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## **Consumers Going Green: How Online Shopping Stimulates Sustainable Consumption**

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The current study explores the effects of the introduction of an online channel on sustainable consumption. We demonstrate that utilitarian shopping orientations in the online channel enhance sustainable product purchases of consumers who adopted online shopping compared to those who continued shopping only offline.

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# Consumers Going Green Online: How Online Shopping Stimulates Sustainable Food Consumption

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## EXTENDED ABSTRACT

With the growing concerns about sustainability and the simultaneous growth of available sustainable alternatives, consumers frequently choose products with at least one environmental attribute even if they are not deliberately intending to purchase one (Tezer and Bodur 2019). Retailers and manufacturers are actively seeking new ways to engage consumers in sustainable consumption. However, even though sales of organic products are growing, the market share of sustainable products varies substantively across categories (Juhl et al. 2017). Considerably low demand for sustainable products and barriers for future growth might be partly explained by a large price premium over other products (Van Doorn and Verhoef 2015). There is also an attitude-behavior gap in the context of sustainable consumption, where ethical intentions are not aligned with actual behaviors (Carrington, Neville, and Whitwell 2014).

At the same time consumers in a search of more convenient and time-effective shopping have started to utilize online channels, even for their routine grocery shopping. Online shopping unlocks potential for consumers to benefit from shopping in several channels simultaneously and satisfy different consumer needs, but also generate more loyalty and profit to the retailers (Melis et al. 2016). With the switch between channels, consumers are likely to change their purchase behavior. Such, online grocery shopping is characterized by choosing fewer vices (Huyghe et al. 2016), more bulky and heavy (Chintagunta, Chu, and Cebollada 2014), less sensory products (Campo and Breulmans 2015) in consumer baskets, and by lower price sensitivity (Degeertu, Rangaswamy, and Wu 2000). Despite the extensive literature on sustainable consumption, previous research did not investigate if sustainable consumption could be enhanced when consumers switch from offline channel shopping to online or multichannel shopping.

We argue that sustainable consumption is driven by utilitarian goals since consumers are motivated to choose sustainable products due to their environmental and health benefits (Bezawada and Pauwels 2013, Van Doorn and Verhoef 2015). Online shopping also offers mainly utilitarian benefits such as search convenience, information availability, speed of delivery (Cervellon, Sylvie, and Ngobo 2015). We propose that the compatibility of goal orientation would impact consumer choices of sustainable products. Specifically, we thus argue that sustainable consumption is driven by utilitarian goals, which are more congruent with online shopping. If our proposal is accurate, actual online shopping behavior should be more sustainable than offline shopping behavior.

We use point-of-sales data from loyalty cards for a Nordic grocery retailer. The data come from one hypermarket in a mid-sized city and the online store of the same hypermarket. We use a period of two years in total (March 16, 2014 - March 15, 2016), where the online channel was introduced on March 16, 2015.

For the analysis, we use a difference-in-difference (DID) estimation approach combined with propensity score matching. Employing difference-in-difference approach allows us to isolate the effect of adding an online channel to the existing offline channel by using a quasi-experiment. Specifically, this approach employs a pre-period (before the online channel introduction) versus post-period (after the online channel introduction) and control versus treatment household

groups, that allows excluding other explanation to differences in the shopping behavior such as that household who start purchasing online (further “online households”) are different in various behavioral and social characteristics compared to those who shop only offline (“offline households”). We also conducted additional analysis employing propensity score matching, which is a common technique in consumer and marketing research to reduce the selection bias and address possible confounding (Wang, Malthouse, and Krishnamurthi 2015). We match 400 pairs of online and offline households based on Euclidean distances of propensity scores that we estimate using logistic regression with independent variables Recency, Frequency, Monetary values (cf. McCarty and Hastak 2007), Volume (cf. Hernant and Rosengren 2017), and Distance to offline store (cf. Pozzi 2013).

Comparing online and offline behavior, we observe that online consumers overall tend to buy relatively more sustainable grocery products ( $\beta = 3.74, p < .01$ ). However, there is also a positive effect of online channel introduction on sustainable purchase behavior of online households (DID estimator) ( $\beta = 2.38, p < .01$ ). Even after employing propensity score matching to analyze only similar online and offline household, the DID estimator is still positive and statistically significant, demonstrating that households when shopping online have 2.87% larger share of sustainable product in total sales ( $\beta = 2.87, p < .05$ ) compared to matched offline households.

Our study shows that consumers who start shopping for groceries online from the same retailer they have shopped before, purchase a larger share of sustainable products compared to consumers who continue shopping only offline from the same retailer. This effect even holds when we address selection bias and analyze similar online and offline households, providing evidence that the online channel stimulates sustainable consumption among consumers. We suggest that this effect is explained by the compatibility of goal orientations. When consumers have more utilitarian goal orientation, they choose products that have more utilitarian benefits, such that when consumers shop online, they choose more sustainable products compared to when they shop offline.

The present study makes several research contributions. We extend the understanding of sustainable consumption by providing evidence that online shopping channel can be used effectively to stimulate sustainable consumption. Moreover, we contribute to the literature on multichannel retailing by demonstrating further differences in consumer behavior online and offline. Our data provide us with a natural experimental setting because we can trace precisely when the retailer introduced an online channel and consumers started purchasing online. Our results are important not only for the retailers and manufacturers but also for non-profit and governmental organizations because the study demonstrates that the digitalization of retailing stimulates sustainable consumption.

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