Promises and Pitfalls of Targeted Communication Encouraging Sustainable Purchase Decisions in Grocery Retailing

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Abstract
In this working paper we set out to investigate whether retailers can use targeted communication to encourage sustainable consumer behavior in online grocery retailing. More specifically, in two scenario-based experiments we explore if targeted communication can increase purchase intentions of sustainable food, if this effect can be explained by perceived relevance of the communication, as well as be moderated by customer sustainability knowledge and product category. The results from the two studies indicate that targeted communication might be more effective in encouraging sustainable purchase decisions for some product categories than others. However, the results from the two studies raise several questions. These can be seen as guidance for retailers and researchers interested in exploring targeted communication and its effects on sustainable consumer behavior further.

Keywords: *Sustainability, Retail, Grocery Retailing, Purchase Intention, Targeted Communication*

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INTRODUCTION

In this working paper we set out to investigate if retailers can help customers make more sustainable grocery purchases online by using targeted communication. More specifically, we investigate if targeted communication based on customer data, such as purchase history, will have greater effect on sustainable purchase decisions compared to generic communication (i.e., not targeted to a specific customer). Moreover, we investigate a possible mediator (perceived personal relevance) and moderators of this effect (sustainability knowledge and product category). The main research question that we set out to explore in this working paper is: Can retailers' use of targeted communication increase sustainable consumption? We define sustainable consumption as "actions that result in decrease in adverse environmental impacts as well as decreased utilization of natural resources across the lifecycle of the product, behavior, or service" (White et al., 2019). Thus, we limit our focus to explore the environmental aspects of sustainability.

We argue that exploring this is of importance, especially since both producing and consuming groceries have a relatively vast environmental impact (Tjärnemo & Södahl, 2015). With regards to the consumption aspect, customers have a positive attitude towards sustainable consumption, but established research has demonstrated that several aspects such as shopping habits, perceived effort, and having other priorities hinder them from behaving in line with these attitudes (Carrington et al., 2014; White et al., 2019). This so-called attitude-behavior gap has been well examined in research (see White et al., 2019 for a review). Retailers have been pinpointed as important actors in helping customers behave more sustainably by guiding them in their shopping decisions (Tjärnemo & Södahl, 2015). Making sustainable shopping decisions less effortful has been suggested as a possible strategy for retailers to help customers act more sustainably (White et al., 2019). One way of making a sustainable shopping decisions less effortful is to target communication towards the customer. Especially since targeted communication often is perceived as more convenient (Aguirre et al., 2015) and personally relevant (De Keyzer et al., 2022).

Recommending relevant sustainable substitutes based on customer data has already been implemented by retailers on the Swedish market. The Swedish retailer Mat.se is recommending more sustainable substitutes, based on lower $CO2_e$, when the customer searches for specific products in the online store. So far, there is, however, little research investigating the effects of retailers using such tools. Previous research has primarily focused on targeted communication in general, without examining it in a sustainability context (e.g., Gabel & Guhl, 2021) or sustainability communication such as sustainability nudges (e.g., Kristensson et al, 2017) in a more generic way. Combining these research streams can increase the knowledge regarding how the attitude-behavior gap can be minimized and how retailers can work to increase sustainable grocery consumption.

In this paper, the results from two experimental studies only demonstrate a significant effect of targeted communication on purchase intentions for one of all the tested sustainable substitutes. Thus, the results lead to several future research questions to be explored further as well as methodological implications. In this working paper we will therefore discuss different aspects that might be of importance for a) retailers targeting communication towards the customer to increase sustainable consumption, and b) researchers exploring this research inquiry further. The result presented in this

working paper should be seen in the light of the chosen methodology and the limitations linked to the two studies performed.

BACKGROUND

Sustainability has grown in importance both in practice and in academia. Relatedly, there is also a growing retail and consumer behavior literature on the topic. One aspect that has gained much attention is the so-called attitude-behavior gap, where consumers have positive attitudes toward sustainable offerings, but this doesn't affect their consumption decisions to the same extent (e.g., White et al., 2019; Carrington et al., 2014). Focus has been on examining barriers of sustainable consumption (e.g., Jacobs et al., 2018; Carrington et al., 2014). More specifically, Carrington et al. (2014) demonstrate that the attitude-behavior gap can occur due to customers making prioritizations both across sustainability issues (e.g., social versus environmental) and other factors such as price and convenience. Furthermore, these authors show that factors such as shopping habits, unplanned purchases, unwillingness to engage and commit, as well as the shopping mode of the customer, can all inhibit customers from acting sustainably. It has also been demonstrated that infrastructures, norms, and laws can inhibit sustainable behavior, thus also help explain why a gap occurs (Romero et al., 2018). Moreover, previous research has examined the extent of the attitude-behavior gap (Jacobs et al., 2018), as well as how the extent of this gap can vary across customer segments (Eberhart & Naderer, 2017).

Sustainability in grocery retailing research

Sustainability research focusing on grocery retailing has focused on operational and supply chain aspects. More specifically, issues such as food waste linked to retail operations (de Moraes et al., 2020) and emissions linked to online order fulfillment and revenue models (van Loon et al, 2015; Belavina, Girotra & Kabra, 2017) have been investigated. Research focusing on the consumer side of grocery retailing has explored customer characteristics, such as socio-demographic factors, perceptions, knowledge, and attitudes, that are related to sustainable food consumption (Mohr & Schlich, 2016; Carrero et al., 2016; Panzone et al., 2016; Megicks, Memery & Angell, 2012; Schanes et al., 2018; von Kameke & Fischer, 2018; Del Giudice et al., 2018). Research has also investigated the different priorities leading to the attitude-behavior gap for food waste (Schanes et al., 2018) and considerations that drive purchases of sustainable food, where both egoistic and altruistic aspects play an important role (Kareklas, Carlson & Muehling, 2014). Moreover, research has focused on the effect of new services, such as food subscriptions and meal box schemes, on sustainable food consumption (Torma, Aschemann-Witzel & Thøgersen, 2018; Heidenstrøm & Hebrok, 2022) and the effect of sustainability labels on willingness to pay (Del Giuidice et al., 2018; Sigurdsson et al., 2022). Further, research has investigated the impact of sustainable food consumption on greenhouse gas emission (Wallén, Brandt & Wennersten, 2004).

One area within grocery retailing research that has gained a lot of attention is the promotion of sustainable behavior. Consumers in general are open to nudges helping them consume food more sustainably (Schösler et al., 2013). Research has investigated the impact of both communication channels and message framing on sustainable consumer behavior. Regarding communication channels, digital displays in the grocery store has been shown to have a positive effect on future sustainable

behavior, however not on actual sustainable behavior in the store (van Giesen & Leenheer, 2019). Moreover, research has found that sustainability messages communicated verbally are better than written messages in helping consumers act more sustainably (Kristensson et al, 2017). Regarding message framing, research has demonstrated that using descriptive norms in the communication can lead to positive effects on both spending and purchases of sustainable products (Demarque et al., 2015). Similarly, using social norms to influence customers to shop more locally was demonstrated to have a positive effect, but only for those customers that had an unfavorable attitude towards shopping locally (Testa et al., 2018). Moreover, previous research has demonstrated that using anthropomorphism when promoting less norm-like vegetables can increase the purchase intentions of these, thus decrease the waste of these types of greens (Cooremans & Geuens, 2019).

Of interest in this working paper is promoting behavior change in grocery shopping using targeted communication. Related aspects have been examined in previous research. For example, Verain and colleagues (2017) examined targeted communication and its effect on customer behavioral outcomes (both thoughts and intentions). They proposed that communication, testing either health, or sustainability, or health and sustainability guidelines, will be more effective for customer behavioral change when it is targeted in accordance to segment motivation. However, contrary to their hypothesis, a targeted communication strategy based on segment motivation seems to be less effective in comparison with communicating sustainability and health at the same time. Communicating both health and sustainability guidelines were shown to be the most effective strategy across all segments (Verain et al., 2017).

To the best of the authors' knowledge, this is the first research paper focusing on targeted sustainability communication. Thus, little is still known with regards to targeted communication and its effect on more sustainable shopping behavior. We add to the study by Verain and colleagues (2017) by 1) examining targeted communication towards a specific customer (and not to a specific segment) and 2) base this communication on previous purchase behavior (and not segment motivation). Next, literature linked to our hypothesis generation will be presented.

Hypotheses

Targeted communication and its effect on sustainable shopping behavior

Targeting communication toward the customer, sometimes also referred to as personalization of the communication (e.g., Tran, 2017; Aguirre et al., 2015; Riegger et al., 2021), tailoring of the communication (Verain et al., 2017) or online behavioral advertising (Boerman et al., 2017; Aiolfi et al., 2021) has gained attention in research (e.g., Gabel & Guhl, 2021). Regardless of which term is being used, it is commonly defined as communication (e.g., advertisement, promotions, information, coupons) that is adapted based on a customer's shopping data (e.g., clicks or purchase history) to match the needs of that customer (Tran, 2017; Aguirre et al., 2015; De Keyzer et al., 2022; Hess et al., 2020). In this working paper, previous purchase behavior is linked to the customer's most common purchases which is used as a base for recommending sustainable substitutes.

In research, focus has been on examining both positive and negative effects of targeting communication towards customers. The personalization-privacy paradox

refers to targeted communication resulting in both positive customer responses by being relevant, and negative customer responses by increasing privacy concerns (e.g., Aguirre et al., 2016). Moreover, research has also focused on examining other aspects related to targeted communication that might lead to negative customer responses. More specifically, targeted communication with social presence in-store has been demonstrated to lower the attitude towards the store and attitude towards shopping in the store, especially when it is perceived as threatening and congruent with the self-concept (Hess et al., 2020).

Nevertheless, targeted communication can lead to positive outcomes such as higher click-through intentions when the retailer is transparent with the collection of customer data (Aguirre et al., 2015), better evaluation of the advertisement, which in turn positively affect behavioral intentions (Tran, 2017), as well as increased shopping frequency and expenditures (Gabel & Guhl, 2021). Moreover, targeted communication in an omnichannel context has been demonstrated to lead to positive effects on customer satisfaction (Blom, Lange & Hess, 2021) and promotion redemption (Blom, Lange & Hess, 2017). Thus, targeted communication can lead to both negative and positive customer behavioral outcomes.

We argue that targeted communication in a sustainability context will lead to increased purchase intention for a recommended sustainable substitute. Firstly, it is common for retailers to gather customer data for product recommendations making customers accustomed to this type of communication strategy. Shopping data can also be perceived as relatively low in sensitivity compared to, for example, medical data (Okazaki et al., 2020). Thus, we argue that privacy concerns might not be a great issue in this context. Secondly, sustainable shopping decisions are perceived as effortful in general (White et al., 2019) and can be even more so in habit-driven shopping contexts such as the grocery context (Siegrist, Visschers & Hartmann, 2015; Melis et al., 2015). Here, targeted communication is effective as it decreases the effort associated with finding suitable products (Aguirre et al., 2015; Tran, 2017; Hess et al., 2020). Therefore, targeted communication should lead to higher purchase intention for a suggested sustainable substitute compared to generic communication strategies. Thus, we hypothesize:

Hypothesis 1a: When communicating a sustainable substitute, targeted communication will lead to higher purchase intentions than generic communication

Moreover, targeted communication is often perceived as personally relevant (e.g., De Keyzer et al., 2022; Boerman et al., 2017) and has been shown to affect both brand attitude, communication acceptance, click intentions and purchase intentions positively by increasing perceived relevance (De Keyzer et al., 2022; Aiolofi et al., 2021). Thus, positive effects of targeted communication on customer outcomes can be explained by perceived personal relevance. Arguable, this would also hold true in a sustainability context. Hence, we argue that the positive effect of targeted communication on purchase intention for the sustainable substitute will be mediated by perceived personal relevance. Thus, we hypothesize:

Hypothesis 1b: The impact of targeted communication on purchase intention is mediated by perceived relevance

Moderating effect of sustainability knowledge

The effect of targeted communication on sustainable consumer behavior is likely to depend on consumers general knowledge about sustainability. Consumers' sustainability knowledge has been pointed out as a key driver for sustainable behavior (Bangsa & Schlegelmilch, 2020) and customers with high knowledge about sustainability are in general more impacted by sustainability communication (Sigurdsson et al., 2022; Taufique et al., 2017; Herédia-Colaço et al., 2019; Kumar et al., 2017; Eberhart & Naderer, 2017). However, this is mainly the case when the knowledge is specific, for example when connected to a specific sustainability label (Bangsa & Schlegelmilch, 2020). Targeted communication can adapt communication based on the sustainability aspect/label where the customer is most knowledgeable. Hence, customers with a higher degree of knowledge might be more impacted by targeted communication.

On the other hand, Eberhart & Naderer (2017) argue that customers with limited knowledge of sustainability are not impacted by general communication cues, such as labels. Instead, companies should use targeted communication to reach these customers by highlighting the aspects of sustainable products that are relevant to these customers. This means that targeted sustainability communication should have an increased effect on customers with low knowledge, as it can highlight other aspects than sustainability that are relevant to these customers. Thus, we develop two competing hypotheses:

H2a: The impact of targeted communication on purchase intention is enhanced among customers with high degree of sustainability knowledge.
H2b: The impact of targeted communication on purchase intention is enhanced among customers with low degree of sustainability knowledge.

Moderating effect of product category

There is a vast body of research on product categorization and how it impacts consumer behavior on a broad spectrum of topics (Loken, 2006). In this research, we are interested to see if customers are more likely to switch to a more sustainable substitute when they get targeted communications for certain products compared to other products. Previous research on targeted communication has demonstrated that the effect on consumer behavior can be moderated by product category, more specifically hedonic versus utilitarian product categories (Blom et al., 2021). We argue that customers might be less likely to change products in certain product categories, regardless of targeted or generic communication. More specifically, this could be product categories that the consumer might perceive as prototypical in one way or another (Loken and Ward, 1990). This could be the center of a meal (e.g., chicken in Tikka Masala), important to always have in the home products, or personal favorites. Existing research shows that prototypicality is positively related to preferences and customer loyalty (Nedungadi and Hutchinson, 1985). Other products, that are more of a complementary nature (e.g., side components such as rice in Tikka Masala), might be more easily switched by consumers. In a food grocery context, Scholderer et al., (2013) argue that a meal center can be linked to the classical protein category (such as meat products or fish products) and side components to the classical carbohydrate category (such as rice, pasta, and potatoes) or vegetable category (such as carrots and cabbage).

In this research, we compare products that are perceived as a prototypical main component in meals (meal center) with products that are not (side components). We hypothesize that the impact of targeted communications on purchase intention is enhanced for products that are perceived as side components in a meal, since these have a less prototypical role of the meal and are seen as more complementary.

H3: The impact of targeted communication on purchase intention is greater for products that are perceived as side components compared to products that are perceived as a meal center

Our hypotheses are displayed and summarized in Figure 1

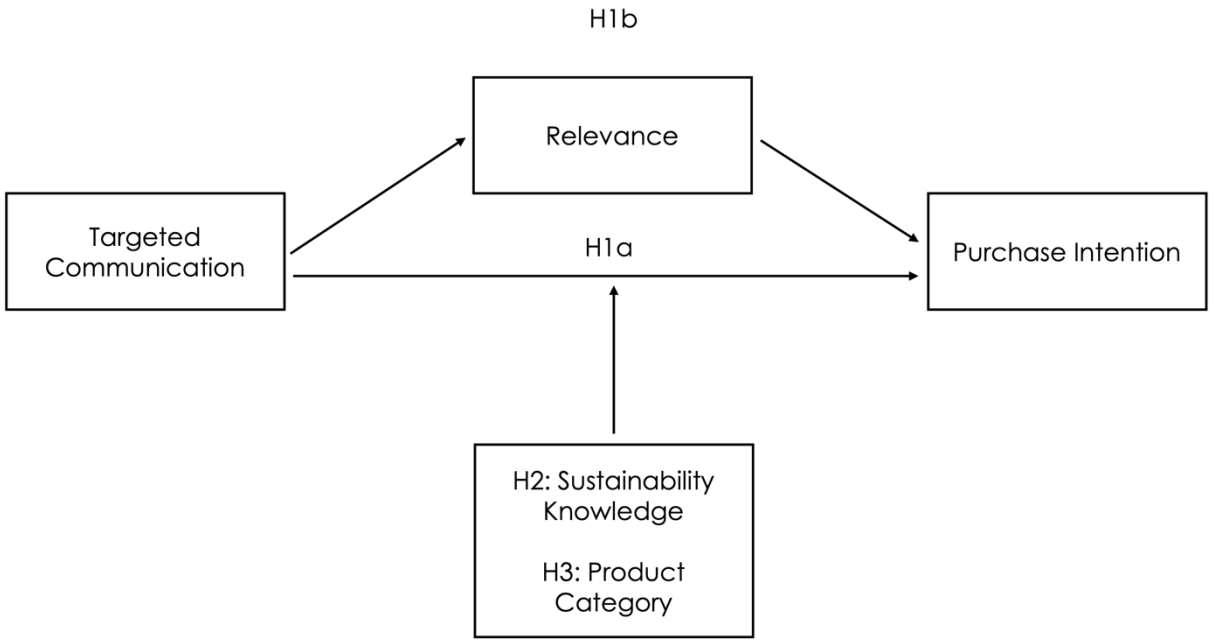

Figure 1: *The conceptual model for this working paper displayed with our hypotheses.*

EMPIRICAL STUDIES

Study 1

The purpose of study 1 was to test hypothesis 1a, if purchase intention for the sustainable substitute is higher for customers seeing targeted communication compared to generic communication. This study also examines the main effect for both organic substitutes and substitutes with lower $CO2_e$ as well as tests the effect for three different product categories: protein, carbohydrates, and fat. According to the work of Scholderer et al., (2013), the protein can be classified as the meal center and the carbohydrates as side components. While fats are not specifically mentioned in the research, we assume fat to be more of a peripheral side component.

Design

Study 1 used a 2(targeted communication vs. generic communication) X 2(organic substitute vs. lower $CO2_e$ substitute) design and was conducted as a between-subject scenario-based experiment.

Participants

499 participants were recruited from a Swedish online panel covering the general population of Sweden. Participants were paid for their participation by the panel company. We excluded 15 participants who did not complete the study; 96 participants who did not pass an attention check ("Mark number 2"); 70 participants who failed additional attention checks (had not understood that the scenario was about shopping food online and/or had not understood that the scenario was about sustainable products); and 40 participants who reported a vegetarian or vegan diet (as the manipulation involved animal protein). This leaves a total of 278 responses used in the analysis (gender: 126 men, 150 women, 2 other; M_{age} = 42.60).

Stimuli and Procedure

Participants were invited to partake in the study via email by the online panel provider. If they were interested in partaking, they first read an introduction with general information about the study (e.g., purpose of study, persons responsible for the study and contact information, personal data management, and possible outlets for presentation of results) before they were asked about their consent to partake in the study.

Participants were randomly assigned to one of the four experimental conditions. The participants were asked to imagine that they were shopping for groceries and that a message in the online store was communicated towards the customer, the message entailed both pictures and prices of the products. See table 1 for the four shopping scenarios used in the study (this description does not include the pictures of the products due to copyright reasons).

In the targeted communication condition, participants were told that the product recommendations were based on their customer data and the products they most commonly buy (beef, rice, and butter). The three most common purchases and the three suggested sustainable substitutes were displayed together with the pictures of these six products. In the generic condition only pictures of the suggested sustainable products were displayed. The sustainable substitutes were either based on organic production: organic beef, organic rice, or organic butter, or based on $CO2_e$: chicken, wheatberry, rapeseed oil. The $CO2_e$ presented in the scenario were based on Rise öppna listan (an open climate database for groceries from Research Institute from Sweden).

The sustainability operationalizations were based upon retail practices seen on the market today, as well as wanting to test substitutes with different price ranges. Thus, organic substitutes were priced higher than those substitutes based on $CO2_e$ as commonly seen on the market. Moreover, the specific products (organic beef, organic rice, organic butter, chicken, wheatberry and rapeseed oil) were chosen as they could be considered sustainable substitutes for the less sustainable products

Condition	Organic Substitutes	CO2e Substitutes
Targeted Communication	Make your shopping basket more sustainable! We, your local grocer, strive to reduce groceries' environmental footprint. Put these organic products in your shopping basket instead of your most common purchases in our store to make your shopping basket more sustainable. Organic products Organic Beef Organic Rice Organic Butter Your most common purchases Beef Rice Butter By doing so, you can shop more sustainably!	Make your shopping basket more sustainable! We, your local grocer, strive to reduce groceries' environmental footprint. Put these products with a low CO2e emission in your shopping basket instead of your most common purchases in our store to make your shopping basket more sustainable. Lower CO2e emission Chicken Wheat Berry Rapeseed Oil Your most common purchases Beef Rice Butter By doing so, you can shop more sustainably!
Generic Communication	Make your shopping basket more sustainable! We, your local grocer, strive to reduce groceries' environmental footprint. Put these organic products in your shopping basket to make your shopping basket more sustainable. Organic products Organic Beef Organic Rice Organic Butter By doing so, you can shop more sustainably!	Make your shopping basket more sustainable! We, your local grocer, strive to reduce groceries' environmental footprint. Put these products with a low CO2e emission in your shopping basket to make your shopping basket more sustainable. Lower CO2e emission Chicken Wheat Berry Rapeseed Oil By doing so, you can shop more sustainably!

Table 1: *The shopping scenarios used in study 1.*

(beef, rice, and butter) since they were either produced organically or had lower $CO2_e$. After the respondents had read the shopping scenario, they answered a questionnaire before they were thanked and debriefed.

Measures

In the questionnaire, respondents were asked to indicate their purchase intentions for the three different sustainable substitutes recommended (those substitutes that they had seen in their specific condition) using a single item scale adapted from Elder & Krishna (2012). The manipulation check for the targeted communication was measured by three items (α = .926) adapted from Sutanto and colleagues (2013). Lastly, respondents answered attention checks, if they could specify the purpose of the study, a screening question linked to vegetarian/vegan diet, experience of shopping food online, and demographic variables (age and gender).

Privacy concerns and sustainability engagement were also included as control variables. Privacy concerns was measured by four items from Martin, Borah and Palmatier (2017) (α =.862), and sustainability engagement was measured by six items from Haws et al., (2014) (α = 936). For exploratory purposes, we also measured evaluation of the communication, evaluation of the store, emotions, and customer satisfaction. However, as these did not yield any results of interest they will not be discussed further in the paper. See Appendix for all measures and items from study one.

Result Study 1

Manipulation Check

The manipulation check was successful. Respondents in the targeted communication condition perceived the communication to be more targeted towards them (M= 4.39) than those in the generic condition (M= 3.87; t=-2.801, p=.005).

Moreover, no significant differences were found between the targeted communication and the generic communication conditions in terms of privacy concerns ($M_{targeted}$=4.60, $M_{generic}$=4.54, t=-.329, p=.743) and sustainability engagement ($M_{targeted}$=4.67, $M_{generic}$=4.51, t=-.974, p=.331).

Purchase Intention

H1 proposed that participants in the targeted communication condition would report higher purchase intentions for the sustainable products than those in the generic condition. An independent samples t-test revealed that the targeted communication condition indicated higher purchase intentions only for one of the three sustainable substitutes, namely the carbohydrates category (organic rice and wheatberry: $M_{targeted}$=4.25, $M_{generic}$=3.54, t=-3.328, p<.001). There were no significant differences between the targeted and generic communication for the protein category (organic beef and chicken: $M_{targeted}$=4.56, $M_{generic}$=4.37, t=-.789, p=.215) or the fats category ($M_{targeted}$=4.34, $M_{generic}$=4.15, t=.883, p=.189). Next, independent samples t-tests, split into the two sustainable substitutes (organic and lower $CO2_e$), will be presented in detail.

Organic substitutes

For organic products, an independent samples t-test demonstrated that the purchase intention was higher for participants in the targeted (M= 4.13) compared to generic (M= 3.51; t= -2.034, *p*=.044) condition for the sustainable substitute carbohydrate. However, there were no significant differences between the targeted condition and

Organic substitute	**Targeted (n=69)**	**Generic (n=78)**	**t**	**p**
Carbohydrates (Organic rice)	4.13	3.51	-2.034	.044
Protein (Organic beef)	3.86	3.99	.396	.692
Fats (Organic butter)	3.84	3.82	-.065	.949

Table 2: The effects on purchase intention for the three different organic substitutes between the two groups (targeted communication vs. generic communication).

the generic condition for the protein category ($M_{targeted}$= 3.86; $M_{generic}$= 3.99, t=.396, p=.692) and the fats category ($M_{targeted}$= 3.84; $M_{generic}$= 3.82, t=-.065, p=.949).

Lower $CO2_e$ emission substitutes

For products with lower $CO2_e$, purchase intention for the carbohydrate substitute was higher for the targeted communication (M= 4.36) compared to generic condition (M= 3.57, t= -2.578 *p*=.011). For protein and fats, however, there were no significant differences between the conditions ($M_{targetedprotein}$= 5.20, $M_{genericprotein}$= 4.89 t=-.955, p=.341; $M_{targetedfats}$= 4.80, $M_{genericfats}$= 4.61, t= -.681, p=.497).

Lower $CO2_e$ emission substitute	**Targeted (n=75)**	**Generic (n=56)**	**t**	**p**
Carbohydrates (Wheatberry)	4.36	3.57	-2.578	.011
Protein (Chicken)	5.20	4.89	-.955	.341
Fats (Rapeseed oil)	4.80	4.61	-.681	.497

Table 3: The effects on purchase intention for the three different lower CO2e emission substitutes between the two groups (targeted communication vs. generic communication).

Thus, the analysis only demonstrates an effect of targeted communication on purchase intentions for the carbohydrate products (rice and wheatberry), both when consumers are shown an organic and a lower $CO2_e$ substitute. Thus, H1a is partly supported. See figure 2 for results graphically displayed for the organic substitutes and figure 3 for the $CO2_e$ substitutes.

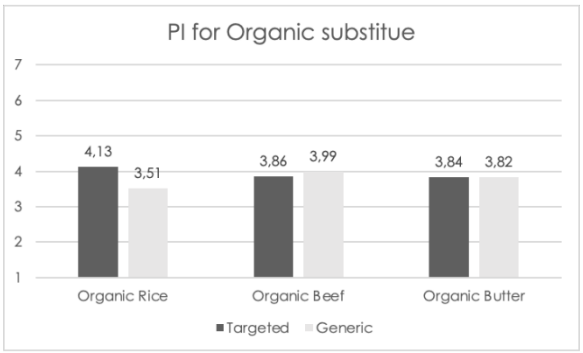

Figure 2: Purchase intentions for organic substitutes

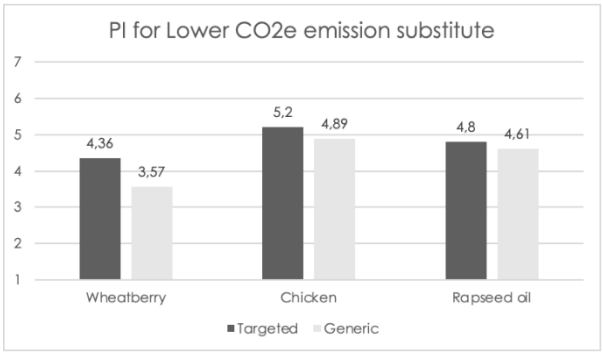

Figure 3: Purchase intentions for lower CO2e substitutes

Discussion Study 1

Study 1 finds a positive effect from targeted communication on purchase intentions for the sustainable substitutes in the carbohydrates category (organic rice and wheatberry). This effect was not found in the protein category (organic beef and chicken) nor the fats category (organic butter and rapeseed oil). The effect for carbohydrates was found for both the organic substitute and for the lower $CO2_e$ substitute; two substitutes with a different price range. Thus, it seems like consumers are more likely to switch to sustainable substitutes in the carbohydrates category compared to the protein and fats category. In study 2, we investigate the moderating role of product categories. Moreover, we investigate perceived relevance as a potential mechanism and sustainability knowledge as a possible moderator.

Study 2

The aim of the second study was to further investigate the impact of targeted communication on purchase intention in a sustainability context (testing H1a). We also investigate if the effect is mediated by perceived personal relevance (testing hypothesis 1b). Further, we examine if the effect of targeted communication on purchase intention is dependent on product category. More specifically, we test whether the impact of targeted communication is more prominent for so called side components (i.e., carbohydrates such as pasta) compared to meal centers (i.e., protein such as meat) (testing hypothesis H3). We also examine if the main effect is dependent on customers environmental knowledge (testing H2).

Study 2 is also designed to overcome some of the limitations of study 1. Firstly, the second study is designed to entail the same amount of product pictures across the stimuli used. In study 1, the generic stimuli had fewer pictures than the targeted stimuli which might affect the results found in this study. Moreover, study 1 included several product categories which might have impacted respondents. In study 2, we only use one product substitute per stimuli.

Design

Study 2 used a 2(targeted communication vs. generic communication) X 2(meal center substitute vs. side component substitute) between-subject scenario-based experiment design. In this study, we focus only on substitutes with lower $CO2_e$ emission. The substitutes were chosen based on 1) Scholderer et al., (2013) where certain products are described as side components or meal centers, 2) a change in products used in study one to increase generalization, and 3) RISE Öppna Listan, were we had to choose product categories covered on the list.

Participants

903 respondents accepted to be part of the study from the same Swedish online panel as in study 1. The panelists were paid by the panel company for their participation. Participants that were recruited in the first study could not partake in the second study. We excluded 201participants who failed the first attention check; 170 participants with missing data; and 51 participants that reported that they were vegetarian or vegan (since one of the stimuli contained animal protein). In total, a sample of 481 responses were used in the analysis. Of these, 236 were men, 243 were women, and 2 were other. Mean age was 45.36 years.

Stimuli and Procedure

Respondents were invited by email to partake in the study by the panel company. The same introduction text as in study 1 was used before the respondents were asked about consent. Then an attention check was used to screen out respondents not paying attention ("To demonstrate that you are reading, please select other and write the word bicycle"). Similar attention checks have been pinpointed as a valuable tool to increase attention to instructions or screen out those not paying enough attention (Oppenheimer et al., 2009). The respondents were randomly assigned to one of the four shopping scenarios. The respondents were asked to imagine that they were sitting at home one night shopping for food online for the upcoming week. They were asked

to imagine that they were shopping at their favorite store where they usually shop online. They were then told that the store had the following communication on the landing page (product pictures are removed for copyright reasons).

Condition	Meal Center	Side Component
Targeted Communication	Make your shopping basket more climate smart! We, your local grocer, strive to reduce groceries' climate footprint on our planet. **Your most common purchase**: Minced meat **Product with lower CO2e-emission:** Quorn Put this product with **a lower CO2e-emission** in your shopping basket to shop more climate smart. (<-- climate smart choice **for you**)	Make your shopping basket more climate smart! We, your local grocer, strive to reduce groceries' climate footprint on our planet. **Your most common purchase**: Macaroni **Product with lower CO2e-emission:** Potatoes Put this product with **a lower CO2e-emission** in your shopping basket to shop more climate smart. (<--climate smart choice **for you**)
Generic Communication	Make your shopping basket more climate smart! We, your local grocer, strive to reduce groceries' climate footprint on our planet. **The store's most common purchase:** Minced meat **Product with lower CO2e-emission:** Quorn Put this product with **a lower CO2e-emission** in your shopping basket to shop more climate smart. (<--climate smart choice)	Make your shopping basket more climate smart! We, your local grocer, strive to reduce groceries' climate footprint on our planet. **The store's most common purchase:** Macaroni **Product with lower CO2e-emission:** Potatoes Put this product with **a lower CO2e-emission** in your shopping basket to shop more climate smart. (<--climate smart choice)

Table 4: *The shopping scenarios used in study 2.*

After reading the scenario, the respondents were asked to think of what food to buy in the online store and which products they wanted to put in the shopping basket for the upcoming week. Then, they answered questions in a following questionnaire before they were thanked and debriefed.

Measures

After reading the scenario, respondents were first asked to evaluate their purchase intention for the sustainable product using a scale adapted from Bian & Forsythe (2012) (α =.954). Then, personal relevance of the communication was measured using a scale adapted from Krafft, Arden and Verhoef (2017) (α =.971). Next, participants sustainability knowledge was measured by a scale adapted from Taufique et al., (2017), (α =.872). As in study 1, privacy concern was included as a control variable and was measured by a scale adapted from Krafft, Arden & Verhoef (2017), (α =.959). Lastly, manipulation check for targeted communication was measured by a scale

adapted from De Keyzer, Dens & De Pelsmacker (2022), (α = .806) and manipulation check for meal centrality asked respondents to evaluate how good of an example minced meat, Quorn, macaroni, and potatoes were as side component or meal center (1 = side component – 7 = meal center).

Respondents were also asked a screening question; if they only eat vegetarian or vegan diet, as well as questions linked to their experience of shopping food online, demographical questions (age, gender, education, food budget), which screen they used to answer the study on, and what they thought the purpose of the study was before they were thanked and debriefed. We also measured evaluation of communication, effort saving and self-efficacy for exploratory purposes, but as they did not yield any results of interest they will not be discussed further within the scope of the working paper. See Appendix for all scales and items used in the second study.

Result Study 2

Manipulation checks

To analyze if our manipulation of targeted communication was perceived as intended an independent sample t-test was performed. The analysis demonstrated that the targeted communication (M = 3.93) was perceived as more targeted compared to the generic communication (M = 3.66; t=-1.950, p=.052), with a p-value just on the verge of being supported (this will be discussed in more detail in the discussion of the study).

A paired samples t-test (since all respondents could evaluate all product categories independent of which stimuli they have seen) was conducted on the manipulation check for product categories. Minced meat was perceived more as a meal center (M = 5.61) than macaroni (M = 3.8; t = 15.220, p < .001). There was, however, no significant difference between the products the respondents were suggested to switch to (M_{Quorn} = 4.37; $M_{potatoes}$ = 4.20; t = 1.153, p = .249). This will be discussed further in the discussion section.

Moreover, no significant differences were found between the group that received the targeted communication and the group that received the generic communication with regards to privacy concerns ($M_{targeted}$ = 3.63; $M_{generic}$ = 3.40; t = -1.337, p = .182) and sustainability knowledge ($M_{targeted}$ = 4.66; $M_{generic}$ = 4.59; t = -.639, p = .523).

Main and interaction effects on purchase intention

To test hypotheses H1a and H3, a Univariate analysis of variance was performed. The analysis showed no main effect from targeted communication on purchase intention for the sustainable substitutes (p = .234). The results indicated a significant main effect of product category on purchase intention, where participants were more likely to purchase the sustainable substitute for side components ($M_{side\ component}$ = 4.00; $M_{meal\ center}$ = 3.48; F = 9.901, p = .002). Moreover, there was no significant interaction between type of communication (targeted vs generic) and product category (meal center vs side component) (p = .234). A pairwise comparison demonstrated no main effect of targeted communication on purchase intention for the meal center substitute ($M_{targeted}$ = 3.28, $M_{generic}$ = 3.68, F = 2.863, p = .091). Neither was there a significant main effect of targeted communication on purchase intention for the side

Sustainable substitute	Targeted	Generic	F	p
Meal center (Quorn)	3.28 (n=120)	3.68 (n=122)	2.863	.091
Side component (Potatoes)	4.00 (n=120)	4.00 (n=119)	.000	1.00

Table 5: *The effects on purchase intention for the four different experimental conditions.*

component ($M_{targeted}$ = 4.00; $M_{generic}$ = 4.00; F = .000, p = 1.00). Thus, hypotheses 1a and 3 are not supported. See figure 4 for results graphically displayed for the sustainable substitutes for respective group (Meal Center & Side Component).

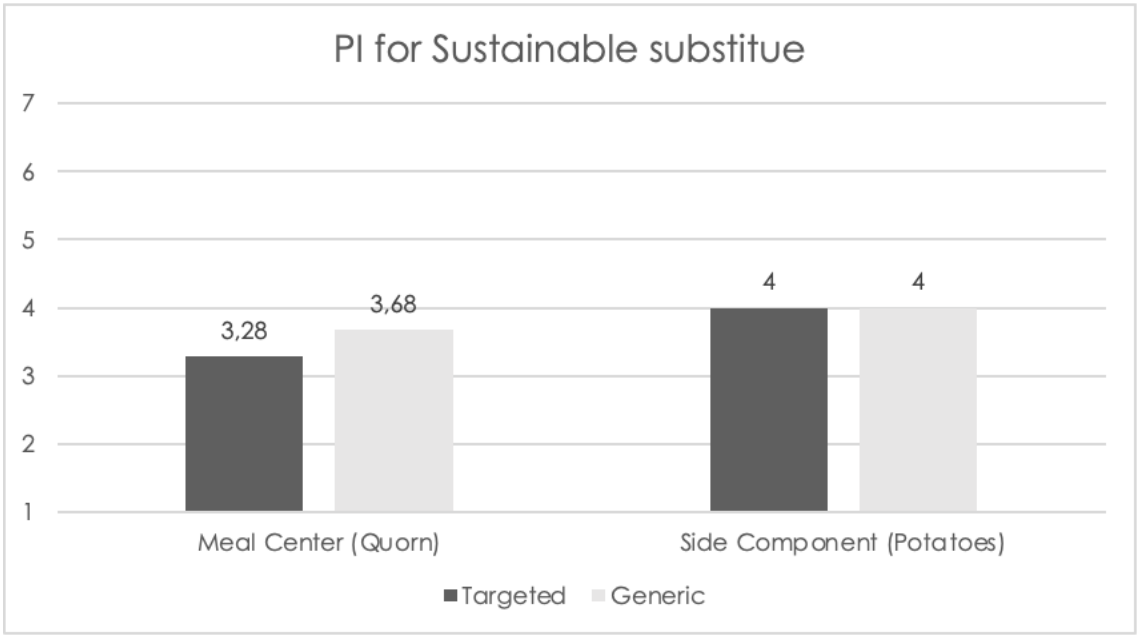

Figure 4: Purchase intentions for the sustainable substitutes for respective category (meal center & side component)

Mediation analysis of relevance

Despite the non-significant result for the main effect of targeted communication, a mediation analysis was performed using PROCESS, model 4, 5000 bootstraps with a 95-confidence interval. This as mediation can occur despite the lack of a significant main effect (Zhao et al., 2010). Targeted communication did not have a significant impact on perceived relevance (β = -.12, t = -.749, p = .454). Moreover, while targeted communication did not significantly impact purchase intention (β = .34, t = -.948, p = .34), perceived relevance did (β = .82, t = 29.049, p = .000).

We also analyzed the data separately for each product category (meal center and side component). For the meal center substitute, targeted communication did not significantly impact perceived relevance (β = -.12, t = -.506, p = .613). However, both perceived relevance (β = .84, t = 22.025, p=.000) and targeted communication significantly influenced purchase intention (β = -.30, t = -2.117, p = .035).

For the side component substitute, targeted communication did not significantly impact perceived relevance (β = .13, t = -.573, p = .567). However, perceived relevance positive positively influenced purchase intention (β = .79, t = 18.958, p = .000), while targeted communication did not (β = .10, t = .705, p = .481).

Thus, while relevance is enhancing purchase intention for more sustainable food choices, it plays no role in how targeted communications impacts purchase intention. Thus, H1b cannot be supported.

Moderating effects of sustainability knowledge

Next, we investigate H2a and H2b. The competing hypotheses stated that sustainability knowledge either enhanced or diminished the effect of targeted communication on purchase intentions for a sustainable substitute. To investigate this moderating effect, we used PROCESS model 1, 5000 bootstraps with a 95-confidence interval. The analysis yielded no significant effect of targeted communication (β = -.21, t = 1.290, p = .198), sustainability knowledge (β = .42, t = 1.877, p = .061), or the interaction term (β = -.11, t = -.773, p = .440) on purchase intention.

We also analyzed the moderating result from sustainability knowledge separately for each product category (meal center and side component) and found no significant moderation effect of sustainability knowledge and targeted communication on purchase intention for the meal center category (β = -.02, t = -.106, p = .915), nor main effects of targeted communication (β = -.36, t = -1.504, p = .134) or sustainability knowledge (β = .27, t = -.106, p = .404).

Neither did we find a significant moderating effect of sustainability knowledge and targeted communication on purchase intention for the side component category (β = -.31, t = -1.554, p = .122), nor main effects of targeted communication (β = -.10, t = -.425, p = .671). However, sustainability knowledge negatively impacted purchase intention (β = -.79, t = 2.451, p = .015). Thus, neither H2a nor H2b can be confirmed.

Discussion Study 2

In this study we could not replicate the main finding from study 1. That is, we found no significant difference between the group that received the targeted communication and the group that received the generic communication on purchase intention of the sustainable substitute. Nor could we find any significant mediation effects of relevance on purchase intention from targeted communication. Neither did we find any significant interaction effect between type of communication (targeted vs generic) and product category (side component vs meal center) or sustainability knowledge.

There can be several explanations for the non-significant results. Firstly, the manipulation check for the targeted communication showed that the manipulation was not very strong (p=.052, which is on the verge of acceptance). The differences between the targeted and the generic stimuli might thus have been too subtle to detect any effect. Only a few words were changed between the targeted and the generic stimuli used in the study. Thus, the non-significant effect might have been a result of failed manipulation. Moreover, the targeted communication was not based on customers actual previous behavior which might have further reduced the effect. Secondly, the sustainable substitutes might not have been evaluated as relevant substitutes by the respondents. This is further supported by the fact that Quorn and potatoes were perceived to be similar with regards to product category (side component versus meal center). However, we do find that consumers were more likely to switch to a sustainable substitute in the side component category compared

to the meal center category. Moreover, perceived relevance appears to be a relevant variable in explaining willingness to switch to a more sustainable substitute. Sustainability knowledge also appears to impact purchase intention for some products (side components), but negatively. Lastly, we also see tendencies that targeted communication can have negative effects for some product categories (meal center substitute, when taking relevance into account).

GENERAL DISCUSSION

In this working paper we examined if targeted communication in an online grocery store could lead to higher purchase intention for a sustainable substitute compared to generic communication. The effect was tested across different product categories (carbohydrates, proteins, fats; meal center and side component) and with different operationalizations of sustainability (organic products and products with lower $CO2_e$ emission). Moreover, we also examined if the effect on purchase intention from targeted communication is mediated by perceived relevance and moderated by product category and/or customers' sustainability knowledge.

In study 1, we only found a main effect from targeted communication on purchase intention for one of the three product categories, the carbohydrates category (i.e., rice substitutes). The effect was found for both the organic substitute and the substitute with lower $CO2_e$ emission. In study 2, no significant results were found for the hypothesized effects. This might be due to the subtle manipulation of the targeted communication and the choice of the sustainable substitute as previously discussed. However, we did find that customers were more likely to switch to a sustainable product in the side component category regardless of the type of communication. We did also find that relevance enhances customers' purchase intention for more sustainable products. When taking relevance into account, we also find that targeted communication can lower purchase intentions for sustainable substitutes in the meal center category. Lastly, we found that sustainability knowledge negatively influences purchase intention in the side component category. Thus, the result from these studies lead to several inquiries that need to be examined further before concrete implications can be discussed. More specifically, these two studies generate the following questions that can be valuable for both retailers and researchers when thinking about exploring this subject further:

- Are the different results found across categories and studies an effect of how consumer perceive the chosen substitutes and associations with them? Alternatively, is the effect dependent on the category that the customer is switching from? In sum, are consumers more or less prone to reconsider purchases for different product categories?
- Are the effects from the targeted communication dependent on how the communication is formulated? It seems as the formulation "your most common purchase" used in the two studies for the targeted communication can work differently when compared to the formulation "the store's most common purchase" (study 2) or when the communication is formulated as a fully generic offer (study 1).
- What type of customer data should the targeted communication be based on? In our studies the communication was based on (hypothetical) previous purchases, but it could also be based on e.g., previous products visited or

based on purchase behavior of previous customers. Relatedly, how fine-grained should recommendations be (e.g., on a segment basis vs personalized)?

Even though the findings in this working paper led to several unanswered questions that need to be explored further, some conclusions can be drawn. These will be discussed next.

Managerial Implications

The research questions that arose in this paper can be seen as guiding points for what might be important to have in mind when using targeted communication for sustainability purposes. The implications should be interpreted in the light of the inconclusive results found in this paper.

Based on the result from study 1, targeted communication seems to be a promising tool to use for products categorized as side components of a meal (e.g., carbohydrates). Moreover, as found in study 2, customers seem generally more inclined to switch to sustainable substitutes for side component. This indication is further enhanced by the fact that targeted communication had a negative effect on purchase intention for meal centers (e.g., proteins) in study 2, when taking relevance into account. One potential explanation for this finding may be that side components are seen as less central for the meal composition, why these products might be easier to switch from compared to those that might be perceived as more central (Scholderer et al., 2013). A similar reasoning may be applied in other business contexts. For example, consumers switching to socks made from organic cotton from a pair made from conventional cotton might be more likely than switching from a pair of jeans made from conventional cotton to a pair made of organic cotton. All in all, it is important for retailers to create an understanding of how the customer perceives the product category that is used in the targeted communication.

Moreover, the results suggest that other types of customer data than solely purchase history might be of importance to base the targeted communication on. Perhaps customer survey data can be of help to understand how customers perceive product categories (e.g., are they perceived as meal centers or side components, which sustainable substitutes are perceived as relevant). Also, targeted communication based on more sophisticated algorithms and modeling approaches might be more effective.

Moreover, retailers also need to explore if it is the perception of the product the customer is switching from or the product the customer is switching to that is driving the effect. Our results in study 1 suggest that it might be the products the customer is asked to switch from and not the product the customer is asked to switch to that drives the effect. This, since the effect is found for both a "similar" substitute (organic substitute) and a "less similar" substitute (lower $CO2_e$). However, this needs to be explored further.

Lastly, the lack of significant results across categories and studies might suggest that a targeted communication strategy with the aim of helping consumers to act more sustainably might need to be implemented with caution. While relevance seems to be an important predictor for sustainable product decisions, there might be other

tools retailers ought to use in the pursuit of helping customers shop more sustainably. For example, it might be more effective to work with the store environment and/or the assortment offered, making sure that there is a relevant sustainable assortment easily available for the consumer to choose from.

Future research and limitations

The results and discussions in this working paper need to be seen in the light of the limitations of the studies presented. In both studies, the exclusion of respondents based on failed attention checks and missing data were relatively substantial which might indicate that the panel data quality is low. Thus, we argue that the use of the attention checks was necessary to increase the quality of the responses (see e.g., Oppenheimer et al., 2009 and Arndt et al., 2022 for further discussions on attention checks). Additional responses from participants that indicated vegan or vegetarian diet were removed. This was seen as vital to increase the external validity of the research. As the scenarios included meat, vegetarian and vegan respondents would arguably see the scenario as less realistic. A further limitation of these studies is the use of solely scenario-based experiments which meant that the suggestions were not based on the respondent's actual behavior and thus limits how targeted the communication is perceived to be.

Still, there are several things that can be learned from the two studies when exploring this topic further. More specifically, future research focusing on targeted communication and sustainable consumer behavior should consider:

- Verifying if targeted communication works better for products seen as more or less central using different types of products.
- Pretesting possible sustainable substitutes to investigate whether they are perceived as substitutes.
- Making sure that the stimuli differences are not too subtle, as might have been the case in study 2, when using a scenario-based methodology.
- How to best mimic suggestions based on previous consumer behavior when field data is unavailable.
    - For example, one approach could be to control for whether customers have indeed purchased the product used in the scenarios.
    - Another approach could be to investigate what sustainability aspect that is most relevant to the customer and suggest products based on this.
    - One last suggestion could be to use a step wise methodology, where respondents first are surveyed about their shopping behavior and use this in the second step to target the communication based on the information the respondent has indicated in the first step.

We also see the need for additional studies:

- Exploring the effects of targeted communication in the field using real customer data.
- Exploring different ways of formulating the targeted communication to see if this might influence purchase behavior. Possibly, the difference in communication design can explain the disparities in the two different studies (e.g., different framing, different images).

- Exploring the effectiveness of targeted communication to help customers act more sustainably compared to other strategies such as using an assortment strategy.

In sum, more research is needed to understand if targeted communication is effective in helping customers act more sustainably in a grocery setting. Hopefully, this working paper spur future research on this research topic.

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Other:
Rise öppna listan (Öppna listan – ett utdrag från RISE klimatdatabas för livsmedel v 2.0))

APPENDIX – Measures used in respective study

Measures included in study 1

Label	Items	Cronbach's Alpha/ Correlation	Reference
Purchase intention	In the described shopping scenario above, I would choose to buy the following products that were suggested in the communication: 1. Chicken/Organic beef 2. Wheatberry/Organic rice 3. Rapeseed oil/Organic butter **(1= Definitely not – 7= Definitely)**	-	Adapted from Elder & Krishna (2012)
Emotions	Based on your answer on Q1 how would you describe your feelings after your choice? • 1 Negative emotions – 7 Positive emotions • 1 Unhappy – 7 Happy • 1 In a bad mood – 7 In a good mood • 1 Guilt – 7 No guilt • 1 Bad conscience – 7 Good conscience • 1 Not proud – 7 Proud • 1 Not pleased – 7 Pleased • 1 Dissatisfied with myself – 7 Satisfied with myself	α = .971	Items 1-3 adapted from Söderlund & Rosengren, (2007) Item 4-8 adapted from Rowe et al., (2017)
Evaluation of the communication	In the described shopping scenario, I thought that the communication from the online store: 1 Reminded me of products that I needed 2 Helped me make my purchase easier 3 Made me proud of my purchase 4 Made me feel like a smart customer 5 Made me feel like trying new things 6 Gave me new ideas of things to buy 7 Was a fun message 8 Was an entraining message 9 Made me save money 10 Was a good deal **1= Do not agree – 7= Agree completely**	α = .957	Adapted from Chandon, Wansink, Laurent, (2000)
Customer Satisfaction	1. How satisfied or dissatisfied are you with this online store? **(1 Very dissatisfied – 7 Very satisfied)** 2. To what extent did this online store meet your expectations? **(1 Not at all – 7 Totally)** 3. Imagine an online store that is perfect in every respect. How near or far from this ideal did you find this online store? **(1 Very far from – 7 Cannot get any closer)**	α = .922	Adapted from Fornell (1992)
Attention check	Mark number 2	-	-
Evaluation of the store	1. To shop in this way is very entraining 2. The enthusiasm of this store is catching; it picks me up 3. This store does not just sell products-it entertains me 4. To shop in this way is something I do because it is fun 5. To shop in this way is an efficient way to manage my time 6. To shop in this way makes my life easier 7. To shop in this way fits my schedule 8. When I think of this store I think of this store as the best in its category 9. I think of this store as an expert in the merchandise it offers. **1 = Do not agree – 7= Agree completely**	α = .966	Adapted from Mathwick, Malhotra, & Rigdon, (2001)
Sustainability engagement	1. It is important to me that the products I use do not harm the environment 2. I consider the potential environmental impact of my actions when making many of my decisions 3. My purchase habits are affected by my concern for our environment 4. I am concerned about wasting the resources of our planet 5. I would describe myself as environmentally responsible 6. I am willing to be inconvenienced in order to take actions that are more environmentally friendly. **1 = Do not agree – 7= Agree completely**	α = .936	Haws et al (2014)

Privacy concern	1. I am sensitive to the way companies handle my personal information 2. It is important to keep my privacy intact from online companies 3. Personal privacy is very important, compared to other subjects 4. I am concerned about threats to my personal privacy **1 = Do not agree – 7= Agree completely**	α = .862	Martin, Borah & Palmatier, (2017)
Manipulation check - Targeted communication	1. I perceive that the store based the communication on my shopping activities 2. I perceive that the store based the communication on my personal preferences 3. I perceive that the store based the communication on the information I previously have indicated at the store **1 = Do not agree – 7= Agree completely**	α = .926	Adapted from Sutanto, et al (2013)
Attention check	What was the scenario about? 1. I was shopping for clothes 2. I was shopping for food online 3. I was shopping for a gift	-	-
Attention check - Sustainability category	The communication that I received encouraged me to switch to: 1. Organic products 2. Products with a low CO2e emission 3. Products at campaign	-	-
Purpose of the study	What do you think the purpose of the study was?	-	-
Experience of shopping online	Have you shopped for food online before? 1. Yes 2. No		
Screening question	Are you vegetarian/Vegan? 1. Yes 2. No	-	-
Demographical variables	Gender (male/female/other) Age	-	-

Measures in study 1.

Measures included in study 2

Label	Items	Cronbach's Alpha/ Correlations	Reference
Purchase intention	With the shopping scenario described above in mind: 1. I would consider buying the climate smart product that was recommended 2. The likelihood that I would buy the climate smart product that was recommended is high 3. Is It very likely that I would buy the climate smart product that was recommended **1 = Do not agree – 7= Agree completely**	α = .954	Adapted from Bian & Forsythe (2012)
Evaluation of the Communication	With the shopping scenario described above in mind, I perceive that the communication: 1. Reminded me of products that I needed 2. Helped me make my purchase easier 3. Helped me remember what I needed 4. Made me feel like trying new things 5. Made me avoid always buying the same products 6. Gave me new ideas of things to buy **1 = Do not agree – 7= Agree completely**	α =.917	Adapted from Chandon, Wansink, Laurent (2000)
Effort saving	With the shopping scenario described above in mind, I perceive that the communication: 1. Reduced my effort when it comes to shopping climate smart 2. Helped me with my purchases by recommending a climate smart product that I could not have found by myself 3. Did NOT reduced my effort when it comes to shopping climate smart **1 = Do not agree – 7= Agree completely**	α =.523	Adpated from Behwati & Xia (2003)
Personal relevance	With the shopping scenario described above in mind, I perceive that the communication: 1. Was relevant to my needs 2. Was meaningful to me 3. Was useful to me 4. Was interesting to me 5. Was a recommendation that matched my needs **1 = Do not agree – 7= Agree completely**	α =.971	Adapted from: Krafft, Arden & Verhoef (2017)
Privacy concern	I'm concerned: 1. That the company will gather too much personal information about me 2. That the company will use my personal data for purposes other than the reason I provided the data for 3. That the company will share my data with other parties 4. About my privacy when it comes to this company **1 = Do not agree – 7= Agree completely**	α =.959	Adapted from Krafft, Arden & Verhoef (2017)
Manipulation check - Targeted communication	I perceive that the communication: • 1. Was targeted towards all the store's customers – 7. Was targeted towards me as a unique individual	α =.806	Adapted from De Keyzer, Dens & De Pelsmacker (2022)

	• 1. Was not targeted based on my previous purchases – 7. Was targeted based on my previous purchases • 1. Was not tailored – 7. Was tailored		
Manipulation check – Meal Centrality	How good of an example are the following product categories as a meal center of side component? • Minced meat • Quorn • Macaroni • Potatoes **1 Side component – 7 Meal center**	-	-
Sustainability knowledge	1. I see myself as an expert when it comes to knowledge about climate labels 2. I know the meaning of the term recycling 3. I know the meaning of the term environmentally friendly 4. I know the meaning of the term organic 5. I know the meaning of the term energy efficient 6. I know the meaning of the term biodegradable 7. I know the meaning of the term CO2e **1 = Do not agree – 7= Agree completely**	α =.872	Adapted from Taufique et al., (2017)
Self-efficacy	1. There is not much any one individual can do about the environment 2. The conservations efforts for the environment of one person are useless as long as other people refuse to conserve **1 = Do not agree – 7= Agree completely**	Correlation =.582	Ellen et al., (1991)
Experience of shopping online	Have you purchased food online before? 1. Yes 2. No	-	-
Screening question	Are you only eating a vegetarian/vegan diet? 1. Yes 2. No	-	-
Demographical variables	• Gender (Female. Male, Other) • Age • Education • Average food budget/month	-	-
Answer mode	I answered the study on my: 1. Telephone 2. Computer 3. Tablet	-	-
Purpose of the study	What do you think the purpose of the study was?	-	-

Measures in study 2