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Instrument: Integrated project

Thematic Priority: Food Quality and Safety

Consumer acceptance of novel fruits and fruit products

Including:

D1.3.5 Report on consumer innovative behaviour

D1.3.8 Report on cross-cultural comparison of consumer innovative behaviour and segmentation

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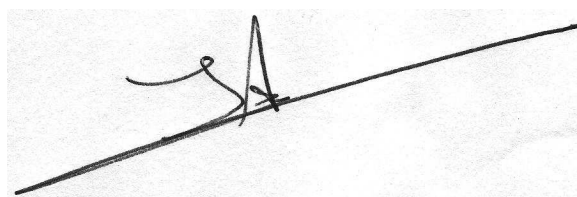| Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Description of deliverable

The present work was carried out within the Project 'Isafruit'. The strategic objective of this project is to increase fruit consumption and thereby improve the health and well-being of Europeans and their environment, by taking a total chain approach, identifying the bottlenecks and addressing them by consumer-driven preferences. The report is a deliverable of Workpackage 1.3 (INNOFRUIT) of Pillar 1, which focuses on the area of 'Consumer driven and responsive supply chain'. The aim of Workpackage 1.3 is to understand the determinants of the adoption of innovations by consumers, thus yielding insight into consumer behaviour with respect to new or modified fruit products and identifying opportunities for fruit innovation. As such, it will provide guidance for the development of future fruit product innovations. This deliverable (which combines the contents of the originally planned deliverables D1.3.5 and D1.3.8) describes the results of an international consumer survey and cross-cultural comparison of the adoption of a range of fruit innovations, relating it to a number of consumer traits that emerged from the literature as relevant. The survey puts the previously developed theoretical model (see D1.3.1) and findings from earlier focus group discussions (see D1.3.3) to a test, building on the preparatory work in D1.3.2 and D1.3.4.

Connection of deliverable with project goals:
This deliverable contributes to the overall strategic objective of ISAFRUIT, namely, "…to increase fruit consumption, searching the improvement of health and well-being of Europeans and their environment, by taking a total chain approach, identifying the bottlenecks and addressing them by consumer driven preferences." in the following way. By identifying those product characteristics that are important for the adoption of novel fruits and fruit products by consumers, future product development can be adapted to the wishes of the consumers, which will increase consumer acceptance. Moreover, by highlighting personal characteristics of innovative consumers the understanding of novel fruits and fruit products acceptance is increased. Together with the identified cross-cultural consumer segments, they are a useful starting point for developing fruit product innovations and fruit promotion campaigns for specific target groups to increase fruit consumption across Europe.

As such, this deliverable facilitates "the development of consumer-driven, efficient, responsive, and innovative supply chains for the growth of fruit consumption in Europe and for a competitive and sustainable fruit industry," which is the main goal of Pillar 1.

This deliverable was made in cooperation between the partners 38 (WAU), 10 (WUR-LEI), 24 (UPM), and 29 (AUA).

Wageningen, May 31st, 2010   Ivo A. van der Lans
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Consumer acceptance of novel fruits and fruit products

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Summary

This report presents results of the consumer survey that was conducted in November, 2009, in four European countries – Poland, the Netherlands, Greece and Spain within WP 1.3 of ISAFRUIT Project. The consumer survey was conducted to validate the major part of the theoretical framework in deliverable D1.3.1 of WP 1.3 (Prosińska & Bartels, 2007).

In the current deliverables (D1.3.5 and D1.3.8), we first focused on the influence of personal characteristics of the respondents, the evaluation of general fruit product characteristics, product evaluations of specific novel fresh fruits and fruit products and demographics on consumers' acceptance of fruit innovations. Furthermore, we identified cross cultural consumer segments, who each value different product characteristics. Moreover, these consumer segments differ in demographics, their willingness to accept fruit innovations and their personal characteristics.

Policy recommendations for future product development of fresh fruits and fruit products and communication strategies were formulated, based on the results of the consumer survey and the identified cross cultural consumer segments.

1 Introduction

The introduction of new products is a critical success factor in many industries, including the fruit industry. The development of new products is necessary to survive in today's global competitive market place. Additionally, innovations within the fruit industry are suggested to be a helpful tool to increase fruit consumption (Trienekens, Uffelen, Debaire, and Omta, 2008). A large amount of money is invested by the industry in the development of new products. These new products are often not accepted by the consumers and therefore fail to succeed (Goldenberg, Lehmann, and Mazursky, 2001; Martinez and Briz, 2000). The purpose of this deliverable is to increase our understanding of the factors affecting the consumer acceptance of novel fruits and fruit products (D 1.3.5) and moreover to investigate whether different consumer segments can be identified based on this acceptance of fruit innovations (D 1.3.8). We focus on two factors from the conceptual model in Deliverable 1.3.1 by (Prosińska and Bartels, 2007), namely 1) the product characteristics of the product and 2) the personal characteristics of the consumer.

The selected new fruit product categories.
Based on earlier work in deliverables D1.3.2 and D1.3.3 and D1.3.4, in the present deliverable new fruit products are classified in the following six categories; a) functional foods with an added beneficial health effect, b) genetically modified foods developed with the help of gene technology, c) organic foods produced under traditional farming conditions without the use of any additives, d) ethnic foods which are imported from exotic countries and e) convenience orientated innovations developed to increase convenience aspects, and f) new purchase channels that refer to a new way of selling fresh fruits (see Zajac and Kraszewska, 2007; Kraszewska, Zajac, Jasiulewicz, and Bolek, 2008; Kraszewska, Bartels, and Onwezen, 2009).

New fruit product characteristics.
The product characteristics used in the current deliverable are based on an extensive literature review. The following characteristics related to consumers' food choice were used: Looks appealing, Healthy, Convenient, Price (Lindeman and Vääanänen, 2002; Steptoe, Pollard, and Wardle, 1995), Taste (Honkanen and Frewer, 2009; Magnusson et al., 2001; Roininen, Lähteenmäki, and Tuorila, 1999; Wandel and Brugge, 1997; Wardle, 1993), Familiar (Pliner and Hobden, 1992; Tuorila, Lahteenmaki, Pohjalainen, and Lotti, 2001), Natural (e.g., Bäckström, Pirttilä-Backman, and Tuorila, 2004), Locally produced (e.g. Brown, 2003; Lea and Worsley, 2008; Tootelian and Segale, 2004), Safety (Cardello, 2003; Frewer, Miles, and Marsh, 2002) and Brand (e.g. Maison, Greenwald, and Bruin, 2004). Although in general, these characteristics seem to be important, it is not clear yet which product characteristics are important for the consumer acceptance of novel fresh fruits and fruit products. In addition, different product characteristics might be important for the different novel food categories in different countries.

Personal characteristics.
Besides the perceived relevance of product characteristics, consumers' personal characteristics influence the level of acceptance of product innovations. Based on Deliverable 1.3.1 (Prosińska and Bartels, 2007) and 1.3.4 (Kraszewska, Bartels, and Onwezen, 2009), the following personal characteristics are included in the current

deliverable: socio demographics, market mavenism (Feick and Price, 1987), food involvement (Bell and Marshall, 2003), social representations of novel foods (Bäckström, Pirttilä-Backman, and Tuorila, 2004), domain-specific innovativeness (Goldsmith and Hofacker, 1991), food neophobia (Pliner and Hobden, 1992), opinion leadership (Flynn, Goldsmith, and Eastman, 1996) and childhood habits (Reinaerts, De Nooijer, Candel, and De Vries, 2007).

Research questions

Present deliverable addresses seven research questions, which aim to increase the understanding of the consumer acceptance of novel fruit and fruit products. The research questions are presented below and are answered within the different chapters of this deliverable. This study considers the above-mentioned product and personal characteristics in a cross national context. Following Steenkamp and Baumgartner (1998) who argue that a fuller understanding of consumer behaviour requires cross-validation of models in different countries. Therefore, in all chapters of this deliverable 'country' is included in the analyses to explore the differences between countries.

Research question 1: Which product characteristics are important for consumers when buying novel fruits and fruit products (Chapter 3)?

Research question 2: Which product innovations are mostly accepted by consumers (Chapter 4)?

Research question 3: How are different product innovations perceived in terms of product evaluations (Chapter 5)?

Research question 4: Which product evaluations are important to predict the adoption of fresh fruits and fruit products (Chapter 6)?

Research question 5: Which personal characteristics predict the adoption of novel fruits (Chapter 7)?

Research question 6: What is the impact of product evaluations and personal characteristics on the adoption of novel fruits (Chapter 8)?

Research question 7: Which cross-cultural consumer segments can be identified based on the ranking of product characteristics (Chapter 9)?

2 Method

Design of the questionnaire.
Respondents completed an online questionnaire. The questionnaire (see Appendix A) consisted of questions regarding (A) personal characteristics of the respondents (B) importance ranking of product characteristics of fresh fruit and fruit products, (C) perception of specific novel fruits and fruit products in terms of product evaluations, (D) adoption of novel fruits and fruit products, and (E) demographics. Each part of the questionnaire is explained in detail below.

There were four different versions of the questionnaire. In each version, respondents were asked to evaluate three different novel fruits or fruit products. In addition, in the first two versions respondents answered specific personal items in the context of novel fresh fruit and in two other versions respondents evaluated the specific personal items in the context of novel fruit products. Table 2.1 presents the differences between the four conditions. The specific novel fruits and fruits products in the questionnaire were selected on the basis of an inventory of innovations that was carried out at an earlier stage (see Zajac and Kraszewska, 2007 for a detailed description), and the focus of other ISAFRUIT pillars. Pictures of the included product innovations are presented in the Appendix (see Appendix B). Moreover, a table is presented that reveals to which innovation category the novel fruits belong (see Appendix C).

Table 2.1. Differences between the four versions of the questionnaire

Condition	Innovativeness regarding:	Product 1	Product 2	Product 3
A1 (N=498)	Fresh fruit	Organic fruit mousse	Cholesterol lowering peach	Fruit vending machine
A2 (N=499)	Fresh fruit	Mini nectarines	Pitaya	Genetically modified apple
B1 (N=494)	Fruit products	Organic apple	Cholesterol lowering orange juice	Prebiotic dried black currant
B2 (N=481)	Fruit products	Nectarine chips	Pitaya juice	Freshly cut fruit salad

Analysis.
The analysis of the data consisted of four main steps. At first, the used multi-item scales for measuring personal characteristics were validated. Second, research question 1 till 6 were answered with the use of descriptive statistics, ANOVA's, ANCOVA's and OLS regression analyses. Third, research question 7 aimed to identify cross-cultural consumer segments. Finite mixture modelling was used as to perform cluster analyses. A sequential logit model with concomitant variables (Vermunt and Magidson, 2005) classified groups of consumers with similar preferences. Finally, the identified segments were profiled with the use of ANOVA's. Each of these steps is explained in more detail within the chapters where the results are reported.

2.1 Demographics and validation of the scales

Measurement.
Consumers' innovative behaviour and its antecedents were measured with multiple psychological constructs included in the theoretical framework for consumers' willingness to adopt novel food (Prosińska and Bartels, 2007). The psychological constructs were measured with validated scales and will be described in detail below. Some of the used constructs are domain (i.e. fruit) specific and these are therefore adapted to a fruit context. Half of the respondents filled out these domain-specific questions for fresh fruits and half of the respondents filled out these domain-specific questions for fruit products.

A pilot study was conducted to test the questionnaire. The results of this pilot were used to adapt the consumer survey for the main study. For each scale a short description and the original source is mentioned below. Moreover, the Cronbach's α's obtained in the current study are presented to indicate the reliability of the scales (See Appendix D for a table including the Cronbach's alphas for of the scales for each country). Deliverable 1.3.4. presents the selection, development and validation of measurement instruments for the consumer survey regarding consumer innovativeness in the context of novel fruits and fruit products (see Kraszewska, Bartels, and Onwezen, 2009 for a detailed description).

Part A: Personal characteristics of the respondents
Market mavenism. Market mavenism refers to the extent a consumer has extensive knowledge and experience with markets rather than in a specific domain. Market mavens are described as "expert shoppers" (Geissler and Edison, 2005, p.74). Market mavenism was measured with 6-item scale developed by Feick and Price (1987). We used 5-point scale Likert Scales (ranging from "1 = Strongly disagree" to "5 = Strongly agree"). Cronbach's alpha of this scale was 0.90.
Domain-specific innovativeness for food. Domain-specific innovativeness (DSI) refers to a tendency to acquire new products or new product-related information within a specific domain (Goldsmith and Hofacker, 1991). A 6-item scale (ranging from "1 = Strongly disagree" to "5 = Strongly agree") by Goldsmith and Hofacker (1991) was used. DSI was measured in two domains, a food domain and a specific fruit domain. Cronbach's alpha for the DSI in a food domain was 0.74. DSI in the specific fruit contexts revealed a Cronbach's alpha of 0.78 for fresh fruit and a Cronbach's alpha of 0.75 for fruit products.
Food neophobia. Food neophobia can be referred to as "the extent to which individuals are reluctant to try novel foods (food products, dishes, cuisines)" (Eertmans, Victoir, Vansant, and Bergh, 2005, p.714). An adapted scale of the original 10-item scale (ranging from "1 = Strongly disagree" to "5 = Strongly agree") of Pliner and Hobden (1992) was used. After analysing the pilot study we decided to remove the positively phrased items (5 items), since they refer more to innovativeness than to food neophobia. Food neophobia is a domain specific constructs and was therefore measured for specific fruit contexts. Cronbach's alpha of this scale was 0.82 for fresh fruit and 0.80 for fruit products.
Food involvement. In the context of food, involvement can be defined as "the level of importance of foods in a person's life" (Bell and Marshall, 2003, p.236). The involvement refers to the level of attachment, enjoyment, the amount of thinking and talking about food. The original Food Involvement scale of Bell and Marshall (2003) was adapted since the results of the pilot study revealed statistical as well as content-

related problems. Three original items (ranging from "1 = Strongly disagree" to "5 = Strongly agree") were used and four other 'involvement' items originated from Zaichowsky (1994) Personal Involvement Inventory were added. Cronbach's alpha of the adapted food involvement scale was 0.86.

Opinion leadership. Opinion leaders are likely to communicate with others about products and in that way they influence the attitude, acceptance and buying behavior of other consumers (Flynn, Goldsmith, and Eastman, 1996; Gatignon and Robertson, 1985). In the present study, opinion leadership was assessed using a 4-item scale (ranging from "1 = Strongly disagree" to "5 = Strongly agree") based on the originally developed scale of Rogers and Cartano (1962). Opinion leadership was measured with specific reference to fruit. Cronbach's alpha of the scale was 0.92 for fresh fruit and 0.92 for fruit products.

Childhood habits. The habit of eating fruit as a child was measured with the 3-item (ranging from "1 = Strongly disagree" to "5 = Strongly agree") scale by Reinaerts et al. (2007). Consumers were asked to rate these child hood habit questions for fresh fruit, processed fruit and prepared fruit. Cronbach's alpha was .90 for fresh fruits, 0.92 for prepared fruits and 0.94 for processed fruits.

Part B: Product characteristics.
Participants were asked to rank the importance of product characteristics, such that they had to order the product characteristics in a line with the most important characteristic at the top and the least important one at the bottom. Half of the participants ranked the product characteristics for fresh fruits and half of the participants ranked the product characteristics for fruit products. The product characteristics were selected based on the results of the earlier conducted focus groups and a literature review. The product characteristics were: Healthy, Safe, Convenient to consume, Reasonably priced, Tasty, Familiar, Naturally produced, Looks appealing. For fresh fruit and fruit products two distinct characteristics were included that where only relevant for the related fruit category. "Locally produced" was taken into account for fresh fruits and for fruit products the product characteristic "Has a good brand" was included.

Part C: Product evaluations.
Each respondent was asked to evaluate three innovative products. These products were evaluated on eleven different aspects. Tasty, Expensive, Convenient to consume, Healthy, Novel, Easily available, Attractive, Safe, Natural, Better than regular fruits/fruit products and Exclusive. For the fruit vending machine respondents were asked to evaluate whether the way of selling is Easy, Novel and Attractive. The remaining product evaluations were also still considered to be relevant and therefore respondents' rated the fruit in the vending machine on the extent it looks Tasty, Expensive, Healthy, Safe, Natural, Better than regular fruits and Exclusive.

Finally, respondents were asked to rate their buying intention towards the three innovative products.

Part D: Actual adoption behaviour.
Respondents were asked to rate the amount of times they have bought fruit innovation in the last three months. The actual adoption behaviour is asked for fresh fruit, prepared fruit, processed fruit and for fruit in general. The answering categories ranged from "Never" to "5 times or more".

Part E: Demographics.

This part of the questionnaire aims to measure who the consumers are with regard to their demographics. The questions concerned respondents' age, gender, family status (Married/Living together, Single/Divorced/Widow or Living with your parents), number of members of households, children below 18 years old, educational level (low, medium or high), employment status (Employed, Retired, Student, Unemployed, Housewife or In the army). With regard to household income, nine categories are developed based on the minimum wage of each country. The nine different categories were a multiplication of this minimum wage (e.g. 4-6 times minimum wage and 6-8 times minimum wage). This makes the income level comparable across countries. Finally, respondents were asked whether they are the person in the household that regularly buys the food (yes/no) and whether they are the person that regularly prepares the food (yes/no).

Participants.

To meet the objectives of this study, a large-scale consumer study was conducted among European consumers. In total the sample consisted of 1972 respondents, divided across The Netherlands (n=502), Greece (n=468), Poland (n=502), and Spain (n=500). Subjects were recruited from online panels and embody a representative sample of the country populations in terms of age and gender.

The demographic characteristics of these respondents were as follows. Age was ranging from 16 to 87 ($M = 43.47$). The sample consisted of 50.9% females and 49.1% males. With regard to education, notice that all countries have very distinctive educational systems. To make comparison between countries possible four educational levels, which are more or less comparable over countries, are composed: no schooling, low (e.g., elementary school), medium (e.g., high school) and high (e.g., college or university). Of the total sample 1.4% had no schooling. 7.2 % of the respondents had an educational level that was considered as low, 41.7 % of the respondents had an educational level that was considered as medium, and consequently 49.7% of the respondents had an educational level that was considered as high. A detailed overview of the sample characteristics for each country is presented in appendix D.

3 Importance of product characteristics.

This chapter aims to reveal the importance consumers attach to a range of product characteristics when buying fresh fruits and fruit products (Research Question 1). Table 3.1 reveals the mean scores of the importance rankings for fresh fruit and for fruit products.

Table 3.1 Mean scores of the product characteristics of novel fresh fruit and fruit products.

	Mean fresh fruit (N=997)	Mean fruit products (N=975)	F(1,1971)	Partial η^2
It is important to me that a new fresh fruit/fruit product..				
… is healthy	3.10 [a]	2.98 [a]	1.961	0.001
…has a good taste	3.11 [a]	3.41 [b]	13.137	0.007
…is safe	4.44 [b]	4.03 [c]	16.062***	0.008
…is reasonably priced	4.43 [b]	4.38 [cd]	0.250	0.000
…is naturally produced	4.63 [b]	4.47 [d]	1.901	0.001
…looks appealing	5.42 [c]	5.70 [e]	6.765**	0.003
…is convenient to consume	5.86 [d]	6.13 [f]	8.083*	0.004
…is locally produced	6.90 [e]	-		
…is has a good brand	-	6.71 [g]		
…is familiar to me	7.11 [e]	7.19 [h]	0.65	0.004
Wilks Lambda	.229, *F*(8, 989)= 416.183***	.227, *F*(8, 967)= 412.265		
Partial η^2	.771	.773		

***< 0.001; **< 0.01; *< 0.05; Respondents were asked to rank the product characteristics in order of importance, such that they rated the most important product characteristic with a 1 and the least important product characteristic with a 9. Therefore, the lower a mean score is, the more important the product characteristic is rated; Similar superscripts in the columns refer to statistically similar means of the product characteristics, such that the top left [a] means the average of the ranking of health and taste does not significantly differ from each other.

The importance rankings for both fresh fruit and fruit products revealed comparable results. The same four product characteristics were evaluated as the most important. Consumers valued healthiness, taste, price and safety of a new product the most. Familiarity, convenience and looks appealing are product characteristics were ranked as unimportant for both fresh fruits and fruit products. A closer look reveals that taste was rated equally important as health for fresh fruits, while taste is rated as less important than health for fruit products. Reasonable prices was ranked equally important as safety and naturally produced for both fresh fruits and fruit products. Furthermore, familiarity, convenience and looks appealing were ranked significantly different for both fresh fruits and fruits products.

More specific, the results displayed in Table 3.1 reveal some differences between the importance rankings of the product characteristics for fresh fruits and fruit products. For fresh fruit, it was relatively unimportant whether a product was locally produced. For fruit products it was relatively unimportant whether the product had a good brand. Safety seemed to be more important when buying new fruit products compared to buying new fresh fruits. Convenience to consume and looks appealing was rated as more important for new fresh fruits than for new fruit products.

Table 3.2 presents the mean importance rankings of the four countries on the product characteristics of novel fresh fruit. The results revealed that for each country health and taste were the most important product characteristics for novel fresh fruit. The healthiness of fresh fruit was equally important for the consumers of all countries. The

countries differed in the importance ranking of all the other product characteristics. Below you will find a detailed description of these differences.

First, *taste* was rated as more important by the Dutch and the Spanish respondents compared to the Greek and the Polish respondents. *Reasonably priced* was a relatively important product characteristic in the Netherlands and in Spain, and less important in Greece. *Safety* was rated as relatively important by the Greek respondents compared to the respondents from the other countries. *Naturally produced* was more important for the Greek respondents and less important for the Dutch consumers. *Looks appealing* was rated as more important for the Dutch and the Polish consumers than for the Greek and the Spanish consumers. *Convenience to consume* fresh fruits was rated as more important by the Dutch consumers compared to the consumers from the other countries. *Locally produced* was most important for the Greek respondents and least important for the Dutch respondents. Finally, *familiarity* was less important for the Polish and the Dutch respondents and more important for the Greek and the Spanish respondents.

Table 3.2. Differences between countries for the importance of product characteristics of new fresh fruit.

It is important to me that a new fresh fruit ...	The Netherlands (N=502)	Greece (N=468)	Poland (N=502)	Spain (N=500)	F(3,996)	Partial η^2
…is healthy	3.13	3.25	2.96	3.05	1.124	0.003
…has a good taste	2.73 [s]	3.52 [p]	3.16 [gs]	3.02 [np]	8.055***	0.024
…is reasonably priced	3.83 [s]	5.22	4.45 [s]	4.25 [np]	18.081***	0.052
…is safe	4.52 [ps]	3.76	4.80 [ns]	4.65 [np]	11.143***	0.033
…is naturally produced	5.57	3.38	4.70 [s]	4.86 [p]	33.652***	0.092
…looks appealing	4.89 [p]	6.48	4.65 [n]	5.69	32.887***	0.090
…is convenient to consume	5.08	6.33 [ps]	6.19 [gs]	5.86 [gp]	18.158***	0.052
…is locally produced	7.70	6.13	6.98 [s]	6.79 [p]	22.808***	0.064
…is familiar to me	7.55 [p]	6.94 [ps]	7.11 [ngs]	6.84 [gp]	5.483**	0.016

***< 0.001; **< 0.01; *< 0.05; Superscripts refer to similar scores between countries, such that if the first letter of a country is displayed after a mean score the scores of these countries do not differ significantly from each other. The top left superscript [s] refers to a similar mean score of the Netherlands and Spain on the importance of taste.

Table 3.3 presents the mean importance rankings in the four countries on the product characteristics of novel fruit products. Also for fruit products healthiness and taste of a novel product were the most important product characteristics for all countries. The results revealed that the countries differ from each other in the importance they attach to all the different product characteristics. Some of the most prominent differences between countries are described below.

First, the *healthiness* of a novel fruit product seemed less important in Greece compared to Poland and Spain. The *tastiness* of a fruit product was more important in the Netherlands and Spain compared to the Greek respondents. *Reasonably priced* was relatively important for the Dutch and the Spanish respondents and relatively unimportant for the Greek respondents. *Safety* of novel fruit products was more important for the Greek respondents compared to the respondents from the other countries. *Naturally produced* was more valued by the Greek respondents and less valued by the Dutch respondents. *Looks appealing* was rated as relatively important by the Dutch and the Polish respondents and relatively unimportant by the Greek respondents. *Convenience* of novel fruit products was more important for the Dutch

and the Spanish respondents compared to the Greek and the Polish respondents. Furthermore, it was more important for the Greek and the Polish respondents that a novel fruit product has a *good brand* compared to the Dutch and the Spanish respondents. Finally, for the Spanish respondents *familiarity* was more important than for the Dutch respondents.

Table 3.3. Differences between countries for the importance of product characteristics of new fruit products.

It is important to me that a new fruit product ...	The Netherlands (N=502)	Greece (N=468)	Poland (N=502)	Spain (N=500)	$F_{(3,974)}$	Partial η^2
...is healthy	2.98^{gps}	3.30^{n}	2.83^{ns}	2.84^{np}	11.298*	0.010
...has a good taste	2.90^{s}	3.91^{p}	3.58^{gs}	3.30^{np}	12.801***	0.038
...is reasonably priced	3.94^{s}	4.71^{ps}	4.54^{gs}	4.38^{ngp}	5.415**	0.016
...is safe	4.41^{ps}	3.09	4.56^{n}	3.96^{n}	20.733***	0.060
...is naturally produced	5.76	3.22	4.34^{s}	4.44^{p}	44.728***	0.121
...looks appealing	4.70^{p}	7.09	4.98^{n}	6.20	62.993***	0.163
...is convenient to consume	5.51^{s}	6.50^{p}	6.61^{g}	5.93^{n}	15.964***	0.047
...has a good brand	7.39^{s}	6.07^{p}	6.29^{g}	7.03^{n}	19.756***	0.058
...is familiar to me	7.41^{gp}	7.12^{nps}	7.29^{ngs}	6.92^{gp}	2.792*	0.009

***< 0.001; **< 0.01; *< 0.05; Superscripts refer to similar scores between countries, such that if the first letter of a country is displayed after a mean score the scores of these countries do not differ significantly from each other. The top left superscript ^{gps} refers to a similar mean score of the Netherlands on the importance of health with Greece, Poland and Spain.

Conclusion

• Health and taste are the most important product characteristics for the acceptance of novel fresh fruits and fruit product in all countries.

• In general, the same product characteristics are relatively more important and the same product characteristics are less important for novel fresh fruits and fruit products.

• Consumers valued healthiness, taste, price and safety of the new product the most, and familiarity, convenience to consume, having a good brand, locally produced and appealing look the least.

• There were differences in perceived importance of the product characteristics between the countries.

  • Dutch consumers attach a relatively high importance to taste, price, looking good and convenience and a relatively low importance to natural.
  • For Spanish consumers taste and familiarity of novel fruit are relatively important.
  • Polish consumers value the way a novel product looks relatively high.
  • Greek consumers value safe and natural relatively high and price relatively low.

4 Buying intention of fruit innovations

This chapter tries to answer the question whether the likelihood to buy a specific fruit innovation differs for the various products and differs between the countries (Research Question 2). In other words, are people more willing to try a specific product innovation compared to other product innovations?

Respondents were asked to evaluate specific fruit innovations on the following question "I would gladly buy this product if I could find it". Table 4.1 presents the mean scores of the buying intentions of the twelve included fruit innovations. Pictures of the twelve fruit innovations are displayed in Appendix B. In addition Appendix C represents a table to which innovation category each of the twelve fruit innovations belong.

As mentioned earlier, respondents did not evaluate each of the twelve innovations. Each respondent was assigned to one of the four versions of the questionnaire and evaluated three different fruit innovations. To compare the buying intention of the different fruit innovations with each other it was important to know that the consumers in the different conditions do not differ in their innovativeness. Results revealed that respondents in the different conditions did not differ from each other in their mean scores on domain -specific innovativeness, food neophobia, opinion leadership, market mavenism and food involvement[1].

For fresh fruit innovations respondents were most willing to buy the organic apple, followed by the mini nectarines and the pitaya. Respondents were least willing to buy fruit from the fruit vending machine. The genetically modified apple also scored relatively low on willingness to buy this product.

For fruit products the freshly cut fruit salad scored the highest on buying intention. The prebiotic dried fruit revealed the lowest score on the buying intention. The other fruit product innovations were comparable in consumers buying intention.

Table 4.1 Buying intention of fresh fruit innovations and fruit product innovations

Fresh Fruit (N=997)	Buying intention	Fruit Products (N=995)	Buying intention
Organic apple	3.71	Freshly cut fruit salad	3.60
Mini nectarines	3.68	Pitaya juice	3.27
Pitaya	3.49	Nectarine chips	3.21
Cholesterol lowering peach	3.45	Cholesterol lowering orange juice	3.21
Genetically modified apple	3.27	Organic fruit mousse	3.21
Fruit vending machine	3.17	Prebiotic dried fruit	3.18

Mean scores on the item "I would gladly buy this product if I could find it"; respondents answered this question on a scale from 1 to 5 (1= "Strongly disagree"; 5= "Strongly agree").

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[1] ANOVA's are conducted with the innovativeness measurements as dependent variables and condition as the independent variable. Results revealed that the four conditions do not differ significantly from each other in the measurements, market mavenism ($F_{(3, 1968)}=0.317; p =.813$), domain-specific innovativeness for food ($F_{(3, 1968)}=0.937; p =.422$) , food involvement ($F_{(3, 1968)}=1.143; p =.330$), food neophobia for fresh fruits ($F_{(1,995)}=.008; p =.930$) and fruit products ($F_{(1, 973)}=1.189; p =.276$), domain-specific innovativeness for fresh fruit ($F_{(1, 995)}=.084; p =.772$) and for fruit products ($F_{(1,973)}=1.189; p =.276$), and opinion leadership for fresh fruits ($F_{(1, 995)}=1.611; p =.205$) and fruit products ($F_{(1, 937)}=1.553; p =.213$). These results indicate that differences in buying intention of the different innovations was not caused by differences in innovativess between these conditions.

The results in Table 4.2 reveal that the four countries differed significantly from each other on buying intention for fresh fruit innovations, except for buying intention on fruit from the fruit vending machine, where consumers from the different countries had a comparable inclination to buy fruit from the vending machine.

The Greek respondents had the highest buying intention on the *organic apple,* while the Dutch respondents had the lowest buying intention on the organic apple. The Polish and the Spanish respondents did dot differ significantly from the other countries on the buying intention for this fruit innovation. The Greek respondents revealed the lowest buying intention towards the *mini nectarines*, followed by the Dutch respondents. The Polish and the Spanish respondents had the lowest intention to buy the mini nectarines. The intention to buy the *pitaya* was the highest in Poland. Polish consumers had a higher intention to buy the pitaya than the Dutch and the Greek respondents. The Polish consumers were more willing to buy the *cholesterol lowering peach* than the Dutch and the Spanish consumers. The Greek respondents were least willing to buy the *GM apple* compared to the respondents of the other countries. The Polish, Dutch and Spanish did not differ significantly from each other in their intention to buy the GM apple.

Table 4.2 Buying intention of fresh fruit innovations: differences between countries

	The Netherlands (N=502)	Greece (N=468)	Poland (N=502)	Spain (N=500)	F(df1,df2)	Partial η^2
Organic apple	3.46 ^{ps}	3.92 ^{ps}	3.82 ^{ngs}	3.67 ^{ngp}	3.897**	(3,493) .023
Mini nectarines	3.66 ^{ps}	3.28	3.99 ^{ns}	3.79 ^{np}	9.686***	(3, 498) .055
Pitaya	3.32 ^{gs}	3.31 ^{ns}	3.70 ^{s}	3.62 ^{ngp}	3.902**	(3, 498) .023
Cholesterol lowering Peach	3.14 ^{gs}	3.50 ^{nps}	3.80 ^{g}	3.37 ^{ng}	6.527***	(3,497) .038
Genetically modified apple	3.29 ^{ps}	2.90	3.41 ^{ns}	3.46 ^{np}	5.727**	(3, 498) .034
Fruit vending machine	2.94	3.23	3.34	3.19	2.039	(3, 497) .012

Note. Mean scores on the item "I would gladly buy this product if I could find it"; respondents answered this question on a scale of 1 to 5 (1= "Strongly disagree"; 5= "Strongly agree"); ***< 0.001; **< 0.01; *< 0.05; Superscripts refer to similar scores between countries, such that if the first letter of a country is displayed after a mean score the scores of these countries do not differ significantly from each other. The top left superscript ^{ps} refers to a similar buying intention of the Dutch consumers towards an organic apple as the Polish and Spanish respondents.

The results in Table 4.3 reveal that the buying intention towards the six fruit product innovations differed between the countries.

The *freshly cut fruit salad* was most appealing to the Polish and the Spanish respondents compared to the Dutch and the Greek respondents. Polish consumers were more inclined to buy *pitaya juice* than Dutch and Greek consumers. Polish and Spanish consumers were more willing to buy *nectarine chips* compared to Dutch and Greek consumers. The *organic fruit mousse* had the lowest buying intention for the Dutch consumers compared to the Greek and Polish consumers. Finally, Dutch consumers were less willing to buy *prebiotic dried fruit* compared to the consumers of all other countries.

Table 4.3 Buying intention of fruit product innovations: differences between countries

	The Netherlands (N=502)	Greece (N=468)	Poland (N=502)	Spain (N=500)	F(df1,df2)	Partial η^2
Freshly cut fruit salad	3.05 [g]	3.43 [n]	3.94 [s]	3.95 [p]	19.378*** (3,480)	.109
Pitaya juice	3.02 [gs]	3.02 [ns]	3.68 [s]	3.33 [ngp]	8.347*** (3, 480)	.050
Nectarine chips	2.69 [g]	2.95 [n]	3.75 [s]	3.40 [p]	19.167*** (3, 480)	.108
Cholesterol lowering orange juice	2.83 [g]	2.97 [n]	3.64 [s]	3.41 [p]	13.802*** (3,493)	.078
Organic fruit mousse	2.84 [s]	3.25 [ps]	3.57 [g]	3.20 [ng]	9.112*** (3, 497)	.052
Prebiotic dried fruit	2.49	3.35 [ps]	3.63 [gs]	3.25 [gp]	19.426*** (3, 493)	.106

Note. Mean scores on the item "I would gladly buy this product if I could find it"; respondents answered this question on a scale of 1 to 5 (1= "Strongly disagree"; 5= "Strongly agree"); ***< 0.001; **< 0.01; *< 0.05;
Superscripts refer to similar scores between countries, such that if the first letter of a country is displayed after a mean score the scores of these countries do not differ significantly from each other. The top left superscript [g] refers to a similar buying intention of the Dutch consumers towards freshly cut fruit salad as the Greek respondents.

Conclusion

- Consumers' buying intention towards fruit innovations differs between innovation categories and between countries.

- In general, product innovations related to convenience aspects (mini nectarines and fruit mix salad) and exotic fruit innovations (pitaya and pitaya juice) seem to be the most appealing to consumers.

- Fruit vending machine is evaluated the most negative. This new purchase channel seems to be relatively unattractive to all consumers.

- Dutch consumers are more willing to buy novel fresh fruits than novel fruit products.

- Greek consumers are more willing to buy novel organic fresh fruits compared to consumers in other countries and less willing to buy novel GM fresh fruits and functional fruit products.

- Polish consumers are most willing to buy novel fresh fruits and fruit product innovations across all examples. Dutch consumers are the least innovative with respect to their intention to buy the fruit innovations.

5   Consumer evaluation of novel fruits and fruit products.

This chapter focuses on how the specific product innovations were evaluated on their product characteristics (Research Question 3). Respondents were asked to evaluate the twelve selected fruit innovations on tastiness, expensiveness, convenient to consume, healthiness, novelty, easy available, attractiveness, safety, naturalness, being better than regular and exclusiveness.

For each of the twelve product innovations the perception on the different product evaluations is presented in figures 5.1-5.12. These figures present the mean product evaluations for each country. Moreover, the mean scores across countries are added (red bullet), which makes a comparison between countries more sufficient. In addition, ANOVA's were conducted to test whether respondents of different countries perceived the novel fruits differently on the product evaluations. Product evaluations were added as dependent variable and country was included as independent variable. Moreover, post hoc comparisons were performed to check which countries differ from each other in the perception of product evaluations of the novel fruits.

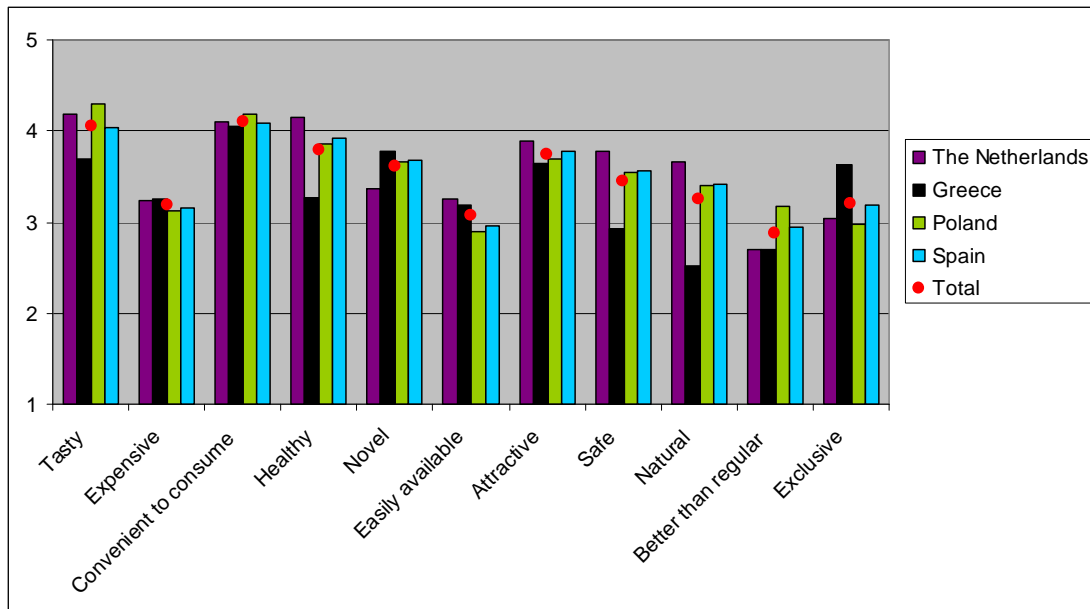## 5.1 Product evaluations of novel fresh fruits
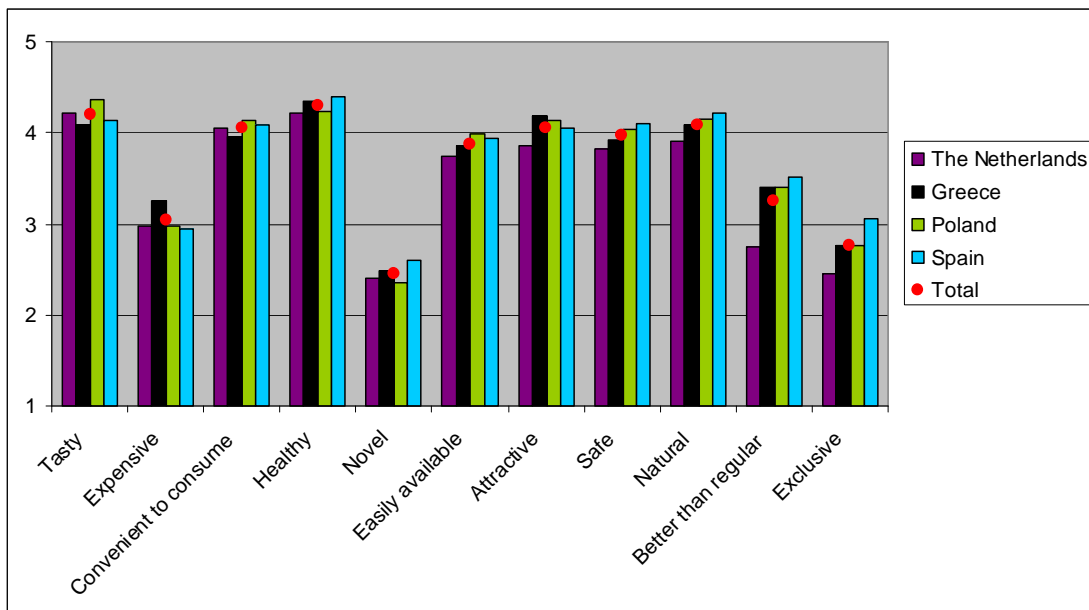
Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.1 Product evaluations of the Organic Apple

The *organic apple* was evaluated high on being tasty, healthy, convenient to consume, easy available, attractive, safe and natural. Furthermore, the organic fresh fruit was perceived low on expensiveness, such that the product was evaluated as being not too expensive. The *organic apple* was not perceived as novel, nor better than regular, nor exclusive.

There were not much differences between in the evaluation of this fruit innovation. The *organic apple* was evaluated differently on attractiveness (F(3, 490)=

2.738, $p<.05$), better than regular ($F(3, 495)= 13.327$, $p<.001$) and exclusive ($F(3, 495)= 5.778$, $p<.01$). The Dutch consumers perceived the organic apple as less attractive than the Greek consumers. The Dutch consumers evaluated this product as less better than regular than all countries and less exclusive than the Spanish consumers.
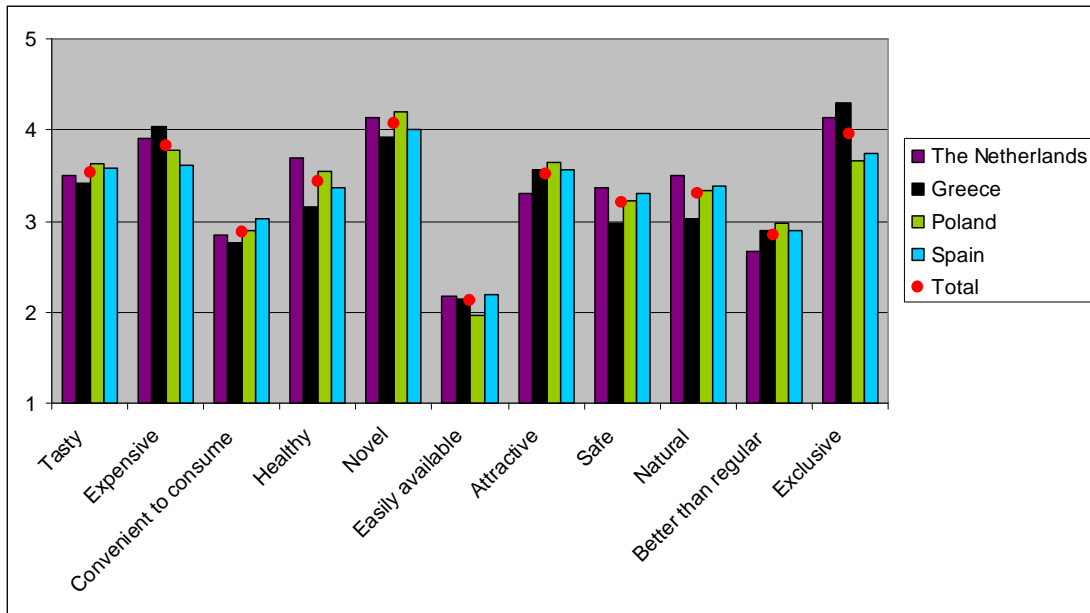

Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.2 Product evaluations of the Mini Nectarines

The *mini nectarines* were evaluated rather high on tastiness, convenient to consume, healthiness and attractiveness. Respondents evaluated the *mini nectarines* quite low on expensiveness, easy available and better than regular. In other words, respondents perceived this novel fruit as not too expensive, however, also as not being better than regular and not easily available.

Figure 5.2 reveals that there were large differences between the countries in the evaluation of the *mini nectarines*. The countries evaluated the *mini nectarines* significantly different on taste ($F(3, 495)= 9.840$, $p<.001$), healthy ($F(3, 495)= 20.287$, $p<.001$), novel ($F(3, 495)=2.675$, $p<.05$), easy available ($F(3, 495)=2.865$, $p<.05$), safe ($F(3, 495)=19.472$, $p<.001$), natural ($F(3, 495)=24.241$, $p<.001$), better than regular ($F(3, 495)=6.919$, $p<.001$), and exclusive ($F(3, 495)=8.948$, $p<.001$). The Greek consumers seemed to perceive the mini nectarines significantly different than the consumers of the other countries. The Greek consumers perceived the *mini nectarines* as less tasty, healthy, safe and natural. Furthermore, the Greek consumers evaluate the *mini nectarines* as more exclusive.
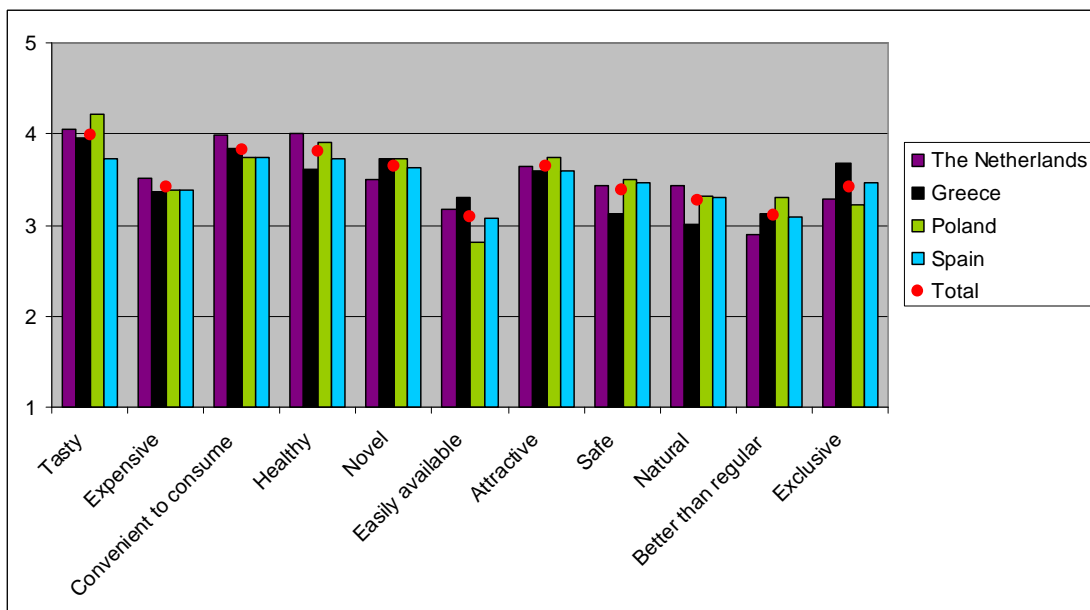
Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.3 Product evaluations of the Pitaya

The *pitaya* was evaluated the highest on exclusiveness and novelty. The *pitaya* was evaluated low on being easily available, convenient to consume and being better than regular. Moreover, consumers perceived this exotic fruit as expensive.

ANOVA's reveal that consumers of the different countries perceived this product differently on some of the product evaluations. The countries differed in the evaluation of expensive ($F(3, 495)= 5.202$, $p<.01$), healthy ($F(3, 495)= 8.562$, $p<.001$), safe ($F(3, 495)= 5.129$, $p<.01$), natural ($F(3, 495)= 5.374$, $p<.01$), better than regular ($F(3, 495)= 2.791$, $p<.05$), and exclusive ($F(3, 495)= 11.898$, $p<.001$).
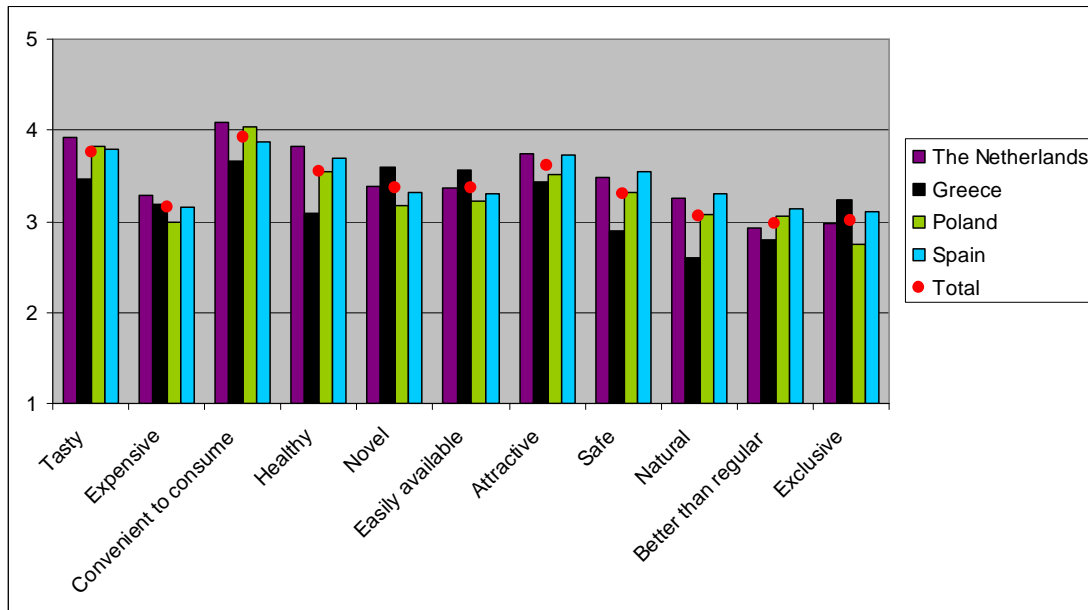

Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.4 Product evaluations of the Cholesterol Lowering Peach

The *cholesterol lowering peach* was evaluated quite high on tastiness, convenient to consume, healthiness, novelty, attractiveness and exclusiveness. This product innovation was evaluated low on being easy available and better than regular.

The product evaluations differed between countries on the following aspects; tasty ($F(3, 494)= 5.987$, $p<.01$), healthy ($F(3, 494)= 3.568$, $p<.05$), easy available ($F(3, 494)= 4.129$, $p<.01$), safe ($F(3, 494)= 3.387$, $p<.05$), natural ($F(3, 494)= 2.825$, $p<.05$), better than regular ($F(3, 494)= 3.131$, $p<.05$) and exclusive ($F(3, 494)= 4.620$, $p<.01$). Product evaluations on expensive, convenient, novel and attractive did not differ between the countries.

Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.5 Product evaluations of the Genetically Modified (GM) Apple

The *GM apple* was evaluated quite high on convenience to consume and tastiness. It was evaluated rather low on the naturalness, being better than regular and exclusiveness.

There were some differences between the countries in the evaluation of the *GM apple*. Consumers in the four countries evaluated the *GM apple* significantly different on taste ($F(3, 495)= 5.141$, $p<.01$), convenient to consume ($F(3, 495)= 5.825$, $p<.01$), healthy ($F(3, 495)= 10.058$, $p<.001$), novel ($F(3, 495)= 3.236$, $p<.05$), attractive ($F(3, 495)= 2.697$, $p<.05$), safe ($F(3, 495)= 8.850$, $p<.001$), natural ($F(3, 495)= 8.471$, $p<.001$) and exclusive ($F(3, 495)=4.781$, $p<.01$). The Greek consumers evaluated this product as less tasty, convenient, healthy, safe and natural than the consumers in the other countries.
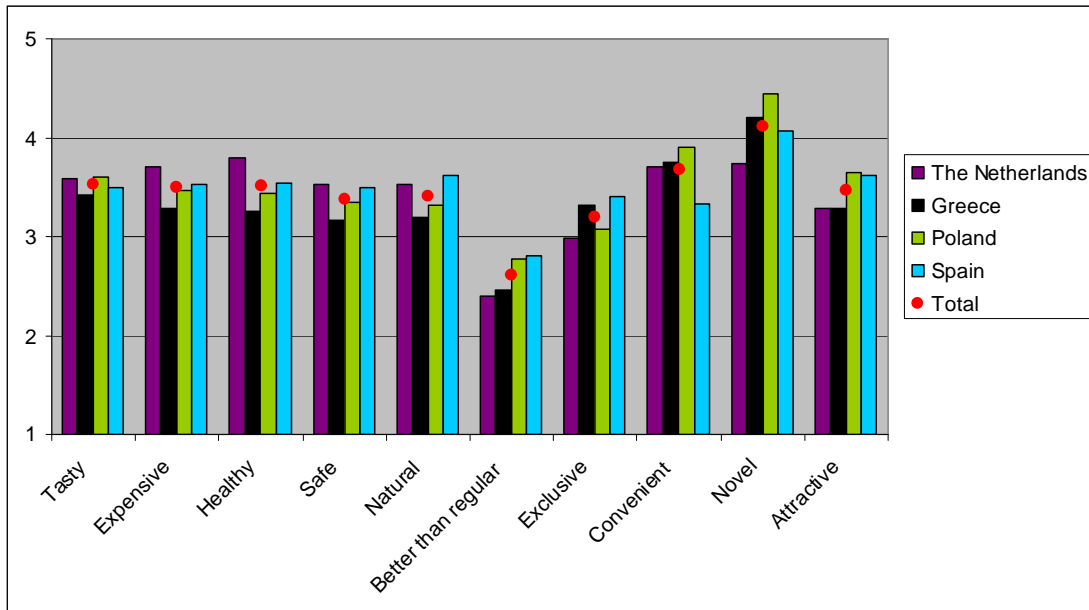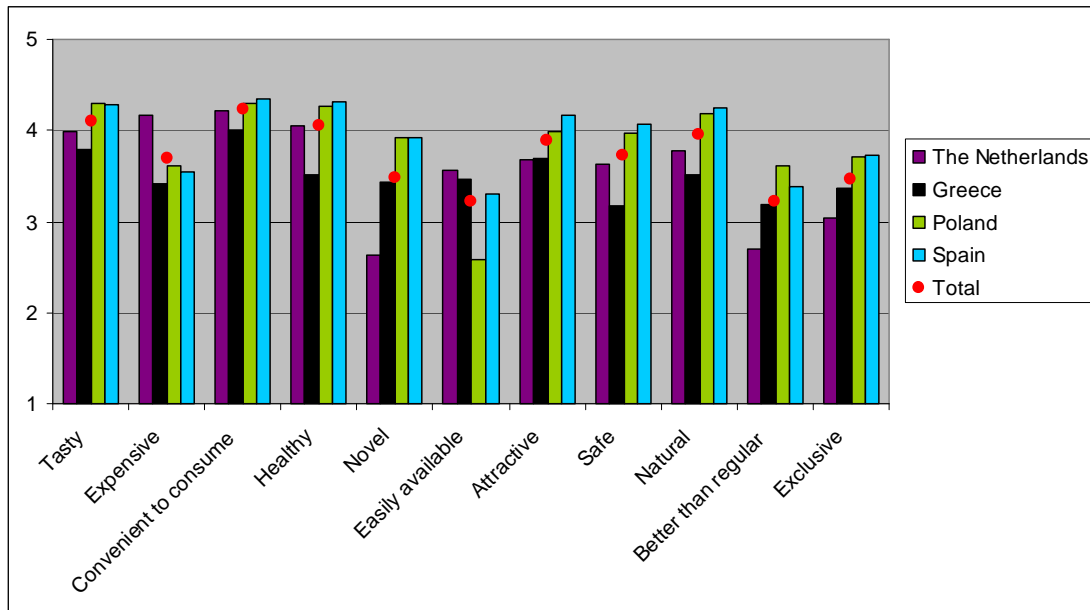
Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.6 Product evaluations of the Fruit Vending Machine

The *fruit vending machine* is evaluated the highest on novelty. The product evaluations were in general quite high, except for better than regular and exclusive.

The evaluations of consumers in the different countries differed significantly in all aspects, except for taste. The countries evaluated the following aspects in a different way, expensive ($F(3, 494)= 3.727$, $p<.05$), healthy ($F(3, 494)= 6.249$, $p<.001$), safe ($F(3, 494)= 3.050$, $p<.05$), natural ($F(3, 494)= 4.149$, $p<.01$), better than regular ($F(3, 494)= 5.441$, $p<.01$), exclusive ($F(3, 494)= 3.670$, $p<.05$), convenient ($F(3, 494)= 5.531$, $p<.01$), novel ($F(3, 494)= 10.925$, $p<.001$) and attractive ($F(3, 494)= 3.203$, $p<.05$). Dutch consumers evaluated the fruit from the *fruit vending machine* as more tasty, expensive healthy and safe than the Greek consumers. Spanish consumers perceived the fruit from the *fruit vending machine* as more natural than the Greek consumers. The Polish and the Spanish consumers perceived the fruit as better than regular and more attractive than the Dutch and the Greek consumers.

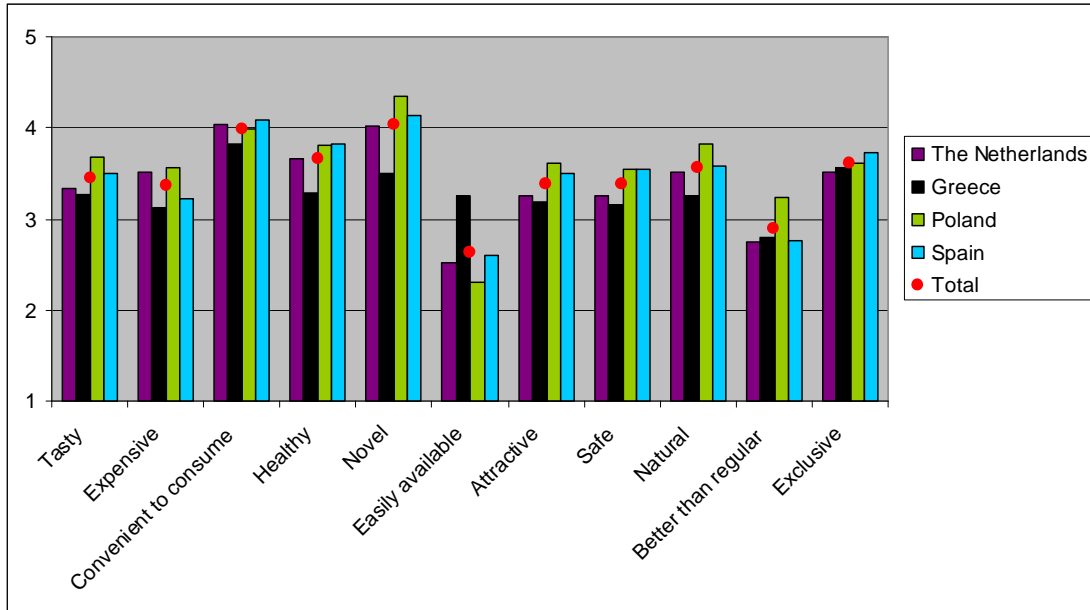## 5.2 Product evaluations of novel fruit products

Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.7 Product evaluations of the Fruit Mix Salad

The *fruit mix salad* was evaluated very high on the following aspects; convenient to consume, natural, healthy, tasty, easy available, safe and attractive. It was evaluated quite low on being better than regular, and being easy available.

Consumers from the Netherlands, Greece, Poland and Spain appraised this novel fruit product significantly different. ANOVA's revealed that there was a significant difference between the countries on all product evaluations, taste (F(3, 477)= 7.753, $p<.001$), expensive (F(3, 477)= 15.527, $p<.001$), convenient to consume (F(3, 477)= 3.444, $p<.05$), healthy (F(3, 477)= 16.409, $p<.001$), novel (F(3, 477)= 42.950, $p<.001$), easily available (F(3, 477)= 18.886, $p<.001$), attractive (F(3, 477)= 7.397, $p<.001$), safe (F(3, 477)=20.827, $p<.001$), natural (F(3, 477)= 13.922, $p<.001$), better than regular (F(3, 477)= 14.764, $p<.001$), and exclusive (F(3, 477)= 11.633, $p<.001$). The Polish and the Spanish consumers evaluated the *fruit mix salad* as more natural, safe and novel than the Greek and the Dutch consumers. Moreover, the Polish and the Spanish consumers evaluated the *fruit mix salad* higher than the Dutch consumers on being exclusive, better than regular, healthy, convenient to consume and expensive.

Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.8 Product evaluations of the Pitaya Juice

The *pitaya juice* was evaluated the highest on novelty and convenience and the lowest on being easy available and better than regular.

There were some differences between the four countries in the evaluation of the *pitaya juice* on the different aspects. The evaluation differed significantly between the four countries on the following aspects taste ($F(3, 477)= 3.307$, $p<.05$), expensive ($F(3, 477)= 7.144$, $p<.001$), healthy ($F(3, 477)= 7.641$, $p<.001$), novel ($F(3, 477)= 14.983$, $p<.001$), easy available ($F(3, 477)= 16.279$, $p<.001$), attractive ($F(3, 477)= 4.586$, $p<.01$), safe ($F(3, 477)= 5.363$, $p<.01$), natural ($F(3, 477)= 6.399$, $p<.001$), better than regular ($F(3, 477)= 6.509$, $p<.001$). The Greek consumers evaluated this exotic fruit juice lower than all other countries on healthiness and novelty. They evaluated the *pitaya juice* higher than all other countries on easy available. The Polish consumers were in general somewhat more positive in their evaluation of the *pitaya juice*.
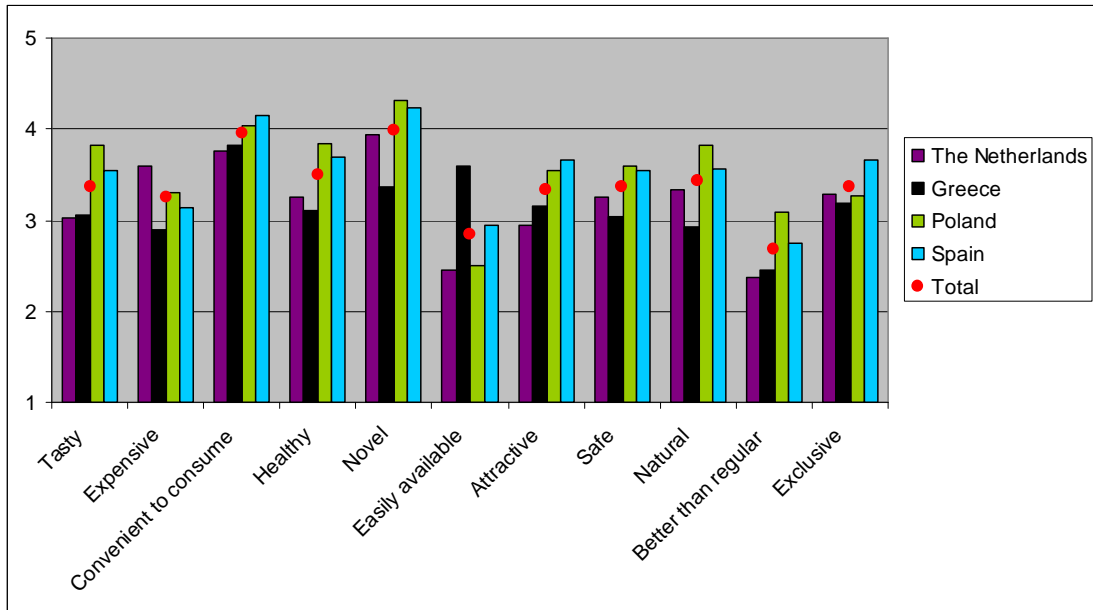
Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.9 Product evaluations of the Nectarine Chips

Nectarine chips was evaluated the highest on convenience to consume, and being novel and the lowest on being better than regular and being easy available.

The countries differed from each other in the evaluation of the *nectarine chips* on all aspects. Countries evaluate the *nectarine chips* different on taste ($F(3, 477)$= 15.967, $p<.001$), expensive ($F(3, 477)$= 13.214, $p<.001$), convenient to consume ($F(3, 477)$= 4.669, $p<.01$), healthy ($F(3, 477)$= 15.479, $p<.001$), novel ($F(3, 477)$= 22.028, $p<.001$), easy available ($F(3, 477)$= 28.308, $p<.001$), attractive ($F(3, 477)$= 14.186, $p<.001$), safe ($F(3, 477)$= 8.498, $p<.001$), natural ($F(3, 477)$= 14.784, $p<.001$), better than regular ($F(3, 477)$= 13.044, $p<.001$) and exclusive ($F(3, 477)$= 4.879, $p<.01$). In general, the Polish and the Spanish consumers evaluated the *nectarine chips* more positive than the Dutch and Greek consumers.

Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.10 Product evaluations of the Cholesterol Lowering Orange Juice

The *cholesterol lowering orange juice* was evaluated quite equally on the different product evaluations. This product was evaluated as convenient to consume and healthy. The product evaluations on easily available and better than regular were quite low.

The evaluation of this product differs between countries on all aspects, except for exclusiveness. Countries evaluate this novel fruit product differently on taste ($F(3, 490)= 12.528$, $p<.001$), expensiveness ($F(3, 490)= 5.914$, $p<.01$), convenience to consume ($F(3, 490)= 6.830$, $p<.001$), healthiness ($F(3, 490)= 11.445$, $p<.001$), novelty ($F(3, 490)= 3.144$, $p<.05$), easily available ($F(3, 490)= 18.309$, $p<.001$), attractiveness ($F(3, 490)= 18.256$, $p<.001$), safety ($F(3, 490)= 14.855$, $p<.001$), naturalness ($F(3, 490)= 18.012$, $p<.001$), and better than regular ($F(3, 490)= 14.373$, $p<.001$). Overall the Greek consumers evaluate this product more negative than the other countries. The Polish consumers evaluate this product in general more positive than the other countries.
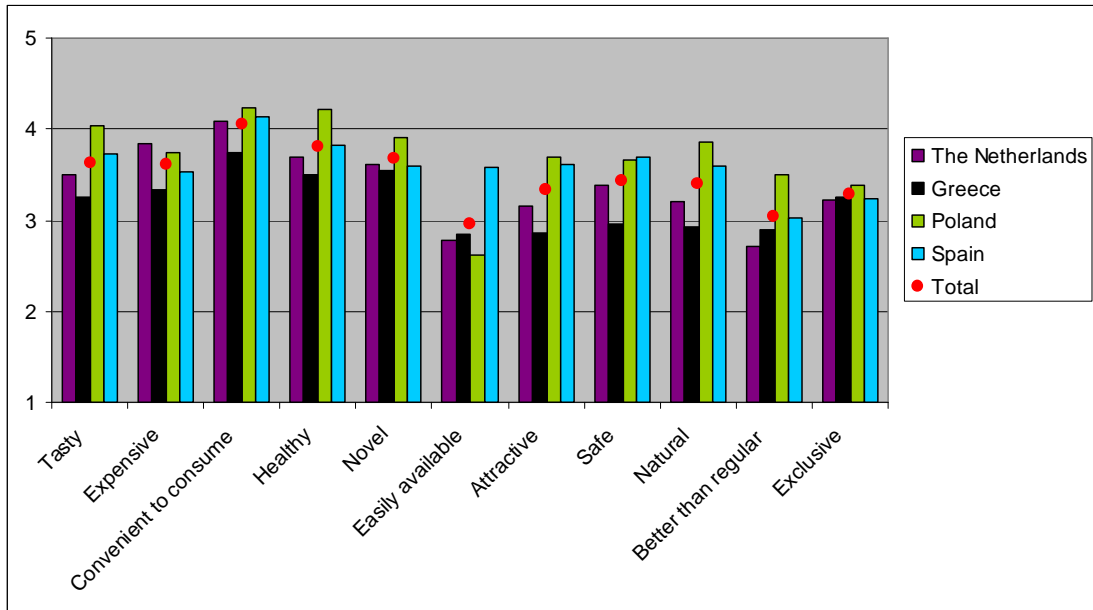
Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.11 Product evaluations of the Organic Fruit Mousse

Overall, the *organic fruit mousse* was evaluated quite equally on the different product evaluations, with the exception of two of them. The *organic fruit mousse* was evaluated high on convenient to consume and low on better than regular.

The differences between countries in the evaluation of the organic mouse were not that large. The significant differences were found on expensiveness ($F(3, 494)= 5.591$, $p<.01$), easy available ($F(3, 494)= 28.756$, $p<.001$), natural ($F(3, 494)= 5.941$, $p<.01$), better than regular ($F(3, 494)= 7.496$, $p<.001$) and exclusive ($F(3, 494)= 3.869$, $p<.01$). The Greek consumers evaluated the *organic fruit mousse* as more easy available, more exclusive and less natural than the other countries. The Dutch consumers evaluated this product as more expensive than the other countries. The Polish consumers evaluated this organic fruit product higher on better than regular than the consumers out of the other three countries.
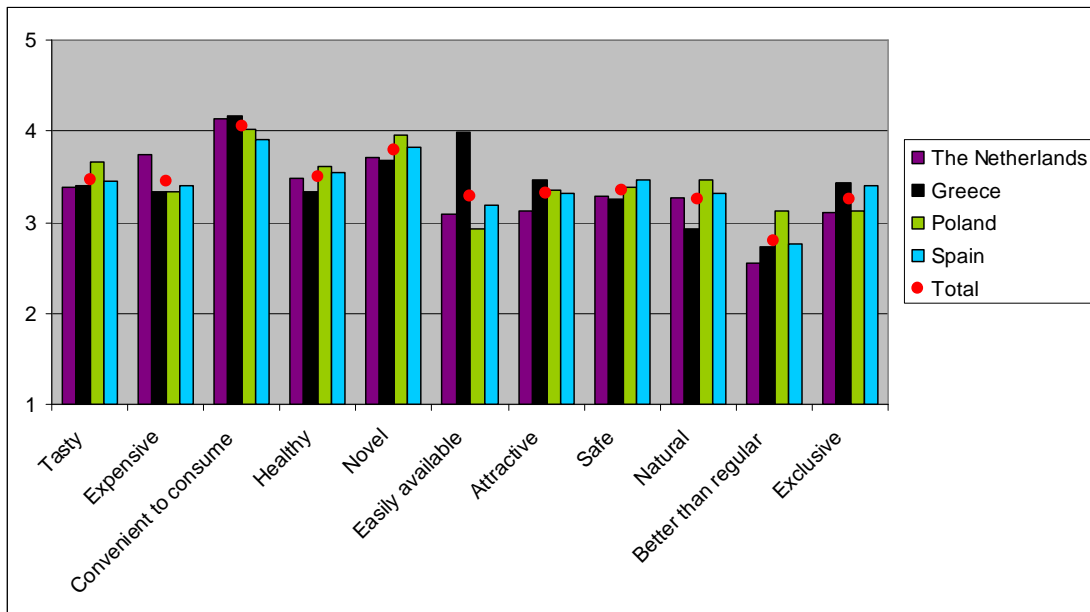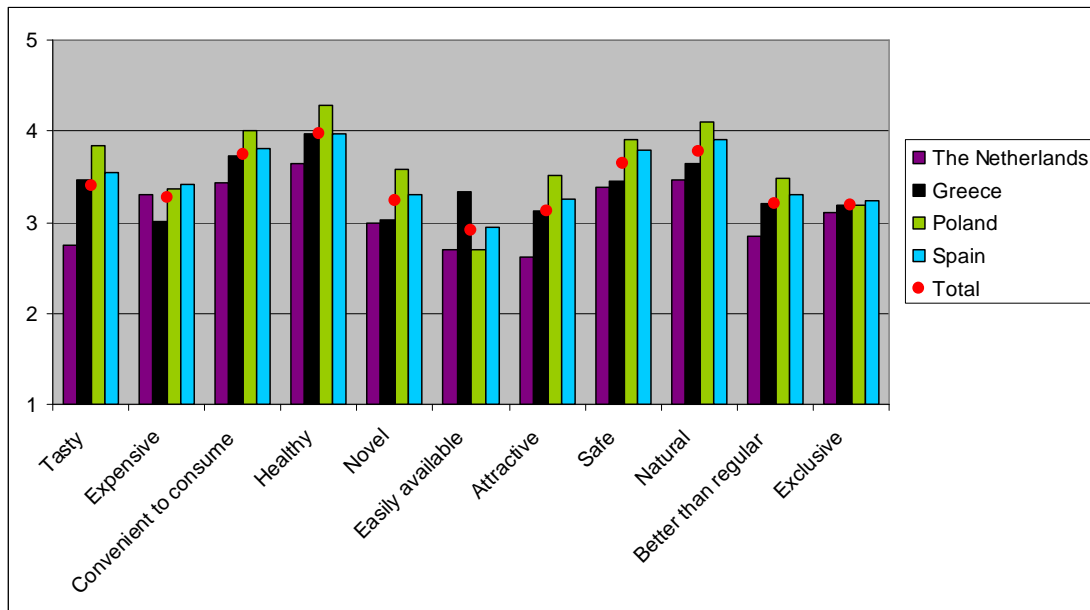
Note. Product evaluations were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree)
Figure 5.12 Product evaluations of the Prebiotic Dried Fruit

The *prebiotic dried fruit* was evaluated the highest on healthiness, convenience to consume and naturalness and evaluated the lowest on easy available, attractiveness, novel, better than regular and exclusive.

Respondents in the four countries evaluated the *prebiotic dried fruit* differently on all aspects, except for the exclusiveness of the product. The evaluation of taste ($F(3, 490)= 20.047$, $p<.001$), expensive ($F(3, 490)= 4.223$, $p<.01$), convenient to consume ($F(3, 490)= 7.147$, $p<.001$), healthy ($F(3, 490)= 9.032$, $p<.001$), novel ($F(3, 490)= 7.095$, $p<.001$), easy available ($F(3, 490)= 8.712$, $p<.001$), attractive ($F(3, 490)= 14.611$, $p<.001$), safe ($F(3, 490)= 8.360$, $p<.001$), natural ($F(3, 490)= 9.222$, $p<.001$), and better than regular ($F(3, 490)= 8.647$, $p<.001$) differed between the countries. Overall the Dutch consumers perceived the prebiotic dried fruit more negative. They evaluated the product as less tasty, convenient to consume, healthy, attractive, natural and better than regular than all other countries. Overall, the Polish consumers were the most positive in their evaluation of this functional fruit product.

Conclusion

- Consumers seem to evaluate the product innovations as quite appealing on the different characteristics. The evaluation of taste, expensive, convenient to consume, healthy, easy available, attractive, safe, natural, and better than regular and exclusive is in general quite positive for all product innovations.

- A detailed look reveals that the twelve product innovations are evaluated differently on the product evaluations. Consumers perceive the product innovations distinct, for example some innovations are evaluated as more natural while others are evaluated as more exclusive.

- Consumers from different countries perceive the product innovations differently.

- Some innovations reveal large differences between countries (e.g. nectarine chips), while others only reveal small differences between countries (e.g. organic apple).

- Polish consumers are in general the most positive and Greek consumers the most negative in their evaluation of the product innovations.

- Polish consumers evaluate the product innovations in general lower on easy available and higher on better than regular, novel and tasty.

- Greek consumers evaluate the innovations in general as less natural, novel, healthy, safe and tasty. Furthermore, they perceive the product innovations as more exclusive.

- Dutch and Spanish consumers seem to have more average product evaluations. Dutch consumers evaluate the fruit product innovations less positive, especially the nectarine chips, the organic fruit mousse and the prebiotic dried fruit.

6 Product evaluations and buying intention

This chapter focuses on which product evaluations are important to predict the adoption of novel fresh fruits and novel fruit products (Research Question 4). In addition, it describes whether these predictors of the buying intentions differ across the countries. For each country, the buying intention for the different products was regressed on the product evaluations.

Table 6.1 shows the significant predictors of the buying intention of organic fruit mousse for the different countries.

Table 6.1 Predictors of the buying intention of organic fruit mousse

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t
	.432			.443			.469			.512		
Tasty		0.303	0.439**		0.219	2.367*		0.354	2.924**		0.145	1.489
Expensive		-0.135	3.160		-0.228	-3.038**		-0.164	-2.158*		-0.124	-1.710
Convenient to consume		0.125	-1.552		0.079	0.945		0.057	0.573		0.146	1.545
Healthy		0.033	1.403		0.167	1.594		-0.081	-0.626		-0.029	-0.266
Novel		-0.062	0.288		-0.012	-0.145		-0.002	-0.024		0.104	1.185
Easily available		-0.151	-0.664		-0.074	-0.916		-0.093	-1.209		-0.159	-1.867
Attractive		0.354	-1.800**		0.119	1.138		0.228	1.983*		0.312	2.604**
Safe		0.067	3.321		0.094	0.831		-0.059	-0.496		0.103	0.768
Natural		-0.053	0.623		0.091	0.790		0.165	1.453		0.031	0.303
Better than regular		0.108	-0.469		0.079	0.684		0.148	1.491		0.227	2.351*
Exclusive		0.062	1.228		0.067	0.758		0.001	0.007		-0.021	-0.215
F	7.881***			7.941***			9.062***			10.774***		
df	11,125			11, 121			11,124			11,124		

***< 0.001; **< 0.01; *< 0.05;

The buying intention of the *organic fruit mousse* was influenced by the evaluation of the tastiness of the product for the Netherlands, Greece and Poland. The evaluation of the attractiveness was also a predictor in multiple countries (The Netherlands, Poland and Spain). Expensiveness negatively influenced the inclination to buy organic fruit mousse. This implies that for Greek and Polish consumers it is important that organic fruit mousse is not marketed as too expensive. Finally, for the Spanish consumers the buying intention of the organic fruit mousse was significantly influenced by better than regular.

Table 6.2 shows the significant predictors of the buying intention of cholesterol lowering peach for the different countries.

Table 6.2 Predictors of the buying intention of cholesterol lowering peach

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t
	.533			.765			.650			.658		
Tasty		0.152	1.375		0.080	1.310		0.109	1.153		0.363	3.512**
Expensive		-0.137	-1.874		-0.065	-1.208		-0.126	-1.965		-0.058	-0.859
Convenient to consume		0.144	1.756		-0.041	-0.626		0.051	0.631		-0.029	-0.304
Healthy		0.145	1.440		0.412	4.454***		0.298	2.576*		0.169	-1.595
Novel		0.024	0.295		-0.083	-1.259		-0.011	-0.170		0.084	1.008
Easily available		-0.033	-0.435		-0.052	-0.897		-0.124	-1.857		-0.030	-0.378
Attractive		0.188	1.791		0.121	1.857		0.028	0.279		-0.018	-0.146
Safe		-0.010	-0.095		0.257	2.308*		0.188	1.439		0.176	1.414
Natural		0.126	1.188		-0.123	-1.315		0.142	1.293		0.159	1.475
Better than regular		0.293	3.729***		0.301	3.575**		0.157	1.778		0.127	1.444
Exclusive		-0.170	-2.182*		-0.028	-0.424		-0.041	-0.585		-0.037	-0.409
F	11.828***			32.559***			9.332***			19.783***		
df	11,125			11, 121			11,124			11,124		

***< 0.001; **< 0.01; *< 0.05;

The buying intention of the *cholesterol lowering peach* was significantly predicted by different product evaluations for the different countries. The Dutch consumers that evaluated this product as better than regular and less exclusive were more willing to buy this product. Greek consumers were more inclined to buy the cholesterol lowering peach when they perceived it as more healthy, safe and better than regular. For Polish consumers, the cholesterol lowering peach had a higher buying intention when it was evaluated as healthy. Finally, the Spanish consumers were more willing to buy this novel functional food when they perceived it as more tasty.

Table 6.3 shows the significant predictors of the buying intention of fruit from the fruit vending machine for the different countries.

Table 6.3 Predictors of the buying intention of fruit from the fruit vending machine

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t
	.585			.735			.736			.634		
Tasty		0.089	0.971		-0.037	-0.462		0.077	0.880		0.263	3.099**
Expensive		-0.172	-2.517*		-0.126	-2.371*		-0.014	-0.260		-0.197	-3.365**
Healthy		-0.015	-0.118		0.129	1.313		0.343	2.979**		0.189	2.065*
Safe		0.191	1.991*		0.076	0.899		-0.054	-0.519		-0.149	-1.242
Natural		-0.065	-0.654		0.166	1.892		-0.174	-2.196*		0.063	0.550
Better than regular		0.062	0.871		0.088	1.148		0.089	1.195		0.100	1.360
Exclusive		-0.120	-1.587		0.159	2.199*		-0.055	-0.842		0.034	0.481
Convenient		-0.027	-0.270		0.161	2.240*		0.215	3.044**		0.376	4.451
Novel		-0.014	-0.145		0.094	1.508		-0.013	-0.210		-0.073	-0.884
Attractive		0.666	5.989***		0.268	3.076**		0.502	6.065***		0.178	1.706
F	16.219***			30.841***			31.815***			19.764***		
df	10,125			10, 121			10,124			10,124		

***< 0.001; **< 0.01; *< 0.05;

Dutch, Greek and Polish consumers that judged the way of selling fruit throughout this new purchase channel as attractive were more willing to buy fresh fruits from the *fruit vending machine*. Another product evaluation that was a significant predictor in multiple countries was expensiveness. Consumers from the Netherlands, Greece and Spain that judged the fruit from the fruit vending machine as less expensive were more willing to buy the fruit. Furthermore, in The Netherlands buying intention was influenced by safety; in Greece by convenient and exclusive; in Poland by healthy and convenient; and in Spain by tasty and healthy.

Table 6.4 shows the significant predictors of the buying intention of mini nectarines without stone for the different countries.

Table6.4 Predictors of the buying intention of mini nectarines without a stone

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t
	.566			.618			.458			.498		
Tasty		0.150	1.502		0.238	3.403**		0.076	0.836		0.099	1.090
Expensive		-0.037	-0.551		-0.063	-0.937		-0.015	-0.202		0.055	0.690
Convenient to consume		0.116	1.214		-0.041	-0.559		0.045	0.495		0.245	2.028*
Healthy		-0.057	-0.534		0.075	0.780		0.343	3.229**		0.115	1.036
Novel		0.058	0.698		0.049	0.566		0.121	1.333		0.044	0.459
Easily available		-0.074	-0.958		-0.028	-0.387		0.046	0.535		-0.036	-0.379
Attractive		0.359	3.562**		0.105	1.304		0.131	1.266		0.131	1.214
Safe		-0.006	-0.053		0.184	1.713		0.204	1.830		0.252	2.607*
Natural		0.320	3.153**		0.213	1.799		-0.171	-1.569		0.051	0.472
Better than regular		0.100	1.395		0.250	2.861**		0.162	1.512		0.022	0.238
Exclusive		0.010	0.127		-0.063	-0.728		-0.100	-1.204		-0.029	-0.312
F	13.382***			16.445***			8.691***			10.210***		
df	11,124			11, 123			11,124			11,124		

***< 0.001; **< 0.01; *< 0.05

The buying intention of the *mini nectarines* was dependent on different product evaluations in all countries. The Dutch consumers that perceived the mini nectarines as more attractive and natural were more inclined to buy this product. In Greece the buying intention of the mini nectarines was significantly predicted by tasty and better than regular. Polish consumers that perceived this fresh fruit as more healthy had a higher buying intention. In Spain the buying intention was significantly predicted by convenient to consume and safe.

Table 6.5 shows the significant predictors of the buying intention of pitaya for the different countries.

Table 6.5 Predictors of the buying intention of pitaya

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	T	ΔR^2	β	t	ΔR^2	β	t
	.775			.674			.471			.529		
Tasty		0.445	5.584***		0.295	3.730***		0.205	2.272*		0.339	3.620***
Expensive		-0.067	-1.335		-0.006	-0.094		-0.088	-1.044		-0.062	-0.791
Convenient to consume		0.137	2.166*		-0.030	-0.492		-0.043	-0.489		0.150	1.690
Healthy		0.099	1.512		0.148	1.737		-0.081	-0.801		0.011	0.112
Novel		-0.081	-1.541		-0.051	-0.728		0.313	3.986***		0.124	1.300
Easily available		-0.132	-2.387*		-0.022	-0.356		-0.073	-0.902		0.081	1.005
Attractive		0.245	2.994**		0.166	2.356*		0.133	1.369		0.126	1.436
Safe		0.101	1.512		-0.168	-1.608		0.016	0.134		-0.038	-0.396
Natural		0.061	0.869		0.068	0.705		0.358	3.272**		0.173	1.728
Better than regular		-0.004	-0.080		0.455	6.076***		0.175	1.683		0.047	0.541
Exclusive		0.064	1.106		0.122	1.697		-0.008	-0.088		0.056	0.623
F	35.299***			21.064***			9.164***			11.540***		
df	11,124			11, 123			11,124			11,124		

***< 0.001; **< 0.01; *< 0.05;

For all studied countries the evaluation of the tastiness of the *pitaya* significantly predicted the buying intention. There were some additional predictors of the buying intention for The Netherlands, Greece and Poland. Dutch consumers that perceived this exotic fruit as more attractive and less easy available were more inclined to buy this product. For Greece attractive and better than regular significantly predicted the intention to buy the pitaya. Polish consumers that perceived the pitaya as more novel and natural were more willing to buy this product.

Table 6.6 shows the significant predictors of the buying intention of a genetically modified apple for the different countries.

Table 6.6 Predictors of the buying intention of a genetically modified (GM)apple

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t
	.613			.772			.575			.595		
Tasty		0.160	1.778		0.036	0.524		0.235	2.592*		0.132	1.328
Expensive		0.083	1.226		-0.046	-0.913		0.097	1.406		0.080	1.110
Convenient to consume		0.036	0.361		0.037	0.655		-0.011	-0.123		-0.139	-1.259
Healthy		0.057	0.507		0.278	3.228**		0.134	1.047		0.452	4.183***
Novel		-0.154	-1.916		-0.002	-0.029		0.009	0.123		0.096	1.093
Easily available		-0.031	-0.396		0.015	0.292		0.075	1.060		-0.046	-0.574
Attractive		0.257	2.676**		0.089	1.386		0.083	0.950		0.048	0.474
Safe		0.207	2.181*		0.267	2.780**		0.097	0.658		0.014	0.118
Natural		0.217	2.750**		0.277	3.354**		0.335	2.986**		0.154	1.413
Better than regular		0.214	3.022**		0.025	0.318		-0.018	-0.163		0.191	1.991*
Exclusive		-0.015	-0.179		0.053	0.977		-0.007	-0.095		-0.025	-0.305
F	16.303***			34.555***			13.878***			15.062***		
df	11,124			11, 123			11,124			11,124		

***< 0.001; **< 0.01; *< 0.05;

Dutch, Greek and Polish consumers that evaluated the *GM apple* as more natural were all more willing to buy this novel fruit. In the Netherlands, attractive, safe and better than regular also significantly predicted the willingness to buy this product. In Greece safe and healthy were also significant predictors of buying intention. Polish consumers that perceived the GM apple as more tasty were more willing to buy it. For the Spanish consumers healthy and better than regular were significant predictors of the buying intention of the GM apple.

Table 6.7 shows the significant predictors of the buying intention of an organic apple for the different countries.

Table 6.7 Predictors of the buying intention of an organic apple

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t
	.514			.535			.414			.464		
Tasty		0.247	2.281*		0.357	3.941***		0.103	0.915		0.142	1.271
Expensive		-0.215	-2.839**		-0.130	-1.658		-0.053	-0.622		-0.157	-2.062*
Convenient to consume		0.179	1.825		-0.010	-0.122		0.181	1.578		0.117	1.133
Healthy		-0.060	-0.490		-0.053	-0.574		0.270	1.847		0.040	0.410
Novel		0.017	0.230		0.035	0.408		-0.036	-0.408		0.111	1.268
Easily available		-0.027	-0.285		0.033	0.415		-0.003	-0.042		-0.057	-0.662
Attractive		0.283	2.277*		0.262	3.130**		0.017	0.163		0.090	0.867
Safe		0.089	0.703		0.075	0.632		-0.115	-0.947		0.015	0.127
Natural		-0.070	-0.589		0.024	0.228		0.143	1.253		0.274	2.004*
Better than regular		0.210	2.508*		0.167	1.688		0.163	1.691		0.186	1.862
Exclusive		0.026	0.286		0.161	1.730		0.143	1.522		-0.012	-0.126
F	10.853***			11.174***			7.261***			8.908***		
df	11,124			11, 118			11,124			11,124		

***< 0.001; **< 0.01; *< 0.05

In the Netherlands, consumers were more willing to buy *organic apples* when they perceived them as tasty, attractive and better than regular and not expensive. Greek consumers that perceived the organic apple as more tasty and attractive were more inclined to buy organic apples. For the Polish market no significant predictors were found for the buying intention of an organic apple. In the Spanish market consumers were more inclined to buy the organic apple if they perceived them as less expensive and more natural.

Table 6.8 shows the significant predictors of the buying intention of the cholesterol lowering orange juice for the different countries.

Table 6.8 Predictors of the buying intention of cholesterol lowering orange juice

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t
	.535			.726			.609			.662		
Tasty		0.196	1.930		0.077	1.031		0.187	2.237*		0.430	4.239***
Expensive		-0.147	-2.048*		-0.260	-4.360***		-0.104	-1.428		-0.135	-2.274*
Convenient to consume		-0.094	-1.062		0.101	1.612		0.037	0.515		-0.027	-0.305
Healthy		0.214	1.820		0.373	4.641		0.067	0.636		-0.183	-1.632
Novel		0.028	0.368		0.092	1.210		0.186	2.311*		0.038	0.479
Easily available		0.011	0.146		-0.025	-0.407		-0.036	-.553		0.005	0.075
Attractive		0.291	2.972**		0.193	2.462*		0.456	4.730***		0.371	3.776***
Safe		-0.050	-0.462		0.058	0.549		-0.221	-2.085*		-0.117	-1.045
Natural		0.054	0.552		0.021	0.232		-0.018	-.177		0.236	2.442*
Better than regular		0.222	2.489*		0.236	2.509*		0.245	2.666**		0.026	0.333
Exclusive		-0.006	-0.075		0.012	0.156		0.070	0.920		0.177	2.379*
F	11.965***			25.711***			16.021***			20.084***		
df	11,124			11, 118			11,124			11,124		

***< 0.001; **< 0.01; *< 0.05;

For all countries the attractiveness of the *cholesterol lowering orange juice* significantly predicted the willingness to buy this functional food. For the Dutch, Greek and Polish consumers better than regular was also a significant predictor of the inclination to buy the cholesterol lowering orange juice. Dutch and Greek consumers that perceived this product as less expensive were more willing to buy this product. Novel, safe and taste were product evaluations that significantly forecast the buying intention of this functional fruit product in Poland. Spanish consumers that perceived this orange juice as more tasty, natural and exclusive and as less expensive were more willing to buy this fruit product.

Table 6.9 shows the significant predictors of the buying intention of prebiotic dried fruit for the different countries.

Table 6.9 Predictors of the buying intention of prebiotic dried fruit

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t
	.686			.626			.600			.682		
Tasty		0.299	3.133**		0.311	3.484**		0.276	3.128		0.536	5.728***
Expensive		-0.141	-2.293*		-0.007	-0.089		-0.171	-2.166		- 0.114	-1.843
Convenient to consume		0.173	2.275*		-0.079	-1.006		0.169	1.904		0.060	0.596
Healthy		0.195	2.113*		0.195	1.835		0.037	0.365		0.019	0.149
Novel		-0.068	-0.948		0.150	1.689		0.100	1.356		-0.042	-0.521
Easily available		-0.117	-1.869		-0.006	-0.077		-0.188	-2.928		-0.048	-0.808
Attractive		0.444	4.777***		0.163	1.775		0.170	2.071		0.222	2.802**
Safe		0.023	0.222		-0.070	-0.607		0.064	0.582		0.055	0.461
Natural		-0.192	-1.839		0.173	1.492		-0.015	-0.132		0.054	0.538
Better than regular		0.088	1.096		0.320	3.769***		0.270	3.327		0.034	0.423
Exclusive		0.052	0.688		-0.209	-2.219*		0.034	0.420		0.027	0.300
F	22.477***			16.285***			15.437***			22.032***		
df	11,124			11, 118			11,124			11,124		

***< 0.001; **< 0.01; *< 0.05;

Dutch consumers that perceived the *prebiotic dried fruit* as more tasty, convenient to consume, healthy and attractive and as less expensive, are more willing to buy this fruit product. Tastiness was a significant predictor for the buying intention of this functional fruit product in The Netherlands, Greece and Spain. Greek consumers that perceived the dried fruit as better than regular and less exclusive were more willing to buy this product. For Poland again no significant predictors were found on the buying intention of prebiotic dried fruit. Finally, Spanish consumers that evaluated this novel fruit product as more attractive had a higher buying intention towards this fruit novelty.

Table 6.10 shows the significant predictors of the buying intention of nectarine chips for the different countries.

Table 6.10 Predictors of the buying intention of nectarine chips

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t
	.551			.527			.662			.553		
Tasty		0.386	4.189***		0.246	2.460*		0.387	4.277***		0.217	2.085*
Expensive		-0.054	-0.803		-0.028	-0.367		-0.032	-0.500		-0.185	-2.655**
Convenient to consume		-0.044	-0.589		-0.126	-1.451		-0.196	-2.427*		-0.122	-1.382
Healthy		0.033	0.366		0.256	2.187*		0.238	2.391*		0.036	0.344
Novel		0.042	0.516		0.024	0.221		0.114	1.574		0.087	0.984
Easily available		-0.057	-0.795		-0.029	-0.331		-0.062	-0.923		-0.013	-0.185
Attractive		0.292	2.821**		0.208	2.157*		0.394	4.610***		0.359	3.267**
Safe		0.226	2.397*		0.182	1.525		-0.174	-1.866		0.143	1.294
Natural		-0.008	-0.079		0.144	1.275		0.097	1.077		0.069	0.691
Better than regular		0.040	0.460		-0.099	-1.027		0.114	1.430		0.070	0.932
Exclusive		-0.040	-0.486		0.029	0.298		-0.035	-0.502		0.060	0.628
F	12.706***			9.235***			17.175***			12.704***		
df	11,125			11, 102			11,126			11,124		

***< 0.001; **< 0.01; *< 0.05;

Attractiveness and taste were significant positive predictors of the buying intention of *nectarine chips* in all countries. All countries have one or two additional predictors of the buying intention of nectarine chips. Taste was a significant predictor in the Netherlands, healthy in Greece, convenience and healthy in Poland, and expensive in Spain.

Table 6.11 shows the significant predictors of the buying intention of pitaya juice for the different countries.

Table 6.11 Predictors of the buying intention of pitaya juice

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t
	.579			.582			.554			.639		
Tasty		0.422	4.179***		0.120	1.212		0.345	3.376**		0.446	5.382***
Expensive		-0.057	-0.869		-0.023	-0.316		-0.056	-0.740		-0.146	-2.257*
Convenient to consume		-0.150	-1.802		0.072	0.611		-0.068	-0.637		-0.043	-0.479
Healthy		0.028	0.273		0.120	0.948		0.103	0.786		0.124	1.221
Novel		0.204	2.468*		0.048	0.481		-0.046	-0.505		0.003	0.030
Easily available		-0.047	-0.707		0.006	0.070		-0.087	-1.212		0.109	1.834
Attractive		0.385	3.332**		0.218	2.264*		0.109	0.865		0.400	4.228***
Safe		-0.130	-1.382		0.029	0.281		0.196	1.591		- 0.080	-0.865
Natural		0.094	1.039		0.097	0.847		0.174	1.394		0.019	0.196
Better than regular		0.009	0.115		0.299	3.071**		0.000	0.001		0.070	0.991
Exclusive		0.004	0.062		0.035	0.315		0.051	0.595		-0.064	-0.789
F	14.280***			11.534***			12.974***			18.215***		
df	11,125			11, 102			11,126			11,124		

***< 0.001; **< 0.01; *< 0.05;

The perception of the attractiveness of the *pitaya juice* had a significant impact on the buying intention for the Dutch, Greek and Spanish respondents. The evaluation of the tastiness was a significant predictor in The Netherlands, Poland and Spain. Dutch consumers that perceived this juice as novel were more willing to buy this fruit product. Greek consumers that evaluated the pitaya juice more as better than regular were more inclined to buy it. For the Spanish consumers the expensiveness was a negative predictor of the buying intention of pitaya juice. In other words, Spanish consumers that perceived the pitaya juice as more expensive were less willing to buy this exotic novel fruit product.

Table 6.12 shows the significant predictors of the buying intention of fruit salad mix for the different countries.

Table 6.12 Predictors of the buying intention of the fruit salad mix

	The Netherlands (N=502)			Greece (N=468)			Poland (N=502)			Spain (N=500)		
	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t	ΔR^2	β	t
	.469			.519			.586			.413		
Tasty		0.162	1.276		0.097	0.969		0.432	3.324**		0.287	1.788
Expensive		-0.114	-1.523		-0.083	-1.135		-0.194	-2.846**		-0.155	-1.885
Convenient to consume		-0.191	-1.650		0.192	1.994		-0.133	-0.932		0.206	1.358
Healthy		0.199	1.466		0.155	1.165		0.139	1.029		0.149	0.766
Novel		-0.067	-0.691		0.117	1.279		-0.009	-0.125		-0.005	-0.045
Easily available		-0.012	-0.133		-0.137	-1.689		-0.207	-3.196**		0.076	0.896
Attractive		0.527	4.222***		0.198	1.943		0.337	2.826**		0.055	0.356
Safe		-0.273	-2.750**		0.242	2.268*		0.108	0.809		0.004	0.028
Natural		0.023	0.219		-0.002	-0.020		-0.153	-1.145		-0.160	-1.051
Better than regular		0.262	3.151**		0.190	1.975		0.162	1.588		0.115	1.328
Exclusive		-0.054	-0.593		-0.062	-0.624		0.050	0.591		0.099	0.791
F	9.137***			13.459***			14.796***			7.241***		
df	11,125			11, 102			11,126			11,124		

***< 0.001; **< 0.01; *< 0.05;

For Dutch consumers the buying intention of the *fruit salad mix* was significantly predicted by attractive, safe and better than regular. Greek consumers that perceived the fruit salad mix as more safe had a higher buying intention. The more tasty and attractive and the less expensive and easy available the fruit salad mix was perceived by the Polish consumers, the more they were willing to buy this convenience related product. For this fruit product the Spanish market was not significantly influenced by any of the product evaluations. This implies that all product evaluations were similar in the predictive value of the buying intention of the fruit salad mix in Spain.

Conclusion

- The predictors of the buying intention for the product innovations differ between the product innovations and the countries. This underlines the importance of taking into account multiple product evaluations and countries by developing novel products and marketing strategies to increase acceptance of these novel products.

- Aside from differences between countries, some product innovations seem to have similar predictive characteristics across countries.

- For each of the four countries taste and attractiveness are important predictors of the acceptance of fruit innovations. These product evaluations forecast the buying intentions of multiple fruit innovations in all countries.

- Better than regular is a product evaluation that is important for Dutch and Greek consumers.

- The evaluation of expensiveness predicts the acceptance of multiple fruit innovations in Spain.

7 Social psychological constructs and novel-fruit adoption behaviour

This chapter focuses on which psychological constructs are important in explaining the adoption of the different novel fruits (Research Question 5). Regression analyses were conducted on consumers' stated adoption behaviour of novel fruits (ABNF).

Respondents were asked to rate their actual adoption of novel fruits in 1) fresh fruit, 2) processed fruits, 3) prepared fruits and 4) fruits in general. First, we checked whether these adoption behaviours regarding the different fruits were distinct from each other or whether these could be seen as one factor. The results revealed a clear one-factor structure, indicating that these scales could be treated as one-dimensional. The explained variance was 68.5%. Finally, the Cronbach's α was .85. These findings indicated that the scales had an acceptable level of internal consistency and therefore we formed one measure for actual adoption behaviour of new fruits and fruit products, which is referred to as ABNF.

This chapter aims to reveal which psychological constructs predict one's ABNF. Therefore, psychological constructs were selected based on a literature review on consumers' (fruit) innovation adoption (Prosińska and Bartels, 2007). These relevant psychological constructs were in short described in the method section of this deliverable (for a detailed description see Prosińska and Bartels (2007). Present chapter focused on the impact of psychological constructs on a general level. Differences between countries and differences between condition (fresh fruit versus fruit products) will be explored in detail in the next chapter.

At first, a correlation table was carried out to reveal how these psychological constructs were related to each other and moreover how they were related to the ABNF. The correlation table is presented in Table 7.1. Then, a regression analysis is conducted with ABNF as dependent variable and the selected psychological constructs as independent variables. Moreover, demographic variables were included as control variables in the regression analysis. Results of the regression analysis are presented in Table 7.2.

Table 7.1 Correlation table of social psychological constructs and the ABNF

	M	SD	N	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Market mavenism	34.01	0.88	1972		0.370***	-0.043	0.150***	0.270***	0.306***	-0.185***	0.408***	0.312***	-0.054*	0.490***	0.270***	0.296***
2. Food involvement	36.07	0.72	1972			0.037	0.058*	0.459***	0.612***	-0.335***	0.282***	0.273***	-0.012	0.284***	0.147***	0.134***
3. SR suspicion	28.63	0.63	1972				-0.296***	0.233***	0.002	0.126***	-0.411***	-0.299***	0.406***	-0.032	-0.064**	-0.081***
4. SR adherence to technology	29.40	0.76	1972					0.011	0.186***	0.190***	0.285***	0.213***	-0.144***	0.170***	0.243***	0.150***
5. SR adherence to natural	35.83	0.61	1972						0.351***	-0.373***	0.105***	0.139***	0.030	0.169***	0.174***	0.168***
6. SR food as enjoyment	36.45	0.79	1972							-0.161***	0.236***	0.233***	-0.069**	0.200***	0.148***	0.107***
7. SR food as necessity	21.48	0.79	1972								-0.189***	-0.174***	0.126***	-0.073**	-0.058*	-0.105***
8. DSI for food	32.60	0.68	1972									0.665***	-0.384***	0.392***	0.236***	0.235***
9. DSI for fruit	32.95	0.71	1972										-0.581***	0.445***	0.282***	0.248***
10. Food Neophobia for fruit	24.65	0.83	1972											-0.021	-0.135***	-0.047*
11. Opinion leadership for fruit	26.15	0.99	1972												0.369***	0.394***
12. Habits	29.89	0.82	1972													0.510***
13 ABNF	23.81	1.04	1972													

***< 0.001; **< 0.01; *< 0.05;

Table 7.1 reveals that the social psychological constructs are related to each other. Below the strongest relationships are mentioned. Market mavenism was especially strongly related to domain specific innovativeness for food and opinion leadership. Food involvement was strongly related to the social representation dimensions of adherence to natural and food as enjoyment. Suspicion and food neophobia seemed to have a strong positive relationship, both also correlated negatively with the domain specific innovativeness measurements. As expected domain specific innovativeness for food and for fruit specific seemed to be highly correlated. In addition, the innovativeness constructs were strongly related to opinion leadership. Then, habits and opinion leadership, seemed to have the strongest relationship with ABNF.

Table 7.2 The influence of social psychological constructs on the ABNF

	Model 1			Model 2		
	R^2	β	t	R^2	β	t
Demographics	.138			.371		
Gender		-0.016	-0.724		-0.060	-3.159**
Age		-0.050	-2.278*		-0.028	-1.421
Children		-0.038	-1.778		-0.002	-.136
Education		0.005	0.231		-0.041	-2.158*
Income		0.019	0.872		0.014	0.718
The Netherlands versus Spain		-0.315	-11.808***		-0.227	-9.296***
Greece versus Spain		-0.005	-0.201		0.034	1.389
Poland versus Spain		0.103	3.892***		-0.042	-1.717
Psychological constructs						
Market Mavenism					0.040	1.748
Food Involvement					-0.027	-1.013
Social Representations						
Suspicion					-0.065	-2.828**
Adherence to technology					-0.006	-0.286
Adherence to natural					0.020	0.874
Food as enjoyment					0.012	0.489
Food as necessity					0.008	0.364
Domain Specific Innovativeness for food					0.014	0.514
Food Neophobia for fruit					0.070	2.333*
Domain Specific Innovativeness for fruit					0.038	1.517
Opinion Leadership for fruit					0.148	6.165***
Habits					0.403	18.336***
F	39.244***			57.588***		
Df	8, 1963			20,1951		

***< 0.001; **< 0.01; *< 0.05; Gender 0=men 1=female; Children 0=yes 1=no

Concerning the control variables, Dutch respondents differed significantly in the ABNF from the other countries. Also the Polish respondents had a different adoption of fruit innovations than the other countries, whereas Greek respondents did not differ significantly in the adoption of fruit innovations. In addition, age, gender and educational level impact the ABNF.

Then, the impact of the social psychological constructs was checked. The five social representation dimensions of food revealed only one significant predictor. Respondents who scored higher on *suspicion* were less likely to try fruit novelties. Then, respondents that indicated to be more food neophobic, had more often bought novel fruits. *Food neophobia* is a personality trait that is triggered when a consumer is confronted with novel, unfamiliar foods. It can be defined as "the extent to which individuals are reluctant to try novel foods". The positive impact of food neophobia on respondents' ABNF therefore seems contradictory. Consumers that were more reluctant to try novel fruits tried them more often. Results of the correlation table indeed revealed a negative relationship between food neophobia and ABNF. Moreover, the correlation table revealed high correlations between the psychological constructs. Altogether, these results imply that the results in the regression analysis are distorted by high correlations among the psychological constructs. Probably the high correlation between suspicion and neophobia resulted in these odd results.

Consumers that scored high on *opinion leadership*, also had a positive impact on ABNF. In other words, opinion leaders were more inclined to accept fresh fruit innovations. Finally, the *habits* in buying and eating fruits significantly influenced ABNF. Consumers that indicated to have a higher routine in fruit consumption bought more fruit innovations.

Conclusion

- The demographic variables, age, gender, education and country of origin explain a small part of the variance in consumers' stated adoption behaviour of novel fruits (ABNF).

- Not all psychological constructs impact the ABNF.

- The social representation dimension suspicion predicts consumers' ABNF. Consumers with low suspicion are more willing to adopt fruit novelties.

- The domain-specific psychological constructs, food neophobia and opinion leadership predict ABNF.

- Habits on eating fruit predict the ABNF. Consumers that eat fruit on a routine base try fruit novelties more often.

8 Impact of psychological constructs and product evaluations on actual adoption behaviour of novel fruits

This chapter aims to reveal the impact of both the evaluation of specific fruit innovations and the psychological constructs to consumers' stated adoption behaviour of novel fruits (ABNF) (Research Question 6). Furthermore, the results in Chapter 7 revealed an impact of country on the ABNF. This chapter will further explore the impact of country. Moreover, the impact of condition is also investigated in more detail in this chapter.

8.1 Method
Product evaluations. The consumer survey consisted of four conditions. In each condition respondents rated their willingness to buy three different fruit innovations, such that there were twelve fruit innovations in total.

To reveal whether the buying intention of these fruit innovations has a general or a specific impact on the adoption behaviour, we performed two ANCOVA's. In the first analysis the average buying intention across the three fruit innovations was calculated and included in the regression analysis. In the second analysis the buying intentions for each of the three products were included separately. In the end we tested whether the second model had a better fit than the first. If so, then the evaluations of different product innovations have different impacts on the ABNF.

As mentioned before, respondents were assigned to different conditions, differing in whether the psychological constructs were formulated with respect to fresh fruits or fruit products, and the fruit innovations included. Since, consumers evaluated different product innovations in the different conditions, the evaluation of these product innovations could have a different impact on the adoption behaviour for each product. Moreover, the domain specific constructs could have a different impact on the adoption of fruit innovations. To check whether condition or country of origin had an impact on the relationship between buying intention and the psychological constructs these variables were included in the analyses as interaction terms.

An ANCOVA was conducted with country and condition as factors and the buying intention and the psychological constructs as covariates. The dependent variable was the adoption behaviour of novel fruits. To reveal the impact of country and condition interaction effects were included. We included interaction effects for country with all variables, since country could affect all aspects. Furthermore, we included an interaction effect for condition and the specific buying intentions, domain specific innovativeness, food neophobia and opinion leadership, since these were the variables that were differently formulated in the different conditions.

8.2 Results
Table 8.1 shows the results from a regression of ABNF on the average buying intention (across the three novel products for each condition) and the psychological constructs. Moreover, interaction effects with country and condition were included.

Table 8.1 ABNF regressed on average buying intention and psychological constructs

	F	Partial Eta Squared
Main effects		
Country	1.650	.003
Condition	1.341	.001
Main effects		
Market Mavenism (MM)	2.695	.001
SR_Suspicion	6.379*	.003
SR_Technology	1.209	.001
SR_Natural	0.070	.000
SR_Enjoyment	0.065	.000
SR_Necessity	0.452	.000
Food Involvement (FI)	2.338	.001
Domain Specific Innovativeness (DSI) for fruit	3.043	.002
Food Neophobia (FN)	0.445	.000
Opinion Leadership (OL)	38.974***	.020
Habit	246.340***	.114
Average buying intention	18.720***	.010
Interaction effects with condition		
ConditionII * DSI	0.062	.000
ConditionII * FN	1.938	.001
ConditionII * OL	0.792	.000
Interaction effects with country		
Country * MM	0.360	.001
Country * SR_Suspicion	3.552*	.006
Country * SR_Technology	0.725	.001
Country * SR_Natural	2.994*	.005
Country * SR_Enjoyment	2.062	.003
Country * SR_Necessity	1.568	.002
Country * FI	0.698	.001
Country * DSI	0.108	.000
Country * FN	2.590	.004
Country * OL	1.012	.002
Country * Habit	2.759*	.004
Country * Buying Intention	0.895	.001
F	23.136***	.399
Df	55, 1916	
R Squared	.399	

***< 0.001; **< 0.01; *< 0.05; Condition refers to a variable for the four different conditions with distinct product innovations; ConditionII refers to a variable with two different conditions, one for fresh fruit and one for fruit products.

The results of Table 8.1 reveal that consumers' ABNF was not significantly influenced by country of origin. In other words, consumers of the four different countries did not differ in their past adoption of novel fruits. Condition also did not have a significant main effect on consumers' ABNF. Since consumers' were randomly assigned to the four different conditions, this is what we expected.

There were four significant main effects on ABNF. Suspicion, opinion leadership, habit and average buying intention towards new foods all had a significant effect on one's willingness to try food novelties. These main effects are comparable

with the result of Chapter 7, such that the same psychological constructs seemed to impact the ABNF. The partial eta squared seemed to be the highest for one's routine behaviour towards the consumption of fruits, indicating again that this is a strong predictor of ABNF.

The main effect of average buying intention on the ABNF implies that innovative consumers are on average more willing to buy specific fruit innovations and also more often buy fruit innovations. This result underlines the reasoning that an average buying intention towards specific fruit innovations is a good indicator of one's actual buying behaviour. However, it is possible that by calculating the average buying intention the specific effects are vanished, therefore the specific buying intentions will be investigated in the next section.

Concerning interaction effects, the results revealed that the effects of the specific constructs were not affected by condition. This means that it did not matter whether respondents answered questions for fresh fruits or for fruit products. The constructs had a similar impact on ABNF for the specific domains. Finally, the results revealed that the relationship between ABNF and suspicion to new foods, adherence to natural and habit was influenced by country membership. Thus, the effects of suspicion, natural and habit on ABNF were distinct for the different countries.

Table 8.3 shows the results from a regression of ABNF on product-innovation-specific buying intention and psychological constructs. Table 8.2 refers to the specific product innovations that belong to the four different conditions.

Table 8.2 Product innovations in the four conditions

Condition	Product 1	Product 2	Product 3
1	Organic fruit mousse	Cholesterol lowering peach	Fruit vending machine
2	Mini nectarines	Pitaya	Genetically modified apple
3	Organic apple	Cholesterol lowering orange juice	Prebiotic dried black currant
4	Nectarine chips	Pitaya juice	Freshly cut fruit salad

Table 8.3 ABNF and product-innovation-specific buying intention and psychological constructs

	F	Partial Eta Squared
Main effects		
Country	2.127	.003
Condition	1.172	.001
Main effects		
Market mavenism	2.481	.001
SR_Suspicion	6.149*	.003
SR_Technology	1.164	.001
SR_Natural	0.033	.000
SR_Enjoyment	0.001	.000
SR_Necessity	0.631	.000
Food Involvement	2.004	.001
Domain Specific Innovativeness for fruit	3.000	.002
Food Neophobia	0.215	.000
Opinion Leadership	38.186***	.020
Habit	231.368***	.110
Interaction effects with condition		
ConditionII * DSI	0.024	.000
ConditionII * FN	2.484	.001
ConditionII * OL	0.494	.000
Condition * Buying Intention P1	1.360	.003
Condition * Buying Intention P2	2.268	.005
Condition * Buying Intention P3	2.069	.004
Interaction effects with country		
Country * MM	0.564	.001
Country * SR_Suspicion	3.644*	.006
Country * SR_Technology	0.386	.001
Country * SR_Natural	2.908*	.005
Country * SR_Enjoyment	1.633	.003
Country * SR_Necessity	1.824	.002
Country * FI	0.782	.001
Country * DSI	0.153	.000
Country * FN	3.160*	.004
Country * OL	1.428	.002
Country * Habit	2.896*	.005
Interaction effects with condition and country		
Condition * Country * Buying Intention P1	1.847*	.012
Condition * Country * Buying Intention P2	1.723	.011
Condition * Country * Buying Intention P3	0.442	.003
F	13.796***	.422
df	99, 1872	
R square		.422

$***< 0.001$; $**< 0.01$; $*< 0.05$; Condition refers to a variable for the four different conditions with distinct product innovations; ConditionII refers to a variable with two different conditions, one for fresh fruit and one for fruit products.

The results were mostly comparable with the results in Table 8.1. The only difference between the two analyses was the significant interaction effect of food neophobia and country in this second analysis compared to the first analysis (in Table 8.1). Although

food neophobia did not have a significant main effect on the ABNF this psychological construct did affect the ABNF in interaction with country. This implies that food neophobia had a different relation with consumer innovativeness in the different countries.

Furthermore, the results of Table 8.3 reveal that the buying intention of the three specific product innovations in each of the conditions did not significantly impacted consumers' ABNF. This implies that the buying intention of the single products did not predict the ABNF better than the general buying intention of the specific fruit innovations. Finally, the three way interaction effects revealed that the buying intention towards organic fruit mousse, mini nectarines, organic apple and nectarine chips significantly impacted the ABNF in interaction with country. This result implies that consumers of the different countries evaluated these products differently. Subsequently, the relation between the buying intention of these products and the ABNF differed between countries.

8.3 The best model

To test which of the two abovementioned models revealed the best model fit an F-test was performed. The first model included consumers' average buying intention towards the specific fruit innovations. The second model, referred to as the extended model included consumers' buying intention towards each of the three product innovations they evaluated. The results revealed that the extended model results in a better model fit compared to the simple model ($F(55, 99)=1.673$; $p=<.05$). Including specific product evaluations instead of general product evaluations resulted in a significant improvement of the model.

Conclusion

- Country and condition both do not have an impact on the ABNF.

- Suspicion, childhood habits and opinion leadership have an impact on the ABNF.

- The distinction between fresh and processed fruits does not moderate the effect of the psychological constructs on the ABNF.

- Country interacts with suspicion, adherence to natural, childhood habits and food neophobia on ABNF. This implies that the impact of these constructs on the actual adoption behaviour of fruit differs between countries.

- The average buying intention towards the specific product innovations affects the ABNF novel fruits. There is no interaction effect with country, nor with condition. The average buying intention does not differ across countries or different product innovations.

- The specific buying intentions reveal that the intention to buy specific fruit innovations impacts the ABNF differently for the countries. However only for

organic fruit mousse, mini nectarines, organic apple and nectarine chips and not for the other fruit innovations.

- The specific buying intentions furthermore reveal that the domain specific product evaluations have similar impacts on ABNF. So, the specific product innovations all have a similar impact on the ABNF.

9 Cross-Cultural Consumer Segmentation on the Relevance of Product Characteristics for Fruit-Innovation Adoption

This chapter aims to identify cross-cultural consumer segments based on the importance consumers attach to product characteristics (Research Question 7). Consumers ranked nine product characteristics on importance for fresh fruit innovations or for fruit product innovations. In Section 9.1 the method will be described. In addition this section will present the results of cluster analyses that were carried out. The following sections aim to profile the identified consumer segments on importance rankings of product characteristics (Section 9.2), demographics (Section 9.3), the social psychological constructs (Section 9.4), and consumer innovativeness regarding innovative past and intended behaviour (Section 9.5).

9.1. Identification of segments: Method and results

Consumer segments refer to homogeneous groups of consumers. Previous research has shown that distinguishing consumers in groups with similar characteristics is effective in the development of new marketing strategies (Steenkamp and Hofstede 2004; Ter Hofstede, Wedel, and Steenkamp 2002). Consumer segmentation could therefore be used to successfully develop and market product innovations for homogeneous consumer groups across national borders (Bijmolt, Paas, and Vermunt 2004; Ter Hofstede, Steenkamp, and Wedel). Here we focus on consumer segmentation to increase insight in the potential markets for specific fruit innovations.

Cluster analyses were performed separately for fresh fruits and for fruit products, since half of the respondents rated the importance of the product characteristics for novel fresh fruit and half of the respondents rated the importance of the product characteristics for novel fruit products. The Latent GOLD 4.5 Choice program was used to perform the cluster analyses (Vermunt and Magidson, 2005). Respondents ranked the product characteristics in order of importance. As a consequence, the amount of choices decreased after selecting each product characteristic. The Latent GOLD Choice program is designed to work with this ranking data and takes into account the changing number of choices after each choice. The cluster analysis with the so called finite-mixture sequential logit model is a type of cluster analysis based on probability-based classification, such that objects are classified into clusters based upon membership probabilities estimated directly from the model (Vermunt and Magidson, 2005).

Carrying out the analyses, we started in each condition with a full model including all the ranking of the product characteristics and the demographics age, gender, country, education and income as so-called concomitant variables. These concomitant variables contribute to the identification of the clusters. That is, the probability that a consumer belongs to a segment is modeled as a function of concomitant variables (Kamakura, Wedel, and Agrawal, 1994).

To find the optimal amount of cluster ten alternative models were estimated, each model having a different number of clusters (1 till 10). The optimal number of clusters was identified with the use of the CAIC value. The model with the lowest CAIC value is the model with the best trade-off between model fit and parsimony (Vermunt, 2003). The program starts off from some initial set of estimates and then iteratively comes up with better estimates until convergence has been reached. The starting point influences the identification of the clusters and the model fit. To avoid suboptimal solutions, each alternative model was fitted 10 times (Wedel and DeSarbo, 2002), from different random starting values, and for each model the best-fitting estimates were retained.

After the selection of the optimal full model we checked whether all concomitant variables improved the model fit. In other words, we checked whether all demographic values had a noteworthy impact on the identification of the clusters. A stepwise procedure was used

to verify whether excluding a specific concomitant variable resulted in a decrease of the CAIC value. One by one the concomitant variables were excluded from the analyses. For each alternative model again 10 submodels were estimated for each proposed cluster (Cluster 1 till Cluster 10) to select the optimal amount of clusters for the specific alternative model[2]. The concomitant variable that lowered the CAIC value the most after excluding it was left out for further analyses. After the selection of a new optimal solution, this procedure was repeated again to check whether leaving out another concomitant variable would decrease the CAIC value even more. This procedure was repeated until excluding additional concomitant variables did not decrease the CAIC value. In the end, the model with the lowest CAIC value was chosen as the model that represents the optimal number of cross-cultural consumer segments.

For fresh fruit, Table 9.1 presents the results of all alternative sequential logit models. The results reveal that the optimal solution is a four-segment model with country as a concomitant variable. This model has the best fit in terms of the CAIC (= 22266). The entropy R^2 is 0.64. This entropy R^2 (also applied in Cleaver and Wedel, 2001) indicates how extreme the consumer assignment probabilities are divided across the segments.

Table 9.1 Model fit for sequential logit model with the ordered product characteristics and the different concomitants for Fresh Fruits

Concomitants	CAIC	Entropy R^2	Segments
With all eleven concomitants	22518	0.67	2
Without all concomitants	22393	0.61	4
With age, gender, income and education	22617	0.64	2
With age, gender, income and country	22497	0.66	2
With age, gender, education and country	22419	0.66	3
With age, income, education and country	22512	0.66	2
With gender, income, education and country	22463	0.64	3
With age, education and gender	22548	0.63	3
With age, education and country	22425	0.64	3
With age, gender and country	22376	0.65	3
With gender, education and country	22326	0.64	4
With gender and education	22448	0.62	4
With education and country	22327	0.63	4
With country and gender	22268	0.65	4
With gender	22396	0.62	4
With country [a]	22266 [a]	0.64	4

[a] Denotes the lowest CAIC-value.

Table 9.2 represents the results of all alternative sequential logit models of the rank ordered product characteristics for novel fruit products. The results revealed that also for fruit

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[2] These procedures were also repeated ten times for each model to avoid suboptimal solutions (Wedel and DeSarbo, 2002). For each alternative model the best-fitting estimates were retained.

products the optimal solution is a four-segment model with country as concomitant variable. This model has the best fit in terms of the CAIC (= 21843). The entropy R^2 is competent (0.62).

Table 9.2 Model fit for sequential logit model with the ordered product characteristics and the different concomitants for Fruit Products

Concomitants	CAIC	Entropy R^2	Segments
With all eleven concomitants	22052	0.66	2
Without all concomitants	21998	0.54	4
With age, gender, income and education	22140	0.64	2
With age, gender, income and country	22031	0.66	2
With age, gender, education and country	21986	0.66	2
With age, income, education and country	22045	0.66	2
With gender, income, education and country	22010	0.65	2
With age, education and gender	22079	0.63	2
With age, education and country	21979	0.66	2
With age, gender and country	21965	0.66	2
With gender, education and country	21913	0.62	4
With gender and education	22036	0.63	2
With education and country	21902	0.62	4
With country and gender	21854	0.62	4
With gender	22006	0.55	4
With country [a]	21843 [a]	0.62	4

[a] Denotes the lowest CAIC-value.

9.2. Importance of product characteristics

The present section aims to profile the consumer segments on the importance rankings of the product characteristics. The product characteristics were used as segmentation base and therefore are the fundamental aspect on which the identified consumer segments differ. Differences among groups of consumers in the importance they attach to product characteristics are useful in the development of product innovations and marketing strategies, since these groups of consumers seek to fulfil these different product characteristics.

Table 9.3 Importance of product characteristics per consumer segment of fresh fruits

Average consumer FF (n=356, 35.7%)		Natural consumer FF (n=300, 30.1%)		Heterogeneous consumer FF (n=222, 22.3%)		Healthy consumer FF (n=119, 11.9%)	
Taste	2.24	Natural	2.10	Taste	3.72	Healthy	2.00
Healthy	3.38	Healthy	2.50	Healthy	4.04	Taste	2.34
Price	3.48	Safe	3.16	Natural	4.74	Safe	3.27
Looking Good	3.67	Taste	3.97	Price	4.83	Price	3.78
Convenient	4.99	Price	5.53	Looking Good	5.26	Natural	4.80
Safe	5.22	Locally Produced	6.07	Familiar	5.47	Convenient	5.73
Natural	6.65	Looking Good	6.91	Safe	5.53	Looking Good	7.21
Familiar	7.22	Convenient	6.97	Locally Produced	5.58	Locally Produced	7.71
Locally Produced	8.16	Familiar	7.79	Convenient	5.83	Familiar	8.15

Table 9.3 presents for each consumer segment the importance consumers within the segment attach on average to each of the different product characteristics when buying new *fresh fruit.* The lower the mean score the higher the importance consumers attach to a product characteristic.

Average consumer FF. Taste, healthy and price were the most important characteristics in consumer segment 1, while importance rankings for safety and naturalness were relatively low. These consumers are therefore referred to as the average consumers. *Natural consumers FF* rated natural, healthy and safe as most important. Compared to the other consumer segments these consumers rate price and taste as less important. Segment 3 seemed to consist of consumers that attach importance to a range of different product characteristics. This segment consisted of consumers with a variety of importance rankings. This segment is therefore labelled as the *heterogeneous consumer FF* segment. Taking this into account, taste and healthy were to be the most important characteristics for these consumers. Finally, healthy, taste and safe were the most important characteristics for the *healthy consumers FF*.

Table 9.4 Importance of product characteristics per consumer segment of fruit products

Average consumer FP (n=280, 28.7%)		Natural consumer FP (n=271, 27.8%)		Heterogenous consumer FP (n=205, 21.0%)		Healthy consumer FP (n=219, 22.5%)	
Taste	2.31	Natural	2.34	Taste	3.64	Healthy	1.79
Price	2.89	Safe	2.57	Healthy	4.17	Safe	3.14
Healthy	3.33	Healthy	2.88	Looking Good	4.66	Natural	3.46
Looking Good	4.43	Taste	4.42	Price	4.79	Taste	3.55
Convenient	4.91	Price	4.91	Natural	4.82	Price	5.19
Safe	5.03	Good Brand	5.83	Safe	5.41	Looking Good	6.05
Natural	6.87	Convenient	6.79	Good Brand	5.55	Convenient	6.86
Familiar	7.33	Familiar	7.40	Familiar	5.84	Good Brand	7.07
Good Brand	7.91	Looking Good	7.85	Convenient	6.11	Familiar	7.89

Table 9.4 gives an overview of the importance rankings for the product characteristics when buying *fruit products* for each of the four consumer segment. Taste, price and healthy were the most important characteristics for the *average consumers FP*. Moreover, compared to the

other consumer segments convenience is relative important and natural is relatively unimportant for these consumers. *Natural consumers FP* rated natural, safe and healthy as most important. Segment 3 consists of consumers that attach importance to a range of different product characteristics. This segment seems to consist of consumers with a variety of importance. This segment therefore refers to a group with *heterogeneous consumers FP*. Taking this into account, taste and healthy were the most important characteristics in this segment 3. Finally, the *healthy consumers FP* rated healthy, safe and natural as the most important product characteristics.

The consumer segments based on the importance rankings of fresh fruit and fruit products seemed to be comparable with each other in the importance rankings of the product characteristics. Therefore the consumer segments were labelled with similar names. The *average consumers FP* valued taste, price and health the most, followed by looking good, convenient and safe. They values natural, familiar and a good brand the least. The average consumer segment FF seemed to be larger than the segment for FP. The importance rankings of the *natural consumers FP* also revealed similarities. Natural, healthy and safe were the most important characteristics for these consumers. They attach a medium high importance to taste and price. The other characteristics were relatively unimportant for these consumer segments. These natural consumer segments were also comparable in size. The *heterogeneous consumers FP* were also comparable in size. Furthermore, for both the most important characteristics were tasty and healthy. Moreover, both these segments seemed to consist of consumers with a variety of importance rankings of the product characteristics.

Then, the *healthy consumers FP*. These consumer segments were more or less comparable with each other. However, the link between these two segments was less clear. Both consumer segments attached high importance to healthy, taste and safe. Natural was more important for the consumers in the importance rankings of the fruit products, while price was more important for the importance rankings of fresh fruits. The healthy consumer segment of FF was smaller than the healthy segment FP.

9.3. Demographic

Table 9.5 presents the demographics of the consumer segments based on the importance rankings of fresh fruit. Percentage scores are presented for each of the consumer segments as well as the total sample.

Table 9.5 Demographics for the four consumer segments of fresh fruit

	Average consumer FF (n=356)	Natural consumer FF (n=300)	Heterogeneous consumer FF (n=222)	Healthy consumer FF (n=119)	Total
Country					
The Netherlands	46.3%	10.3%	5.4%	36.1%	25.2%
Greece	5.1%	51.3%	31.5%	3.4%	24.7%
Poland	33.4%	26.3%	23.4%	0.0%	25.1%
Spain	15.2%	12.0%	39.6%	60.5%	25.1%
Gender					
Male	43.8%	44.0%	59.9%	45.4%	47.6%
Female	56.2%	56.0%	40.1%	54.6%	52.4%
Age					
<30	26.1%	20.7%	29.7%	15.1%	24.0%
31-50	39.9%	47.0%	34.7%	48.7%	41.9%
>51	34.0%	32.3%	35.6%	36.1%	34.1%
Family status					
Married\Living together	64.0%	62.0%	59.5%	73.9%	63.6%
Single\Divorced\Widow	23.6%	24.0%	20.3%	19.3%	22.5%
Living with your parents	12.4%	14.0%	20.3%	6.7%	13.9%
Educational background					
No schooling completed	1.7%	0.3%	1.4%	4.2%	1.5%
Primary education	8.4%	2.3%	9.0%	12.6%	7.2%
Secondary education	44.4%	39.3%	37.8%	38.7%	40.7%
Higher education	45.5%	58.0%	51.8%	44.5%	50.6%
Employment status					
Employed	57.6%	66.3%	58.1%	69.7%	61.8%
Retired	12.6%	13.7%	14.0%	10.9%	13.0%
Student	10.4%	8.0%	16.7%	7.6%	10.7%
Unemployed	7.9%	6.3%	8.1%	3.4%	6.9%
Housewife	11.0%	5.0%	1.8%	6.7%	6.6%
In the army	0.6%	0.7%	1.4%	1.7%	0.9%
Income					
Low income	16.0%	20.0%	23.0%	18.0%	19.0%
Moderate income	59.0%	59.0%	59.0%	68.0%	60.0%
High income	7.0%	7.0%	9.0%	4.2%	7.0%
I do not know	19.0%	14.0%	9.0%	10.0%	14.0%
Buying food					
Yes	90.2%	92.0%	82.0%	93.3%	89.3%
No	9.8%	8.0%	18.0%	6.7%	10.7%
Preparing food					
Yes	77.5%	78.3%	63.5%	78.2%	74.7%
No	22.5%	21.7%	36.5%	21.8%	25.3%

For all demographics was tested whether the scores differed across countries with the use of Chi squares for independence. The results revealed that all demographics differed significantly between countries, except for number of people within household and having children or not. These results were therefore excluded from the table

The results of the cluster analysis revealed that consumers' country improved the identification of the consumer segments. As a result country was included as a concomitant variable. In other words the identification of the segments is based on the country of origin. Subsequently, it is not strange that the consumer segments differed a lot in the country of the consumers. For the most part, the average consumer segment FF consisted of Dutch and Polish consumers, while natural consumers were mostly Greeks and Polish consumers. The heterogeneous FF segment did hardly contain any Dutch consumers. Finally, the healthy consumer FF segment mostly consisted of Spanish and Dutch consumers.

The other demographic variables did not reveal that large differences between consumer segments. For gender, the heterogeneous segment consisted of relatively more males, while the other segments embodied more females. Heterogeneous consumer segment FF seemed slightly younger and seemed to live relatively often with their parents. The healthy consumer segment seemed also to consist of relatively less young consumers that are more often married or living together, they live relatively less often with their parents. The natural consumers were relatively high educated consumers. The average consumers were relatively low educated and had an overrepresentation of housewives. Heterogeneous consumer segment also embodied relatively much low educated consumers. Furthermore, this segment embodied a relatively high amount of students. The natural and healthy consumer segments both had an overrepresentation of employed consumers. Income seemed to be quite equally divided between the consumer segments. Except for the heterogeneous consumers, who seemed to have a relatively low income. They also bought and prepared less often their own food.

Table 9.6 presents the demographics of the four identified consumer segments for fruit products.

Table 9.6 Demographics for the four consumer segments of fruit products

	Average consumer FP (n=280)	Natural consumer FP (n=271)	Heterogenous consumer FP (n=205)	Healthy consumer FP (n=219)	Total
Country					
The Netherlands	53.6%	0.0%	9.8%	29.9%	25.7%
Greece	3.6%	74.4%	22.9%	0.7%	22.8%
Poland	14.6%	0.0%	44.4%	44.3%	25.8%
Spain	28.2%	25.6%	22.9%	25.1%	25.6%
Gender					
Male	48.9%	56.6%	55.6%	43.9%	50.7%
Female	51.1%	43.4%	44.4%	56.1%	49.3%
Age					
<30	25.7%	18.7%	28.3%	20.7%	23.3%
31-50	37.9%	58.0%	30.2%	33.2%	39.5%
>51	36.4%	23.3%	41.5%	46.1%	37.2%
Educational background					
No schooling completed	2.9%	0.9%	1.0%	0.4%	1.3%
Primary education	12.5%	3.2%	4.9%	6.3%	7.1%
Secondary education	44.6%	34.7%	43.9%	46.1%	42.7%
Higher education	40.0%	61.2%	50.2%	47.2%	48.9%
Employment status					
Employed	50.4%	74.4%	57.1%	49.8%	57.0%
Retired	15.7%	9.1%	15.6%	20.3%	15.5%
Student	13.2%	6.4%	13.7%	9.6%	10.8%
Unemployed	9.3%	8.2%	5.9%	7.7%	7.9%
Housewife	8.6%	1.8%	7.8%	10.7%	7.5%
In the army	2.9%	0.0%	0.0%	1.8%	1.3%
Income					
Low income	16.1%	25.1%	22.4%	11.8%	18.3%
Moderate income	60.0%	54.8%	56.6%	59.4%	57.9%
High income	4.3%	9.6%	5.4%	9.6%	7.2%
I do not know	19.6%	10.5%	15.6%	19.2%	16.6%
Buying food					
Yes	85.7%	88.6%	86.8%	94.1%	88.9%
No	14.3%	11.4%	13.2%	5.9%	11.1%
Preparing food					
Yes	72.5%	60.3%	64.4%	76.4%	69.1%
No	27.5%	39.7%	35.6%	23.6%	30.9%

For all demographics was tested whether the scores differed across countries with the use of Chi squares for independence. The results revealed that all demographics differed significantly between countries, except for family status, Amount of people within household and having children or not. These results were therefore excluded from the table

The country of origin also revealed large differences between the consumer segments in the importance rankings of fruit products. Average consumer segment FP mostly consisted of Dutch consumer, followed by Spanish and Polish consumers. Natural consumers were mainly Greek. There were also some Spanish consumers within this segment. A large part of the heterogeneous consumers had a Polish origin. This consumer segment also had a lot of Greek and Spanish consumers. Finally, healthy consumers were mostly Polish consumers, followed by Dutch and Spanish consumers.

The healthy consumers seem to be slightly more females, while heterogeneous and natural consumers were slightly more male. The healthy consumer segment FP had slightly less young and older consumers. The heterogeneous consumer segment was represented by more young and older consumers, and less middle aged consumers, whereas the natural consumer segment FP had less young and old consumers and more middle aged consumers. Average consumers had a relatively low, and natural consumers a relatively high education. The segments were quite average in their educational level. Concerning employment status, average consumer segment FP embodied consumers that were relatively less employed and relatively more often student. A relatively large part of the healthy consumers was retired. Heterogeneous consumers were relatively often a student. Finally, consumer segment natural consisted mainly of employed consumers. There were no large differences between consumer segments in income level. Average and healthy consumers prepared their own food relatively often, whereas the heterogeneous and natural consumers prepared their own food less often.

9.4. The social psychological constructs

This section aims to reveal differences between the consumer segments in terms of the social psychological constructs. The present study embodies several social psychological constructs to measure consumers' innovativeness at different aspects. Table 9.7 reveals the differences between the fresh fruit consumer segments and Table 9.8 reveals differences between the fruit product consumer segments.

Table 9.7 Differences in consumer innovativeness for each consumer segment of fresh fruit

	Consumer segments					
	Average consumer FF ^{a} (n=356)	Natural consumer FF ^{n} (n=300)	Heterogeneous consumer FF ^{h} (n=222)	Healthy consumer FF ^{y} (n=119)	F(df1, df2)	Partial η^2
Market Mavenism	3.25^y	3.61^h	3.47^{ny}	3.31^{ah}	$F(3, 993)=10.544$***	.031
Food involvement	3.51^{ay}	3.83	3.46^{ay}	3.60^{ah}	$F(3, 993)=15.936$***	.046
Social representations						
Suspicion	2.74^y	2.98^h	3.01^n	2.73^a	$F(3, 993)=14.859$***	.043
Adherence to technology	3.12^{hy}	2.61	3.04^{ay}	3.07^{ah}	$F(3, 993)=31.806$***	.088
Adherence to natural	3.35	3.86	3.57^y	3.59^h	$F(3, 993)=47.285$***	.125
Food as enjoyment	3.65^{nhy}	3.70^{ay}	3.50^a	3.74^{an}	$F(3, 993)= 3.788$***	.011
Food as necessity	2.42^h	1.72	2.33^{ay}	2.17^h	$F(3, 993)= 56.779$***	.146
DSI for food	3.32	3.31	3.17	3.32	$F(3, 993)=2.486$	.007
DSI FF	3.42^{ny}	3.38^{ay}	3.12	3.50^{an}	$F(3, 993)=10.682$***	.031
Food Neophobia FF	2.18^{ny}	2.32^{ay}	2.65	2.16^{an}	$F(3, 993)=17.152$***	.049
Opinion Leadership FF	2.47^{hy}	2.74^{hy}	2.68^{any}	2.60^{any}	$F(3, 993)=4.538$**	.014
Habits FF	3.91^{nh}	4.10^{ay}	3.70^a	4.19^n	$F(3, 993)=9.769$***	.029

***< 0.001; **< 0.01; *< 0.05; Likert scales were used ranging from 1 (totally disagree) and 5 (totally agree); Superscripts refer to similar scores between consumer segments, such that if the first character of a segment label is displayed (and 'y' for the healthy consumers) these segments have similar scores. For instance, the top left superscript ^{y} means that Average consumers have a similar score on market mavenism as Healthy consumers.

Table 9.7 reveals that that the consumer segments differ from each other on all social psychological aspects.

The *Average consumers FF* in general score relatively low on the social psychological constructs compared to the other three segments. They only scored 'high' on adherence to technology compared to the other segments. Furthermore, these consumers seemed to value the adherence to natural relatively low. Finally, these consumers score higher on food as necessity compared to the other segments. However, this score is still below the middle of the scale.

Natural consumers FF scored quite extreme on multiple social psychological constructs. These consumers seemed to be quite different in terms of social psychological characteristics than the other consumer segments. The consumers within this segment score relatively high in market mavenism, food involvement and adherence to natural. These consumers scored relatively low on adherence to technology and food as necessity. Natural consumers were most involved with their food. Finally, these consumers scored high in routine behaviour. This indicated that even consumers that were highly involved seemed to buy fruits on a daily routine.

Heterogeneous consumers FF score quite average on the different aspects. Only for food Neophobia these consumers scored quite high. In other words, these consumers seem to be reluctant to try novel foods.

Healthy consumers FF scored relatively high on routine behaviour, food as enjoyment, and domain-specific innovativeness for fresh fruits and low on suspicion when buying fruit. This indicates that these consumers bought their fruit on a routine base.

Table 9.8 Differences in consumer innovativeness for each consumer segment of fruit products

	Consumer segments					
	Average consumer FP [a] (n=280)	Natural consumer FP [n] (n=271)	Heterogenous consumer FP [h] (n=205)	Healthy consumer FP [y] (n=219)	F(df1, df2)	Partial η^2
Market Mavenism	3.19 [y]	3.62 [y]	3.42 [ny]	3.37 [ah]	$F(3, 971)=9.449$***	.028
Food involvement	3.47 [yh]	3.87	3.50 [ay]	3.61 [ah]	$F(3, 971)=15.007$***	.044
Social representations						
Suspicion	2.69	2.96 [hy]	2.96 [ny]	2.87 [nh]	$F(3, 971)=9.866$***	.030
Adherence to technology	3.10 [h]	2.63	3.06 [ay]	2.92 [h]	$F(3, 971)=18.411$***	.054
Adherence to natural	3.27	3.87	3.58 [y]	3.68 [h]	$F(3, 971)=45.694$***	.124
Food as enjoyment	3.64	3.66	3.56	3.72	$F(3, 971)=1.478$	.005
Food as necessity	2.40 [h]	1.74	2.33 [a]	2.02	$F(3, 971)=38.523$***	.106
DSI for food	3.27	3.18	3.20	3.27	$F(3, 971)=1.092$	.003
DSI FP	3.26	3.15	3.19	3.31	$F(3, 971)=2.502$	.008
Food Neophobia FP	2.34	2.94	2.72	2.52	$F(3, 971)=26.166$***	.075
Opinion Leadership FP	2.34	2.69 [hy]	2.77 [ny]	2.72 [nh]	$F(3, 971)=10.394$***	.031
Habits prepared fruits	2.28 [n]	2.15 [a]	2.85 [y]	2.82 [h]	$F(3, 971)=25.449$***	.073
Habits processed fruits	2.47 [n]	2.24 [a]	2.81 [y]	2.76 [h]	$F(3, 971)=12.562$***	.037

***< 0.001; **< 0.01; *< 0.05; Likert scales were used ranging from 1 (totally disagree) and 5 (totally agree); Superscripts refer to similar scores between consumer segments, such that if the first letter of a segment is displayed (and a y for the healthy consumers) these segments have similar scores. The top left superscript [y] means that Average consumers have a similar score on market mavenism as Healthy consumers.

The *average consumer FP* scored relatively low on market mavenism, opinion leadership, food neophobia, suspicion and adherence to natural compared to the other three segment. This implies that these consumers did not seem to have a lot of knowledge and expertise about

purchases in general and in fruit specific. They were not very particular about new fruit products and not afraid to try new things. In contrast, consumers in segment 1 scored relatively high on food as necessity and adherence to technology compared to the other consumer segments.

Natural consumer FP These consumers score relatively high on market mavenism, food involvement, adherence to natural and food neophobia and relatively low on adherence to technology, food as necessity and habitual behaviour. These results imply that these consumers were very involved with their food. Moreover, they saw themselves as experts on the purchases of products in all kinds of areas. On the other hand, these consumers were somewhat reluctant to try novel foods.

Heterogeneous consumer FP scored relatively high on food as necessity, food neophobia and purchasing fruit products on a routine base. This indicates that these consumers were not that much involved with food and food purchases.

Healthy consumer FP only seemed to score relatively high on food as enjoyment, although the four consumer segments did not significantly differ on this aspect. These consumers score relatively high on routine behaviours in the purchase of fruit products. This indicates that these consumers buy their fruit automatically.

9.5. Innovative behaviour

This section aims to reveal whether the consumer segments differ in their acceptance of fruit innovations. We checked whether consumer segments differed in their intention to buy different specific fruit and in actual adoption behaviour of fruit innovations.

Table 9.9 Buying intention product innovations consumer segments fresh fruit

	consumer segments				
	Average consumer FF [a] (n=356)	Natural consumer FF [n] (n=300)	Heterogeneous consumer FF [h] (n=222)	Healthy consumer FF [y] (n=119)	F(df1, df2)
Organic Fruit Mousse	3.19	3.34	3.10	3.20	F(3, 494)=.993
Cholesterol Lowering Peach	3.46	3.48	3.40	3.46	F(3, 494)=.098
Fruit Vending Machine	3.22	3.11	3.04	3.50	F(3, 494)=1.489
Mini Nectarines	3.89 [y]	3.50 [h]	3.47 [n]	3.92 [a]	F(3, 495)=5.893**
Pitaya	3.54	3.48	3.32	3.63	F(3, 495)=1.166
GM apple	3.43 [hy]	2.95 [h]	3.30 [any]	3.52 [ah]	F(3, 495)=5.992**

***< 0.001; **< 0.01; *< 0.05; Likert scales were used ranging from 1 (totally disagree) and 5 (totally agree); Superscripts refer to similar scores between consumer segments, such that if the first letter of a segment is displayed (and a y for the healthy consumers) these segments have similar scores. The top left superscript [y] means that Average consumers have a similar buying intention towards mini nectarines as Healthy consumers.

Table 9.9 represents the differences between the fresh fruit consumer segments in their intention to buy new fruit innovations when these are available. The results reveal that the consumer segments had a similar buying intention towards the Organic Fruit Mousse, the Cholesterol Lowering Peach, the Fruit Vending Machine and the Pitaya. The consumer segments differed in their intention to buy the Mini Nectarines and the Genetically Modified Apple. *Average and Healthy consumers FF* were more inclined to buy the Mini Nectarines than *natural and heterogeneous consumers FF*. Furthermore, *natural consumers* had a lower buying intention towards the Genetically Modified Apple than *Average and Healthy consumers FF*.

Table 9.10 Actual adoption behaviour consumer segments of fresh fruit

	consumer segments				
	Average consumer FF ^{a} (n=356)	Natural consumer FF ^{n} (n=300)	Heterogeneous consumer FF ^{h} (n=222)	Healthy consumer FF ^{y} (n=119)	F(df1, df2)
Fresh fruits	2.22 ^{y}	2.57 ^{hy}	2.58 ^{ny}	2.24 ^{anh}	$F(3,993)=5.559**$
General new fruits (fresh fruits, prepared fruits and processed fruits)	2.41 ^{y}	2.69 ^{hy}	2.65 ^{ny}	2.56 ^{anh}	$F(3, 993)=4.339**$

$***< 0.001; **< 0.01; *< 0.05$; Likert scales were used ranging from 1 (totally disagree) and 5 (totally agree); Superscripts refer to similar scores between consumer segments, such that if the first letter of a segment is displayed (and a y for the healthy consumers) these segments have similar scores. The top left superscript ^{y} means that Average consumers have a similar actual adoption of fresh fruits as Healthy consumers.

Table 9.10 shows the actual adoption of fresh fruits for every consumer segment. *Average* consumers FF indicated to have a higher actual adoption behaviour regarding fresh fruits and fruits in general than *natural and heterogeneous consumers* FF.

Table 9.11 Buying intention product innovations consumer segments based on fruit products

	consumer segments				
	Average consumer FP ^{a} (n=280)	Natural consumer FP ^{n} (n=271)	Heterogenous consumer FP ^{h} (n=205)	Healthy consumer FP ^{y} (n=219)	F(df1, df2)
Fruit Mix Salad	3.39 ^{nh}	3.52 ^{ahy}	3.63 ^{any}	3.81 ^{nh}	$F(3, 477)=.3.103*$
Pitaya Juice	3.17 ^{nhy}	2.98 ^{ah}	3.29 ^{any}	3.55 ^{ah}	$F(3, 477)=.4.585**$
Nectarine Chips	3.02 ^{nh}	3.04 ^{ah}	3.18 ^{any}	3.51 ^{h}	$F(3, 477)=4.311**$
Prebiotic Dried Fruit	2.67	3.45 ^{hy}	3.47 ^{ny}	3.32 ^{nh}	$F(3, 490)=12.430***$
Cholesterol Lowering Orange Juice	3.02 ^{nhy}	3.19 ^{ahy}	3.41 ^{any}	3.34 ^{anh}	$F(3, 490)=5.893*$
Organic Apple	3.45 ^{h}	4.02 ^{y}	3.58 ^{ay}	3.84 ^{nh}	$F(3, 490)=7.059***$

$***< 0.001; **< 0.01; *< 0.05$; Likert scales were used ranging from 1 (totally disagree) and 5 (totally agree); Superscripts refer to similar scores between consumer segments, such that if the first letter of a segment is displayed (and a y for the healthy consumers) these segments have similar scores. The top left superscript ^{nh} means that Average consumers have a similar buying intention towards Fruit Mix Salad as Healthy consumers.

Table 9.11 represents the differences between the fruit products consumer segments in their intention to buy new fruit innovations when these are available Consumer segments based on the importance rankings of fruit products revealed differences in the buying intention of all specific fruit innovations. Below, the most outstanding differences among the consumer segments were described.

 Average consumers FP had a lower buying intention towards the Prebiotic Dried Fruit than the other consumer segments. Furthermore, they were less inclined to buy the organic apple than the natural and healthy consumers. *Natural consumers FP* had a relative high intention to buy the organic apple, whereas they had a quite low intention to buy the organic apple. *Heterogeneous consumers FP* scored quite average in comparison with the other consumer segments in the intention to buy the several product innovations. Finally, the *healthy consumers FP* were relatively willing to buy the nectarine chips. They also rated fruit mix salad, prebiotic dried fruit and organic apple higher than the average consumers.

9.12 Actual adoption behaviour consumer segments of fruit products

	consumer segments				
	Average consumer FP [a] (n=280)	Natural consumer FP [n] (n=271)	Heterogeneous consumer FP [h] (n=205)	Healthy consumer FP [y] (n=219)	F(df1, df2)
Prepared fruits	1.90	2.25 [hy]	2.42 [ny]	2.38 [nh]	$F(3,971)=9.310$***
Processed fruits	2.08	2.48 [hy]	2.51 [ny]	2.49 [nh]	$F(3,971)=6.485$***
General new fruits (fresh fruits, prepared fruits and processed fruits)	2.37	2.89 [hy]	2.76 [ny]	2.77 [nh]	$F(3,971)=10.877$***

***< 0.001; **< 0.01; *< 0.05; Likert scales were used ranging from 1 (totally disagree) and 5 (totally agree); Superscripts refer to similar scores between consumer segments, such that if the first letter of a segment is displayed (and a y for the healthy consumers) these segments have similar scores. The top left superscript [hy] means that Natural consumers have a similar actual adoption of prepared fruits as heterogeneous and healthy consumers.

Finally, Table 9.12 shows the actual adoption of fruit products for every consumer segment. *Average consumers FP* had lower actual adoption behaviour than all consumer segments for prepared fruits, processed fruits and general new fruits.

Conclusion

- Four consumer segments are distinguished based on the importance rankings of characteristics of fruit products and fresh fruits. These consumer segments have distinct preferences regarding novel fruit characteristics.

- The identified consumer segments based on importance rankings of product characteristics of fresh fruits, average consumers, natural consumers, heterogeneous consumers, and healthy consumers, are comparable with the consumer segments based on the importance ranking of fruit products.

- Country is important in the identification of the consumer segments for fresh fruits and for fruit products. That is, knowledge about the country a consumer lives in, helps to predict the segment that she is in.

- Consumer segments differ in demographic variables. However, these differences in demographics are not very large.

- Consumer segments differ from each other in their average score on psychological constructs.

- There are differences between the consumer segments in the intention to buy product innovations.

10 Conclusions and policy recommendations

Chapter 10 describes the most important conclusions and policy recommendations based on the consumer survey results. We will first formulate conclusions per research question. Consequently we will draw some general conclusions (Section 10.1). Finally we will describe recommendations for policy makers (Section 10.2).

10.1 Conclusions

The first research question was formulated as followed: Which product characteristics are important for consumers when buying novel fruits and fruit products (Chapter 3)?

For fresh fruits and fruit products the healthiness and taste of a novel product are the most important characteristics, in all four countries included in the study: Greece, Netherlands, Poland, and Spain. This is in line with the findings of D 1.2.7 (Reinders et al., 2010), who also found that health and taste are the most important needs of consumers.

The perceived importance of product characteristics revealed no large differences between fresh fruits and fruit products. In general the same product characteristics are rated as important and the same product characteristics are rated as unimportant. Consumers value healthiness, taste, price and safety of a new product the most and familiarity, convenience to consume, having a good brand, locally produced and appealing look the least.

Safety seems to be more important when buying new fruit products compared to buying new fresh fruits. Convenience to consume a product and whether a product looks appealing is rated as more important for new fresh fruits than for new fruit products.

The differences in the rankings of the product characteristics reveals a similar pattern for fresh fruits and fruit products between countries. *Dutch consumers* seem to attach a relatively high value to the tastiness, price, the way a product looks and the convenience of a product. They attach relatively low importance at the naturalness of a product. *Spanish consumers* rate taste and familiarity of fruit as relatively important. *Polish consumers* value the way a product looks relatively high. Finally, *Greek consumers* rate the safety and naturalness of a product relatively high. They attach relatively low value at the price of fruit innovations.

The second research question was formulated as followed: Which product innovations are mostly accepted by consumers (Chapter 4)?

The buying intention towards fruit innovations differs between the innovation categories and between countries.

In general, for all studied countries product innovations related to convenience aspects (mini nectarines and fruit mix salad) and exotic fruit innovations (pitaya and pitaya juice) seem to be the most appealing. Product innovations related to a new purchase channel seem to be the least attractive to all consumers.

Differences between the studied countries reveal that *Greek consumers* are more willing to buy fresh fruits than fruit products. Moreover, they are more willing to buy organic fresh fruits compared to the other countries and less willing to buy GM fresh fruits and functional fruit products. *Polish consumers* are most willing to buy all fresh fruits and fruit products. Moreover, based on the results of this study, we can conclude that Polish consumers are the most innovative and that *Dutch consumers* are the most conservative on the acceptance of product innovations. The Dutch consumers are less willing to buy fruit product innovations compared to their willingness to buy fresh fruit innovations.

The third research question was formulated as followed: How are different product innovations perceived in terms of product evaluations (Chapter 5)?

Overall, the studied product innovations are perceived quite positively on the different evaluation characteristics. In other words, respondents seem to evaluate the product innovations as quite appealing on the different characteristics. The results reveal that there are some differences in the evaluation of the twelve product innovations- both between the countries and the product innovations.

The differences in the evaluation of the fruit innovations reveal that some product innovations are perceived as very healthy and natural, such as the organic apple, the fruit mix and the prebiotic dried fruit. Other product innovations are evaluated as very novel and exclusive, such as the pitaya, pitaya juice and nectarine chips. Convenient to consume is applicable to a broad range of product innovations. The organic apple, GM apple, fruit mix salad, mini nectarines, pitaya juice, nectarine chips, organic fruit mousse, and cholesterol lowering orange juice are rated quite high on being convenient to consume. Pitaya is for example rated quite low on this product evaluation. In other words, the product innovations are perceived distinct on the different aspects. For example, organic apple is perceived as healthy and tasty, but not very novel and exclusive, while nectarine chips scores quite high on novel and lower on taste or health.

Some innovations reveal large differences between countries, while others only reveal small differences between countries. Respondents in the four countries seem to perceive GM apple, mini nectarines, fruit mix salad, nectarine chips and cholesterol lowering orange juice quite differently. The evaluations of organic apple, organic fruit mousse, cholesterol lowering peach and pitaya seem to differ less between countries.

Polish consumers are in general the most positive and the Greek consumers the most negative in their evaluation of the product innovations. Polish respondents score lower on easy available indicating that their situation is quite different in relation to product innovations available on the market. In addition, they evaluate the product innovations more as being better than regular, novel and tasty. Greek respondents evaluate the innovations in general as less natural, novel, healthy, safe and tasty. They perceive the product innovations as more exclusive. Dutch and Spanish consumers seem to score more average on the product evaluations. Dutch consumers score the fruit product innovations less positive than the fresh fruits, especially the nectarine chips, the organic fruit mousse and the prebiotic dried fruit are evaluated quite negative.

The fourth research question was formulated as followed: Which product evaluations are important to predict the adoption of fresh fruits and fruit products (Chapter 6)?

The results reveal that the product innovations are accepted by consumers for distinct reasons. For some product innovations, healthiness is an important predictor of the buying intention, while for other innovations novelty or tastiness seem to be the evaluation that results in the acceptance of a product innovation. In addition, the results reveal that besides the differences between product innovations, countries differ in the extent to which certain product evaluations predict consumers' acceptance of the specific fruit innovations. As such, the acceptance of each product innovation in each country is predicted by a different set of product evaluations. The results imply that it is important to take both, the product and the country, into account while developing marketing strategies for novel fresh fruits and fruit products.

The results of current study reveal some general consequences for possible future product developments in new fruit products. These general recommendations for the different product categories will be described in the recommendations section.

Countries differ in the predictive product evaluations for the twelve fruit innovations. However, in general for each of the four countries taste and attractiveness are important predictors of the acceptance of fruit innovations. These product evaluations forecast the buying intentions of multiple fruit innovations in all countries. For the *Dutch* and the *Greek* consumers better than regular is a product evaluation that has an impact on the adoption of multiple fruit innovations. For the *Spanish* consumers the evaluation of expansiveness predicts the acceptance of multiple fruit innovations.

The fifth research question was formulated as followed: Which personal characteristics predict the adoption of novel fruits (Chapter 7)?

Consumers' age, gender, education level and country of origin explains a small part of the variance in adoption of fruit novelties.

The explained variance after including the social psychological constructs in the regression analyses is much higher. However, not as high as the explained variances which is found for the influence of specific product evaluations on buying intension of products (as described in Chapter 6).

The social representation dimensions of food reveal one significant predictor of consumers' actual adoption of fruit novelties. Consumers that score high on *suspicion* towards novel foods are not surprisingly less willing to buy prepared and processed fruit novelties. In other words, they have a rather reserved position to new foods. *Food neophobia* significantly influences consumers' adoption of fruit novelties. The effect however contrasts ones' expectations, such that consumers who are more neophobic bought fruit innovations more often the last two months. This implies that some confounding of effects take place between the psychological constructs. The correlations between the psychological constructs reveal that suspicion is especially highly correlated with food neophobia, indicating that this correlation possibly causes the odd finding. Consumers who frequently influence the decision of others in the specific domain of fresh fruits or fruit products score higher on the actual adoption behaviour of fruit innovations. In other words *opinion leadership* has a positive impact on the acceptance of fruit innovations. Finally, *habits* on eating fruit significantly predicts actual adoption behaviour. Consumers that eat fruits very often and that already ate fruits in their childhood seem to be more willing to buy fruit novelties.

The sixth research question was formulated as followed: What is the impact of product evaluations and personal characteristics on the adoption of novel fruits (Chapter 8)?

Respondents belong to different countries, the Netherlands, Greece, Poland and Spain. Country is included in the analyses to check what the impact of country of origin on the acceptance of fruit novelties is. In addition, respondents are assigned to different conditions, differing in whether the psychological constructs are formulated with respect to fresh fruits or fruit products, and the fruit innovations included. To check whether condition or country of origin have an impact on the relationship between buying intention and the psychological constructs these variables are included in the analyses as interaction terms.

Country and condition both did not have a significant impact on the actual adoption of novel fruits. This implies that consumers from different countries do not differ in the actual buying behaviour of fruit novelties.

Including the buying intention of specific product innovations in explaining the adoption behaviour of novel fruits (ABNF) reveals similar results of the social psychological

constructs. Results show that after including these buying intentions, suspicion, childhood habits and opinion leadership significantly impact the ABNF.

There are no interaction effects between condition and the psychological constructs. Thus psychological characteristics in the specific domains of fresh fruit and fruit products have a similar impact on the actual adoption behavior.

In contrast, there is an interaction effect of suspicion and natural with country in predicting the actual adoption behavior of fruit novelties. These two social representation dimensions seem to impact the actual buying behavior of fruit innovations differently within the four countries. Childhood habits also has a significant interaction effect with country, such that the strength of this effect on the ABNF differs between countries.

The average buying intention towards the specific product innovations significantly affects the ABNF in a positive way. There is no interaction effect with country, which implies that the average buying intention not differs over countries.

The specific buying intentions in interaction with condition reveals no significant impact on the ABNF, such that the buying intention towards the specific fruit innovations not predict one's ABNF. After including country in this interaction term resulting in a three-way interaction results reveal that the impact of organic fruit mousse, mini nectarines, organic apple and nectarine chips on ABNF differs between countries. This implies that the buying intention towards product innovations has a distinct impact on ABNF for the different countries, however not all of them.

The last research question was formulated as followed: Which cross-cultural consumer segments can be identified based on the ranking of product characteristics (Chapter 9)?

Based on the importance rankings for the characteristics of fresh fruits and fruit products, four consumer segments are identified, *average consumers*, *natural consumers*, *heterogeneous consumers* and *healthy consumers*. Country proves to be important in the identification of the consumer segments for fresh fruits and for fruit products.

The four consumer segments differ from each other in the importance they attach to the product characteristics. The consumer segments also reveal small differences in demographic characteristics. Moreover, the identified segments differ from each other in psychological constructs. Finally, they differ from each other in the buying intention towards the fruit innovations.

The different consumer segments can be used to develop cross cultural communication strategies to market fruit innovations.

Comparable results
The consumer segments based on the importance rankings for the characteristics of novel fresh fruit seem to be comparable to those obtained in the context of novel fruit products. The *average consumer* segments for fresh fruits and fruit products both ranked taste, price and health as the most important characteristics. Followed by looking good, convenient and safe. They attach the lowest importance to natural, familiar and a good brand. Both segments consist of many Dutch consumers and very few Greek consumers. The *heterogeneous consumers* are also comparable. They attach the highest importance at tasty and healthy. Moreover, both of these segments seem to consist of a group of consumers with a variety of importance rankings of the product characteristics. Both segments seem to contain mostly Greek consumers. The *natural consumers* also reveal comparable results for fresh fruits and fruit products. Natural, healthy and safe are the most important for these consumers. They attach a medium high importance at taste and price. The other characteristics are relatively unimportant for these consumers. Consumers in these segments are not Dutch, the consumers are mainly from Greece, Poland and Spain. Finally, the *healthy consumers* of the importance rankings of the fresh fruits and fruit products. The link between these two segments is less

clear. Both consumer segments attach high importance to healthy, taste and safe. Natural is more important for the consumers in the importance rankings of the fruit products and price is more important for the importance rankings of fresh fruits.

Overall conclusion

The results imply that in general consumers perceive similar characteristics as relevant when buying novel fresh fruits and fruit products. The same product characteristics are rated as important and the same product characteristics are rated as unimportant for fresh fruits and fruit products. Consumers value healthiness, taste, price and safety of the new product the most and familiarity, convenience to consume, having a good brand, locally produced and appealing look the least.

Innovation categories regarding convenience and exotic fruits seem to be the most appealing for all consumers. The novel purchase channel seem to be the least attractive for all consumers with regard to their buying intention. Consumers perceive the product innovations quite differently. Some product innovations are for example rated as very novel and attractive, while others are rated as very healthy and convenient. In general, the product innovations are rated quite positive on the different product evaluations. Moreover, the results reveal that different product evaluations predict the acceptance of the twelve product innovations. The results imply that it is important to take both, the product and the country, in account while developing marketing strategies for novel fresh fruits and fruit products.

Taste and attractiveness are important predictors of the acceptance of fruit innovations for all countries. These product evaluations forecast the buying intentions of multiple fruit innovations in all countries.

The Netherlands Dutch consumers seem to value tastiness, price, the way a product looks and the convenience of a product. Naturalness of fruit is valued relatively low. These consumers are the least innovative with regard to buying intention towards the fruit innovations. In addition, Dutch consumers are less willing to buy fruit product innovations compared to their willingness to buy fresh fruit innovations. They also perceive the fruit product innovations as less positive than the fresh fruits. Finally, better than regular is a product evaluation that has an impact on the adoption of multiple fruit innovations for the Dutch consumers.

Greece Greek consumers rate the safety and naturalness of a product relatively high
They especially value the price of fruit innovations. Greek consumers are more willing to buy fresh fruits than fruit products. Moreover, they are more willing to buy organic fresh fruits compared to the other countries and less willing to buy GM and functional fruits. Greek consumers evaluate the product innovations the most negative compared to the other countries. They evaluate the innovations in general as less natural, novel, healthy, safe and tasty. Better than regular is a product evaluation that has an impact on the adoption of multiple fruit innovations for the Greek consumers.

Poland Polish consumers value the way a product looks relatively high. They are the most innovative in their acceptance of fruit innovations, such that they are most willing to buy all fresh fruits and fruit products. Polish respondents score the product innovations lower on easy available indicating that their situation is quite different in relation to product innovations available on the market. In addition, they evaluate the product innovations more as being better than regular, novel, exclusive and tasty.

Spain Spanish consumers rate taste and familiarity of fruit as relatively important. In comparison with the other countries they perceive the product innovations as more average

concerning the product evaluations. For the Spanish consumers the evaluation of expensiveness predicted the acceptance of multiple fruit innovations.

Demographics only explained a small part of consumers' actual adoption behaviour. Multiple psychological constructs are important in predicting consumers' actual adoption of fruit novelties. After including buying intentions, less psychological constructs predict one's actual adoption behaviour. Psychological characteristics in the specific domains of fresh fruit and fruit products have a comparable impact on the actual adoption behaviour of fruit novelties. There is a significant interaction effect of the psychological constructs with country, such that the strength of these effects on the actual adoption behaviour differs between countries.

10.2 Policy recommendations

Based on the results of this deliverable we formulated several policy recommendations for product development and marketing communication strategies to increase consumer acceptance of fruit innovations. We first discuss general recommendations on product characteristics (Section 10.2.1) and product innovations (Section 10.2.2). Furthermore we will focus on specific strategies per product category (Section 10.2.3), per country (Section 10.2.4), for consumers' personal characteristics (Section 10.2.5) and finally for the different consumer segments (Section 10.2.6).

10.2.1 General recommendations on product characteristics
In general, product development for fresh fruits and fruit products could focus on similar product characteristics. For both fresh fruits and fruit products, healthiness, taste, price and safety of a new product are important. On the other hand, familiarity, convenience to consume and looks appealing seem to be less important for consumers. Furthermore for fresh fruits, locally produced is relatively unimportant, while for fruit products having a good brand is relative unimportant. Although these latter characteristics are less relevant to include in product development, it does not mean that these characteristics do not create opportunities. If product developers invest in these characteristics they could first try to increase the importance of these characteristics. Previous research point at the importance of consumer involvement, which refers to the level of perceived personal importance, interest or relevance evoked by a stimulus or stimuli, which are linked by the consumer goals (Zaichkowsky, 1985). Consumer involvement is found to affect food-related consumer behaviour (e.g.Vermeir and Verbeke, 2005). It seems therefore important that consumers perceive product attributes as relevant. It might be more relevant to first explore the possibilities of the characteristics that prove to be more important to consumers at the moment.

In addition, communication strategies should also focus more on the characteristics that are important to consumers rather than on emphasizing the less important characteristics. Thus, novel fruits can best be marketed by underlining healthiness, taste, and safety aspects of the product. Moreover, pricing strategies seem to be relevant in introducing new products on the market. New products do not prosper when prices are higher than comparable products on the market. If marketers or policy makers would like to increase the perceived value of the unimportant characteristics, communication strategies emphasizing these characteristics are useful. Drawing attention towards specific characteristics of products is in the marketing literature found to be a useful method to increase consumers' perceived importance of these characteristics (e.g. Mackenzie, 1986). A successful strategy might be to link the unimportant characteristics with product features that do seem to matter to consumers. For example, associating locally produced fresh fruits with a great taste.

10.2.2 General recommendations on product innovations

When focusing on actual novel products, results revealed that convenience products were actually perceived as attractive. This implies that the development of convenience products could be prosperous. Consumers seem to be attracted to innovations that have additional value in being more easy to consume or buy. However, in line with the previous advice on characteristics, communication strategies (e.g. advertising, promotion) the convenience aspects of these products are less recommended. Consumers rank convenience aspects as relatively unimportant. It is therefore recommended to market these innovations by underlining characteristics that consumers do rate as important.

Moreover, launching new products from exotic countries seems to be appealing to consumers in different countries. Therefore, we would recommend to first explore the possibilities of introducing existing products from more exotic countries which could be perceived as novel to consumers in the current market. Product development could then focus on adapting and improving these exotic fruits such that they will be accepted in the current market, for example exotic fruit mix salads. The above mentioned importance of certain product characteristics could be useful in adapting exotic products to consumers' current needs.

Finally, offering fresh fruits via a new purchase channel seems to be the least attractive novelty to consumers in all countries. Focussing on a novel purchase channels therefore is not recommended at the moment. However, current study included only one innovation which focuses on a new purchase channel. Therefore, generalising these findings towards all new purchase channels seems invalid. Increasing fruit consumption among consumers with the use of new purchase channels that focus on increasing availability of fruit can still be relevant. For example, providing fruit on employees' work place or offering fruits at shop counters are ways to offer fruit to consumers via unconventional ways.

10.2.3 Specific strategies per product category

Results revealed the importance of different product evaluations for the acceptance of each product innovation within each country. As a result different marketing strategies per country and product category are recommended. However, some product innovations seem to have similar predictive characteristics across countries.

The following product innovations do have similar characteristics over countries and can therefore be marketed in multiple countries with the same marketing communication; pitaya juice, pitaya, nectarine chips, cholesterol lowering orange juice, GM apple, organic fruit mousse, prebiotic dried fruit, and fruit vending machine.

Pitaya juice: The perception of the attractiveness and tastiness of the pitaya juice seems to be important in multiple countries. This implies that when developing exotic fruit juices one should invest in the attractiveness of the packaging and tastiness of the juice. In addition, the marketing communication around these exotic product innovations should include messages focusing on these product characteristics. These implications are useful for fruit juices based on all kinds of exotic novel fruits, such as a guava and a santol.

Pitaya: The buying intention of the pitaya is predicted by the evaluation of tastiness in all countries. This implies that an exotic fresh fruit should be selected based on its tastiness. Most consumers have never actually tasted this pitaya. Therefore it should have a tasty appearance in the first place. In addition, the acceptance of this fruit innovation seems to be impacted by different evaluative aspects for the different countries.

Nectarine chips: Attractiveness and taste are significant positive predictors of the buying intention of nectarine chips in all countries. Product development should at least focus on attractive packaging. Furthermore, communication messages to market nectarine chips could

include the tastiness of this innovation. All countries have one or two additional predictors of the buying intention of nectarine chips. These results seem to be applicable to fruit product innovations that focus on the snack segment.

Cholesterol lowering orange juice: This functional fruit product seems more appealing for consumers of all origins when perceived as attractive. This implies the importance of the packaging of the juice. Other important marketing strategies for this functional food innovation are underlining that this product is better than regular products. Concerning pricing strategies, this new product should not be more expensive than regular fruit juices on the market. Finally, in the different countries some distinct additional characteristics matter in consumers' buying intention.

GM Apple: Although consumers know that GM is a technical innovation, it seems that the perception of naturalness increases the acceptance of a GM apple. For example, highlighting the natural processes within the technology, could be a successful strategy. For example by underlining that GM is used to increase the *natural* resistance to fungi in an apple, such that less chemical spraying is necessary during cultivation. Furthermore, one could mostly focus on marketing communication strategies that include messages on health and safety of the apple. Although one should keep in mind that GM is often perceived as a threatening new technology, it seems emphasizing that the product is healthy and safe could lead to a higher buying intention.

Organic fruit mousse: The organic fruit product can be best targeted in multiple countries on tastiness and attractiveness. Underlining the exceptional flavour and the appealing character of this product possibly increases its acceptance in multiple countries.

Prebiotic dried fruit: Underling the tastiness of this functional fruit seems to be an overall marketing strategy that could be successful in multiple countries. Again the countries differ in the product evaluations that predict the acceptance of this functional fruit product innovation.

New purchase channel: Currently, a new purchase channel for fresh fruits does not seem to be very appealing to consumers. However, if new purchase channels were introduced for selling novel fruits one could focus on convenience. This is in line with the idea that new purchase channels are developed to make products more easily available for consumers. Furthermore, the attractiveness of the way in which the product is sold should be taken into account. This seems to be important for consumers' willingness to buy products via a new way of selling. Concerning pricing strategies, marketers should consider that consumers are not willing to pay a higher price than a fresh fruit product that is sold by conventional means.

Other product innovations: Some product innovations do not have similar predictive characteristics across countries. Cholesterol lowering peach, mini nectarines, organic apple and fruit salad mix can therefore best be marketed in a targeted way. The different countries have very distinct characteristics that predict the buying intention of these fruit innovations.

Applicability of these findings within the fruit sector
Findings of current study reveal that one should focus on different product characteristics for the different innovation categories, this recommendation counts for product development and marketing communication surrounding the innovations. Thus, consumer acceptance of the fruit novelties within these specific innovation categories can best be reached by a targeted strategy. These targeted strategies however are applicable to all kinds of product innovations within these innovation categories. This implies that GM strategies for fruits should include the naturalness, health and safety aspects of these fruits, not only for GM apples, but also for GM peaches, GM bananas and other GM fruits. Furthermore, the importance of attractiveness

and taste for the pitaya and the pitaya juice implies that the selection and development of exotic fruits in general has beneficial effects by focussing on these aspects.

Thus, the above mentioned strategies are applicable to multiple product innovations with the innovation categories. However, one should be cautious with this generalisation since only related products can be targeted in similar ways.

10.2.4 General recommendations per country

The Netherlands: In comparison with the other countries the Dutch consumers indicated to be less innovative. This implies that these consumers are in general less willing to accept fruit innovations and therefore are a challenging target group. If one targets the Dutch consumers one should especially focus on tastiness of a product. Furthermore, fruit novelties should not be too expensive. Fruit innovations that focus on convenience aspects are applicable, while natural aspects and fruit products are less interesting for these consumers.

Greece: When targeting new products at Greek consumers one should at least take into account that they value safety and naturalness. Developing fruit products based on new technologies are less interesting for Greek consumers, since these products (e.g. GM) are probably not accepted. However, focusing on more organically produced fruits could be more prosperous for Greek consumers. When introducing fruit innovations, also for the Greek market prices should not be higher than regular products in the market.

Poland: The Polish market seems to be the most interesting in terms of acceptance of new products, since they were mostly attracted to the offered product innovations. Outward appearance seems to be relative important for Polish consumers. Therefore, development of fruits that look fresh and delightful or attractive packaging for fruit products could be a powerful strategy. Furthermore, it is important for the Polish market to focus on fruit innovations being better than regular, really novel and exclusive.

Spain: In comparison with the other countries, the Spanish consumers perceived the product innovations as more average in terms of the product evaluations. However, for Spanish consumers one should at least take into account taste and familiarity of fruit innovations. Especially in Spain, product development should focus on incremental changes of current products. Finally, Spanish consumers are price sensitive. Therefore these new products should not be too expensive.

10.2.5 Recommendations on personal characteristics
Although there are differences in the influence of personal characteristics between the different countries, we will now focus on policy recommendations that are applicable for all countries. More specific we will discuss the two most influential personal characteristics on actual adoption behaviour. First, when developing new products and marketing strategies one should consider consumers' (childhood) habits at all times. Apparently, also concerning fruit consumption people have strong habitual behaviour. The current study suggests that childhood habits seem to have long term effects on eating behaviour during adult life. This implies that focusing on young consumers seems to be the most prosperous in the long run. Therefore we recommend that policy makers focus on stimulating consumers eating (new) fruit products at an early stage of their lives. Innovations can be developed that are especially appealing to children. Second, consumers who perceive themselves as opinion leaders seem to adopt more fruit innovations. Policy development should focus on using these opinion leaders, since they not only consume more themselves but also seem to have an influence on the behaviour of related others. Furthermore, using opinion leaders as role models for specific

target groups, could increase adoption of new fruit innovations. Since opinion leaders are very active in finding information on fruit novelties, they should be easy to reach. For example, one could launch a website or make an application for a mobile phone which includes information about fruit innovations. Moreover, one could use opinion leadership by providing a relevant and trustful source of information (e.g. Nutrition Centre) to admissible groups.

10.2.6 Consumer segments

Besides developing strategies for specific countries one could focus on cross-cultural strategies. Consumer segmentation could be a helpful tool to identify these cross-cultural markets. We identified four consumer segments for fresh fruit and fruit products based on the importance rankings of product characteristics. For both fresh fruit and fruit products country was the only demographic variable which proved to be important in the identification of the consumer segments.

The identified consumer segments for fresh fruits and fruit products seem to be comparable with each other. The policy implications for these consumer segments are therefore discussed two by two.

Average consumers FF. These consumers highly value the tastiness, price and healthiness of fresh fruit innovations. Furthermore, these consumers are very interested in the naturalness of a product. In general they experience food as a necessity. Finally, they find the application of novel technologies in the food sector trustworthy.

- Average consumers FF can best be targeted by underlining the tastiness and healthiness of fruit product innovations. In addition, they value the price of a product innovation. Therefore pricing strategies could best focus on affordable innovations.
- Focussing on natural aspects of fruit is not very prosperous for these consumers. They perceive the naturalness of fruits as quite unimportant.
- Average consumers FF can not be regarded as experts in the field of innovations. This implies that they do not have extensive knowledge about new products. Subsequently, these consumers should be approached in an easygoing way, without any extensive knowledge of the specific innovations.
- Then, average consumers FF are not afraid to try fruit novelties. Moreover, they have relative good faith in the application of technologies in a food context. They value the use of technology and are not suspicious about the effects of the use of technology within the production of food. Technology-based fruit innovations could therefore be especially applicable to this specific consumer group.
- One should keep in mind that these consumers experience food as a necessity. Although they are willing to try new things and are not 'scared' of fruit innovations, they also do not see much relevance in it. Communication strategies should focus on underlining the beneficial value of the fruit innovations. More specific, highlighting the beneficial value of an innovation in terms of tastiness and healthiness.
- Average FF consumers can especially be found in the Netherlands and Poland.

Average consumer FP. Profiling of this consumer segment reveals similar results as the average consumer FF. They also perceive tastiness, price and healthiness of fruit product innovations as highly important. Moreover, compared to the other consumer segments convenience is relative important and naturalness is relatively unimportant for these consumers. Like average consumer FF, these consumers experience food as a necessity. They are also not very involved in food and think of food as a useful tool to get enough energy. They score relatively low on being an expert consumer and are trustworthy towards the use of technologies for the development of novel fruits. Therefore the abovementioned recommendations for the average consumer FF are also applicable to this group of consumers. In addition, the following recommendations are suggested:

- Taste, price and healthiness of products can be seen as prerequisite characteristics. Fruit innovations should meet these characteristics, since average consumers FP are otherwise never willing to accept an innovation. The characteristics that follow, looking good, convenient and safe, are the one's that could be used as additional beneficial value.
- At the moment average consumers FP are not very innovative in the adoption behaviour of fruit novelties. This implies that these consumers are not the easiest market segment to reach.
- This consumer segment mainly consisted of Dutch consumers, followed by Spanish and Polish consumers.

Natural consumers FF. These consumers value the most that food novelties are natural, healthy and safe. They are very involved with their food choices. Food is a highlight of their day and they certainly see food as more than a necessity. Moreover, natural consumers FF seem to eat fruits on a routine base. They find naturalness of food as very important and they really dislike the use of technology in the production of food.

- Innovations related to technology are not very applicable for natural consumers FF. They do not trust the use of technology for the development of novel fruits, which is underscored in their low intention to buy a GM apple. Fruit innovations for this consumer segment should focus on the naturalness and safety of fruit. Natural production methods and organic fruits seem to be the most prosperous for these consumers.
- Price and taste are relatively less important for natural consumers FF. Marketing communication strategies can therefore better focus on underling other characteristics of fruit innovations, like natural and safe production methods, than the tastiness of a fruit novelty. Pricing strategies are not very relevant for these consumers, since they value these characteristics relatively low.
- Furthermore, natural consumers FF score quite high on market mavenism, indicating that they are expert shoppers with extensive knowledge about many fruit novelties. This implies that these consumers can best be reached by communicating in a more advanced way. One should focus on their expertise concerning food innovations.
- Natural consumers FF are involved in food choices. Food is a highlight of their day. This implies that they are involved in cooking and preparing food. Developing recipes or preparation advice for fruit novelties may appeal to consumers in this segment.
- Natural consumers FF score relatively high on routine behaviour. They seem to eat fresh fruits on a routine base and are therefore a prosperous group to target, since they are already inclined to eat fresh fruits.
- These consumers can be found especially in Greece and Poland.

Natural consumer FP. This consumer segment is comparable with the natural consumer FF. Natural, safe and healthy were also for these consumers the most important product characteristics. Moreover, natural consumers FP are very involved with their food and they are experts on purchases of fruit products in all kinds of areas. On the other hand, they are not that enthusiast about trying new fruits. Moreover, they even seem to be reluctant to try novel foods. The developments of new technologies within the food sector are not appreciated by these consumers.

- Natural consumers FP seem to have low scores on the routine behaviour of fruit products. This is not in line with the habits of the natural consumer FF, which revealed a high routine behaviour towards fresh fruits. Possibly these consumers have a low routine behaviour toward fruit products, because they don't rate these as natural. Natural fruits are highly relevant for these consumers. These results imply that especially fresh fruits are applicable to these consumers. Organic apple was for

example rated high on the buying intention, indicating that these consumers are indeed willing to accept fruit innovations related to natural production methods.

- Natural consumers are mainly Greek. There are also some Spanish consumers within this segment.

Heterogeneous consumers FF. This segment consists of consumers with a variety of importance rankings. By taking this into account, taste and healthy are the most important characteristics for heterogeneous consumers FF. Furthermore, they score quite average on the innovativeness aspects. Except for their scores on food neophobia, they are reluctant to try novel foods.

- The variety of importance ranking indicates that these consumers can be approached with a more general marketing strategy that can also be applied to one of the other consumer segments. It seems to be a segment which sometimes can be included within communication strategies without the necessity of using additional adaptations.
- Heterogeneous consumers FF score quite medium on the innovativeness aspects. This implies that these consumers can best be targeted on a medium expertise level. The information regarding novel fruits should be not too complicated towards these consumers.
- Heterogeneous consumers FF have a quite high score on food neophobia. In other words, these consumers are relatively reluctant to try novel foods. Therefore the development of novel fruits can best take place in incremental steps for these consumers.
- These consumers can be found in Greece, Poland and Spain.

Heterogeneous consumer FP This consumer segment seems to be comparable with the heterogeneous consumers FF, such that they also rated taste and health as quite important characteristics. Moreover, this segment also seems to consist of consumers with a broad range of preferences. Like the heterogeneous consumer FF, these consumers also seem to score high on food neophobia. In contrast, these consumers scored quite high on food as necessity and purchasing fruit products on a routine base.

- Food is regarded as a necessary intake of energy for heterogeneous consumers FP. Therefore product innovations can best be marketed by underlining satiety aspects of these products. Moreover, convenience aspects seem to be applicable to these consumers that see food as a necessity.
- Heterogeneous consumers FP score relatively high on childhood habits. This implies that they eat fruit on a routine base and are therefore a prosperous segment in terms of consumption. Moreover, this implies that these consumers can be easily reached with novel fruit innovations in places where they buy their fruits.
- The intention to buy product innovations is quite average in comparison with the other consumer segments. Although this implies that these consumers are not very innovative, it means that seducing these consumers to buy fruit innovations is possible.
- A large part of the heterogeneous consumers had a Polish origin. This consumer segment also had a lot of Greek and Spanish consumers.

Healthy consumers FF. Healthy, taste and safe are the most important product characteristics for healthy consumers FF. The naturalness and the price of novel fruits followed as averagely important product characteristics. These consumers perceive food as an enjoyment, which indicates that they are involved in their food choices. Furthermore, these consumers scored high on domain specific innovativeness and indicated to be trustworthy towards the use of technologies.

- Marketing strategies should mainly focus on the healthiness, safety and taste of product innovations by targeting these consumers. Having a healthy lifestyle seems to be the most relevant for these consumers. In line with that healthy lifestyle safety is also rated as highly important. Note that this healthy lifestyle does not result in a sober lifestyle. They value food a lot and also find the tastiness of food important.
- As healthy consumers FF value healthiness highly and seem to be innovative regarding new technologies on functional foods and GM innovations seem to be very applicable to these consumers. Adding beneficial health effects with comparable or better taste seems to be highly valued by these consumers.
- Healthy consumers FF score high on routine behaviour towards fresh fruits, indicating a high frequency of eating fruits. This implies that these consumers are already inclined to eat fruits, and therefore persuading these consumers to try fruit novelties seems to be easy. However, one could question whether these consumers are not already eating enough fruits and subsequently whether focussing on other segments is more relevant.
- Healthy consumers FF are quite receptive for fruit innovations, which indicates that this is a relevant group for the development and marketing of fruit innovations. They were relatively willing to buy several innovations, like for example mini nectarines.
- The healthy consumer FF segment mostly consisted of Spanish and Dutch consumers.

Healthy consumers FP also find it very important that novel fruit products are healthy, safe and natural. Food seems to be very important for these consumers above and beyond the nutritional value. Healthy consumers FP score high on habits concerning eating fruits, indicating that they eat and buy fruits frequently. This consumer segment differs from healthy consumer FF in the extent that they did not score relatively high on innovativeness and technology based psychological characteristics. Therefore targeting technology based innovations towards the healthy consumers FP seems rather inefficient.

- These consumers were relatively willing to buy the nectarine chips. They also rated fruit mix salad, prebiotic dried fruit and organic apple higher than the average consumers. These results indicate that healthy consumers FP are willing to accept fruit novelties. Therefore, this group does seem prosperous to target fruit innovations on. However, one should not underline the technology aspects of the process for these consumers. Especially health related messages are relevant.
- Healthy consumers were mostly Polish consumers, followed by Dutch and Spanish consumers.

11   Limitations

Chapter 11 aims to identify some limitations of the current study.

First, the importance of the product characteristics was analysed with the use of a ranking method. This method has several advantages. For example, respondents are forced to make a choice between multiple characteristics, which is also the case in everyday decision making. Moreover, social desirable answering tendencies are filtered out more than with the use of answering scales (e.g. Likert scales). However, this method has the disadvantage that the importance ratings are only meaningful in relationship to each other. Therefore the rankings of the product characteristics should be interpreted in this way. In other words, health and taste seemed to be the most important characteristics in comparison with the other product characteristics included in the study. Since we included a range of product characteristics based on an extensive literature review, this seems so be not problematic for the interpretation of the results. However one should acknowledge this interdependence of the characteristics.

Second, concerning the study design, current study included four conditions that differed in domain specific questions of the psychological constructs and in the product innovations. As a result of this complex design, it was possible to include specific questions regarding fresh fruits and fruit products. These domains seem to be very related to each other in the minds of consumers. It was therefore not possible to ask respondents to fill out multiple questions two times, which would make them annoyed. Moreover, this design made it possible to include twelve product innovations accompanied with several evaluative questions. It would be cognitively impossible for respondents to evaluate twelve different products. Therefore, the use of multiple conditions seems to be very useful. On the other hand, the use of multiple conditions makes the comparison among respondents more difficult than when every respondent in each country answers exactly the same questions. One should keep this in mind, when interpreting the conclusions and policy recommendations.

Third, the identified product innovations were selected based on focus groups and the input from experts. However, it remains that the selection of products influences the results. When we had included other products, this would probably give different results on some aspects of innovativeness. Although, we have selected products from multiple innovation categories (e.g. functional, GM and exotic), it remains possible that different results are found with other product innovations. Moreover, it is difficult to draw conclusions from one product innovation towards a whole innovation category. For example the results regarding the fruit vending machine, which was evaluated quite negative in the buying intention, do not necessarily imply that all new purchase channels are evaluated negatively by consumers.

Fourth, respondents were asked to evaluate the product innovations on the willingness to buy this product. This is an often used method to reveal the acceptance of consumers towards novel and existing products. However, it is also widely recognized that one's intention to buy a certain product does not necessarily mean that one actually is going to buy a product. Although highly correlated, the intention to buy products is not the same as actual behaviour. Therefore, the results regarding consumer acceptance of product innovations should be interpreted with some caution. In addition, respondents were asked to rate their actual adoption behaviour of novel fruits. Again this is perceived behaviour of respondents (a self-reports measure) and not the actual behaviour of consumers. Moreover, the actual adoption of novel fruits is also influenced by respondents' perception of what a fruit novelty is.

Concerning the countries, we first want to underline that only four European countries were included in the present study. The countries were selected such that they represent different regions of Europe. The results therefore can give an indication of the innovativeness of consumers in Europe. However, generalizing the results to consumers in other countries

should be done with caution. The differences between countries revealed that it is important to include this factor. Future research is recommended to test whether similar results can be found in other European countries.

Countries seem to be difficult to compare due to differences in economical status and other societal differences. For example, food safety seems to be no issue in the Netherlands, while this is much more a public issue in Poland. Moreover, one could question whether expensiveness is the same in the four studied countries, since income levels are difficult to compare. More important, these differences are not stable, such that countries develop in a different pace.

Finally, current study has identified multiple consumer segments. There is described which marketing strategies and product can best be targeted towards these consumers to increase their acceptance of fruit innovations. Although, demographic variables of consumers were included in the segmentation study, there were no additional variables included to reach these consumers. For future research it is recommended to include variables concerning media usage and shopping behaviour, such that recommendations regarding communication channels can be made.

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Appendix A

Only one of the questionnaires of the four conditions is included for all versions we refer to Kraszewska, Bartels, and Onwezen (2009).

Dear Sir/Madam,

Four scientific institutes from Europe are carrying out an international study on preferences for fruit and fruit products. We would be very pleased if you would be willing to spend some of your time to fill out the questionnaire. Your answers will be very valuable to us. Please note that there are no correct or wrong answers. The only thing that we are interested in is your own preferences for fruit. You do not have to think long about each question. Your first reaction is often the best. Of course, your answers will be analysed in an anonymous way and kept confidential. It will take less than 20 minutes to fill in the questionnaire.

Thanking you in advance,

The European research team of Greece, The Netherlands, Poland and Spain

I. Your expertise on consumer products and brands

The statements below are concerned with your attitudes towards products and brands in general. Please indicate if you disagree/ or agree with following statements.

	Strongly disagree				Strongly agree
	1	2	3	4	5
1. I like introducing new brands and products to my friends.	☐	☐	☐	☐	☐
2. I like helping people by providing them with information about many kinds of products.	☐	☐	☐	☐	☐
3. People ask me for information about products, places to shop, or sales.	☐	☐	☐	☐	☐
4. If someone asked where to get the best buy on several types of products, I could tell him or her where to shop.	☐	☐	☐	☐	☐
5. My friends think of me as a good source of information when it comes to new products or sales.	☐	☐	☐	☐	☐
6. I am a person who knows about many products, sales, stores, and so on, but does not necessarily feel as an expert on one particular product.	☐	☐	☐	☐	☐

7. Please, write down the specific products and brands you were thinking of when answering the previous questions

……
……
……
…………………………………………

II. Your attitudes towards food products and eating

The statements below are concerned with your attitudes towards food products and eating. Please indicate if you disagree/ or agree with following statements.

		Strongly disagree				Strongly agree
		1	2	3	4	5
1.	I am suspicious to new food products					
2.	I do not really need information about new foods	☐	☐	☐	☐	☐
3.	Eating is a highlight of the day	☐	☐	☐	☐	☐
4.	Genetic modification in food production is nothing more than aiding nature (*Genetic modification is a technology developed for changing the characteristics of living organisms, such as plants and animals, in order to make them capable of making new substances or performing new or different functions. Genetic modification is sometimes called GM, genetic engineering or GE.*)	☐	☐	☐	☐	☐
5.	It makes no difference to me what kind of food is served at parties	☐	☐	☐	☐	☐
6.	Food novelties are not trustworthy					
7.	Functional food is efficient but dangerous (*by functional foods we mean food with a health-promoting and/or disease-preventing property beyond the basic nutritional function of supplying nutrients – like calcium fortified milk or juice enriched with vitamins and omega 3 fatty acids*)	☐	☐	☐	☐	☐
8.	I do not care what I eat, as long as I am not hungry	☐	☐	☐	☐	☐
9.	For me, delicious food is an essential part of weekends	☐	☐	☐	☐	☐
10.	I trust in organically grown food	☐	☐	☐	☐	☐
11.	I do not care how my food is produced	☐	☐	☐	☐	☐
12.	I treat myself to something really delicious	☐	☐	☐	☐	☐
13.	Eating is very important to me	☐	☐	☐	☐	☐
14.	New food technology is trustworthy	☐	☐	☐	☐	☐
15.	Consequences of eating new foods are unknown					
16.	I believe in the potential of new food technology	☐	☐	☐	☐	☐
17.	Genetic modification can provide solutions to global food problems	☐	☐	☐	☐	☐
18.	I value things being in accordance with nature	☐	☐	☐	☐	☐
19.	New foods are just a silly trend	☐	☐	☐	☐	☐
20.	I feel good when I eat clean and natural food	☐	☐	☐	☐	☐
21.	I have some doubts about food novelties	☐	☐	☐	☐	☐
22.	Resisting genetically modified food is just longing for the past	☐	☐	☐	☐	☐
23.	I would like to eat only food with no additives (no preservatives nor other artificial components)	☐	☐	☐	☐	☐
24.	In my opinion, organically grown products are no better than conventionally grown	☐	☐	☐	☐	☐
25.	People are afraid of genetically modified food because they don't have	☐	☐	☐	☐	☐

knowledge about it

III. Your attitudes towards food

The statements below are concerned with your attitudes towards food products and eating. Please indicate if you disagree/ or agree with following statements.

		Strongly disagree 1	2	3	4	Strongly agree 5
1.	In general, I am among the last in my circle of friends to purchase a new food product	☐	☐	☐	☐	☐
2.	If I heard that a new food product was available through a local store, I would be interested enough to buy it	☐	☐	☐	☐	☐
3.	Compared to my friends, I rarely buy new food	☐	☐	☐	☐	☐
4.	I would consider a new food product, even if I hadn't heard of it yet	☐	☐	☐	☐	☐
5.	In general, I am the last in my circle of friends to know the names of the latest foods and food trends	☐	☐	☐	☐	☐
6.	I know more about new food than other people do	☐	☐	☐	☐	☐

IV. Your involvement towards food consumption

The following statements are concerned with your involvement towards food consumption. Please indicate if you disagree/ or agree with following statements.

		Strongly disagree 1	2	3	4	Strongly agree 5
1.	I think a lot about food each day	☐	☐	☐	☐	☐
2.	Talking about what I ate or am going to eat is something I like to do	☐	☐	☐	☐	☐
3.	Compared with other daily decisions, my food choices are very important	☐	☐	☐	☐	☐
4.	Having a good meal, means a lot to me	☐	☐	☐	☐	☐
5.	I value good food	☐	☐	☐	☐	☐
6.	I am very involved with my food choices	☐	☐	☐	☐	☐
7.	I'm interested in what I eat	☐	☐	☐	☐	☐

V. Your attitudes towards fruits

The statements below are concerned with your attitudes towards fruits. Please indicate if you disagree/ or agree with following statements.

Please indicate if you disagree/ or agree with following statements	Strongly disagree				Strongly agree
	1	2	3	4	5
1. I don't trust new fruit	☐	☐	☐	☐	☐
2. If I don't know what a new fruit tastes like, I won't try it	☐	☐	☐	☐	☐
3. Exotic fruit looks too weird to eat.	☐	☐	☐	☐	☐
4. I am afraid to eat fruit I have never had before.	☐	☐	☐	☐	☐
5. I am very particular about the fruit I will eat.	☐	☐	☐	☐	☐
6. In general, I am among the last in my circle of friends to purchase new fruit	☐	☐	☐	☐	☐
7. If I heard that a new fruit was available through a local store, I would be interested enough to buy it	☐	☐	☐	☐	☐
8. Compared to my friends, I rarely buy new fruit	☐	☐	☐	☐	☐
9. I would consider buying new fruit, even if I hadn't heard of it yet	☐	☐	☐	☐	☐
10. In general, I am the last in my circle of friends to know the latest new fruit	☐	☐	☐	☐	☐
11. I know more about new fruit than other people do	☐	☐	☐	☐	☐
12. Other people come to me for advice about choosing fruit.	☐	☐	☐	☐	☐
13. People that I know pick fruit based on what I have told them.	☐	☐	☐	☐	☐
14. I often persuade other people to buy fruit that I like.	☐	☐	☐	☐	☐
15. I often influence people's opinions about fruit.	☐	☐	☐	☐	☐

VI. Importance of characteristics when buying new fruit

Below you may find a list of 9 characteristics referring to new fruit. Please, indicate how important they are when you buy a new fruit for the first time by shifting them to the field on the right with a mouse (as indicated by an arrow) and ranking them. The characteristic on the top is the most important and the characteristic at the bottom is the least important. It is possible to change the order by shifting the item back to the left by changing the order of items in the column on the right.

It is important to me that a new fresh fruit:

......   is healthy

......   is safe

......   is locally produced

......   is convenient

......   is reasonably priced

......   has a good taste

.....   is familiar to me

.....   is naturally produced

.....   looks appealing

VII. Product evaluation

The statements below are concerned with your attitudes towards presented products

1. This is fruit organic mousse produced by Nestle.

[PICTURE HERE]

a. Please indicate if you disagree/ or agree with following statements:

This product seems to be…	Strongly disagree				Strongly agree
1. Tasty	☐	☐	☐	☐	☐
2. Expensive	☐	☐	☐	☐	☐
3. Convenient to consume	☐	☐	☐	☐	☐
4. Healthy	☐	☐	☐	☐	☐
5. Novel	☐	☐	☐	☐	☐
6. Easily available in a store nearby	☐	☐	☐	☐	☐
7. Attractive	☐	☐	☐	☐	☐
8. Safe	☐	☐	☐	☐	☐
9. Natural	☐	☐	☐	☐	☐
10. Better than regular fruit products	☐	☐	☐	☐	☐

| 11. Exclusive | ☐ | ☐ | ☐ | ☐ | ☐ |

b. The statements below are concerned with your behaviour towards this specific product.

1.1.1.1

		Strongly disagree 1	2	3	4	Strongly agree 5
1.	I would gladly buy this product if I could find it	☐	☐	☐	☐	☐
2.	To buy this product is	Bad ☐	☐	☐	☐	Good ☐
3.	To buy this product is	Foolish ☐	☐	☐	☐	Wise ☐

2. This is new variety of peach. The special quality of this fruit is that it lowers the cholesterol. The taste and aroma do not differ from regular product.

[PICTURE HERE]

a. Please indicate if you disagree/ or agree with following statements.

		Strongly disagree				Strongly agree
This product seems to be…						
1.	Tasty	☐	☐	☐	☐	☐
2.	Expensive	☐	☐	☐	☐	☐
3.	Convenient to consume	☐	☐	☐	☐	☐
4.	Healthy	☐	☐	☐	☐	☐
5.	Novel	☐	☐	☐	☐	☐
6.	Easily available in a store nearby	☐	☐	☐	☐	☐
7.	Attractive	☐	☐	☐	☐	☐
8.	Safe	☐	☐	☐	☐	☐
9.	Natural	☐	☐	☐	☐	☐
10.	Better than regular fruit products	☐	☐	☐	☐	☐
11.	Exclusive	☐	☐	☐	☐	☐

b. The statements below are concerned with your behaviour towards this specific product.:

		Strongly disagree 1	2	3	4	Strongly agree 5
1.	I would gladly buy this product if I could find it	☐	☐	☐	☐	☐
2.	To buy this product is	Bad ☐	☐	☐	☐	Good ☐
3.	To buy this product is	Foolish ☐	☐	☐	☐	Wise ☐

3. This is fresh fruit vending machine that sells apples and peaches. You just insert the coin and you choose one of the fruits from the machine.

a. Please indicate if you disagree/ or agree with following statements:

		Strongly disagree				Strongly agree
The fruit from this machine is……						
1.	Tasty	☐	☐	☐	☐	☐
2.	Expensive	☐	☐	☐	☐	☐
3.	Healthy	☐	☐	☐	☐	☐
4.	Safe	☐	☐	☐	☐	☐
5.	Natural	☐	☐	☐	☐	☐
6.	Better than regular fruit products	☐	☐	☐	☐	☐
7.	Exclusive	☐	☐	☐	☐	☐
		Strongly disagree				Strongly agree
This way of selling is…..						
8.	Convenient	☐	☐	☐	☐	☐
9.	Novel	☐	☐	☐	☐	☐
10.	Attractive	☐	☐	☐	☐	☐

b. The statements below are concerned with your behaviour towards this specific product.

1.1.1.2

	Strongly disagree 1	2	3	4	Strongly agree 5
1. I would gladly buy product from this machine if I could find it	☐	☐	☐	☐	☐
2. To buy product from this machine is	Bad ☐	☐	☐	☐	Good ☐
3. To buy product from this machine is	Foolish ☐	☐	☐	☐	Wise ☐

*In the next few questions you will be asked about fresh fruit, prepared fruit and processed fruit. By "**fresh fruit**" we mean whole fresh fruit. "**Prepared fruit**" is a fruit bought ready for consumption, but not processed (for example cleaned, peeled or cut). Example of "**processed fruit**" is juice or dried fruit.*

VIII. Frequency of new fruits and fruit products purchases

The questions below are about how often you have bought **new** fresh, prepared and processed fruit and fruit products. Examples of **new** fresh fruit are new variety of apple or some exotic fruit. Example of **new** prepared fruit product is peeled and cut fruit. Example of **new** processed fruit product is juice with new combination of tastes.

	Never 1	1 time 2	2 times 3	3-4 times 4	5 times and more 5
1. How many times have you tried **new fresh fruit** over the last three months (besides the products you have tried on holidays)?	☐	☐	☐	☐	☐
2. How many times have you tried **new prepared fruit products** over the last three months (besides the products you have tried on holidays)?	☐	☐	☐	☐	☐
3. How many times have you tried **new processed fruit products** over the last three months (besides the products you have tried on holidays)?	☐	☐	☐	☐	☐
	never	sometimes	regularly	often	very often
4. How often do you buy **new fruit products** (fresh, prepared and processed)?	☐	☐	☐	☐	☐

IX. Personal characteristics

*In the next few questions you will be asked about fresh fruit, prepared fruit and processed fruit. By "**fresh fruit**" we mean whole fresh fruit. "**Prepared fruit**" is a fruit bought ready for consumption, but not processed (for example cleaned, peeled or cut). Example of "**processed fruit**" is juice or dried fruit.*

		Strongly disagree				Strongly agree
1.	I eat fresh fruits routinely	☐	☐	☐	☐	☐
2.	Eating fresh fruit suits me	☐	☐	☐	☐	☐
3.	I have been eating fresh fruits since I was a child	☐	☐	☐	☐	☐

		Strongly disagree				Strongly agree
4.	I eat prepared fruits routinely	☐	☐	☐	☐	☐
5.	Eating prepared fruits suits me	☐	☐	☐	☐	☐
6.	I have been eating prepared fruits since I was a child	☐	☐	☐	☐	☐

		Strongly disagree				Strongly agree
7.	I eat processed fruits routinely	☐	☐	☐	☐	☐
8.	Eating processed fruit suits me	☐	☐	☐	☐	☐
9.	I have been eating processed fruits since I was a child	☐	☐	☐	☐	☐

X. Personal information

Year of birth: …………………..

Gender: ☐ Male   ☐ Female
Country of birth   ………………………..

Country of birth of parents:
Mother ……………………………
Father……………………………..
Family status:
☐ Married / Living together
     ☐ Single / Divorced / Widow
     ☐ Living with parents

6.   Could you please indicate the number of members of your household (including yourself):

       ☐ one   ☐ four

       ☐ two   ☐ five

       ☐ three   ☐ six or more

7.   Do you have children under 18 years old?   ☐ yes   ☐ no

8.   If yes, how many children do you have under 18 years old _____

9.   Are you one of the persons in a household who regularly buys the food?

     ☐ Yes   ☐ No

10. Are you one of the persons in the household who regularly prepares the food?
     ☐ Yes   ☐ No

11. Educational level:
   ☐   No schooling completed

   ☐   Primary education

   ☐   Secondary education

   ☐   Higher education

12. Employment status
☐ Employed
☐ Retired
☐ Student
☐ Unemployed
☐ Housewife
☐ In the army

13. I am currently living in:
☐ A city
☐ A suburb
☐ A village
☐ A rural city
☐ Other

14. Household income (net) last month:

In which of the following categories was your family income (net) last month?

    (1)   < minimum wage €
    (2)   minimum wage – 2 * minimum wage €
    (3)   2* minimum wage – 3* minimum wage €
    (4)   3* minimum wage – 4* minimum wage €
    (5)   4* minimum wage – 6* minimum wage €
    (6)   6* minimum wage – 8* minimum wage €
    (7)   8* minimum wage – 10* minimum wage €
    (8)   10* minimum wage – 15* minimum wage €
    (9)   > 15* minimum wage
    (10) I do not know / I do not want to answer

Greece:
    (1)   < 750 €
    (2)   750 – 1.500 €
    (3)   1.500 – 2.250 €
    (4)   2.250 – 3.000 €
    (5)   3.000 – 4.500 €
    (6)   4.500 – 6.000 €
    (7)   6.000– 7.500 €
    (8)   7.500 – 11.250 €
    (9)   > 11.250
    (10) Δε ξέρω / Δεν απαντώ

Spain:
    (1)   < 540 €
    (2)   540 – 1080 €
    (3)   1080 – 1620 €
    (4)   1620 – 2160 €
    (5)   2160 – 3240 €
    (6)   3240 – 4320 €
    (7)   4320 – 5400 €
    (8)   5400 – 8100 €
    (9)   > 8100 €
    (10) NO SABE / NO CONTESTA

The Netherlands:
    (1)   < € 500
    (2)€ 500 – € 999
    (3)€ 1000 - € 1499
    (4)€ 1500 - € 1999
    (5)€ 2000 - € 2499
    (6)€ 2500 - € 2999
    (7)€ 3000 - € 3999
    (8)€ 4000 - € 4999
    (9)€ 5000 of meer
    (10) Weet niet / geen antwoord

Poland:
    (1)   < 825 PLN
    (2)   825 – 1650 PLN
    (3)   1651 – 2475 PLN
    (4)   2476 – 3300 PLN
    (5)   3301 – 4950 PLN
    (6)   4951 – 6600 PLN
    (7)   6601 – 8250 PLN
    (8)   8251 – 12375 PLN
    (9)   > 12375 PLN
    (10) Nie wiem / Nie chcę odpowiadać

THANK YOU VERY MUCH FOR YOU COOPERATION!

Appendix B

Organic fruit mousse:

Cholesterol lowering peach:

Fruit vending machine:

Mini nectarines without a stone:

Pitaya:

GM apple:

Organic apple:

Cholesterol lowering orange juice:

Prebiotic dried fruit:

Nectarine chips:

Pitaya juice:

Fruit mix salad:

Appendix C

Innovation categories to which the specific fruit innovations belong

A. Fresh fruit innovations	B. Processed fruit innovation	C. Prepared fruit innovations
ORGANIC, LOCALLY PRODUCED Fresh organic local apple	*ORGANIC / WELL-KNOWN BRAND / CONVENIENCE* Organic fruit mousse produced by Nestle (apple-apricot, apple-blueberry)	PREPARED - different tastes to eliminate preferences Fresh cut salad (or fresh cut salad vending machine)
FUNCTIONAL-fresh fruit with increased health effect Lowering cholesterol peach	*FUNCTIONAL – processed fruit with increased health effect* Lowering cholesterol juice (Orange Minute Maid)	
CONVENIENCE of consumption and snacking Mini nectarines without stone	*CONVENIENCE of consumption and snacking, radical innovation* Nectarine baked dried chips	
EXOTIC FRESH FRUIT Fresh pitaya	EXOTIC Pitaya juice	
NEW PURCHASE CHANNEL (new way of selling fresh fruit) Fresh fruit vending machine (selling peaches and apples)		

Source: Deliverable 1.3.4 (Kraszewska, Bartels, and Onwezen, 2009)

Appendix D

Demographics per country

	The Netherlands (N=502)	**Greece** (N=468)	**Poland** (N=502)	**Spain** (N=500)	**Total** (n=1972)
Gender					
Male	48.40%	51.70%	47.40%	49.20%	49.10%
Female	51.60%	48.30%	52.60%	50.80%	50.90%
		37.81	43.44	45.74	43.47
Age	46.51 (15.8)	(10.7)	(15.1)	(14.6)	(14.6)
Family status					
Married\Living together	65.30%	55.60%	67.70%	65.20%	63.60%
Single\Divorced\Widow	27.10%	21.20%	15.70%	24.40%	22.10%
Living with your parents	7.60%	23.30%	16.50%	10.40%	14.30%
Children					
Yes	28.50%	32.10%	33.90%	25.00%	29.80%
No	71.50%	67.90%	66.10%	75.00%	70.20%
Number of household					
1	21.50%	12.00%	6.60%	9.00%	12.30%
2	38.60%	26.70%	25.30%	29.20%	30.00%
3	14.90%	24.60%	32.30%	30.40%	25.60%
4	15.70%	24.40%	20.30%	25.00%	21.30%
5	6.20%	9.40%	10.60%	4.60%	7.70%
>= 6	3.00%	3.00%	5.00%	1.80%	3.20%
Educational background					
No schooling	2.80%	0.00%	0.00%	2.80%	1.40%
Low	11.80%	1.30%	1.60%	13.60%	7.20%
Medium	51.20%	32.10%	44.40%	38.40%	41.70%
High	34.30%	66.70%	54.00%	45.20%	49.70%
Employment status					
Employed	48.20%	75.00%	56.40%	59.20%	59.40%
Retired	17.10%	4.30%	19.50%	15.40%	14.20%
Student	9.20%	12.00%	12.00%	10.00%	10.80%
Unemployed	9.20%	6.40%	4.80%	7.40%	7.40%
Housewife	13.10%	2.40%	6.80%	7.00%	7.00%
In the army	3.20%	0.00%	0.60%	1.10%	1.10%
Income					
< minimum wage €	2.80%	6.00%	3.20%	6.60%	4.60%
minimum wage – 2 * minimum wage	6.60%	19.90%	11.20%	18.60%	13.90%
2* minimum wage – 3* minimum wage	12.70%	19.40%	12.90%	22.20%	16.80%
3* minimum wage – 4* minimum wage	15.50%	16.00%	17.10%	14.40%	15.80%
4* minimum wage – 6* minimum wage	17.90%	11.10%	19.50%	21.60%	17.60%
6* minimum wage – 8* minimum wage	11.40%	3.60%	10.20%	10.00%	8.90%
8* minimum wage – 10* minimum wage	3.20%	1.70%	3.20%	3.20%	2.80%
10* minimum wage – 15* minimum wage	2.00%	1.30%	2.40%	2.00%	1.90%

> 15* minimum wage	0.00%	6.40%	1.60%	1.40%	2.30%
I do not know / I do not want to answer	27.90%	14.50%	18.70%	0.00%	15.30%
Buying food					
Yes	88.80%	87.80%	91.80%	87.80%	89.10%
No	11.20%	12.20%	8.20%	12.20%	10.90%
Preparing food					
Yes	78.30%	65.20%	74.70%	69.20%	72.00%
No	21.70%	34.80%	25.30%	30.80%	28.00%

Appendix E

Cronbach's Alphas of the psychological constructs for all countries

		The Netherlands (N=502)	Greece (N=468)	Poland (N=502)	Spain (N=500)	Total (n=1972)
Market Mavenism		0.89	0.86	0.91	0.92	0.90
Social Representations						
	suspicion	0.67	0.67	0.69	0.72	0.69
	adherence to technology	0.79	0.77	0.79	0.82	0.80
	adherence to natural	0.74	0.72	0.74	0.73	0.76
	eating as enjoyment	0.78	0.63	0.82	0.79	0.76
	food as necessity	0.61	0.61	0.72	0.71	0.70
DSI Food		0.82	0.73	0.72	0.73	0.74
Food Involvement		0.86	0.82	0.89	0.88	0.86
Fresh fruit						
Food Neophobia		0.84	0.78	0.81	0.83	0.82
DSI Fresh Fruit		0.82	0.78	0.74	0.77	0.78
Opinion Leadership		0.93	0.91	0.90	0.92	0.92
Habit		0.91	0.90	0.88	0.90	0.90
Fruit products						
Food Neophobia		0.80	0.76	0.78	0.80	0.80
DSI Fruit Products		0.83	0.68	0.71	0.76	0.75
Opinion Leadership		0.92	0.90	0.91	0.94	0.92
Habit Processed fruit		0.89	0.90	0.89	0.92	0.92
Habit prepared fruit		0.93	0.94	0.91	0.93	0.94