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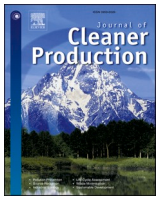

# Creating trust and consumer value for true price food products

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ABSTRACT

The current work contains one of the first empirical studies targeting trust and consumer acceptance of food products incorporating the social and environmental costs in the price of the product ('true price food products'). Our two studies drew on a unique sample of Dutch supermarket patrons who could purchase 'true price' food products, and on a representative (Dutch) sample. In both studies, we show that the more consumers perceive to gain value from true food pricing that pertain to social status and 'green value' (positive environmental impact), the greater consumers' trust in true pricing characteristics and in organizations that implement true pricing and subsequently the higher consumers' intention is to purchase true price food products. The findings present a first exploration into how consumer acceptance of true price food products can be promoted by practitioners: (promotional) appeals to social status and to the 'green value' that true pricing can deliver have the potential to boost consumers' trust in true pricing and make them more inclined to ultimately purchase food products in which externalities are incorporated. Our study revealed initial value sources that can potentially contribute to promoting trust and consumer acceptance for true pricing in the food domain, but various other factors can be relevant as well; future research can explore which types of other contributing factors exist in creating consumer trust and acceptance for true price food products.

## 1. Introduction

The food system's currently hidden, external costs of $12 trillion illustrates the necessity to make the food system more sustainable (Nature Editorial, 2019) as a means to counteract the overstepping of planetary boundaries which leads to climate change and biodiversity loss (Rockström et al., 2009). True cost accounting reveals the mostly negative external costs of food production: environmental externalities such as climate change and biodiversity loss, as well as social externalities such as underpayment (Baker et al., 2020; Rockström et al., 2009). According to Michalke et al. (2022) the external costs of different categories of food vary tremendously and true cost accounting gives insight in the variation in environmental impact from different types of products. As these external costs are unaccounted for in current market prices of food products, a next step comes in the form of 'true pricing' which integrates (some) of the externalities in product prices (Baker et al., 2020; Hendriks et al., 2021). True pricing closes the gap between food's market prices and true costs of food production (Pieper et al., 2020), and can incentivize the private sector to provide more beneficial externalities in the production of their food products and to provide more transparency about the true price or even charge for it (Hendriks et al., 2021). As such, true pricing potentially supports actors within the food supply chain, including consumers, to make more sustainable decisions (de Adelhart Toorop et al., 2021) and facilitate the transition towards a more sustainable food system.

True cost accounting is gaining traction among food industry stakeholders (Nature Food Editorial, 2021), but ultimately consumers will also have to accept 'true price' food products to capitalize on this traction and increase responsible food consumption. Because true cost accounting and true pricing are relatively novel approaches in the transition towards a more sustainable food system, little is known about consumer perceptions and reactions regarding true price food products. Previous consumer studies considered sustainable food consumption. There are, for example, studies that concentrate on consumers' perceptions and behavior towards organic food products (Aschemann-Witzel and Zielke, 2017; Massey et al., 2018) or local food products (Feldmann and Hamm, 2015; Wenzig and Gruchmann, 2018), studies that focus on consumers' perceptions of environmental packaging (Herbes et al., 2018; Martinho et al., 2015), and, more recently, studies on climate-friendly food consumption (Feucht and Zander, 2018;

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Schmidt, 2021). However, none of these studies can be directly linked to consumers' perceptions and acceptance of true pricing in the food domain. To our knowledge, a first study that examines the role of consumers in the domain of true pricing is work of Michalke et al. (2022) who show that overall consumers show interest in true food pricing, but they also express concerns that many consumers might not be able to afford to pay true prices. One of the expert interviewees in the study of Michalke et al. (2022) notes that a lack of consumer trust in true cost accounting methodology that underlies true prices might be detrimental for consumer acceptance of true price food products.

Consumer acceptance of food products incorporating external costs is not self-evident: even though research has shown a willingness among a subset of consumers to pay more for sustainable products such as organic food relative to non-organically produced food products (Aschemann-Witzel and Zielke, 2017), internalizing externalities would lead to consumers paying more for a product, relative to the exact same product without incorporation of negative externalities.

In exploring factors that may provide value for consumers from purchasing and consuming true price products, we focus on three potential value assets. True pricing can be seen as a communication instrument to show consumers which products have higher (or lower) external costs, and by doing so it can help consumers to choose for more sustainably produced food. We therefore propose that the perceived positive environmental impact ('green value') but also the social signaling potential can possibly play an important role in consumers' evaluation of true price products. In addition, true pricing is not only a way to create transparency and communicate about the external costs of a certain product by monetizing the environmental and social costs of its production, but true cost accounting can also be actively used to reduce the environmental and social costs of food production by identifying and implementing appropriate measures. As such, true pricing can also be considered a tool that enables the remediation of the hidden, external costs. We propose this can be considered as a unique feature of true pricing, which distinguish it from other sustainable food products, and which may offer added value to consumers.

In sum, we propose that 'true price' products have the potential to create unique product value for consumers, in terms of benefits that consumers perceive to gain from purchasing and consuming true price products (Priem, 2007). In the current study, we therefore explore three types of (potential) value for consumers that true price products can deliver: (1) showing positive environmental impact ('green value'), (2) signaling social status and (3) remediation of external costs. We relate these types of value to creating trust in true pricing and enhancing consumer acceptance in the form of purchase intention of true price products.

### 1.1. Perceived 'green value'

First, we posit that an important part of the consumer value of true price products lies in the aim of internalizing externalities to reduce (hidden) environmental costs: the potential positive environmental impact that characterizes products with a 'true price', thus making 'green value' of true price products a first potential value source for consumers. Chen and Chang (2012, p. 505) define perceived green value as "a consumer's overall appraisal of the net benefit of a product or service between what is received and what is given based on the consumer's environmental desires, sustainability expectations, and green needs". This perceived 'green value', i.e. consumers' expectations of a product's net positive environmental benefit, has been shown to affect 'green trust', and subsequently consumers' purchase intention of sustainable products (Chen, 2013). 'Green trust' concerns consumers' credibility and ability expectations regarding a product's environmental performance (Chen, 2013). Consumers can view green or environmental product claims as ambiguous or sometimes even deceptive (Chen and Chang, 2013; Leonidou and Skarmeas, 2017) suggesting that trust in true pricing is key to create consumer acceptance and shape consumers' intention to purchase sustainable products in the form of true price products. Scholars have already noted the risk of actors viewing true cost accounting as a form of greenwashing (de Adelhart Toorop et al., 2021), further corroborating that building trust is a key underlying mechanism in creating consumer acceptance for true price food products.

**H1**. The more consumers perceive true price products to have 'green value', the higher their trust in true pricing and in turn their purchase intention for true price products

### 1.2. Social status

We propose that a second potential value source is social status that consumers perceive to gain from purchasing true price products. Research in other domains has shown that purchasing sustainable innovations has the potential to enhance social status signaling for consumers, for instance because purchasing such products is a way for consumers to distinguish themselves from others (Noppers et al., 2014) and because sustainable innovations are more costly to purchase (Groening et al., 2018). This is also the case when purchasing true price products which are potentially more costly relative to the same products when externalities are not incorporated. Consumers have been shown to trust green product claims more by relying on signals (Atkinson and Rosenthal, 2014); we propose that when consumers perceive to be able to signal their social status to a greater extent when purchasing true price products, they are also more likely to trust true pricing more as a result of relying on this social status signal. Also, the perception of gaining social status decreases consumers' price sensitivity (Goldsmith et al., 2010), thus potentially making consumers more inclined to pay a (higher) true price. Thus, we hypothesize that.

**H2**. The more consumers associate true price products with gaining social status, the higher their trust in true pricing and in turn their purchase intention for true price products

### 1.3. Remediating externalities

A third potential value source concerns remediating externalities, implying that extra revenues collected as a result of the incorporation of hidden, external costs in product prices are subsequently used to remediate externalities by investing in sustainable production within the supply chain and therefore reducing environmental harm. This potential value source acts as a credence claim (Ford et al., 1988), as consumers typically cannot verify that extra revenues are indeed used for remediation purposes. Exploratory research suggests that remediation beliefs influence consumer acceptance for true price products and are a potential reason for why consumers choose to trust true pricing (van Haaster-de Winter, 2020). Based on these exploratory findings, we expect that.

**H3**. The more consumers believe that externalities are remediated by purchasing true price products, the higher their trust in true pricing and in turn their purchase intention for true price products

### 1.4. Overview of studies

We conducted two empirical studies to examine the role of these three value sources ('green value', social status, remediation beliefs) in creating trust among consumers for true pricing, and in turn shaping consumers' purchase intention for true price products. In Study 1, we recruited participants in a Dutch organic supermarket, where part of the assortment was priced in a way that incorporated several externalities, which was also communicated in the store. Thus, these supermarket patrons were uniquely positioned to purchase food products that were sold for a true price. In Study 2, we aimed for a more representative sample for The Netherlands, by recruiting participants via a market research agency who drew a sample that was representative on several

socio-demographic characteristics. This way, we could test our hypotheses (1) among participants who in a real-life setting could purchase true price products, and thus were relatively familiar with true pricing but who were unlikely to be representative for the Dutch context (also given the setting of an organic supermarket), and (2) among a group participants who were representative for the Dutch context, but likely to still be relatively unfamiliar with true pricing.

The two studies are comparable, but one methodological difference lies in the measurement of trust. In Study 1 we measured consumers' trust in true pricing characteristics, related to work concerning 'green trust' (Chen, 2013), while in Study 2 we measured trust in terms of integrity-based trust (i.e., consumers' trust that organizations implementing true pricing are honest and transparent about these activities). Integrity-based trust affects consumer acceptance of novel sustainable technologies and concepts (Liu et al., 2020) and is strongly related to concern for public interest (Frederiks et al., 2015). Given true pricing's potential public interest role in lowering food production's environmental costs, and the risk of greenwashing and a corresponding need for trust in the food system actors that apply the principles of true cost accounting (de Adelhart Toorop et al., 2021), we posit that the relation between value sources and purchase intention (also) runs through integrity-based trust. By including these two slightly different operationalizations of trust, we also exploratory examine the extent to which the three value sources of true price products are related to consumers' purchase intention, via various facets of trust.

## 2. Study 1

### 2.1. Participants

For Study 1, participants were recruited in an organic supermarket in Amsterdam, the Netherlands. A total of 136 participants completed the (online) survey. The average age of participants was 56.6 years (range 25–83 years; s.d. = 13.3 years), of which 31.6% were male, 66.9% female, and 2.2% unknown.

### 2.2. Study procedure & measures

Part of the fruit and vegetable products of the supermarket were sold for a true price. Four externalities (i.e., climate impact, underpayment, land use, water use; based on industry and product-specific elements) were calculated for these fruit and vegetable products. These four externalities were subsequently incorporated in product prices, thus 'unhiding' these externalities and creating true price products. When purchasing a true price product, these patrons actually paid the (higher) true product price in which external costs were incorporated. Shelf cards in the supermarket indicated the monetary value of the previous product price, of four externalities (climate impact, underpayment, land use, water use; based on industry and product-specific elements) and finally of the current true product price which included incorporation of these four externalities. This way, patrons could also see which specific products were sold for a true price. In the supermarket, posters and leaflets informed patrons about what true pricing entails. The text that the supermarket used on these materials to describe true pricing was as follows:

*On the way to store shelves all products have their own specific journey. A journey in which unfortunately, many negative traces are left behind. Think about the $CO_2$-emissions during transport to the store, pollution of water and land during production or the depletion of raw materials like metals, gas and oil. Underpayment and child labor within the production chain also still occur regularly. The question is: who will ultimately pay for these costs?*

*As long as these costs remain hidden, an increasingly expanding bill will only endlessly be moved to the future. This can for instance lead to a strong reduction in biodiversity, an increase in social inequality and an increasing amount of soil pollution.*

*So, it is time to act. Towards a more honest food system. With more true prices. In which costs do not longer remain hidden.*

*That is why in this supermarket, you now pay: the 'regular' retail price + hidden costs = true price.*

At the cash register of the supermarket, all patrons who bought a fruit and/or vegetable product were asked whether they would complete a survey. Patrons who were willing to do so, received a card with a QR-code which they needed to scan to go the online survey. There was also a URL link on the card patrons could use to go to the survey. Due to COVID-19 restrictions at the time of data collection, the survey could not be completed in the supermarket, as this would lead to too much congestion in the supermarket. Given the setting where this survey was conducted, we were also restricted in the number of measures and items that we could incorporate in the questionnaire.

In the survey, participants had to complete the sentence 'Buying a true price product … ' with two items to measure perceived 'green value', based on Chen (2013; ' … contributes to a cleaner environment.', ' … contributes to improved (social) living conditions.'), two items to measure social status (based on Noppers et al., 2014; ' … leads to positive reactions from others.', ' … sets a good example towards others.'), and one item to measure remediation beliefs (' … creates extra revenue for organizations who contribute to decreasing environmental and social costs.'). Subsequently, 'green trust' was measured with three items based on Chen (2013): 'I trust that the true prices are calculated correctly', 'I trust that revenues will indeed be used to solve problems in the environmental and social domain', 'I trust that investments will be made in agricultural companies where the food products are made, so that the hidden costs will decrease there'). Finally, purchase intention of true price products was measured with three items based on Ajzen (1991): 'I consider buying products which have a true price', 'I want to buy products which have a true price', 'I am sure that I will buy products which have a true price). A 5-point scale was used for all items, with 1 = completely disagree and 5 = completely agree.

All constructs were averaged across their scale items to create a composite construct score. All constructs and their items, means, standard deviations, factor loadings, composite reliabilities, and average variance extracted (AVE) are shown in Table 1. Note that for the composite reliability for the constructs containing only two items (i.e., perceived 'green value' and social status) Cronbach's alpha is not an accurate estimate of reliability, it almost always underestimates true reliability (Eisinga et al., 2012). Instead, for two-item scales the Spearman-Brown reliability estimate is equivalent to standardized coefficient alpha based on standardized items. We therefore reported the Spearman-Brown reliability estimate for these constructs. As can be seen in Table 1, the multi-item variables that were used have high factor loadings (>0.5), satisfactory composite reliabilities (>0.7) and AVE greater than 0.5, which indicates convergent validity.

### 2.3. Results

Table 2 shows the means, standard deviations and zero-order correlations among all constructs included in the study. The constructs with the highest mean score were found to be in perceived 'green value' ($M$ = 4.29) and purchase intention of true price products ($M$ = 4.26). These scores were well above the midpoint of the scale (which is a score of 3), suggesting that participants do see the environmental value of the concept of true price products and also show positive intention to buy these products. When looking at the correlations, Table 2 shows that all constructs were positively and strongly correlated with each other.

We used mediation analysis (MacKinnon et al., 2007) to test to what extent the three value sources predict consumers' trust in true pricing, and in turn their purchase intention of true price products, via consumers' trust in true pricing, with 'green value', social status, remediation beliefs as the three independent variables, trust in true pricing as the mediator, and purchase intention of true price products as the dependent variable. The analyses were conducted using SPSS (Statistical Package for the Social Sciences) version 25.0 software, and a mediation

**Table 1**
Measurement items, means, factor loadings, and reliability and validity checks for Study 1 (N = 136).

| Measures and items | *M** | SD | λ | CR** | AVE |
|---|---|---|---|---|---|
| **1. Purchase intention true price food products** | 4.26 | .86 | | .89 | .84 |
| I consider buying products which have a true price | 4.24 | .98 | .88 | | |
| I want to buy products which have a true price | 4.36 | .93 | .94 | | |
| I am sure that I will buy products which have a true price | 4.17 | .92 | .92 | | |
| **2. 'Green trust' (trust true price characteristics)** | 4.14 | 0.85 | | .89 | .82 |
| I trust that the true prices are calculated correctly | 4.27 | .85 | .89 | | |
| I trust that revenues will indeed be used to solve problems in the environmental and social domain | 4.00 | 1.01 | .92 | | |
| I trust that investments will be made in agricultural companies where the food products are made, so that the hidden costs will decrease there | 4.16 | .94 | .92 | | |
| **3. 'Green value'** | | | | | |
| Buying a true price product … | 4.29 | .88 | | .78 | .78 |
| contributes to a cleaner environment | 4.35 | .96 | .95 | | |
| contributes to improved (social) living conditions | 4.24 | .98 | .81 | | |
| **4. Social status** | | | | | |
| Buying a true price product … | 3.69 | .94 | | .74 | .70 |
| leads to positive reactions from others | 3.29 | 1.08 | .73 | | |
| sets a good example towards others | 4.08 | 1.04 | .92 | | |
| **5. Remediation beliefs** | | | | | |
| Buying a true price product … | | | | | |
| creates extra revenue for organizations who contribute to decreasing environmental and social costs | 4.10 | 1.08 | – | | – |

Note: *M* = mean (* constructs measured on scales 1 to 7); SD = standard deviation; λ = standardized factor loading; CR = composite reliability (**NB. For constructs with more than two items Cronbach's alpha is reported, for constructs with two items the Spearman-Brown coefficient is reported); AVE = average variance extracted.

**Table 2**
Descriptive statistics and inter-correlations among study variables for Study 1 (N = 136).

| | *M** | *SD* | 1. | 2. | 3. | 4. | 5. |
|---|---|---|---|---|---|---|---|
| 1. Purchase intention true price food products | 4.26 | .86 | – | | | | |
| 2. 'Green trust' (trust true price characteristics) | 4.14 | .85 | .58** | – | | | |
| 3. Perceived 'Green value' | 4.29 | .88 | .54** | .62** | – | | |
| 4. Social status | 3.69 | .94 | .53** | .62** | .54** | – | |
| 5. Remediation beliefs | 4.10 | 1.08 | .39** | .52** | .65** | .54** | – |

Note: *M* = mean (* constructs measured on scales from 1 to 7), SD = standard deviation; *$p < 0.05$; **$p < 0.01$.

macro from Hayes and Preacher (2012) to test the model in a single analysis.

As can be seen in Fig. 1, both perceived 'green value' ($\beta = 0.38$, $t(132) = 4.00$, $p < 0.001$, 95% CI [0.19, 0.55], Cohen $f^2 = 0.126$) and perceived social status ($\beta = 0.35$, $t(132) = 4.06$, $p < 0.001$, 95% CI [0.16, 0.47], Cohen $f^2 = 0.129$) associated with purchasing true price products significantly predicted purchase intention. Also, the higher participants' trust in true pricing was, the higher their purchase intention for true price products (Fig. 1). The bias-corrected bootstrap estimate of the indirect effects had a 95% confidence interval (CI) from 0.037 to 0.229 ('green value') and 0.034 to 0.260 (social status), indicating that the relation between these predictors and purchase intention is significantly mediated by trust, as expected. Thus, the more participants perceived true price products to have 'green value' and social status value, the higher their trust in true pricing was, and in turn the higher participants' purchase intention, in line with $H_1$ and $H_2$. However, stronger remediation beliefs were not significantly associated with participants' intention to purchase true price products (Fig. 1). As indirect-only mediation is possible (Zhao et al., 2010), we did check the 95% bootstrapped CI which ranged from −0.035 to 0.115, indicating that the relation between remediation beliefs and purchase intention is not significantly mediated by trust. Thus, we found no support for $H_3$.

## 3. Study 2

### 3.1. Participants

For Study 2, participants were recruited via a consumer panel of a market research agency. The market research agency was asked to draw a sample that is representative for the Netherlands in terms of age, gender and income level. A total of 750 participants completed the online survey. The average age of participants was 48.7 years (range 18–80 years; s.d. = 15.9 years), of which 46.8% were male, 52.9% female, and 0.3% unknown.

### 3.2. Study procedure

Participants first read a short description about what true pricing entails. Relative to Study 1, the text was made slightly more generic as to not only be applicable to the context of supermarkets.

***What are true prices?***

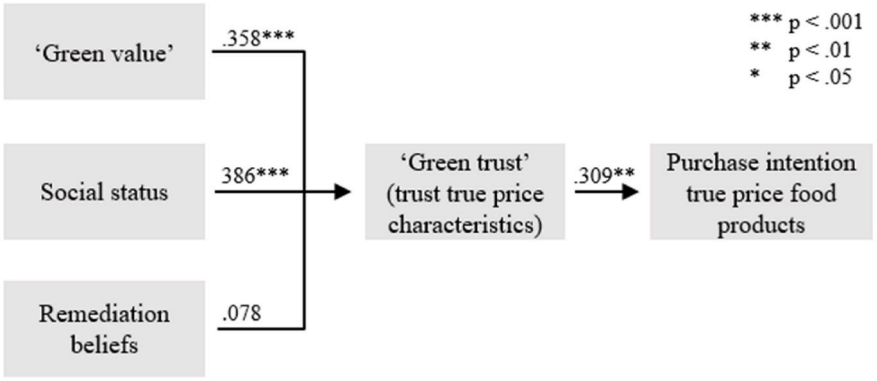
*The price that you pay for a product in a store typically does not reflect the social and environmental costs that occur as a result of production. When you pay the true price for a product, the price does reflect the actual costs from production.*

*The effects of the production process on the environment and on people now are not (fully) incorporated in the price you pay for the product in a store. Think about climate change (CO2-emissions) and underpayment. These costs now end up in society and/or future generations and can also lead to higher (environmental) taxes for citizens.*

*A True Price implies that social costs and environmental costs are incorporated in the retail price of a product. This way social costs and environmental costs become integrated in the production process.*

*If the True Price is higher that the 'regular' retail price, then the extra revenue is forwarded to organizations who have the goal to prevent and/or decrease the social costs and environmental costs of food production. In the long run, the goal is that producers will be able to prevent social costs and environmental costs caused by production, by implementing True Prices.*

Subsequently, participants completed the sentence 'Buying a true price product … ' with the same two items as in Study 1 to measure perceived 'green value', social status and one item to measure remediation beliefs. Integrity-based trust was then measured with two items based on previous research (Liu et al., 2020): 'I believe that organizations that implement true prices are transparent about their true pricing activities', 'I believe that organizations that implement true prices are honest about their true pricing activities'. Finally, purchase intention was measured in the same manner as in Study 1. A 7-point scale was used for all items (completely disagree (1) – completely agree (7)). All constructs were averaged across their scale items to create a composite construct score. All constructs and their items, means, standard deviations, factor loadings, composite reliabilities, and average variance extracted (AVE) are shown in Table 3. Like Study 1, for the composite reliability for the constructs containing only two items the




**Direct effects of value sources on purchase intention**
'Green value': .381*** (.272**)
Social status: .348*** (.229*)
Remediation beliefs: -.047 (-.072)
Nb.: all standardized beta coefficients; beta coefficients between brackets indicate the coefficients when trust is included in the model (full model). Adj R2 (full model) = .399.

**95% bootstrapped confidence intervals (BootCI's) indirect effects through trust (mediation)**
'Green value': .110 (95%BootCI [.037; .229])
Social status: .119 (95%BootCI [.034; .260])
Remediation beliefs: .024 (95%BootCI [-.035; .115])

**Fig. 1.** Mediation model to test the relation between value sources and purchase intention, via 'green trust' (Study 1).

Spearman-Brown reliability estimate was reported. Also for Study 2, the multi-item variables that were used have high factor loadings (>0.5), satisfactory composite reliabilities (>0.7) and AVE greater than 0.5, which indicates convergent validity.

### 3.3. Results

The data of Study 2 was analyzed in the same manner as Study 1. Table 4 shows the means, standard deviations and inter-correlations among all constructs included in the study. The constructs with the highest mean score were found to be in remediation beliefs ($M = 4.60$) and perceived 'green value' ($M = 4.57$). These scores were well above the midpoint of the scale (which is a score of 4), suggesting that participants do see the environmental value and remediation possibilities of the concept of true price products. However, and especially compared to the findings of Study 1, scores on purchase intention and integrity-based 'green trust' were below the midpoint of the scale ($M = 3.90$ and $M = 3.78$ respectively). These findings suggest that, although they see their value, the participants were only moderately positive about true price products. This difference in mean scores with Study 1 may be explained the fact that participants of this study were representative for the Dutch context and therefore likely to be less familiar with true pricing as compared to the participants of Study 1. When looking at the correlations, Table 4 shows that all constructs were positively and strongly correlated with each other.

We ran the mediation model, this time with integrity-based trust as the mediator, which showed that perceived 'green value' ($\beta = 0.36$, $t(746) = 7.83$, $p < 0.001$, 95% CI [0.30, 0.50], Cohen $f^2 = 0.082$) and perceived social status ($\beta = 0.42$, $t(746) = 10.22$, $p < 0.001$, 95% CI [0.40, 0.58], Cohen $f^2 = 0.140$) associated with purchasing true price products significantly predicted purchase intention. Fig. 2 shows that the higher the level of integrity-based trust was, the higher respondents' purchase intention of true price food products. The bias-corrected bootstrap estimate of the indirect effects had a 95% confidence interval from 0.048 to 0.136 ('green value') and 0.041 to 0.120 (social status), indicating that the relation between these predictors and purchase intention is significantly mediated by the level of integrity-based trust, as expected. Thus, similar to Study 1 the more participants perceived true price products to have 'green value' and social status value, the higher participants' trust in true pricing was (this time in the form of integrity-based trust), and in turn the higher participants' purchase intention, in line with $H_1$ and $H_2$. As in Study 1, stronger remediation beliefs did not predict purchase intention, contrary to our expectations (Fig. 2). We did check the 95% bootstrapped CI to check for indirect-only mediation (Zhao et al., 2010), which ranged from 0.001 to 0.060, indicating that the relation between remediation beliefs and purchase intention is significantly mediated by trust. This indicated indirect-only mediation, however since the value source in terms of remediation beliefs ultimately was not significantly related to purchase intention, $H_3$ was not fully supported.

## 4. Discussion

### 4.1. General discussion

To our knowledge, the current work contains the first empirical studies targeting consumer acceptance of true price food products. With the principles of true cost accounting now gaining traction among food industry practitioners and policy makers, a next phase lies in creating consumer acceptance for true price food products to help unlock the potential of true pricing in creating a more sustainable food system. The current studies aim to take a first step in this next phase, by revealing initial insights into relevant value sources in the process of creating consumer trust and acceptance. In both studies, we found that perceived social status and 'green value' (positive environmental impact) are value sources which shape consumers' intention to purchase true price

**Table 3**
Measurement items, means, factor loadings, and reliability and validity checks for Study 2 (N = 750).

| Measures and items | *M** | SD | λ | CR** | AVE |
|---|---|---|---|---|---|
| **1. Purchase intention true price food products** | 3.90 | 1.67 | | .95 | .90 |
| I consider buying products which have a true price | 4.10 | 1.80 | .92 | | |
| I want to buy products which have a true price | 3.88 | 1.74 | .93 | | |
| I am sure that I will buy products which have a true price | 3.72 | 1.73 | .99 | | |
| **2. 'Green trust' (trust true price characteristics)** | 3.78 | 1.48 | | .91 | .87 |
| I believe that organizations that implement true prices are transparent about their true pricing activities | 3.76 | 1.55 | .90 | | |
| I believe that organizations that implement true prices are honest about their true pricing activities | 3.79 | 1.53 | .96 | | |
| **3. 'Green value'** | | | | | |
| Buying a true price product … | 4.57 | 1.51 | | .89 | .82 |
| contributes to a cleaner environment | 4.59 | 1.63 | .90 | | |
| contributes to improved (social) living conditions | 4.55 | 1.56 | .91 | | |
| **4. Social status** | | | | | |
| Buying a true price product … | 4.28 | 1.44 | | .85 | .76 |
| leads to positive reactions from others | 4.04 | 1.52 | .80 | | |
| sets a good example towards others | 4.51 | 1.57 | .94 | | |
| **5. Remediation beliefs** | | | | | |
| Buying a true price product … | | | | | |
| creates extra revenue for organizations who contribute to decreasing environmental and social costs | 4.60 | 1.57 | – | | – |

Note: *M* = mean (* constructs measured on scales 1 to 7); SD = standard deviation; λ = standardized factor loading; CR = composite reliability (**NB. For constructs with more than two items Cronbach's alpha is reported, for constructs with two items the Spearman-Brown coefficient is reported); AVE = average variance extracted.

**Table 4**
Descriptive statistics and inter-correlations among study variables for Study 2 (N = 750).

| | *M** | *SD* | 1. | 2. | 3. | 4. | 5. |
|---|---|---|---|---|---|---|---|
| 1. Purchase intention true price food products | 3.90 | 1.67 | – | | | | |
| 2. 'Green trust' (trust true price characteristics) | 3.78 | 1.48 | .61** | – | | | |
| 3. Perceived 'Green value' | 4.57 | 1.51 | .67** | .58** | – | | |
| 4. Social status | 4.28 | 1.44 | .68** | .57** | .78** | – | |
| 5. Remediation beliefs | 4.60 | 1.57 | .52** | .50* | .74** | .67** | – |

Note: *M* = mean (* constructs measured on scales from 1 to 7), SD = standard deviation; $*p < 0.05$; $**p < 0.01$.

products; both among patrons uniquely positioned to purchase true price products (Study 1), as well as among a nationally representative group through using national panel data (Study 2). The findings also indicate that part of the underlying mechanism of these uncovered relations pertains to the amount of trust consumers have in true pricing, in terms of 'green trust' concerning true price characteristics (Chen, 2013; Study 1; e.g., 'do I trust how the true price is calculated?') and integrity-based trust in organizations that implement true pricing (Liu et al., 2020; Study 2). These findings extend research suggesting that trust is key for consumers to accept environmental product claims in general (Chen and Chang, 2013; Leonidou and Skarmeas, 2017), by specifically applying it to the principles of true cost accounting (Hendriks et al., 2021). The relevance of the latter being shown in consumers' trust in the integrity concerning organizations' true price activities playing an underlying role in value sources of true price products being translated into consumers' purchase intention (Study 2).

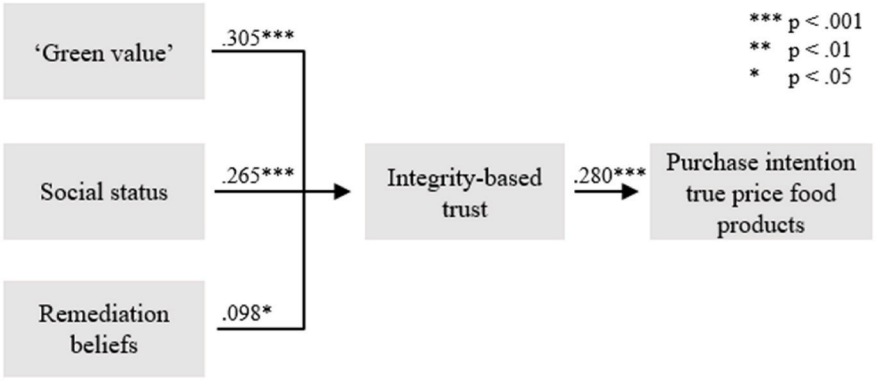
Furthermore, our studies indicate that social status and 'green value' are value sources that practitioners can appeal to, to boost consumer acceptance of true price products. Potentially, such appeals can partially nullify potential negative effects of higher product (true) prices on consumer acceptance of true price products. These findings are in line with willingness to pay studies that were conducted in the context of organic food products (Katt and Meixner, 2020; Li and Kallas, 2021). Besides individual differences in values and attitudes, two prominent aspects that play a role in consumers' willingness to pay for organic products are related to the organic production as an attribute that exhibits a positive environmental impact and the social signaling power of these products. For example, Zander and Feucht (2018) found that consumers' willingness to pay for organic production as a positive sustainable attribute was higher than for animal welfare and local attributes alone. In addition, Luomala et al. (2020) showed that even everyday consumer behaviors such as buying organic foods serve as prosocial status signaling.

### 4.2. Study limitations and future research

Certain limitations can be raised regarding the generalizability of our findings. First, the studies provide initial indications which value sources to address to create consumer acceptance for true price products, but our studies used purchase intention as an outcome variable, not actual purchase behavior. Note that in Study 1, part of the sample very likely consisted of consumers who bought one or more true price food products, as only patrons of an organic supermarket who bought a fruit and/or vegetable product were asked to complete a survey and part of the supermarket's fruit and vegetables assortment was sold for a true price. On the one hand, this suggests that the intention-behavior gap might have been smaller in Study 1 than in Study 2, as at least part of the Study 1 sample is likely to have bought a true price product. On the other hand, this characteristic of the Study 1 sample also might have acted as a form of self-selection, as at least part of the participants who were already accepting true price products (i.e., those who had bought a fruit or vegetable product sold for a true price) were asked to complete the survey. This could also explain the higher mean scores of Study 1 participants to the constructs under study. Nevertheless, we recommend future studies to take more explicitly into account the intention-behavior gap (Sheeran and Webb, 2016) and to examine the findings' generalizability to actual purchase behavior.

Second, the work does not yet provide causal evidence that social status and 'green value' drive consumer acceptance of true price products, so follow-up experimental research is needed. However, given that consumers anticipate to gain social status and 'green value' suggests that appeals to these values could contribute to creating consumer acceptance of products incorporating externalities. Future research can develop such appeals, for instance in the form of promotional materials, and test whether promotional materials that appeal to social status or 'green value' that can be generated from purchasing true price food products indeed increases the uptake of food products that are sold for a true price.

Third, besides perceived 'green value', the literature also recognizes perceived 'green risk' as an important determinant, negatively affecting trust (Chen and Chang, 2012). As the focus of this paper was on the three types of (potential) value for consumers that true price products can deliver, we did not consider risk. By doing so, we are aware that we only partially explain consumers' purchase intention of true price products. Although overall perceived value can already be considered a trade-off of a product's benefits and costs and risks (Perrea et al., 2017), thus




**Direct effects of value sources on purchase intention**
'Green value': .359*** (.274***)
Social status: .422*** (.348***)
Remediation beliefs : -.024 (-.051)
Nb.: all standardized beta coefficients; beta coefficients between brackets indicate the coefficients when trust is included in the model (full model). Adj R2 (full model) = .562.

**95% bootstrapped confidence intervals (BootCI's) indirect effects through trust (mediation)**
'Green value': .085 (95%BootCI [.048; .136])
Social status: .074 (95%BootCI [.041; .120])
Remediation beliefs : .027 (95%BootCI [.001; .060])

**Fig. 2.** Mediation model to test the relation between value sources purchase intention, via integrity-based trust (Study 2).

already encompassing aspects like perceived quality and perceived risk, we recommend future research to also take into account perceived product quality and perceived risk, to get a more complete picture of consumers' evaluation of and behavioral intentions towards true price products. In addition, given other conceptual models that have been developed regarding consumers' acceptance of food products, future research could also look at other facets that may play a role in the acceptance of true price food products, such as social norms and perceived behavioral control.

Finally, we found no relation between remediation beliefs and purchase intention. Possibly, consumers need more specific information regarding remediation (e.g., which externality is remediated) for such beliefs to influence purchase intention, especially given that remediation is very likely to be a relatively unknown, abstract concept for most consumers. Future studies can explore this path by for instance providing more specific, concrete information to consumers about what the remediation entails and which types of externalities will be remediated as a result of consumers purchasing true price food products, as opposed to similar food products that are not sold against a true price.

## 5. Conclusions

The current work on consumer perceptions and reactions regarding true pricing adds to the literature in several ways. To our knowledge, empirical research concerning true pricing has rarely empirically targeted consumers, who are ultimately relevant actors to create wide support for true pricing. So far, scholarly attention has been mostly focused on refinement of true cost accounting methodology, which makes sense given the critical importance that true prices are adequately calculated. Earlier work showed an interest of consumers in the topic of true pricing, while also highlighting trust in true cost accounting methodology might be a key mechanism underlying consumer acceptance for true pricing (Michalke et al., 2022). Our studies extend these findings by empirically revealing relevant value sources of true price food products for consumers, as well as demonstrating that the relation between these values sources and purchase intention for true price food products indeed runs via the level of trust that consumers have in true pricing. Furthermore, the current studies also build on research in the more overarching domain of sustainable food consumption, as previous work has not focused specifically of true price food products when examining forms of sustainable food consumption.

Also, several practical implications can be derived from the studies' findings, though it should be noted again follow-up experimental work is needed first to establish causal relations. One of the implications concerns the mechanism of consumer trust in true pricing. As the findings indicate that the relation between on the one hand value sources in the form of 'green value' and social status and on the other hand purchase intention of true price food products runs via the level of trust consumers have in true pricing, it is relevant to ensure that the true cost accounting methodology used to calculate true prices are trustworthy and also perceived as such by consumers. Attention to these details in communicating the methodology behind true pricing is key in this respect, in a manner that ultimately leads to consumers believing that true prices are calculated correctly (an aspect of 'green trust'; Chen, 2013) and believing that organizations implementing true pricing are transparent and honest (integrity-based trust; Liu et al., 2020). Additionally, practitioners can develop communication and promotional materials which highlight the potential social status and 'green value' of true price food products, in a way that leverages social status and 'green value' to make true price food products more attractive for consumers.

To conclude, the current studies reveal potential value sources of true price food products for consumers and show the relevance that consumers' trust in true pricing plays in creating consumer value for true price products, while also inviting future experimental work to further assess whether and how consumer value pertaining to social status and 'green value' can be leveraged by practitioners to increase consumer

acceptance of food products which apply the principles of true cost accounting.

## CRediT authorship contribution statement

**Danny Taufik:** Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft. **Mariët A. van Haaster-de Winter:** Conceptualization, Methodology, Investigation, Writing – review & editing. **Machiel J. Reinders:** Conceptualization, Formal analysis, Writing – review & editing.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

Data will be made available on request.

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