and perceived risk

Food-safety considerations are particularly relevant to DSF since proximity to expiration and other signs of suboptimality may create uncertainty regarding freshness and safety. Consumers may balance the economic or environmental benefits of choosing DSF against the perceived risks associated with consuming a product that deviates from conventional expectations (Aschemann-Witzel, 2018; Tsalis, 2020; van Rooijen et al., 2024). Importantly, perceived risk does not necessarily correspond to objective product safety. Visual imperfections, signs of ageing, and packaging abnormalities can themselves function as cues from which consumers infer freshness, quality, or safety (Tsalis, 2020; Castagna et al., 2021; Cao & Miao, 2021).

Date labels constitute another important cue through which consumers evaluate risk. Consumers may not always distinguish between labels communicating quality and those concerning safety, potentially interpreting date information as a strict threshold for acceptability (Hall-Phillips & Shah, 2017). Reliance on expiration dates has also been observed for perishable categories such as meat, dairy products, and eggs (Farr-Wharton et al., 2014; Ghinea & Ghiuta, 2019). Remaining shelf life may therefore influence DSF choice both through the time available for consumption and through consumer's perceptions of product safety.

Trust can become particularly relevant where consumers cannot confidently evaluate product quality or safety themselves. The importance of retailer trust may vary according to the product, and the information consumers can assess before purchasing (Aschemann-Witzel et al., 2019). In the context of DSF, consumers trust that retailers follow appropriate procedures when assessing and discounting products which may provide reassurance that the products remain safe and suitable for consumption, thereby reducing perceived risk. Familiarity with markdown practices may similarly prevent a reduced price from being interpreted automatically as evidence of unacceptable product quality

(Aschemann-Witzel, 2018; Theotokis et al., 2012). Perceived risk and trust therefore provide mechanisms through which product characteristics can influence consumer's willingness to purchase DSF.

Habits

Food choices are not always the result of deliberate evaluation but can also be shaped by established habits and previous experiences. Repeated grocery-shopping behaviours can become routine and increasingly automatic, with familiar situational cues influencing decisions without extensive conscious evaluation (Zhang et al., 2023). Consequently, consumers may repeatedly choose familiar products because these choices require relatively little cognitive effort and fit established shopping and consumption routines.

Habitual decision-making can be particularly relevant to suboptimal food since these products deviate from the characteristics consumers normally expect when selecting food. Visually optimal products may be chosen automatically because they correspond to familiar expectations regarding appearance, quality, and convenience, whereas suboptimal alternatives may require consumers to reconsider these established choice patterns (Ammann et al., 2025). Szymkowiak et al. (2024) similarly suggests that consumers can rely on rapid and relatively automatic evaluations when making routine food choices, which may disadvantage products that visually deviate from conventional standards. DSF may therefore initially require a more deliberate purchase decision than products already incorporated into a consumer's usual shopping routine.

Previous experience can, however, influence how consumers subsequently evaluate suboptimal food. Past purchasing behaviour has been associated with future willingness to choose suboptimal products, suggesting that familiarity may reduce some of the uncertainty associated with subsequent purchases (Tsalis, 2020). Positive previous experiences with discounted products approaching expiration may similarly demonstrate to consumers that a reduced price does not necessarily indicate unacceptable quality, thereby supporting greater acceptance of future DSF purchases (Aschemann-Witzel, 2018). Repeated positive experiences may consequently allow DSF purchasing to become more familiar and potentially more routine over time.

Familiarity can also concern the food product itself. Consumers who regularly purchase and use a particular product are likely to have greater experience with its expected quality, preparation, storage, and consumption than with unfamiliar foods. Conversely, unfamiliarity may create uncertainty about how a product should be evaluated or used, which can complicate its incorporation into established household routines (Romani et al., 2018). Thus, familiarity with both DSF purchasing and the specific food product may influence consumer's confidence in choosing and subsequently using the product.

Habits should therefore be understood as an additional determinant on DSF choice alongside economic, environmental, quality, and safety considerations. While these factors relate to consumer's evaluation of the potential benefits and risks associated with a specific purchase, habitual behaviour reflects the extent to which the purchasing decision are embedded in established shopping routines. Repeated positive experiences may increase familiarity and facilitate future DSF purchasing, while established preferences for conventional products may make suboptimal alternatives less likely to be selected. These purchasing habits also provide a link to household planning, since the extent to which a purchase fits or disrupts existing shopping and consumption routines may influence how easily it can subsequently be incorporated into household food management.

2.3.2 Sociodemographic and household characteristics

The FCPM also recognizes that food choices occur within individual and social contexts. Personal factors, available resources, and social frameworks can shape the conditions within which different food-choice values are negotiated (Furst et al., 1996). Although the present study does not operationalize these components directly, sociodemographic and household characteristics provide one means of examining whether DSF purchasing behaviour varies across different consumer contexts. Food-choice motivations do not necessarily carry equal importance across consumers. Sociodemographic and household characteristics provide an important context within which consumers evaluate factors such as price, health, quality, familiarity, and convenience. Previous research has identified differences in food-choice priorities according to characteristics including gender, age, education, income, and household composition (Kearney et al., 2000; Konttinen et al., 2021; Ogundijo et al., 2022; Kunzová & Mužíková, 2026). These characteristics are therefore relevant to understanding variation in consumer food choice, although they should not be interpreted as purchase motivations in themselves.

Gender differences have been identified in the relative importance assigned to different food-choice considerations. Women have generally been found to place greater emphasis on health, nutrition, and diet quality, whereas men may attach relatively greater importance to considerations such as taste, familiarity, value for money, and habit (Kearney et al., 2000; Konttinen et al., 2021; Kunzová & Mužíková, 2026). Age is similarly associated with differences in food-choice priorities. Younger consumers tend to place greater emphasis on convenience and other short-term considerations, while health, weight control, ethical considerations, and familiarity tend to become more important among older consumers (Kearney et al., 2000; Konttinen et al., 2021; Ogundijo et al., 2022). Gender and age may therefore be relevant when examining whether the considerations associated with food purchasing differ between consumer groups.

Higher educational attainment has been associated with greater emphasis on health, nutritional value and ingredient quality, while lower educational attainment has been associated with greater price sensitivity and stronger reliance on familiarity and sensory considerations (Kearney et al., 2000; Konttinen et al., 2021; Kunzová & Mužíková, 2026). Income can further constrain the range of choices available to consumers. Lower-income consumers generally attach greater importance to price and affordability, whereas higher-income consumers may have greater flexibility to prioritise attributes such as quality, nutritional value, and ethical considerations (Kearney et al., 2000; Konttinen et al., 2021; Kunzová & Mužíková, 2026). Research on households experiencing financial constraints further shows that discounts, special offers, and purchase planning can become important strategies for managing limited food budgets (Vaughan et al., 2024). These findings are particularly relevant to discounted food because the reduced price constitutes an explicit feature of the purchase offer. Against this background, Education and income are particularly relevant to the balance between economic considerations and other food-choice attributes.

Food choices are also made within a household context rather than solely according to individual preferences. Household size and composition can affect the practical and economic considerations involved in purchasing food. In larger households, affordability and the preferences of other household members may become more influential, while households with children must additionally accommodate children's preferences and eating behaviour (Kearney et al., 2000; Vaughan et al., 2024). Convenience has also been found to receive greater relative importance in households containing both adults and children than in adult-only households (Konttinen et al., 2021). Household characteristics may therefore influence the constraints and priorities within which food-purchasing decisions are made.

Taken together, the literature suggests that food-choice priorities can vary across sociodemographic and household contexts. In relation to DSF, this provides a basis for examining whether purchasing behaviour and purchase planning differ according to gender, age, education, income, and household size. These characteristics are treated as potential sources of variation rather than as direct determinants of individual purchase decisions.

2.4 Planning and household food management

Planning is an important component of household food management, as decisions made before and during food purchasing can influence how effectively food is subsequently stored, prepared, and consumed. In this study, planning is considered not only in relation to whether a purchase was anticipated before entering the store, but also in relation to how purchased food is incorporated into subsequent household food management.

2.4.1 Planning and food purchasing

Pre-shopping planning can help align food purchases with actual household needs. Practices such as checking existing refrigerator and pantry stocks, preparing shopping lists, and planning meals in advance can reduce uncertainty about what food is already available and what quantities are required (Farr-Wharton et al., 2014; Romani et al., 2018). In contrast, shoppers who enter stores without checking household inventories or preparing a plan may rely more strongly on habitual or spontaneous decisions, increasing the possibility of duplicate purchases or quantities that exceed immediate consumption needs (Farr-Wharton et al., 2014).

The distinction between planned and unplanned purchasing is therefore relevant to food-waste prevention. Beatty and Ferrell (1998) define impulse purchasing as an immediate and spontaneous purchase made without a prior intention to buy the specific product. Although their framework was developed outside food retail, the distinction between planned and unplanned choice is relevant to grocery purchasing, where in-store promotions and product availability may encourage consumers to deviate from previously intended purchases. Food-waste research similarly indicates that consumers shopping without clear plans can be more susceptible to promotions, bulk offers, and oversized packages, potentially contributing to household overprovisioning (Dobernig & Schanes, 2019; Farr-Wharton et al., 2014; van Rooijen et al., 2024).

However, an unplanned purchase should not automatically be understood as wasteful nor synonymous with impulse purchasing. While impulse purchasing involves a spontaneous decision without prior intention to purchase the specific product (Beatty & Ferrell, 1998), the planning measure used in the present study concerns whether respondents had planned to purchase a similar type of food before entering the store. A spontaneous purchase can still be successfully incorporated into household consumption if the consumer adapts to subsequent meals or storage practices accordingly. The relevance of planning therefore extends beyond whether the purchase itself was anticipated and includes whether consumers develop a workable plan for using the food after purchase.

2.4.2 Planning, storage, and food management

Once food enters the household, effective planning depends partly on maintaining awareness of available products and their locations. Farr-Wharton et al. (2014) distinguish between knowledge of what food is available and knowledge of where it is stored. When refrigerators, freezers, or cupboards become overcrowded or poorly organised, products can be forgotten and remain unused until they deteriorate (Farr-Wharton et al., 2014; Romani et al., 2018). Maintaining an overview of household food stocks can therefore support timely consumption and reduce unnecessary duplicate purchasing (Tsalis et al., 2024).

Meal planning can also influence how food is prepared and consumed. Planning meals around available ingredients may help households coordinate quantities, incorporate partially used foods into subsequent meals, and intentionally use leftovers (Romani et al., 2018). This is especially relevant for perishable products, where the available period for consumption is limited. Preservation practices such as refrigeration and freezing can extend this period, but their effectiveness depends on consumers recognising the need for preservation and incorporating the product into future consumption.

Planning therefore extends beyond the pre-purchase stage. An initially unplanned purchase may still be successfully incorporated into household consumption through subsequent adjustments to meals, storage, or preparation, whereas a planned purchase may still become waste if it is not effectively managed after purchase.

2.4.3 Planning and food-waste outcomes

Previous research generally associates stronger planning and food-management routines with lower household food waste. Practices such as aligning purchases with household needs, maintaining awareness of available food, managing portions, and using leftovers may reduce the likelihood that purchased food remains unused (Romani et al., 2018; van Rooijen et al., 2024). Nevertheless, planning does not guarantee consumption, as changing schedules, preferences, product deterioration, and other practical constraints can disrupt intended food use (van Rooijen et al., 2024; Woolley et al., 2022).

This relationship is particularly relevant to DSF. Discounted products, especially those approaching their expiration dates, may require consumers to integrate an item into household consumption within a relatively short period. Whether the product was planned before entering the store may therefore be only one aspect of successful use. Post-purchase planning, including decisions regarding storage, freezing, cooking, and timing of consumption, may also influence whether the DSF product is ultimately consumed or wasted. Planning consequently provides an important behavioural link between the initial DSF purchase and its post-purchase outcome.

2.5 Conceptual framework

Based on the reviewed literature, this study adopts the conceptual framework presented in Figure 2 to illustrate how product-related and consumer-related factors may be connected to the post-purchase outcome of discounted suboptimal food (DSF). The framework is intended as an analytical model rather than a causal model and is used to organise the relationships examined in the study.

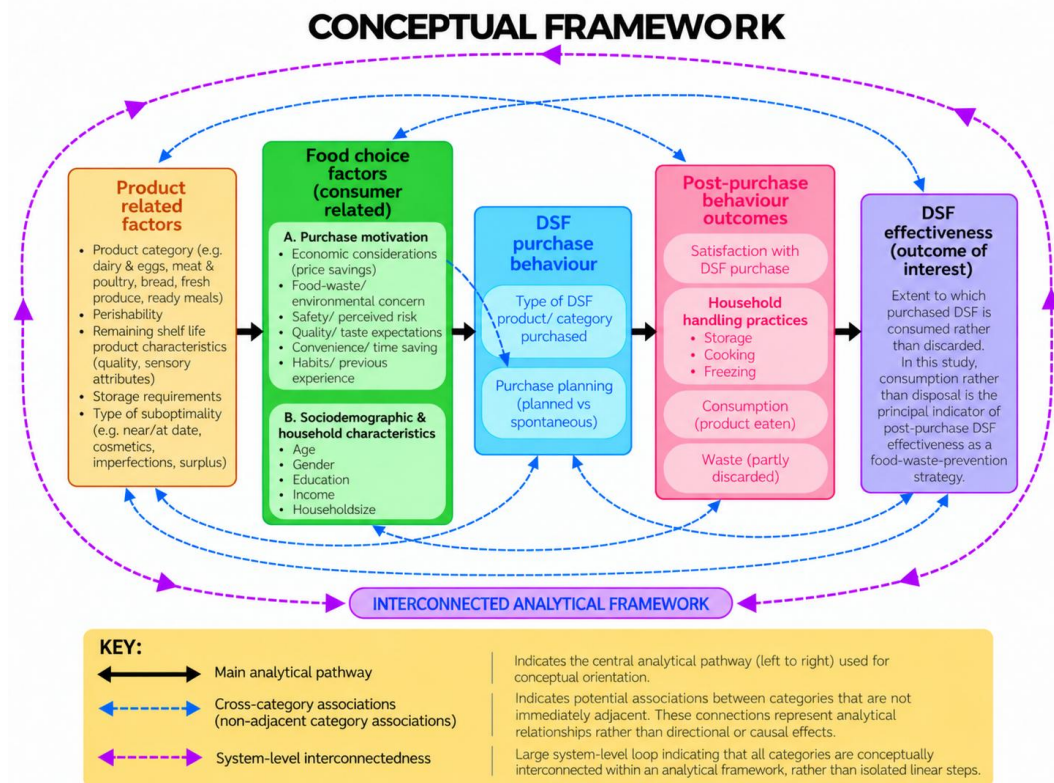


Figure 2. Conceptual framework of factors associated with DSF purchasing and post-purchase outcomes. (generated by help of AI)

Based on the reviewed literature, this study adopts the conceptual framework presented in Figure 2. to illustrate how product-related factors, food-choice factors, purchase behaviour, and post-purchase outcomes are connected in the context of discounted suboptimal food (DSF). The framework is intended as an analytical rather than causal model and is used to organise the relationships examined in the study.

The framework distinguishes between product-related factors and consumer-related food-choice factors that provide the context for DSF purchasing. Product-related factors include product category and characteristics associated with perishability, shelf life, sensory quality, storage requirements, and suboptimality. Consumer-related factors include purchase motivations and sociodemographic, and household characteristics. Conceptually, these factors correspond broadly with Furst et al.'s (1996) emphasis on food context, personal factors, resources, and the negotiation of values such as monetary considerations, sensory perceptions, convenience, and quality. However, the variables used in the present study were not designed as direct measures of the components of the Food Choice Process Model.

Within this context, the study examines DSF purchasing in terms of the product purchased, motivations for choosing it, and the extent to which the

purchase was planned. Purchase motivations and planning are also examined in relation to one another, allowing the study to assess whether the principal reasons for purchasing DSF are associated with whether the purchase was anticipated before entering the store.

The framework subsequently extends beyond the food-choice event addressed by Furst et al. (1996) to examine what happens after the DSF product enters the household. Post-purchase outcomes include satisfaction, storage, cooking, freezing, consumption, and disposal. This extension is central to the present study because the food-waste-prevention potential of DSF depends not only on whether a discounted product is purchased, but also on whether it is ultimately consumed rather than discarded.

3. Method

This chapter presents the methodology adopted for data collection and analysis followed by a discussion of ethical considerations and methodological limitations.

3.1 Research design

As discussed in Section 2.1, the measurement of household food waste presents methodological challenges, particularly when respondents are required to estimate their general levels of food waste retrospectively. To address this issue within the context of the present research questions, the study adopted a two-stage survey design similar to the approach used by van Lin et al. (2023). Rather than asking respondents to estimate their overall household food waste, the design follows a specific discounted suboptimal food (DSF) product from the point of purchase to its subsequent handling within the household. The study adopts a quantitative survey design and employs both descriptive and inferential statistical analyses to examine patterns in the data. The survey is designed to measure both purchase (Survey 1) and post-purchase behaviour (Survey 2, six days after filling out Survey 1) for the reported DSF items in two interrelated parts.

3.2 Store selection and data collection

Due to the nature of the project, a non-probability convenience sampling strategy was employed. Data collection (May 2025 and March 2026) was restricted to 17 participating stores within specific geographical regions in Sweden, namely Stockholm, Uppsala and the Scania region. Stores were recruited either via email or through in-person contact; consequently, only retailers that actively consented to participate were included. After accepting to participate in the study an information sheet was handed out to inform the store staff about the project.

Consumers were eligible to participate in the survey if they were at least 15 years of age and had purchased at least one discounted suboptimal food (DSF) product from a participating store during the study period. Consumer participation was entirely targeted by consumers purchasing DSF products. These consumers could access the survey by scanning a QR-code displayed in-store. Before initiating the survey, respondents received detailed information regarding the study and were required to provide informed consent. No predetermined sample size was established prior to data collection. Unlike confirmatory studies designed to test predefined effect sizes through statistical power analysis, the present study adopted an exploratory quantitative design aimed at identifying patterns in consumer's post-purchase handling of discounted suboptimal food products. The response rate for survey 1 was 123 and for the follow up survey 94. The achieved

sample size reflects the practical constraints of recruiting consumers purchasing discounted suboptimal food products in a real retail environment. The applied research design introduces a dual layer of self-selection bias, occurring both at the retail and individual respondent levels.

3.3 Survey-design

The questionnaire items included in this thesis represent a selection of questions from the survey developed for the overarching Follow the Food project (described in Section 1.7). The selection was made to align with the aim and research questions of the present thesis. The selected items covered six main areas: identification of the purchased discounted suboptimal food (DSF) product, purchase behaviour and planning, purchase motivations, sociodemographic and household characteristics, post-purchase handling and consumption, and food-waste outcomes. The complete wording of the questionnaire items used in this study, including response options and relevant filter conditions, is provided in Appendix 1.

Consumers were recruited in-store through a poster displayed throughout the store and near checkout counters. The poster featured the message “Have you purchased a discounted suboptimal food product?” and invited consumers to participate in the survey by scanning the QR code provided on the poster. Following that, the consumers got directed to the survey, and specific to the first part of the survey (see Appendix 1 for a complete overview of included questions and interview design).

In survey 1, respondents first asked whether they had purchased a discounted food product with a short remaining shelf life or deviating appearance deviating from conventional standards on the same day or the previous day. Those who had made such a purchase were then asked to identify one specific product, by either uploading a photograph or by providing a detailed open-ended description. This information provided was subsequently used to identify and categorise the purchased DSF product for analysis.

This part of the survey also collected information about the circumstances surrounding the purchase. Purchase planning was assessed by asking respondents whether they had planned to purchase a similar type of food before entering the store. Respondents who indicated that the purchase had not been planned, were subsequently asked whether the DSF purchase influenced what would be consumed in the following days and whether they had developed a plan for using the product after deciding to purchase it. In addition, respondents were asked whether the purchased DSF product resulted in buying more or less food than originally intended. Together, these items enabled a distinction between pre-purchase planning and post-purchase planning related to the use of an initially unplanned product.

Purchase motivations were measured using a series of statements assessing respondent's reasons for selecting the specific DSF product. The items captured a range of potential motivations, including price, product size, taste, production method, concern that the product might otherwise be discarded by the retailer, willingness to try something new, perceived safety, convenience, and perceived healthiness. Respondents rated their level of agreement with each statement on a five-point Likert scale ranging from strongly disagreeing to strongly agree. Sociodemographic and household characteristics included in the analysis were age, gender, educational level, household size, and total monthly household income before tax. Finally, participants were requested to provide contact information and agreements to be contacted by the researchers for follow up questions.

The follow-up survey (six days post purchase which was considered to be long enough for the participants to have used/consumed the DSF but also not have forgotten about it to be able to answer the survey questions) focused on the post-purchase outcome of the identified DSF product. Respondents were first asked to evaluate their satisfaction with the purchase and were then presented with a range of post-purchase handling actions. This included consumption, storage in a refrigerator or pantry, cooking, disposal, freezing, giving the product away, or other forms of handling. Multiple responses could be selected where applicable. For products reported as consumed, respondents estimated the proportion of the product that had been eaten. Similarly, for products reported as discarded, respondents estimated the proportion that had been disposed, including food that had been prepared or served but subsequently thrown away. The study did not aim to quantify total household food waste. Instead, the follow-up survey tracked identified DSF purchases at the product level and recorded their post-purchase outcomes, including consumption, storage, freezing, cooking, and disposal. This product-level measurement approach was selected to correspond with the study's focus on the post-purchase outcomes of specific DSF products.

Together, these questionnaire items enabled the purchased DSF product to be linked to both the circumstances surrounding the purchase and its subsequent outcome within the household. This made it possible to examine the distribution of purchased product categories, their post-purchase handling and consumption, and potential differences in these outcomes according to product category, purchase behaviour, and respondent characteristics. The operationalisation and coding of these variables for statistical analysis are described in Section 4.7.

3.4 Statistical Data Analysis plan (tools)

3.4.1 Screening raw data and coding

Prior to analysis, the dataset was screened for incomplete responses and eligibility. Respondents who indicated that they had not purchased a discounted suboptimal food (DSF) product were not eligible for subsequent product-specific survey questions. Since the questionnaire applied conditional follow-up questions, the number of valid responses varied between analyses. Analyses were therefore conducted using the available valid responses for the variables included in each analysis rather than treating unanswered conditional questions as substantive responses.

Respondents could report the purchased DSF product through a written description or an uploaded photograph. Image-based responses were manually coded to identify the product and subsequently assigned to the product categories described in Section 4.6.2. Where more than one product was visible, the most visually prominent and clearly identifiable product was selected for coding.

Ordinal questionnaire items measuring purchase motivations, purchase planning and satisfaction were coded according to their five-point Likert response scales, with higher scores representing stronger agreement or greater satisfaction, as applicable. The original scale values were retained for descriptive and inferential analyses.

3.4.2 Categorisation of purchased DSF products

Registered DSF products purchased were classified into the product categories presented in Table 1. To categorize product types, this study adopted a classification aligned with retail food categories, reflecting how products are organized and encountered by consumers in-store (Livsmedelsverket, 2025). Since there are no specific retail-based classification standards, the observational method was carried out in COOP stores and their website to identify applied categorization of products. The categories were informed by food group structures used in the Nordic Keyhole system, which distinguishes between major product groups such as fruits and vegetables, meat, dairy, cereals, and ready meals. As the Keyhole system does not constitute a comprehensive classification framework but rather identifies nutritionally favorable products within specific categories, it was used as a complementary analytical layer rather than as the primary categorization scheme. This enabled a distinction between product categories eligible for Keyhole labelling and those that are not, such as snacks and sweets, thereby combining practical relevance with alignment to established nutritional frameworks (Livsmedelsverket, 2025). While plant-based products are increasingly relevant in food consumption research, they do not constitute a distinct retail category but rather span multiple product groups (e.g., dairy

alternatives, meat substitutes, and fresh produce). Therefore, plant-based products were not treated as a primary category but instead operationalized as a cross-cutting variable, allowing for analysis across different product types without compromising the retail-based classification structure.

All product categories were retained to describe the aggregate distribution of DSF purchases. However, for inferential comparisons between product categories, analyses were restricted to the five largest groups based on observation count: dairy and eggs, meat and poultry, bread, cereals and grains, fresh produce, and ready meals and convenience foods. Categories with limited observations were excluded from these comparative analyses to mitigate the issue of sparse data and because their small sample sizes lacked the statistical power required for meaningful group-level comparison.

Table 1. The food product categorisation based on Swedish food agency and Swedish retail.

Code	Category	Included	Excluded	Justification
1	Fresh Produce	Fresh fruits, vegetables, herbs, minimally processed produce (e.g., bagged salad)	Processed fruit (e.g., canned fruit in syrup), juices	Based on retail produce sections and Livsmedelsverket food groups; aligns with Keyhole category “fruit & vegetables”
2	Meat and poultry	Fresh meat, minced meat, chicken, processed meat (sausages, cold cuts)	Plant-based meat substitutes (if treated separately), ready meals containing meat	Based on retail meat departments; aligns with Keyhole meat category (with nutritional criteria distinction)
3	Fish and seafood	Fresh fish, frozen fish, shellfish, processed seafood (e.g., fish cakes)	Mixed ready meals containing fish	Based on retail fish category and Keyhole fish/seafood group
4	Dairy and eggs	Milk, yogurt, cheese, cream, eggs	Plant-based dairy alternatives (optional: separate or include depending on coding choice)	Based on retail dairy section and Livsmedelsverket dairy group; consistent with Keyhole dairy category
5	Bread, Cereals and grains	Bread, crispbread, pasta, rice, flour, breakfast cereals	Sweet bakery products (e.g., cakes, pastries → snacks category)	Based on retail dry goods/bakery categories and Keyhole cereals

				group
6	Ready meals and convenience foods	Pre-prepared meals (e.g., pizza, salads, lasagna), semi-prepared foods	Individual raw ingredients	Based on retail “ready meal” sections and Keyhole ready meal category
7	Pantry staples and ingredients	Oils, butter, margarine, sauces, condiments, sugar, spices	Snacks and sweets, ready meals	Based on retail pantry categories; partially overlaps with Keyhole fats/sauces groups
8	Snacks and sweets	Candy, chocolate, chips, desserts, pastries, ice cream	Staple foods, bread, main meals	Based on retail snack/confectionery sections; explicitly excluded from Keyhole eligibility
9	Beverages	Soft drinks, juice, coffee, tea, bottled drinks	Dairy drinks (can be included in dairy if preferred)	Based on retail beverage category; only limited overlap with Keyhole (strict criteria)
10	Plant based	All plant-based products		Residual category for coding reliability (standard practice in content analysis)

3.4.3 Descriptive statistics

Descriptive statistics were initially employed to profile the sample and outline the primary study variables. Frequencies and percentages were computed for respondent demographics, specifically gender, age, education, household size and household income, as well as the purchased DSF product categories. Purchase motivations, purchase planning and satisfaction with the purchased DSF product were summarised using frequencies and percentages across their response categories. Means and standard deviations were additionally calculated when the five-point Likert response scales were used in subsequent analyses as approximately continuous variables.

Post-purchase outcomes were described using frequencies and percentages. The degree of consumption was reported among respondents who indicated that the purchased product had been eaten. Similarly, the degree of waste was examined only among respondents who reported discarding at least part of the product. Since only four respondents reported discarding the purchased DSF, the

degree-of-waste variable was retained for descriptive reporting but was not subjected to inferential statistical analysis.

For descriptive presentation of the purchase-motivation items, responses on the five-point Likert scale were collapsed into three categories. 'Does not apply at all' and 'Does not fully apply' were combined into a 'Does not apply' category, 'Neither applies nor does not apply' was retained as a neutral category, and 'Partly applies' and 'Fully applies' were combined into an 'Applies' category. This grouping was used to provide a clearer summary of the distribution of responses in the figures.

3.4.4 Analysis of multiple-response questions

A multiple-response analysis was used to examine post-purchase handling practices, as respondents could select multiple actions for a single purchased DSF item. The available handling options included consumption, freezing, storing in a refrigerator or pantry, cooking, redistribution (giving away) and discarding (throwing away) the product. Consequently, these behaviours were treated as non-mutually exclusive outcomes. For instance, a single product could be initially stored, subsequently cooked, and ultimately eaten.

Results from the multiple-response analysis were reported using the percentage of cases rather than the percentage of responses. The percentage of cases represents the proportion of respondents (or unique purchase cases) selecting each handling behaviour, whereas the percentage of responses represents the proportion that each selected option relative to the total volume of responses. The percentage of cases was prioritized to identify the proportion of individual purchased DSF products associated with each handling practice. Consequently, because participants could select multiple options per product, the cumulative percentages across handling categories may exceed 100%.

3.4.5 Differences across DSF product categories

Inferential analyses were conducted to examine whether consumer characteristics and purchasing behaviour differed across the five most frequently purchased DSF product categories.

Associations between sociodemographic characteristics and purchased DSF category were examined using Pearson's chi-square test of independence. The sociodemographic variables examined were gender, age, education, household size and household income. The chi-square test was used to assess whether the distribution of purchased product categories differed across the respective sociodemographic groups.

One-way analyses of variance (ANOVA) were used to examine whether purchase motivations differed across the five principal DSF product categories. These analyses focused on price, perceived safety and concern that the product

might otherwise be wasted or discarded, as these represented the three most prominent purchase motivations in the descriptive analysis. Separate ANOVAs were conducted for each motivation, with product category as the grouping variable and the five-point motivation Likert scale as the dependent variable.

One-way ANOVAs were also conducted to examine differences between the five product categories in purchase planning and satisfaction with the purchased DSF product. For these analyses, the respective five-point Likert planning and satisfaction scores were treated as approximately continuous variables. Homogeneity of variance was assessed using Levene's test. Tukey's honestly significant difference (HSD) procedure was used for post-hoc pairwise comparisons between product categories where applicable. In addition to statistical significance, eta squared (η^2) was reported as an estimate of effect size for the ANOVA analyses.

3.4.6 Association between purchase motivations and purchase planning

A standard multiple linear regression was conducted to examine the relationship between the principal DSF purchase motivations and purchase planning. The purchase-planning score was entered as the dependent variable, while price motivation, perceived safety and concern that the product might otherwise be wasted or discarded were entered simultaneously as predictor variables. These three predictors were selected because they were the most prominent purchase motivations identified in the descriptive analysis.

The overall regression model was evaluated using the F-test, R^2 and adjusted R^2 . The unique contribution of each predictor was evaluated using the unstandardised regression coefficient (B), standard error, standardised regression coefficient (β), t statistic and associated p value.

3.4.7 Sociodemographic differences in purchase planning

Exploratory analyses were conducted to determine whether purchase planning differed according to respondent's sociodemographic and household characteristics. The characteristics examined were gender, age, education, household income and household size. Differences in purchase-planning scores across age, education, income and household-size groups were examined using separate one-way ANOVAs. For the ANOVA analyses, purchase planning was treated as the dependent variable, and each sociodemographic characteristic was entered separately as the grouping variable. Eta squared (η^2) was reported as an estimate of effect size.

3.4.8 Interpretation of findings

As this study adopts an exploratory quantitative approach, the interpretation of the statistical analyses emphasises practical and substantive significance alongside statistical significance. Bryman (2016) argues that exploratory research is particularly valuable for identifying patterns that may generate new knowledge and guide future hypothesis-testing research.

Consequently, the discussion considers both statistically significant associations and notable descriptive trends, particularly where these contribute to understanding the effectiveness of different DSF product categories as retail food waste reduction measures. This approach is consistent with the overall aim of generating actionable insights for retailers rather than developing or testing a theory.

4. Results

This chapter presents the empirical findings derived from the questionnaire responses, structured in accordance with the methodology outlined previously. The gathered data are summarized and visualised through a series of tables and figures to illustrate the key variables and patterns.

4.1 Respondent sociodemographic characteristics

Table 2. outlines the demographic characteristics of the study sample (of survey 1), which comprises a total of 123 respondents. The sample was slightly more dominant by females (52%) and highly educated, with 65.9% holding a college degree or university degree. Regarding household income, the largest single segment earned 80 000SEK or more per month (38.2%). The mean age of the participants was 43 years, with the largest age cohort being 35-49 years old (39%). In terms of household composition two-person household represented the largest group (27.6%), closely followed by single-person households (22.8%).

Table 2. Demographic characteristics of the study sample (N=123).

Characteristics	Category	n	%
Gender	Male	56	45.5
	Female	64	52
	Other	1	0.8
	Missing*	2	1.6
Education level	Primary school or equivalent	2	1.6
	High school diploma or equivalent	18	14.6
	Post-secondary education (not college/university)	20	16.3
	Degree from college/university	81	65.9

	Missing	2	1.6
Income	0–19 999 sek	14	11.4
	20 000–39 999 sek	13	10.6
	40 000–59 999 sek	20	16.3
	60 000–79 999 sek	15	12.2
	80 000 sek or more	47	38.2
	Missing	14	11.4
Age	18-24 years	10	8.1
	25-34 years	27	22
	35-49 years	47	39
	50-64 years	27	22
	65 and older	9	7.3
	Missing	3	2.4
household size**	1 person	28	22.8
	2 persons	34	27.6
	3 persons	21	17.1
	4 persons	27	22.0

≥5 persons	11	8.9
Missing	2	1.6

*One respondent did not disclose and another respondent did not answer (1.6%).

** One respondent had reported 1.5 for household size which was counted as missing.

4.2 Purchase patterns of discounted suboptimal food (DSF)

Table 3. presents the distribution of purchased discounted suboptimal food (DSF) categories, arranged from highest to the lowest. Dairy and eggs comprised the largest product category (n = 38; 30.9%), followed by meat and poultry (n = 34; 27.6%). Fresh produce (n= 13; 10.6%) and bread, cereals and grains (n=12; 9.8%) were also among the more frequently purchased products. Conversely, pantry staples and ingredients as well as multiple-product purchases each accounted for a marginal share of less than 1%. Collectively, the findings indicate that purchases were heavily concentrated within highly perishable food categories, indicating that respondents purchased products considered at greater risk of retail food waste.

Table 3. Distribution of purchased discounted suboptimal food (DSF) product categories (N = 123).

Category	n	%
Dairy and Eggs	38	30.9
Meat and Poultry	34	27.6
Fresh produce	13	10.6
Bread, Cereals and Grains	12	9.8
Ready meals and convenience foods	9	7.3
Snacks and sweets	5	4.1
Beverages	4	3.3

Fish and Seafood	3	2.4
Plant based	3	2.4
Multiple products	1	0.8
Pantry staples and Ingredients	1	0.8
Missing	1	0.8

4.3 Purchase motivations

Figure 3. illustrates the respondent's motivations for purchasing discounted suboptimal food products. While responses varied over categories clear behavioural patterns emerged. Price was identified as the primary purchasing motive, with 91% of respondents falling within the combined 'Applies' category. Perceived food safety and concern about food waste were also established as major drivers, with 82.9% respectively 81.3 %. Conversely, curiosity to try a new product (18.7%) and the production process of the food item (27.7%) were the least influential, with most respondents stating these motives did not apply to them.

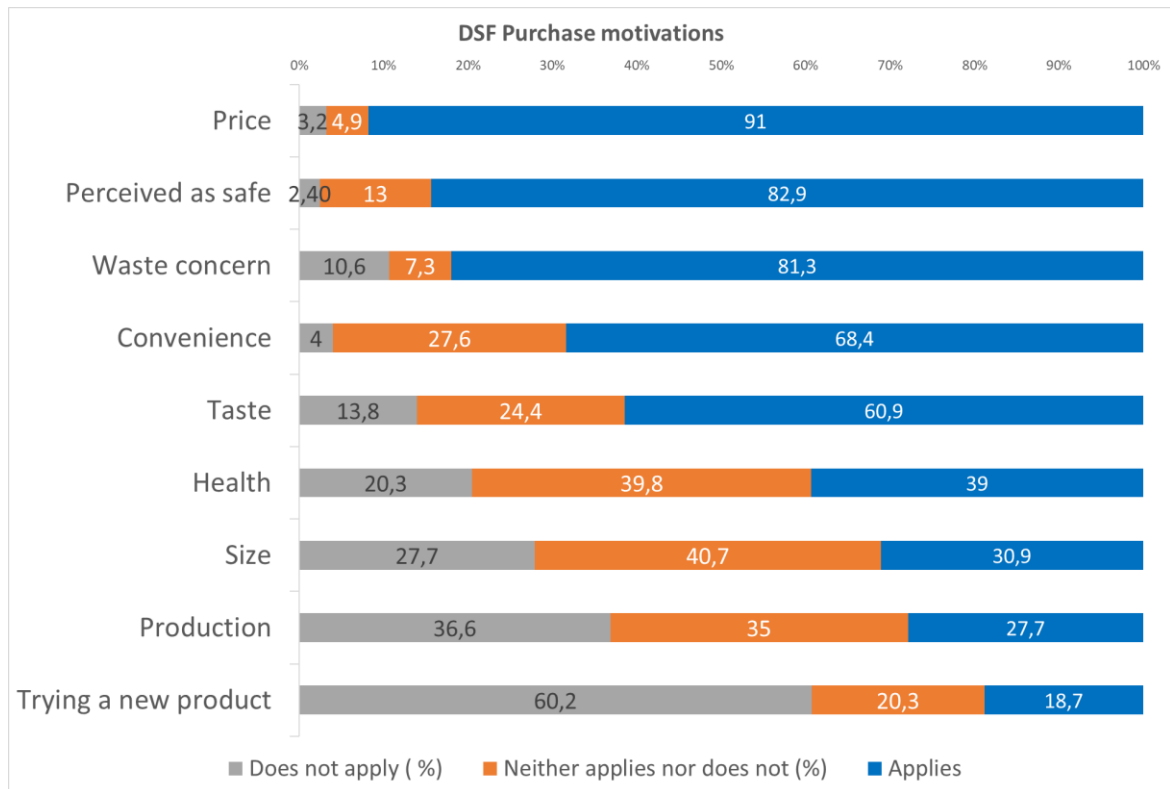


Figure 3. Distribution of respondent's agreement with different purchase motivations for discounted suboptimal food products.

4.4 Purchase planning

Table 4. summarises the respondent's perceptions regarding their purchase planning. The results reveal a clear polarization among participants concerning whether their DSF purchases were planned prior to entering the store. By aggregating the response categories, a nearly equal distribution emerged: 43.1% of respondents indicated that pre-store planning did not apply to their purchase (combining 'Does not apply at all' and 'Does not fully apply'), whereas 44.0% reported that it did ('Partly applies' and 'Fully applies').

Table 4. Respondent's agreement with statements related to purchase planning.

Purchase planning	Does not apply at all (n, %)	Does not fully apply (n, %)	Neither applies nor does not (n, %)	Partly applies (n, %)	Fully applies (n, %)
Purchase planned before entering the store	33 (26.8)	20 (16.3)	15 (12.2)	27 (22.0)	27 (22.0)

Table 5. provides an overview of the respondents who indicated that their DSF purchase was unplanned prior to entering the store (n=53). Within this specific subsample, over half reported that the DSF purchase influenced their subsequent meal planning (n= 31;

58.5%, ‘partly applies and ‘fully applies combined). Similarly, a majority stated they had already determined how the product would be utilized after the purchase was made (n=30; 75.5%, ‘partly applies and ‘fully applies combined). These findings, as displayed in Table 5, suggest that although the purchases of discounted items are frequently spontaneous, customers rapidly establish a clear plan for product utilization once the decision is made. This pattern highlights a highly opportunistic purchasing behaviour.

Table 5. Respondent’s agreement with statements related to purchase planning and intended use of discounted suboptimal food products.

	Does not apply at all (n, %)	Does not fully apply (n, %)	Neither applies nor does not (n, %)	Partly applies (n, %)	Fully applies (n, %)
Purchase influenced meal planning	8 (15.1)	7 (13.2)	7 (13.2)	18 (34.0)	13 (24.5)
Planned use of the purchased product	3 (5.7)	4 (7.5)	6 (11.3)	11 (20.8)	29 (54.7)

4.5 Consumption, storage and wastage of DSF products, at household level

Table 6. summarises the reported post-purchase handling behaviours of discounted suboptimal food products. Most respondents (n= 84; 89.4%) reported that the purchased product had been eaten. This high consumption rate indicates that the acquired items were predominantly utilized rather than wasted at the household levels. Storage in refrigerator or pantry was also common, applying to nearly half of the sample (n= 46; 48.9%), while a quarter of the respondents reported cooking the product (n= 24; 25.5%). Additionally, freezing was utilized by approximately one fifth of the respondents (n= 20; 21.3%), suggesting that households frequently adopted storage strategies that may extend product usability. Conversely, explicit food waste was minimal, with only three respondents (3.2 %) reported discarding the purchased product. Collectively, these findings demonstrate that the majority of purchased DSFs either entered immediate consumption or remained actively managed within the household.

Table 6. Respondent’s post-purchase handling methods.

Handling behaviour*	n	% of cases
Eaten	84	89.4

Stored (refrigerated/pantry)	46	48.9
Cooked	24	25.5
Frozen	20	21.3
Thrown away	3	3.2
Given away	1	1.1

*Note. Respondents could select more than one handling behaviour. Percentages are therefore reported as percentage of cases (respondents) rather than percentage of responses and consequently do not sum to 100%.

Table 7. presents the degree of consumption among the 84 respondents who reported that their purchased DSF item was eaten (as established in table 6). A substantial majority (75%) indicated that they had consumed the entire product. The remaining 25% of respondents reported partial consuming during the study, distributed across consuming more than half (10.7%), about half (8.3%) and less than half (6%). Taken together. These findings suggest that consumers efficiently utilize purchased DSF items over time, thereby strengthening the argument that DSF initiatives are an effective method for household food waste reduction.

Table 7. Degree of consumption of DSF products indicated as eaten in the previous table.

Degree of consumption	n	%
Entire item	63	75.0
More than half	9	10.7
About half	7	8.3
Less than half	5	6.0

4.6 Degree wasted

Owing to the small number of reported discarded products (n = 4), no further statistical analyses of the degree of waste were conducted. The limited number of observations was considered insufficient for meaningful subgroup comparisons or

inferential statistical analyses, as the resulting cell frequencies would not satisfy the assumptions required for reliable statistical testing.

4.7 Degree of satisfaction with purchased DSF item

Respondent's satisfaction with their purchased discounted suboptimal food products is detailed in table 8. The descriptive data (n = 91) reveal that positive perceptions heavily dominated the sample, 54.9% of participants being highly satisfied and 41.8% satisfied. Neutral or negative experiences were exceptionally rare, as only one individual (1.1%) remained neutral, and two respondents (2.2%) experienced dissatisfaction. Overall, these results underscore a consistently high level of satisfaction regarding discounted suboptimal items.

Table 8. Respondent's level of satisfaction with purchased discounted suboptimal food products.

Degree of satisfaction	n	%
Highly satisfied	50	54.9
Satisfied	38	41.8
Neutral	1	1.1
Dissatisfied	2	2.2
Highly dissatisfied	0	0

4.8 Differences between purchased DSF product categories

The following results analyse the characteristics of the sample, purchased DSF products and respondent's reported behaviour. The preceding part analyses whether these behaviours differed across product categories and sociodemographic groups. Inferential statistical analyses were conducted to explore associations and group differences relevant to the study's research questions.

4.8.1 Sociodemographic aspects

The relationship between sociodemographic characteristics and the most frequently purchased DSF categories (1. Dairy and egg; 2. Meat and poultry; 3. Fresh Produce; 4. Bread, cereals and grain) and 5. Ready meals and convenience food) was examined using Pearson Chi-square tests. No significant associations were observed for gender ($\chi^2 (12) = 6.07, p = 0.913$), age ($\chi^2 (16) = 19.61, p = 0.238$), household size ($\chi^2 (24) = 25.62, p = 0.373$) or income level ($\chi^2 (20) = 12.51(20), p = 0.897$). However, a statistically significant association was found for education level ($\chi^2 (16) = 26.81, p = 0.044$). An analysis of the distribution suggests that respondents with higher education levels were more heavily represented among purchase of dairy, eggs, meat and poultry. Conversely, respondents with a primary school education or equivalent tended to purchase higher proportions of ready meals, convenience foods, and fresh produce.

4.8.2 Purchase planning

A one-way ANOVA was conducted to examine whether purchase planning levels differ among the five most purchased product categories. The analysis revealed no statistically significant differences between the product categories ($F (4,100) = 1.91, p = 0.445, \eta^2 = 0.017$). Levene's tests for homogeneity of variance were non-significant, indicating that the assumption of homogeneity of variance was satisfied. Because of the overall F-test did not reach statistical significance, post-hoc pairwise comparisons were not warranted, confirming that purchase planning was uniform across the evaluated food categories.

4.8.3 Purchase motivations

Table 9. presents the result of the one-way ANOVA analyses examining whether the importance attached to three key purchase motivations, namely price, waste concern, and perceived safety across the five most frequently purchased DSF categories. These motivations were selected because they were among the most highly rated reasons for purchasing DSF products in the sample.

The analyses revealed no statistically significant differences between product categories for price as purchase motivation ($F (4,100) = 1.91, p = 0.115, \eta^2 = 0.071$). Similarly, no significant differences were observed for concerns that the product might otherwise be wasted by the retailer ($F (4,100) = 0.31, p = 0.874, \eta^2 = 0.021$), or for perceived safety ($F (4,100) = 1.02, p = 0.401, \eta^2 = 0.030$).

Levene's tests were non-significant for all three variables, indicating that the assumption of homogeneity of variance was met. Although some descriptive variation was observed across product categories, Tukey HSD post-hoc comparisons did not identify any statistically significant pairwise differences between product categories. Consequently, the findings suggest that the

importance attached to price, waste concern and perceived safety was relatively consistent across the most frequently purchased DSF categories.

Table 9. The One-way ANOVA analyses price, safety and waste concern as motivation for purchase across most purchased DSF categories.

Motivation	F	df	P	η^2
Price	1.91	4, 100	0.115	0.071
Waste concern	0.31	4, 100	0.874	0.021
Safety	1.02	4, 100	0.401	0.030

4.8.4 Purchase satisfaction degree

A one-way ANOVA was conducted to examine whether satisfaction with the most purchased DSF categories differed across the most frequently purchased product categories. The analysis revealed no statistically significant differences in satisfaction between product categories ($F(4,74) = 0.88, p=0.481, \eta^2= 0.045$). Overall, respondents reported high levels of satisfaction across all five categories, with mean scores ranging from 4.25 for bread, cereals and grains to 4.63 for meat and poultry and ready meals and convenience foods.

4.9 Consumer behaviour

This chapter examines the relationship between consumer's purchase motivations and purchase behaviour, with particular attention to planning behaviour. The analyses focus on the three most highly rated purchase motivations: price, waste concern, and perceived safety.

4.9.1 Association between purchase motivations and planning behaviour

A standard multiple regression was conducted to examine whether price motivation, waste concern and perceived safety predicted purchase planning. As shown in Table 10, the overall regression model was not statistically significant ($F(3,118) = 1.18, p= 0.321$). The model explained only a small proportion of the variance in purchase planning ($R^2 = 0.029$, adjusted $R^2 = 0.004$). None of the predictor variables made a statistically significant unique contribution to the model. Price motivation was not significantly associated with purchase planning ($\beta= 0.132, p= 0.152$), nor were perceived safety ($\beta= 0.102, p= 0.270$) and waste concern ($\beta= 0.031, p= 0.740$). These findings indicate that respondent's level of purchase planning was not significantly related to the importance they attached to

price, perceived safety, or concern that the product otherwise be wasted. Motivations were significantly related to respondent's level of purchase planning.

Table 10. The standard multiple regression analyses association between price motivation, waste concern and perceived safety with respondent's purchase planning

Motivation	B	SE B	β	t	p
Price	0.252	0.175	0.132	1.44	0.152
Perceived safety	0.185	0.167	0.102	1.11	0.270
Waste concern	0.40	0.122	0.031	0.33	0.740

4.9.2 Sociodemographic and household influences on purchase planning

The influence of sociodemographic and household characteristics on purchase planning was examined using statistical methods appropriate to each variable. A Pearson chi-square test was conducted for gender, while one-way ANOVAs were used for age, income, education and household size.

The chi-square analysis indicated no significant association between gender and purchase planning, ($\chi^2 (12) = 14.74, p = 0.256$). Similarly, no statistically significant differences in purchase planning were found across age groups ($F (5,116) = 1.32, p = 0.260, \eta^2 = 0.054$). Purchase planning also did not differ significantly between income groups ($F (5,116) = 1.32, p = 0.260, \eta^2 = 0.054$), or across education levels ($F (4,117) = 0.937, p = 0.445, \eta^2 = 0.031$). Likewise, household size was not significantly associated with purchase planning ($F (7,114) = 0.45, p = 0.870, \eta^2 = 0.027$).

Overall, the results indicate that purchase planning was relatively similar across gender, age, income, and household-size groups. None of the sociodemographic or household characteristics examined were significantly associated with whether respondents had planned their purchase prior to entering the store.

5. Discussion

The present study examined consumer purchase and post-purchase behaviour related to discounted suboptimal food (DSF), with particular attention to purchase motivations, planning, sociodemographic and household characteristics, product categories and post-purchase outcome. Overall, the findings suggest that DSF purchasing was primarily associated with economic considerations, perceived safety and concern about food-waste, while the extent of purchase planning varied among respondents. However, there was limited evidence that purchasing behaviour differed systematically across product categories or sociodemographic groups. Following purchase, DSF products were generally incorporated into household food use, with respondents reporting high levels of satisfaction and a low level of disposal. Taken together, the findings indicate that DSF cannot be understood solely in relation to the purchase decision. The purchase findings illustrate the multiple considerations involved in food choice, while the post-purchase findings show that the outcome of a DSF purchase also depends on how the product is subsequently incorporated into household food management. The discussion therefore first considers DSF purchasing through the food-choice perspective developed by Furst et al. (1996), before examining the post-purchase outcomes that extend beyond the food-choice event itself.

5.1 DSF purchasing behaviour: motivations and planning

Price emerged as the most prominent reported motivation for purchasing DSF, while perceived safety and concern that the product might otherwise be discarded also received relatively high levels of agreement. The strong emphasis on price is consistent with the economic rationale underlying DSF purchasing, whereby a reduced price compensates consumers for characteristics that may otherwise reduce a product's attractiveness, such as short shelf life or other forms of suboptimality (Tsalis, 2020; Farr-Wharton et al., 2014). The prominence of price can also be understood in relation to the monetary considerations identified by Furst et al. (1996), which concern not only price itself, but consumer's assessment of the value received from a food choice. In the context of DSF, the reduced price may therefore contribute to the perceived value of accepting a product that deviates from conventional expectations. This finding also supports previous research identifying economic value as key driver of consumer acceptance of discounted and suboptimal food products. However, the result also suggests that DSF purchasing cannot be understood only as an economically motivated behaviour. The comparatively high agreement with statements relating to food-

waste concern indicates that some consumers may view DSF purchases as an opportunity to contribute to waste prevention alongside achieving financial savings. This interpretation is consistent with previous studies showing that environmental concern and awareness of food waste are associated with greater acceptance of suboptimal food products (Aschemann-Witzel, 2018; Aschemann-Witzel et al., 2019; Ammann et al., 2025). Interestingly, concern about food waste was almost as prominent as perceived safety, suggesting that consumers may simultaneously evaluate both the potential benefits and risks associated with DSF purchases. This supports the view that DSF choice reflects a combination of economic, ethical, and practical considerations rather than a single dominant motivation.

The relatively high importance attached to perceived safety is also noteworthy. Previous research has identified food-safety concerns and perceived risk as important barriers to the acceptance and purchase of suboptimal food, particularly when products are approaching their expiration date or display signs of reduced freshness (Aschemann-Witzel, 2018; Tsalis, 2020). In contrast, respondents in the present study had already decided to purchase the product suggesting that perceived safety may have functioned less as a barrier and more as a criterion to evaluate whether a discounted product was acceptable for purchase. The high level of agreement observed for this motivation could therefore indicate that consumers actively considered product safety when making their decision and concluded that the selected products remained suitable for consumption despite their suboptimal characteristics. Nevertheless, this interpretation should be treated with caution, as the study measured self-reported purchase rather than the specific cues or decision-making processes through which safety assessments were formed.

Purchase planning showed a less uniform pattern than purchase motivations. Many DSF purchases were not planned before respondents entered the store, suggesting that discounted products are often selected opportunistically when encountered in the retail environment. This finding is noteworthy because previous research has associated unplanned food purchases with a greater likelihood of overprovisioning and increased susceptibility to in-store promotions (Dobernig & Schanes, 2019; Farr-Wharton et al., 2014; van Rooijen et al., 2024).

However, the findings also highlight an important distinction between planning prior to the purchase and planning after purchase. Although many respondents had not initially intended to buy the product, a majority reported that they subsequently developed a plan for its use. This suggests that an unplanned purchase does not necessarily imply a lack of food-management planning. Rather, consumers may integrate a spontaneously DSF purchase into existing household food management by adjusting meal plans, storage practices, or food preparation activities. The results therefore support the distinction proposed in the literature

review between purchase planning and post-purchase planning. They further suggest that the successful utilisation of DSF may depend less on whether the purchase was anticipated in advance and more on the household's ability to incorporate the product into subsequent food-management practices.

5.2 Sociodemographic characteristics and DSF purchasing behaviour

The inclusion of sociodemographic and household characteristics in the conceptual framework was based on previous evidence that food-choice priorities may vary according to factors such as gender, age, education, income and household context. For example, lower income has been associated with greater price sensitivity, higher education with higher attainment on health and product quality, age with changing food-choice priorities, and household composition with differences in affordability and convenience considerations (Kearney et al., 2000; Konttinen et al., 2021; Ogundijo et al., 2022; Kunzová & Mužíková, 2026; Vaughan et al., 2024). In the present study, however, the analyses no statistically significant differences in purchase planning differed were observed across gender, age, education, income or household size.

These findings do not necessarily contradict existing literature. Much of the research reviewed focuses on general food-choice motivations and preferences, whereas the present analysis examined planning behaviour related to a specific DSF food purchase among consumers who had already chosen a discounted product. Sociodemographic characteristics may therefore shape the broader context within which food choices are made without necessarily producing observable differences in the planning of a particular DSF purchase. Furthermore, the absence of statistically significant differences should not be interpreted as evidence that sociodemographic characteristics are irrelevant to DSF purchasing. Rather, the analyses did not provide sufficient evidence of systematic differences in purchase planning across the groups examined.

This distinction is important for understanding the role of sociodemographic variables within the conceptual framework. These characteristics are more appropriately viewed as consumer-level contextual factors than as direct determinants of DSF purchasing behaviour. The findings therefore support retaining a cautious interpretation of their role: sociodemographic and household characteristics may influence consumer's broader food-related preferences, but the present results do not support the conclusion that they determine whether a DSF purchase is planned.

5.3 Product category, purchase motivations and planning

The analysis of product-category revealed few systematic differences in consumer's DSF purchasing behaviour. Although price, perceived safety and food-waste concern varied descriptively across the five most frequently purchased product categories, none of these differences reached statistical significance. Similarly, purchase planning did not differ significantly between categories. These findings suggest that the key motivations underlying DSF purchases were broadly similar regardless of the type of product purchased.

This finding is noteworthy because the conceptual framework proposes that product-related characteristics, such as perishability, remaining shelf life, sensory characteristics, and storage requirements, may shape both purchase decisions and subsequent household management. Previous research has suggested that highly perishable products can create greater time pressure and heighten safety concerns than products with longer shelf lives (Dobernig & Schanes, 2019; Martindale & Schiebel, 2017; Ghinea & Ghiuta, 2019). Despite these differences, consumers in the present study appeared to evaluate discounted products in relatively similar ways across product categories. This may indicate that the discount itself, together with broader considerations related to safety and food-waste reduction, plays a more influential role in purchase decisions than category-specific product characteristics.

At the same time, the absence of statistically significant differences should be interpreted with caution. The analysis was limited to the five most frequently purchased product categories, and some categories contained relatively few observations. It is therefore possible that category-specific differences exist but were not sufficiently pronounced to be detected in the present sample. Nevertheless, the findings suggest that DSF purchasing may be characterised by a set of motivations that transcend individual product categories.

The relationship between purchase motivations and planning provides a further insight into consumer behaviour. Although price, perceived safety and food-waste concern were the most highly rated motivations, the regression analysis did not indicate that these motivations significantly predicted respondents' degree of purchase planning. This suggests that the reason consumers choose DSF should not be assumed to determine whether a purchase was planned.

Rather, the findings support a distinction between purchase motivation and purchase planning as two related but conceptually separate aspects of DSF purchasing behaviour. Consumers may encounter a discounted product unexpectedly and select it because the price is attractive, appears safe to consume, or aligns with a desire to reduce food waste. In such cases planning may occur after that selection rather than before it. This interpretation is consistent with the

findings presented in Section 4.4, where many respondents who did not initially plan to purchase DSF nevertheless reported developing a plan for using the product after purchase. The results therefore support the view that successful incorporation of DSF into household consumption may depend less on advance planning and more on households' ability to adapt meals, storage practices, and food-management routines once the product has been purchased.

5.4 Post-purchase outcomes and DSF effectiveness

The post-purchase findings provide the clearest indication of what happened to DSF products after they left the retail environment. Most respondents reported that the purchased product had been consumed, while only a small number reported discarding all or part of it. Storage, cooking and freezing were also commonly reported, indicating that many products passed through several household-management practices before consumption. The two-stage study design is particularly valuable in this regard, as it moves beyond consumer's purchase intention or willingness to buy DSF and instead follows the subsequent outcome of a specific DSF product purchased.

These post-purchase practices are especially relevant in relation to perishability. Dairy and eggs and meat and poultry accounted for the largest product categories in the sample, despite being products that are often characterised by limited shelf lives and stricter storage or safety requirements. Previous research suggests that practices such as refrigeration, freezing and timely preparation can extend food usability and reduce the risk that perishable foods deteriorate before consumption (Dobernig & Schanes, 2019; Martindale & Schiebel, 2017). The frequent use of these practices among respondents is therefore consistent with the argument that effective household management can help consumers accommodate the time constraints associated with DSF. At the same time, the study design does not allow conclusions regarding causality. While these practices co-occurred with high levels of consumption and low levels of reported waste, the analyses cannot determine whether they directly caused these outcomes.

Purchase satisfaction provides an additional perspective on the post-purchase outcome of DSF. Satisfaction levels were consistently high and did not differ significantly across the most frequently purchased product categories. This finding is noteworthy because DSF products, by definition, deviate from conventional expectations through characteristics such as shorter remaining shelf-life, cosmetic imperfection, or other forms of suboptimality. Despite these characteristics, respondents generally evaluated their purchases positively. This suggests that the forms of suboptimality represented in the sample were not perceived as substantially reducing the value of the purchased products after consumption. The finding is also consistent with previous research indicating that

positive experiences can increase familiarity with DSF and reduce uncertainty regarding future purchases (Aschemann-Witzel, 2018; Tsalis, 2020). However, because the present study did not examine repeat repurchasing behaviour, no conclusions can be drawn whether satisfaction resulted in future DSF purchases.

Taken together, the high level of products reported as consumed, the widespread use of storage and preservation practices, and the low level of reported disposal suggest that the purchased DSF products generally remained within the food-consumption pathway after purchase. According to the definition adopted in this thesis, where post-purchase effectiveness concerns whether purchased DSF is consumed rather than wasted, these findings indicate a high level of effectiveness among the observed purchases. This interpretation should nevertheless be limited to the consumer side of the intervention. The study cannot determine whether every purchased product would otherwise have been discarded by the retailer, nor whether purchasing DSF displaced another household product that was subsequently wasted. The findings therefore support the post-purchase effectiveness of the observed DSF purchases rather than establishing the net food-waste reduction attributable to retail discounting.

5.5 Overall interpretation through conceptual framework

Taken together, the findings provide a more nuanced interpretation of the conceptual framework than a simple linear pathway from product characteristics to food choice, planning, purchase behaviour and post-purchase outcome. Product-related factors and consumer-level food-choice factors provide relevant contexts for DSF purchasing, but the statistical analyses did not identify strong systematic differences in motivations or planning across the examined product categories or sociodemographic groups. Similarly, the three principal motivations did not significantly predict purchase planning. The findings therefore reinforce the decision to treat the framework as analytical rather than causal.

The clearest pattern instead emerges when purchase and post-purchase behaviour are considered together. DSF purchases could be economically and environmentally motivated while also involving safety considerations; they could be either anticipated or encountered opportunistically; and, once purchased, they could be incorporated into household routines through storage, cooking, freezing and consumption. The low reported disposal rate suggests that an unplanned or highly perishable purchase does not necessarily become household food waste. This supports viewing DSF effectiveness as dependent not merely on the retail transaction but on what consumers subsequently do with the product.

From a retail perspective, this distinction is important. Discounting may attract consumers primarily through economic value while simultaneously appealing to food-waste concerns, and the absence of strong category-specific differences

suggests that these motivations may have relevance across different DSF categories. At the same time, the post-purchase findings indicate that consumers in this sample generally succeeded in incorporating the discounted products into household use. Retail DSF strategies should therefore be evaluated not only by the volume of products sold but, where possible, by whether those products continue through to consumption rather than simply transferring the location at which food waste occurs.

5.6 Limitations

Several methodological limitations should be considered when interpreting the findings. First, the study relied on voluntary participation among consumers who had already purchased DSF. This creates a potential self-selection bias, as consumers willing to participate in a study concerning discounted food and food waste may differ systematically from other consumers. Moreover, because respondents were recruited after purchasing DSF, the study captures the experiences of DSF purchasers but not consumers who encountered discounted products and decided not to purchase them. The findings concerning perceived safety, purchase motivations, and acceptance of DSF therefore apply specifically to purchasers and cannot be interpreted as representing consumer attitudes towards DSF more generally.

Second, recruitment was limited to participating stores, in different geographical locations. This restricts the generalisability of the findings since consumers, store practices, product availability, and markdown procedures may differ between retailers and geographical locations. The demographic composition of the final sample, including its relatively high level of education and higher-income representation, further indicates that the sample should not be treated as representative of Swedish households. The study cannot determine whether this composition reflects the locations or characteristics of participating stores, the recruitment procedure, or respondent's propensity to participate.

Third, although the two-stage design allowed individual DSF products to be followed purchase, post-purchase outcomes remained self-reported. Respondents may inaccurately remember or report how products were handled or how much was consumed or discarded. The use of broad response categories for the proportion eaten or wasted also provides less precise measurement than direct weighing or household waste audits. The findings should therefore be interpreted as reported post-purchase outcomes rather than objective measurements of the physical quantity of food consumed or wasted.

The follow-up period also limits the interpretation of effectiveness. Products reported as stored or frozen had not necessarily reached their outcome at the time of follow-up. Although these practices may preserve food for later consumption, the study cannot establish whether all products remaining in storage were

eventually consumed or subsequently discarded. Consequently, the observed proportion of products reported as wasted during the study period may underestimate their eventual waste outcome, particularly for products with longer storage periods.

Product-level measurement constitutes an additional limitation. Product identification relied on respondent-provided photographs or descriptions, and information concerning package size, weight, original price, discounted price, and remaining shelf life was not consistently available across observations. This prevented standardised comparisons of discount magnitude, unit price, and the actual time available for consumption. The latter is particularly relevant because the conceptual framework identifies perishability and remaining shelf life as potential influences on planning and post-purchase management. Product categories can therefore provide an approximate indication of differences in perishability, but they cannot capture variation in the actual remaining shelf life of individual products.

Finally, the relatively small sample and particularly small number of reported waste events restrict the statistical analysis of differences between product categories. Some categories contained few observations, while only a limited number of respondents reported discarding any part of the purchased product. This reduces statistical power and makes it difficult to identify associations between product category and post-purchase outcome even if such associations exist. Non-significant results should therefore not be interpreted as evidence that product categories have equivalent waste outcomes. Larger and more evenly distributed samples would be required to test category-level differences with greater precision.

The recruitment of participants exclusively through Coop stores represents another limitation to the generalisability of the findings. Consumers shopping at one retail chain may differ from consumers using other Swedish grocery retailers in ways that are relevant to DSF purchasing, including their exposure to discounting practices, familiarity with markdown products, shopping routines, and socioeconomic characteristics. The sample itself also contained a relatively large proportion of highly educated (65.9%) respondents and households within higher income categories (53.7%). Consequently, the sample should not be assumed to represent either the Swedish population or Swedish grocery shoppers more generally. Because the study did not include consumers recruited from other retail chains, it is not possible to determine whether the observed sample characteristics resulted from the choice of retailer, the participating store locations, the recruitment procedure, or self-selection into the study. The findings should therefore be interpreted as reflecting the participating Coop consumers rather than being directly generalised to all Swedish households.

6. Conclusion

This study examined consumer purchase and post-purchase behaviour related to discounted suboptimal food (DSF) in Sweden across multiple food categories. By following specific DSF products from purchase into the household, the study moved beyond consumer's stated willingness to purchase discounted suboptimal food and instead examined what happened to products after purchase. In doing so, it provided insight into the role of DSF as a food-waste-prevention strategy beyond the point of sale.

The findings indicate that price was the most important purchase motivation, while perceived safety and concern that the product might otherwise be discarded also played important roles. DSF purchases were not always planned prior to entering the store, suggesting that consumers often purchased discounted products opportunistically. However, many respondents reported developing a plan for using the product after purchase, highlighting the importance to distinguish between pre-purchase and post-purchase planning.

The analyses provided limited evidence of systematic differences in DSF purchasing behaviour across product categories or sociodemographic groups. Purchase planning did not differ significantly according to gender, age, education, income, or household size, and the principal purchase motivations were not significantly associated with purchase planning. These findings suggest that DSF purchasing behaviour cannot easily be explained by demographic characteristics or by a single dominant purchase motive.

The analysis also did not identify a significant relationship between the three main purchase motivations (price, perceived safety, and concern about food waste) and the degree of purchase planning. These findings indicate that, within the present sample, purchase motivations and planning represented distinct aspects of DSF purchasing behaviour rather than forming a clear pattern according to consumer characteristics or product category.

The study further showed that post-purchase outcomes were generally positive. Most of products were reported as consumed, disposal was uncommon, and respondents frequently reported. Using storage, cooking, and freezing practices to manage purchased products. Satisfaction with purchased DSF products was also consistently high across the main product categories. Together, these findings indicate that the products examined were generally incorporated successfully into household food-management routines.

Based on the study's definition of effectiveness in this thesis, where effectiveness refers to the extent to which purchased DSF is consumed rather than wasted, the results indicate a high level of post-purchase effectiveness among the products followed in the study. Importantly, the findings suggest that selling a discounted product should not itself be treated as evidence that food waste has

been prevented; its subsequent household outcome remains relevant. In this study, however, the low level of reported disposal indicates that the observed DSF products were generally consumed rather than transferred from potential retail waste to household food waste.

Overall, the study suggests that DSF should be understood as part of a broader process extending beyond the retail purchase itself. While product characteristics, purchase motivations and consumer characteristics shape purchasing decisions, post-purchase food-management practices appear equally important for determining what ultimately happens to purchased products. Although the exploratory design and sample do not support causal or population-level conclusions, the findings provide product-level evidence that discounted suboptimal food can support food waste-prevention when purchased products are successfully integrated into household consumption.

6.1 Implications

This study examined consumer purchase and post-purchase behaviour related to discounted suboptimal food (DSF) in Sweden across multiple food categories. By following specific DSF products from purchase into the household, the study considered not only why and how consumers purchased DSF, but also what happened to these products after purchase. In doing so, the study provides insight into DSF as a food-waste-prevention strategy beyond the point of sale.

Regarding the characteristics of DSF purchasing, price emerged as the most prominent purchase motivation, while perceived safety and concern that the product might otherwise be discarded were also important considerations. Purchases varied in the extent to which they were planned before entering the store, indicating that DSF purchasing included both planned and more spontaneous decisions. Importantly, an initially unplanned purchase did not necessarily remain unplanned, as consumers could subsequently develop a plan for how the purchased product would be used.

The study found limited evidence that DSF purchasing behaviour differed systematically according to the sociodemographic and household characteristics examined. Purchase planning did not differ significantly according to gender, age, education, income, or household size. Similarly, the main purchase motivations and degree of purchase planning did not differ significantly across the principal DSF product categories. The analysis also did not identify a significant relationship between the three main purchase motivations (price, perceived safety, and concern about food waste) and the degree of purchase planning. These findings indicate that, within the present sample, purchase motivations and planning represented distinct aspects of DSF purchasing behaviour rather than forming a clear pattern according to consumer characteristics or product category.

Post-purchase outcomes were generally positive. Respondents reported high satisfaction with their DSF purchases, with no significant differences in satisfaction across the principal product categories. Most of the followed products were reported as consumed, while disposal was uncommon. Products were also managed through practices including storage, cooking, and freezing, demonstrating that DSF could be incorporated into household food-management routines in different ways after purchase.

Based on the study's definition of effectiveness as the extent to which purchased DSF is consumed rather than wasted, the findings indicate that DSF was largely effective at the post-purchase stage among the purchases examined. Importantly, the findings suggest that selling a discounted product should not itself be treated as evidence that food waste has been prevented; its subsequent household outcome remains relevant. In this study, however, the low level of reported disposal indicates that the observed DSF products were generally consumed rather than transferred from potential retail waste to household food waste.

Overall, the study shows that DSF purchasing, and its subsequent household outcome are best understood as parts of a connected process involving purchase motivations, planning, product characteristics, consumer characteristics, and post-purchase food management. Although the exploratory design and sample do not support causal or population-level conclusions, the findings provide product-level evidence that discounted suboptimal food purchased by the participating consumers was generally successfully incorporated into household consumption. The study thereby contributes to understanding DSF not only as a retail mechanism for selling food at risk of becoming waste, but as a strategy whose waste-prevention value ultimately depends on what happens to the food after it has been purchased.

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Popular science summary

Food retailers use discounts as one way of reducing food waste. Products may be sold at a reduced price due to their proximity to the expiration date, have damaged packaging or other factors that reduce perceived attractiveness, despite still being suitable for sale and consumption. In this study, these products are referred to as discounted suboptimal food (DSF). Discounting can give retailers an opportunity to sell food that is at risk of remaining unsold, while consumers receive food at a lower price. The study examined why consumers buy DSF, to what extent these purchases are planned, and what happens to the products after they are taken home. It also explored whether purchasing behaviour differed between consumer groups and food categories.

This study therefore examined both the purchase itself and what happened subsequently. Swedish consumers were invited to participate in a survey about a specific DSF product they had purchased. Questions covered what they had bought, why they chose it, whether the purchase had been planned, as well as questions related to socio-demographic background and household characteristics. Approximately a week later, they were re-contacted and asked what had happened to the same product, including whether it had been eaten, stored, cooked, frozen, given away or thrown away and how satisfied they were with the purchase.

The results show that price was the strongest reason for buying DSF, illustrating the importance of the financial benefit offered by discounted food. However, consumers were not motivated by price alone. Feeling that the product was safe to consume and wanting to prevent food from being wasted were also important considerations. Purchases varied from planned to more spontaneous decisions. The study also examined whether purchasing behaviour differed depending on consumer's demographic and household characteristics or the type of food purchased, but the analyses showed limited significant differences among the groups examined. Respondents were generally satisfied with their purchases, and the products were managed in several ways at home. Most importantly, most of the followed products were consumed, while only a small number were reported as being discarded.

Most of the discounted suboptimal food (DSF) followed in this study was thus consumed rather than thrown away after purchase. This is important since selling food that might otherwise become waste does not automatically mean that food waste has been prevented. If the product is instead discarded after being taken home, the risk of waste may simply have moved from the supermarket to the household. The findings of this study provide a more encouraging picture: among the purchases followed, disposal was uncommon, and most products remained part of household food consumption. These results show that the success of discounted food as a waste-reduction strategy should not be judged only by

whether the product is sold. What happens after purchase also matters. Following food into the household provides a clearer picture of whether retail food-waste measures lead to consumption rather than disposal.

Appendix 1

Note. The table presents the items from the Follow the Food questionnaire used in the present study. Questionnaire wording and response alternatives are reproduced from the original questionnaire. Descriptive fields and section headers are retained where they provide relevant context but did not generate respondent data.

A. Purchase and product identification

The first variables establish whether a discounted suboptimal food product was purchased and how the particular product was identified.

Code	Variable	Questionnaire wording	Response alternatives / format	Filter condition
5	if_purchased	Har du idag eller igår köpt en prissänkt matvara med kort datum eller avvikande utseende? Om du har köpt flera prissänkta varor, välj ut en av dessa.	1 = Ja; 2 = Nej	None. If “Nej”, survey stops.
6	photo_possible	Har du möjlighet att ta ett foto på denna matvara?	1 = Ja; 2 = Nej	None
7	attached_photo	Vänligen ta ett foto på varan där produkttyp och pris är så tydligt som möjligt. Bifoga enligt instruktionen nedan. 1. Tryck på Upload file. 2. Tryck på Välj fil och markera bilden på varan bland dina filer. 3. Tryck på Upload file igen. 4. Säkerställ att bilden bifogats och gå vidare till nästa steg. Vill du inte ta ett foto, gå tillbaka till föregående fråga och välj Nej.	File upload	Only shown if photo_possible = 1
8	product_type	Vilken specifik produkt köpte du? Var gärna så detaljerad som möjligt. Exempel: Frukt-och grönsakspåse, Ekologisk nötfärs, Skalade räkor på burk.	Open-text response	Only shown if photo_possible = 2

B. Purchase behaviour and planning

Codes 13–18 concern whether the discounted purchase affected the amount purchased and whether the purchase and subsequent use of the product had been planned. Codes 14 and 16 are instructional/descriptive fields rather than respondent variables.

Code	Variable	Questionnaire wording	Response alternatives / format	Filter condition
13	excess_more	Gjorde köpet av varan att du köpte mer eller mindre mat än du tänkt göra?	1 = Köpte mycket mindre; 2 = Köpte lite mindre; 3 = Köpte varken mer eller mindre; 4 = Köpte lite mer; 5 = Köpte mycket mer	None
14	info	Vänligen ta ställning till följande påstående.	Descriptive field; no response	None
15	planned_purchase	Jag hade planerat att köpa ett liknande livsmedel innan jag befann mig i butiken (exempelvis mjölk, apelsin, köttfärs, fikabröd, etc).	1 = Stämmer inte alls; 2 = Stämmer inte helt; 3 = Varken eller; 4 = Stämmer delvis; 5 = Stämmer helt	None
16	matrix_header2	Vänligen ta ställning till följande påståenden.	Descriptive field; no response	Only shown if planned_purchase = 1 or 2
17	planned_influence	Köpet av varan avgjorde vad som skulle ätas de närmsta dagarna.	1 = Stämmer inte alls; 2 = Stämmer inte helt; 3 = Varken eller; 4 = Stämmer delvis; 5 = Stämmer helt	Only shown if planned_purchase = 1 or 2
18	planned_usage	När jag bestämt mig för att köpa varan, hade jag planerat hur den skulle användas.	1 = Stämmer inte alls; 2 = Stämmer inte helt; 3 = Varken eller; 4 = Stämmer delvis; 5 = Stämmer helt	Only shown if planned_purchase = 1 or 2

C. Motives for purchasing the discounted product

Code 19 introduces a matrix asking respondents why the product was purchased.

Codes 20–28 all use the same five-point agreement scale.

Code	Variable	Questionnaire wording	Response alternatives / format	Filter condition
19	matrix_header3	Frågorna som följer handlar om varför varan köptes. Vänligen ta ställning till varje påstående. Jag köpte varan på grund av...	Descriptive field; no response	None

Code	Variable	Questionnaire wording	Response alternatives / format	Filter condition
20	motive_price	varans pris	Five-point agreement scale ¹	None
21	motive_size	varans storlek	Five-point agreement scale ¹	None
22	motive_taste	varans smak	Five-point agreement scale ¹	None
23	motive_process	hur varan var producerad	Five-point agreement scale ¹	None
24	motive_waste_concern	att varan riskerade att slängas i butiken	Five-point agreement scale ¹	None
25	motive_new_product	ville testa något nytt	Five-point agreement scale ¹	None
26	motive_safe	varan upplevdes som säker	Five-point agreement scale ¹	None
27	motive_convenience	varan upplevdes som praktisk	Five-point agreement scale ¹	None
28	motive_health	varan upplevdes som hälsosam	Five-point agreement scale ¹	None

¹ Five-point agreement scale: 1 = Stämmer inte alls; 2 = Stämmer inte helt; 3 = Varken eller; 4 = Stämmer delvis; 5 = Stämmer helt.

D. Demographic and household characteristics

Code 38 introduces the demographic section; codes 39–41 contain age, gender and educational level. Household size is measured by code 47 and household income by code 49.

Code	Variable	Questionnaire wording	Response alternatives / format	Filter condition
38	info_demographics	Frågorna som följer handlar om dig och ditt hushåll. Vill du inte uppge informationen kan du markera Vill ej uppge eller lämna fältet tomt. Information om personuppgiftsbehandling	Descriptive field; no response	None

Code	Variable	Questionnaire wording	Response alternatives / format	Filter condition
39	repondent_age	Vänligen uppge din ålder i siffror.	Numerical response; 15–110 years	None
40	respondent_gender	Vänligen uppge vilket kön du identifierar dig med.	1 = Man; 2 = Kvinna; 99 = Annat; 100 = Vill ej uppge	None
41	respondent_education	Vänligen välj det alternativ som bäst beskriver din högst uppnådda utbildningsnivå.	1 = Grundskola eller motsvarande; 2 = Gymnasieexamen eller motsvarande (t.ex. yrkesexamen); 3 = Eftergymnasial utbildning (ej högskola/universitet); 4 = Examen från högskola/universitet; 100 = Vill ej uppge	None
47	household_total	Hur många personer bor totalt i ditt hushåll? Skriv med siffror.	Numerical response	None
49	respondent_income	Vänligen uppge hushållets totala månadsinkomst före skatt. Räkna med eventuella bidrag, t ex barnbidrag, bostadsbidrag, studiebidrag mm.	1 = 0–9 999; 2 = 10 000–19 999; 3 = 20 000–29 999; 4 = 30 000–39 999; 5 = 40 000–49 999; 6 = 50 000–59 999; 7 = 60 000–69 999; 8 = 70 000–79 999; 9 = 80 000–89 999; 10 = 90 000–99 999; 11 = Över 100 000; 100 = Vill ej uppge	None

E. post-purchase handling and outcomes

This section comes from the follow-up part of the questionnaire. Code 54 introduces questions about the particular purchased product, while codes 55–58 concern satisfaction, post-purchase handling and consumption.

Code	Variable	Questionnaire wording	Response alternatives / format	Filter condition
54	info_questions	Frågorna som följer handlar om den specifika varan du köpte.	Descriptive field; no response	None
55	satisfaction_purchase	Hur nöjd är du med ditt köp?	1 = Mycket missnöjd; 2 = Missnöjd; 3 = Varken eller; 4 = Nöjd; 5 = Mycket nöjd	None
56	post_purchase	Vänligen markera alla alternativ som stämmer in på varan. Valen kan gälla hela eller delar av varan.	Multiple responses possible: 1 = Har ätits; 2 = Förvarad i kylskåp/skaffer; 3 = Tillagad; 4 = Slängd (även från tallrik/serveringskär); 5 = Fryst; 6 = Har getts bort; 99 = Annat	None
57	post_purchase_other	Du uppgav alternativet annat. Vänligen beskriv detta i rutan bredvid.	Open-text response	Only shown if post_purchase = Annat (99)
58	degree_eaten	Vänligen ange ungefär hur stor del av varan som har ätits i hushållet. Bortse från sådant du vanligen inte äter, ex. skal och ben.	1 = Mindre än hälften har ätits; 2 = Ungefär hälften har ätits; 3 = Mer än hälften har ätits; 4 = Hela varan har ätits	Only shown if post_purchase = Har ätits (1)

F. Degree of food waste

Code 61 is displayed only for products for which respondents indicated that at least some of the products had been discarded.

Code	Variable	Questionnaire wording	Response alternatives / format	Filter condition
61	degree_wasted	Vänligen ange ungefär hur stor del av varan som slängts. Ta även hänsyn till delar som tillagats och serverats men sedan slängts efter måltiden.	1 = Mindre än hälften har slängts; 2 = Ungefär hälften har slängts; 3 = Mer än hälften har slängts; 4 = Hela varan har slängts	Only shown if post_purchase = Slängd (4)

Appendix 2

The statistics presented in figure 4. are based on the table below. The percentages visible in figure 3 are result of grouping **‘Does not apply at all’** and **‘Does not fully apply’** together and ‘Partly applies’ and ‘Fully applies’ together. Whilst ‘Neither applies nor does not remain as it is.

Table 1. presents the respondent's reason for their purchase of DSF.

Purchase motivation*	Does not apply at all (n, %)	Does not fully apply (n, %)	Neither applies nor does not (n, %)	Partly applies (n, %)	Fully applies (n, %)
Perceived as safe	1 (0.8)	2 (1.6)	17 (13.8)	24 (19.5)	78 (63.4)
Price	2 (1.6)	2 (1.6)	6 (4.9)	42 (34.1)	70 (56.9)
Waste concern	9 (7.3)	4 (3.3)	9 (7.3)	35 (28.5)	65 (52.8)
Convenience	3 (2.4)	2 (1.6)	34 (27.6)	31 (25.2)	52 (43.2)
Taste	10 (8.1)	7 (5.7)	30 (24.4)	42 (34.1)	33 (26.8)
Health	7 (5.7)	18 (14.6)	49 (39.8)	16 (13.0)	32 (26.0)
Size	28 (22.8)	6 (4.9)	50 (40.7)	22 (17.9)	16 (13.0)
Process	31 (25.2)	14 (11.4)	43 (35.0)	20 (16.3)	14 (11.4)
Trying a new product	62 (50.4)	12 (9.8)	25 (20.3)	18 (14.6)	5 (4.1)

* One respondent did not reply to this section.

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