Consumer attitude and behaviour towards „Flandria“ quality labelled tomatoes

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CONSUMERS' ATTITUDE AND BEHAVIOUR TOWARDS "FLANDRIA" QUALITY LABELLED TOMATOES

Summary

In recent years, trust in food safety and food quality has decreased as a result of consecutive food crises. Consequently, numerous quality labels signalling credence characteristics have been established. One of these labels is the Belgian Flandria label for fresh fruit and vegetables. Based on a self-administered consumer survey (n=373), this paper addresses questions about consumer attitudes, behaviour and perception towards tomatoes in general, and the Flandria tomato label in particular. Principal component analysis and consumer segmentation are performed. The findings indicate that the Flandria label may have become the new standard for tomatoes and may have lost a major part of its differentiation potential by being positioned "in the middle" and being too intensively used for a wide range of other fruits and vegetables.

Keywords: quality labelling, consumer attitude, consumer behaviour, tomatoes, Belgium

JEL Classification: M390, D120, L660

1. Introduction

In recent years, different food safety crises like BSE, dioxins, and foot and mouth disease have resulted in a decrease of consumer trust in the performance of the food chain and an increase in the need for a guarantee of food safety and food quality. There is a newly awakened attention among industry, policy makers and scientists for the consumers' interest in food production and their lack of knowledge about it. Consequently, several initiatives (e.g. quality labelling) to communicate typical product attributes, like safety and healthiness issues, have been developed by a number of different actors: the government, food industry, retailers, farmers' associations and primary producers (Salaün and Flores, 2001).

To evaluate food products, consumers use several evaluative criteria which concern the preferred outcomes from purchase and consumption (e.g. high quality) and which are determined by their goals or motives for consumption (e.g. desire for high quality). On the basis of these criteria, they form certain beliefs and perceptions about the quality of food. The match between consumers' quality beliefs and their desires forms the basis for consumers' evaluative judgements and preferences. Consequently, product quality can be described as resulting from a bundle of different characteristics (attributes) that determines the product's performance (Bredahl, 2003).

Products embody search characteristics if buyers can inspect their quality before purchase (e.g. price, appearance, etc.) and experience characteristics if quality is revealed only after purchase and use (e.g. taste, storage time, etc.). Al these food quality attributes can be verified before or during consumption (Marette et al., 1999; Caswell and Mojduszka, 1996). However, search and experience characteristics are not the only attributes that determine the overall perceived and experienced quality of foods. Quality attributes which are not revealed even after consuming the product (e.g. animal welfare, safety and health claims, origin, etc.) are called credence characteristics (Marette et al., 1999; Nelson, 1970; Darby and Karni, 1973). These credence attributes mainly focus on the quality of the production process, and less on the core product itself. Therefore, quality-of-life issues, such as food ethics, environment and health cannot be verified upon purchase or consumption. In recent years, these attributes have become crucial as components of consumer value (Teisl et al., 1999; Schröder and McEachern, 2004; Bernués et al., 2003; Miles and Frewer, 2001; Wandel and Bugge, 1997). Consumers face specific difficulties to form quality expectations about fresh products like meat, fish, fruit and vegetables, whereas quality labels can anticipate these problems, giving consumers information about credence characteristics of food products (Grunert, 2002). This has found expression in many value-based labelling formats that differentiate products based on more

sustainable, ethical, ecological and healthy production methods (Teisl et al., 1999; Nilsson et al., 2004). Food labelling can be seen as one of the common routes to deliver a message from food supply chains to the ultimate consumers. This information in the form of labels can contribute to the completeness and accuracy of a consumers' assessment of search, experience and credence attributes, especially in the specific case of generic and fresh food products (Verbeke and Viaene, 1999).

Labelling can perform many different functions, like the identification, description or promotion of food products (Teague and Anderson, 1995; Bernués et al., 2003). A food label must contain a minimum amount of mandatory or legally set information, but a producer or food chain is free to add any voluntary but correct information (Przyrembel, 2004), which may contribute to the differentiation of food products. The market mechanism allows this added information to be of extra value when consumers are insufficiently satisfied with the minimum mandatory information. Owing to this, food quality labels can be regarded as having a demand and supply that interact to determine a market-clearing price (Caswell and Mojduszka, 1996). Private or public institutions that certify product quality are very useful in providing information to buyers and such a certification, identifiable by a label, is a voluntary way used by producers to signal product quality (Marette et al., 1999). Therefore, an efficient quality labelling system stipulates that a product gets the certificate in question only when it meets a set of specific requirements (Verbeke and Viaene, 1999).

On the one hand, food labels that carry information on health and safety issues are considered to be sources of direct consumer information. As such, labels are a part of the information set used by consumers in making product purchasing decisions (Verbeke and Viaene, 1999; Salaün and Flores, 2001). On the other hand, a label can also serve as an important extrinsic product quality cue in the consumer decision-making process (Caswell, 1992; Nayga, 1999; Issanchou, 1996). Through offering a quality guarantee by a label, consumer re-assurance can be established and the buying decision can favourably be influenced (Caswell and Padberg, 1992). In this way, quality labelling can differentiate products by enlarging product attractiveness or assuring the consumer of a certain level of quality (Bernués et al., 2003; Caswell and Mojduszka, 1996).

The perceptions and beliefs about the given information are influenced by various factors, like individual characteristics, situational, behavioural and attitudinal factors, as well as product category involvement (Nayga, 1999). In some instances, consumers consider price as an important indicator of product quality. Those who associate a price premium with better quality are likely to display a higher willingness-to-pay. However, Zeithaml (1988) pointed out that the association between price and quality is not obvious and also many other studies could not confirm this relationship. The associated relationship is influenced by the product category, the individual characteristics of the consumer and the availability of other information about the product. Consequently, it appears very difficult to isolate the relationship between perceived price and perceived quality, and in the case at hand, it remains to be investigated whether quality labelled tomatoes are perceived as more expensive than regular non-labelled tomatoes.

Most literature dealing with the role and consumer perception of food quality labelling is situated in the area of animal proteins like meat and fish (Verbeke et al., 2002; Jaffry et al., 2004; Bredahl, 2003; Schröder and McEachern, 2004; Verbeke and Viaene, 1999; Bernués et al., 2003; Enneking, 2004). Nevertheless, the use of quality labelling is also widespread in the fresh fruit and vegetable category. In the specific case of fruit and vegetables, taste and freshness are the primary quality properties (Wandel and Bugge, 1997; ter Hofstede et al., 1996). Appearance and nutritional value are also given high priority by a substantial part of the consumers. Furthermore, the study by Wandel and Bugge (1997) indicates that environmental concerns in evaluation of food quality are more prominent with regard to fruit, vegetables and potatoes than meat.

There exist some studies focussing on fruit and vegetable labelling in the "organic" atmosphere, while a few studies about fruit and vegetable labelling initiatives focus on origin or specific production methods (e.g. Integrated Pest Management) (Baker, 1998; Manhoudt et al., 2002; Vannoppen et al., 2002; Wandel and Bugge, 1997).The objective of this study is to investigate consumer perception of

the Belgian quality label "Flandria" in the specific case of tomatoes. Therefore, attitude towards tomatoes and health benefit beliefs about tomatoes are investigated first in a broad sense. Second, attribute importance upon tomato purchase is analysed and used to segment the market. Finally, consumer perception of Flandria-labelled tomatoes is assessed and compared across buyers and non-buyers.

To understand the impact of the Flandria tomato label, distinct features of Flandria tomatoes are presented in the first part of this text. In the second part, details about the research method and empirical findings are presented and discussed.

2. Materials and methods

2.1 "Flandria"-labelled tomatoes

Flandria is a quality label, which was established in 1995 by combined efforts of producers, auctioneers, sellers, exporters, research institutes and the Flemish organisation (VLAM) for promoting agriculture, horticulture, fisheries and the agro-alimentary sector in Belgium and abroad. VLAM is commissioned by the agribusiness community and by the Flemish government and cooperates actively with as many stakeholders in the food chain as possible (VLAM, 2004). From the onset, the Flandria label was specifically used for tomatoes.

Today, more than 50 fruits and vegetables are sold under the Flandria quality label, including tomatoes, salad, broccoli, apples, etc. The label stands for products of excellent quality, cultivated by family farm businesses in Flanders, of which traceability is perfectly feasible owing to the use of unique product codes. The intrinsic quality of Flandria goes beyond the European first class norms because the label includes more rigorous requirements for the production of fruits and vegetables concerning freshness, firmness, uniformity, taste and nutritional value. Flandria growers have to follow a strict code of conduct for the cultivation of Flandria fruits and vegetables, which was compiled by a co-operation of seven fruit and vegetable auctions in Belgium, called LAVA (Logistic and Administrative Auction Association) (Lava, 2004). The code of conduct describes clearly and precisely the production and hygienic conditions, the grading and quality requirements, the requirements for the package and labelling, the control system and the consequences in the case of abuses. On top of this, the cultivation method must be integrated in an environmental friendly and sustainable production, which means, for example, that the pollination is done by bumble-bees. In case of risk for diseases and plagues natural remedies will be used, like ladybirds as a natural insect eater. Only when natural remedies prove inefficient, the use of chemical pest control is allowed. However, only control measures with very specific effects are allowed, whereas preventive and total-surface pest control measures are forbidden. Owing to the family business character of the production process, producers are very conscious of their individual responsibility. Furthermore, auctioneers and specialised research centres assist them with technical and administrative support. Flandria tomatoes are cultivated in glasshouses, because the climate in Belgium is not suitable for economically viable outdoors cultivation. So far, these tomatoes have not been available during winter.

The quality and other properties of the Flandria products are both internally and externally controlled. Internal control is performed by the auctioneer upon product delivery. The inspectors of the fruit and vegetable auction check the registration forms and if these are incorrect, incomplete or delayed, the inspectors can hold back the quality label. The external control organisation checks the products for contaminants and impurities as well as extrinsic quality signs like appearance, freshness, colour, calibration, uniformity and other properties (Flandria, 2004). The Flandria label is promoted by LAVA and VLAM through generic advertising campaigns, distribution of table mats to restaurants, flaps for shopping carts, advertisements in magazines, video clips at retail outlets, gratification for wholesalers who order large amounts of Flandria tomatoes and open-door days at the growers.

2.2 Consumer Survey

Cross-sectional data were collected in February-March 2003 through a consumer survey in Belgium. Respondents were selected through non-probability judgemental sampling, i.e. population elements were selected based on the personal judgement of the researcher, who took predetermined quota on age into account. A further preconditioned criterion is the willingness of the potential respondent at the time of filling in the questionnaire, which were self-administered at home.

A total of 440 respondents was approached, of which 413 respondents completed the questionnaire. The valid response amounted to 373 after a quality check. Table 1 gives an overview of the sample characteristics for gender, age, education, living environment and presence of children. All respondents were responsible for the purchase of food within their household. Therefore, the sample profile reflects the primary role of women as responsible person for purchase within the family. The age distribution of the sample matches well with the overall population distribution from census data, despite a slight over sampling of the younger age groups (NIS, 2002). Also with respect to the presence of young children, a good match between the sample and population distribution is realised. Finally, it should be noted that the sample is biased towards higher education. However, consumers in the "<18 year" education category still constitute a substantial part of it.

Table 1. Socio-demographic characteristics of the valid sample (n = 373).

		Frequency (n)	Frequency (%)	Census data (%)
Gender	Male	99	26.5	
	Female	274	73.5	
Age	< 26 years	57	15.3	18.4
	26-40 years	103	27.6	32.8
	40-50 years	100	26.8	22.6
	> 50 years	113	30.3	26.2
Education	< 18 years	156	41.8	67.4
	> 18 years	216	57.9	32.6
Living environment	Urban area	234	62.7	
	Rural area	139	37.3	
Children <12 years	No	286	76.7	80.3
	Yes	87	23.3	19.7

3. Empirical findings

3.1 Behavioural characteristics of the sample

Within the valid sample (n=373), more than 75% of the respondents buy tomatoes in the supermarket, about 40% of the respondents buy tomatoes in the grocery store, and about 20% on the market. One quarter of the respondents grow their own tomatoes in summer.

Tomato consumption shows a clear seasonal pattern: 93.6% of the respondents claim to eat tomatoes at least once a week in summer, versus only 53.9% in winter. A paired sample t-test confirms the difference in the average frequency of eating tomatoes in summer versus winter ($p<0.001$). A positive and significant correlation between the consumption of tomatoes in summer and in winter is found (Pearson $r=0.489$, $p<0.001$).

Several socio-demographic variables associate with the consumption frequency of tomatoes. Significantly more women (54.6%) eat tomatoes in summer than men (44.4%) ($p<0.001$), whereas no gender difference is seen in winter. This suggests that the consumption patterns of women are more liable to seasonal changes than the eating habits of men. Consumers with children eat more tomatoes than consumers without children ($p<0.001$). In summer, the consumption of tomatoes is also related with the age of the consumers: consumers older than 35 years eat tomatoes more frequently than younger consumers ($p=0.002$). There is no significant difference in winter. No association between the level of education and tomato consumption is found.

3.2 General attitude towards tomatoes

General consumer attitude towards tomatoes was assessed on five-point scales with a multi-attribute construct. These attributes are grouped on the basis of a principal components analysis which yields three factors with eigenvalues above one. These three factors account for 72.9% of the variance in the original data and are named (in descending order of explained variance): "nutritional and sensory" (43.1%), "credence" (16.6%) and "convenience" (13.2%). The nutritional and sensorial factor consists of the variables delicious, healthy, tasteful and the nutritional value. The credence and the convenience component only contain two attributes each: reliability and safety on the one hand and shelf life and availability on the other hand.

Table 2. Principal component analysis of general attitude towards tomatoes, factor loadings >0.50 of the Varimax rotation.

	Factor 1 Nutritional and sensory 43.1%	Factor 2 Credence 16.6%	Factor 3 Convenience 13.2%
Tasteful	0.869		
Delicious	0.863		
Healthy	0.765		
Nutritional value	0.636		
Safe		0.910	
Reliable		0.904	
Shelf life			0.896
Availability			0.618

An independent samples t-test shows that there is only a significant gender difference for the nutritional and sensorial component: men have a significantly lower attitude towards the nutritional and sensory factor ($p=0.014$). Food-health awareness is positively correlated with the credence factor ($r=0.215$; $p<0.001$), which means that consumers who believe that tomatoes are safe and reliable have a stronger belief that the consumption of tomatoes can positively influence personal health.

Consumption behaviour is associated with the factor score on the nutritional and sensory factor. The Pearson-correlation coefficient equals 0.185 ($p<0.001$), which indicates that consumers who find tomatoes healthy and tasty eat more tomatoes than consumers who share this belief only to a lesser extent. No such relationship with the credence or convenience factor is found.

3.3 Health benefit beliefs from eating tomatoes

Perceived health benefits from eating tomatoes were measured by means of a five-item construct on a scale from 1 to 5. Every item scores higher than 3, which indicates that consumers have rather strong beliefs in the health benefits from eating tomatoes. The beneficial influence of the vitamin intake (4.04) and the nutritional value (3.76) from eating tomatoes receive the highest average score. The intake of dietary fibres scores also high with 3.65. The beliefs that tomatoes reduce the risk on

cardiovascular diseases (CVD) and cancer score rather neutrally, which indicates that consumers are not strongly convinced of these beneficial influences (Table 3).

The scores of the five items result in a Cronbach's alpha of 0.74, which indicates that the five variables can be aggregated into one "health benefit belief" score. This score shows that women (3.56) have a significantly stronger belief in the beneficial influence of tomatoes on health than men (3.36) ($p=0.003$) and that consumers with children younger than 12 (3.63) have a significantly stronger belief in the health benefits from eating tomatoes than consumers without young children (3.42) ($p=0.005$). No significant correlation is found between the health benefit belief from tomato consumption and food-health awareness. The belief in the beneficial influence of tomatoes on human health is strongly correlated with the nutritional and sensory factor score and the credence factor score: the Pearson correlation coefficients are 0.240 and 0.268, respectively (both $p<0.001$).

Table 3. Health benefit beliefs from eating tomatoes, frequency distribution (%) (n=373).

	Reduced risk on CVD	Intake of dietary fibres	Reduced risk on cancer	Nutritious	Intake of vitamins
Strongly disagree	4.7	2.5	4.1	0.8	0.5
Disagree	11.0	7.7	10.2	4.1	1.4
Neutral	56.7	42.5	54.8	30.6	18.
Agree	24.0	37.3	21.8	47.3	54.1
Strongly agree	3.6	10.1	9.1	17.2	25.9

3.4 Importance of tomato attributes upon purchase

The second part of the questionnaire focussed on the perceived importance of evaluation criteria upon tomato purchase. Consumers rated 16 attributes on a 5-point scale. Principal components analysis reveals a four-factor solution explaining 60.2% of the variance in the original data (Table 4). A first factor is fully based on credence characteristics and is referred to as "product identity". The second factor pertains entirely to typical search characteristics or "product appearance". Factor three includes the sensory experience attributes like taste, juiciness and texture. Clearly, consumers are able to use the latter attributes upon purchase owing to previous product experience. Quantitative search attributes like price and expiration date constitute the fourth factor. These are often used as predominant quality cues in case of unbranded products, or in specific situations where consumers face heightened levels of quality uncertainty (Zeithaml, 1988; Bredahl, 2004).

The four-factor solution is used to segment consumers: hierarchical clustering reveals a three-cluster solution as optimal. The clusters differ significantly in terms of gender (Chi-square=9.95; $p=0.007$), health benefit belief from eating tomatoes ($F=6.95$; $p=0.001$) and food-health awareness ($F=6.27$; $p<0.001$). Cluster 1 includes consumers who attach high importance to product identity and low importance to sensory expectations when purchasing tomatoes. Cluster 2 is strongly focussed on price and expiration date, as well as on sensory expectations when purchasing tomatoes. This cluster consists predominantly of women (82.4% women, versus 72.7% in the total sample), and consumers who have stronger health benefit beliefs from eating tomatoes (3.67 versus 3.44 for cluster 3 and 3.41 for cluster 1). Consumers belonging to cluster 3 are heavily focussed on product appearance, and attach very little importance to price and expiration date. These consumers have a significantly lower food-health awareness compared with the other clusters (3.61 versus 3.84 for cluster 1 and 3.87 for cluster 2). Age differences between the clusters are marginally significant ($p=0.078$), with the mean age being 44.8 years for cluster 1, 42.0 years for cluster 2 and 40.3 years for cluster 3. Finally, the clusters differ in terms of attitude towards tomatoes in general as described in the previous section. Cluster 2 scores significantly higher than cluster 1 on the "nutritional and sensory" factor ($F=8.14$; $p<0.001$), and significantly higher than cluster 3 on the "credence" factor ($F=4.04$; $p=0.018$). Note that the clusters do not differ with respect to knowledge and purchase of Flandria-labelled tomatoes (see next section on the distinction between unaware, aware non-buyers and buyers).

Table 4. Principal component analysis and cluster analysis based on evaluation criteria upon tomato purchase, factor loadings >0.50 of the Varimax rotation.

	Factor 1 Identity 25.9%	Factor 2 Appearance 16.3%	Factor 3 Sensory 11.1%	Factor 4 Data 6.9%
Factor loadings				
Health claim	0.86			
Organic label	0.84			
Eco label	0.83			
Guarantee of origin	0.83			
Label "from Belgium"	0.69			
Brightness		0.71		
Size		0.67		
Presentation		0.64		
Packaging		0.60		
Colour		0.57		
Taste			0.75	
Juiciness			0.74	
Texture			0.67	
Price				0.85
Expiration date				0.62
Cluster centers				
Cluster 1 (n=138)	2.71	-1.34	-2.69	-1.39
Cluster 2 (n=131)	-1.86	-0.79	1.36	2.18
Cluster 3 (n=83)	-2.16	3.39	-1.09	-2.27

3.5 Behavioural characteristics towards Flandria-labelled tomatoes

The respondents can be subdivided in three groups based on their claimed awareness and use of Flandria-labelled tomatoes. The first group contains the respondents who claim to have never heard of the Flandria label (34.1%): the unaware. The second group of respondents are consumers who know the label and bought it sometimes in the past, but do not buy it anymore: the aware non-buyers (39.2%). The third group consists of respondents who claim to buy Flandria tomatoes on a regular basis: the buyers (26.8%).

The three groups differ in terms of socio-demographic characteristics such as gender, living environment, the presence of children and food-health awareness. The gender of the respondent associates with the behaviour towards Flandria tomatoes (Chi-square=9.980; p=0.007). Only 15.2% of the men belong to the group of buyers, whereas this is 31.0% for the women. Also, 42.4% of the men are unaware of the Flandria label, versus only 31.0% of the women. The Flandria label is known and purchased to the same extent in urban as in rural areas (Chi-square=2.298; p=0.317). The number of Flandria buyers from families with children (27.7%) and without children (25.2%) is approximately similar. Nevertheless, there is a significant difference (Chi-square=11.670; p=0.003) between the two groups: families with children have a lower awareness of the Flandria label for tomatoes, since they constitute 75.6% in the unaware groups versus only 66.0% in the total sample. Buyers of Flandria tomatoes have a significantly higher food-health awareness (score 4.01 on 5) than the aware non-buyers (3.76) and the unaware (3.71) (p<0.001). There are no significant associations between the age and the level of education, and whether or not the respondents buy and/or know Flandria tomatoes.

According to One-way ANOVA (F=3.168; p=0.043), Flandria buyers eat tomatoes significantly more frequently in summer (3 to 4 days out of 7) than the unaware (2 to 3 days a week). The aware non-buyers eat on average 3 times a week tomatoes, which is not significantly different from the other

two groups. Although One-way ANOVA reveals only a marginally significant difference in winter ($F=2.759$; $p=0.065$), the post hoc Duncan test indicates that Flandria buyers also eat tomatoes more frequently in winter (1 to 2 days a week) than the unaware (1 day or less than 1 day a week).

Concerning the attitude with respect to tomatoes in general, the three groups differ only in their perception of the price and the safety of tomatoes. Buyers and aware non-buyers (both score 3.02 on 5) evaluate tomatoes significantly cheaper ($F=3.666$; $p=0.027$) than the unaware (2.78). Flandria buyers have significantly ($p=0.036$) more faith in the safety of tomatoes than the unaware and have a significantly stronger "health benefit belief" from eating tomatoes (3.75 on 5) compared with the unaware (3.36) and the "aware non-buyers" (3.47). Hence, Flandria tomato buyers are more convinced that tomatoes are beneficial for human health. This is again a logical consequence of the observation that these consumers eat more tomatoes and that the respondents who eat more tomatoes more strongly believe in the health advantages (significant difference in the winter).

The buyers have also a significantly ($p=0.007$) more positive attitude (score 3.37 on 5) towards labelled tomatoes as compared to the aware non-buyers (score 3.21 on 5) and the unaware (the score 3.13 on 5). Upon tomato purchase, Flandria buyers attach significantly more importance to the factor "identity" ($p=0.004$) and "sensory" ($p=0.006$) than the aware non-buyers and the unaware.

Regarding the characteristics consumers associate with Flandria tomatoes, the unaware and the aware non-buyers have, with respect to all criteria, a neutral to slightly negative attitude, whereas the buyers have in each case a significantly ($p<0.001$) more positive attitude than the other two groups (Table 5). All consumers are well aware of the fact that Flandria-labelled tomatoes have Belgian origin. The most important characteristics for the buyers are a (perceived) better quality, better taste and a stricter control of Flandria tomatoes. It should also be noted that the buyers associate Flandria tomatoes more strongly with an average tomato than the other groups and that they perceive Flandria tomatoes as more expensive. Only with respect to "organic production" the three groups have a similar perception ($p=0.212$), which matches with reality since Flandria tomatoes are not organically produced (Table 5). It should be noted that whereas aware non-buyers and buyers can base their perception on knowledge or prior experience, the unaware probably form an opinion based on suppositions or predispositions.

The unaware and aware non-buyers were also asked about their motivation to eventually shift towards buying Flandria tomatoes in the future. The most important motivation would be "if no other tomatoes are available", followed closely by "if more information is provided" and "if proven to be healthier". The aware non-buyers would buy Flandria tomatoes if they are more easily available. Product image and price are not directly perceived as potential motives or barriers (Table 6).

Table 5. Association with "Flandria"-labelled tomatoes.

	Unaware	Aware non-buyers	Buyers	p-value
Better taste	2.62[a]	2.87[b]	3.71[c]	< 0.001
Better shaped	2.62[a]	2.91[b]	3.53[c]	< 0.001
Better evenly colour	2.62[a]	2.96[b]	3.57[c]	< 0.001
More shining look	2.63[a]	2.91[b]	3.45[c]	< 0.001
Better flesh firmness	2.64[a]	2.93[b]	3.66[c]	< 0.001
Bigger fruits	2.63[a]	2.99[b]	3.23[c]	< 0.001
Better presentation	2.65[a]	2.95[b]	3.29[c]	< 0.001
More juicy	2.65[a]	2.90[b]	3.50[c]	< 0.001
Higher price	2.70[a]	3.00[b]	3.44[c]	< 0.001
Environmental friendly	2.64[a]	2.88[b]	3.18[c]	< 0.001
Pesticide free	2.65[a]	2.93[b]	2.97[b]	= 0.013
Healthier	2.66[a]	2.96[b]	3.21[c]	< 0.001
Belgian origin	2.72[a]	3.18[b]	4.04[c]	< 0.001
More natural	2.69[a]	2.96[b]	3.42[c]	< 0.001
Average tomato	2.68[a]	2.85[a]	3.15[b]	< 0.001
Cluster tomato	2.67[a]	2.79[a]	3.38[b]	< 0.001
Loose tomato	2.66[a]	2.92[a]	3.40[b]	< 0.001
Stricter production control	2.73[a]	3.00[b]	3.68[c]	< 0.001
User friendly packaging	2.63[a]	2.86[b]	3.24[c]	< 0.001
More reliable	2.66[a]	2.93[b]	3.54[c]	< 0.001
Safer	2.63[a]	2.88[b]	3.34[c]	< 0.001
Better quality	2.72[a]	3.01[b]	3.86[c]	< 0.001
Integrated Pest Management	2.65[a]	2.91[b]	3.38[c]	< 0.001
Organic production	2.67[a]	2.84[a]	2.84[a]	=0.212

The mean scores with different superscripts are significantly different based on a post hoc Duncan test

Table 6. Possible reasons to choose to buy Flandria tomatoes in the future (%).

	Unaware	Aware non-buyers
Cheaper	51.3	58.4
Better information	76.6	76.4
Better taste	71.7	63.6
No alternative available	79.3	78.5
Better known	52.5	59.9
More environmentally friendly	64.4	64.4
Proven to be healthier	73.3	75.8
Better availability	61.0	63.6
Production better controlled	61.2	58.4

4. Discussion and conclusions

After some consecutive food safety crises, several initiatives were undertaken to restore the consumer trust in the food chain and the food quality. Several food quality labels were established. Most of them focus on ecological and safety aspects of the production method, i.e. adding credence characteristics to the products. The Flandria label has chosen for a different profile than other existing eco-labels. Flandria stands in the first place for high quality from Belgium, resulting from an environmental friendly production process. According to the producers the Flandria label guaranties a more beautiful shape, colour and shininess, juiciness, environment-friendly, healthy, more natural, Belgian tomatoes of a higher quality with a more beautiful presentation and higher utility value. There is a stricter control on production and integrated pest management is practised.

In this study, we investigated the general attitude of consumers towards tomatoes, in order to find out which attributes are important and to see if the Flandria profile matches consumer expectations

and demand. It is important to draw attention to some limitations associated with the study. First, the sample was a convenience sample, non-representative for the Belgian population. In future studies it would be important to employ larger samples, representative for the Belgian population. Second, the data were collected in winter time, when Flandria tomatoes were not available in the retail shelves. This could have influenced the consumer response.

The general attitude towards tomatoes is explained by three factors (in descending order of importance): "nutritional and sensory", "credence" and "convenience". The two most important factors include most of the characteristics found in the Flandria profile. Apparently, through its positioning, communication strategy and resulting image, the Flandria label manages to meet market demand. Analysis of the behaviour of the consumers towards Flandria-labelled tomatoes reveals that 73.3% of the consumers are familiar with the label. Although the buyers have a more positive perception of Flandria than non-buyers, both groups provided a similar ranking of attributes for Flandria (i.e. strongest associations with the effective content of Flandria). For both groups, the strongest associations are with the Belgian origin, better quality and stricter control on production. The aware non-buyers, however, associate the Flandria label stronger with a higher price than with a stricter control on production. Note that consumer income has not been accounted for in this study. Nevertheless, the factor price could imply a different meaning to people in different economic positions. Consumers with limited financial means may have higher price sensitivity, and hence, avoid more expensive products. Hence, the real and perceived price difference between labelled and conventional products may be very important for these consumers.

Although the general attitude of the consumers seems to coincide with the Flandria label characteristics, the question rises whether this is reflected in the purchasing decision process. Principal component analysis shows that four factors determine the purchase behaviour: product identity, product appearance, sensory experience and quantitative search attributes. Based on these four factors, consumers can be divided in three clusters, which differ in gender, health benefit beliefs and food-health awareness. Cluster 1, accounting for 39% of the consumers, includes those consumers who attach high importance to product identity and low importance to sensory expectations when purchasing tomatoes. This means that they buy tomatoes based on health claims and labels. For cluster 2 (37%), both the sensory and the quantitative search attributes are important. Consumers belonging to cluster 3 are heavily focused on product appearance, and attach very little importance to price and expiry date. This cluster accounts for only 24% of the consumers. Judging upon the effective profile of Flandria, and consumers' apparent interest in such a profile for tomatoes, all three clusters could be attracted by the Flandria label.

Concerning the purchase of Flandria-labelled tomatoes, the consumers can be divided in three groups: unaware (34,1%), aware non-buyers (39,2%) and buyers (26,8%). Taking into account the strong match between consumers' expectations about tomatoes, as exemplified by their general attitude and attribute importance levels on the one hand, and the Flandria label profile on the other hand, the group of buyers is rather small. The analysis reveals no clear reasons why the group of buyers is still rather small. Flandria buyers are not limited to one of the three clusters, but are equally divided over the clusters, as expected above. As a consequence, a larger market share should be possible. When respondents were asked what possible reasons could be to purchase Flandria tomatoes, the strongest arguments were better information, a proven health advantage in comparison with other tomatoes and only if no other alternatives are available. It is hard to believe however, that a lack of information explains the small share of conscious buyers, especially seen the intensive communication efforts for the label.

Another potential explanation for the relatively low share of conscious Flandria buyers could be that after the food safety crises and the consecutive initiatives by the government and other stakeholders, consumers consider food quality and food safety as a standard attribute. Findings indicated that Flandria buyers are heavy tomato users, and have the strongest perception of Flandria-labelled tomatoes as being "an average tomato". As such, these findings indicate that consumers do not perceive very specific added value of the Flandria label. Being well-established in the market after

10 years, being heavily advertised and being used for around 50 fruit and vegetable categories, and being positioned “in the middle”, the Flandria label may have become a new standard and have lost part of its differentiation potential.

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