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Abstract:

This study uses qualitative and quantitative data as well as household panel data regarding actual purchases of organic food in order to examine organic consumer profiles and recent developments of organic demand in Denmark. Six different segments of Danish households are identified, of which three are either indifferent or negative towards organic foods. Three distinct positively minded segments are also identified. These positively minded segments hold a very high share of all organic food sales on the Danish market and are also driving demand forward. This market can thus be said to be highly polarised. It can also be said to have matured insofar as positively oriented segments that differ in their food involvement, shopping behaviour and levels of ethical concern have appeared, while marketing and distribution strategies have co-developed with these trends. We discuss the current relevance of segmenting organic consumers in mature markets with a view to improving strategies of production, distribution and marketing of organic foods.

Introduction

The organic food market has grown rapidly since 2000. It has been estimated that global organic sales have increased from 15.2 billion US dollars in 1999 to 50.9 billion dollars in 2008 (Sahota 2010). In many countries, sales have more than doubled between 2000 and 2008 (Willer & Yuseffi 2001; Padel *et al* 2009) and in some countries have even tripled. In USA, for example, organic sales have grown from 1.2 per cent of all food sales in 2000 to 3.7 per cent in 2010 (Partos 2010).

The reasons why some consumers in different markets attach salience and value to organic foods have been found to be many, and include among other things strong beliefs that organic food production is more environmental friendly and ensures safer, healthier and tastier foods (Torjusen *et al.* 2004; Yiridoe *et al.* 2005; Hughner *et al.* 2007).

Although the general character of preferences for organic foods is relatively well known, the organic market is a dynamic and developing field. This implies that studies of the character of consumer demand and other market factors need to be updated frequently. More specifically, the increased organic share of total food sales may have introduced new consumers to the organic market. This entails that the traditional image of the organic consumer as belonging to a very dedicated segment possibly needs to be revised or expanded to include further organic consumer profiles (Midmore *et al* 2005; Hughner *et al* 2007). If other segments of organic consumers have appeared, it is relevant to identify differences between them with regard to their attitudes and socio-demographic characteristics as well as their shopping practices. Organic products are increasingly being sold through mainstream distribution channels in mature markets (Richter 2008), and considerable increases in the market share of discount chains have also been observed recently (Padel *et al* 2009). The entrenchment of organic foods in different types of mainstream retail outlets makes it relevant to understand how this has been received by consumers who differ in their shopping orientations and habits.

On this background, the purpose of this article is threefold: (1) By means of a typology analysis, we aim to identify and examine different consumer segments with reference to

organic consumption, placing particular emphasis on the identification of internal differentiation among organic consumers; (2) Having identified segments, these will be characterised further with regard to organic purchasing frequencies as well as socio-demographic and attitudinal factors; (3) Changes in the purchasing behaviour of these segments over time will then be examined, as well as reasons why these changes have occurred.

Not all countries are appropriate as a case for examining the specific topics raised, since there are major differences between national markets regarding their use of distribution channels and the organic share of the total food market. We use multiple data sources pertaining to the Danish market and Danish consumers. Denmark satisfies the relevant conditions since it has had the highest organic market share globally since 2008, and a very high proportion of these sales (over 80 per cent) are made through mainstream retail outlets (Schaer 2009).

Data and methods

Four sources of data are employed. Firstly, we draw on focus group data (6 groups, N=50 Danish consumers) collected in November 2006. Secondly, we draw on 18 in-depth interviews and shopping trips with Danish consumers carried out from December 2006 to May 2007. Thirdly, we draw on household panel data that record actual food purchases in Danish households on a daily basis covering the years 2001 to 2007, provided by the market research institute GfK ConsumerTracking Scandinavia. The fourth data source comprises responses to two questionnaires distributed to members of the GfK household panel in 2007 and 2008.

Stratified purposive samples were employed in both qualitative studies (Teddlie & Yue 2007), the pool of informants being recruited to reflect socio-demographic features of the Danish population regarding gender, age, and presence of children in the household. A further inclusion criterion was that informants had to be at least partly responsible for undertaking food purchases in the household. Participants in the 18 in-depth interviews were recruited with additional quota regarding frequency of organic consumption as well as numbers of single and non-single households, while participants in focus groups

were recruited with additional quota for higher and lower educational levels. Hence, although these samples can place no claim to being representative of the Danish population, the character of the informant pool nevertheless leads us to assume that we have maximised the chances of observing and finding a range of widespread and typical attitudes, beliefs and drivers pertinent to the everyday lives of Danish consumers.

The GfK household panel comprises data regarding the registration of more than 2000 households' purchases of daily necessities, and the panel is composed with a view to securing a representative sample of Danish households (Wier *et al.* 2008). Two questionnaires were distributed to these households in the spring of 2007 (N=2,376) and 2008 (N=2,322), yielding response rates of 85 per cent and 78 per cent, respectively. Only households that responded to both questionnaires and had reported purchases for at least six weeks in each quarter of 2007 were retained for the purpose of the analysis presented here. This resulted in an eligible data pool of 1,361 households. As compared to census data from Statistics Denmark, this remaining sample was not representative with regard to household composition and age of the oldest household member. Following employment of a household/age adjusted variable, the sample was rendered representative of Danish households on both of these points.

In order to develop a typology of consumers pertaining to organic foods, a two-step methodological approach was used. Firstly, the focus group data and in-depth interviews, including accompanied shopping trips, were analysed with a view to identifying relevant segments of consumers. Secondly, we sought to discover whether these qualitative results were replicated in quantitative data yielded by the questionnaires administered to members of the GfK household panel.

The qualitative analysis employed a mixed strategy approach, in which case level in-depth analysis was synthesised with a patterned level of analysis in an iterative process (Ragin 1987; Miles and Huberman 1994). This procedure was pursued until all cases had been meaningfully combined, thus reaching a functional saturation point in the data reduction process in which each case was assigned to a cluster (Becker 1997). The resulting clusters of cases constituted the final identification of segments, as revealed by qualitative analysis. These segments and their distinctive characteristics were then arranged in a clustered summary table (Miles and Huberman 1994), which gives a

systematic and relational overview of the segments with regard to their particular mindsets and behavioural orientations (see Table 1 below).

We subsequently sought to discover whether these segments could be identified in our quantitative data. Latent class analysis (LCA) was employed for this purpose, and applied to relevant items included in the questionnaires distributed to GfK panel members in 2007 and 2008. LCA is a method that presupposes that unobserved discrete variables are present in a given population (McCutcheon 1987). The members of a class identified by means of LCA share similar characteristics, while members who do not belong to the same classes hold different characteristics. LCA assigns data observations to the most likely class/segment, making additional analysis possible (McCutcheon 1987).

Briefly, we included question items in the LCA that corresponded to five dimensions on which the segments had been found to differ from each other according to our qualitative results. Nine question items were included in the latent class analysis as manifest indicators of the five relevant dimensions identified through the qualitative data (see the clustered summary table below for dimensions and Table 3 for specific questions employed). These items were included in both the 2007 and 2008 questionnaires administered to members of the GfK household panel. This allowed us to estimate the most likely class membership for all households for both years. For this purpose, we merged households' responses for both years yielding a data pool of 2722 observations (2x N=1361).

The LCA model search was performed beginning with the independence model (1 class) and proceeding to a model with 10 classes. With regard to model selection, two types of assessment criteria were used. BIC and AIC information criteria were used for statistical model assessment (Akaike 1974). Alongside these, the functional relevance of the resulting segments were assessed (Becker 1997), drawing on the findings of the qualitative studies. The six-class LCA model was selected.

In order to assess the validity of segments identified by quantitative analysis, we had formulated hypotheses about expected differences between segments on the basis of our qualitative results. In the psychometric literature this type of validation procedure is referred to as predictive validity (Kline 2000). The hypotheses advanced concern three

factors, each of which was subsequently tested: 'organic budget share', 'organic loyalty' (active search for organic foods), and 'health orientation'. 'Organic budget share' is calculated on the basis of consumer purchase data drawn from the GfK household panel for the year 2007. For each household, this share is computed as the percentage of the total amount of money spent on food that had been spent on organic food products per quarter. 'Organic loyalty' is an index comprising five items included in the 2008 questionnaire. These items concern loyalty strategies pertaining to the acquisition of organic foods both at inter-shop and intra-shop levels, as observed in qualitative analysis (Lund and O'Doherty Jensen 2008). This index was constructed on a scale of 1-100 in which one hundred corresponds to absolute organic loyalty and one to absolutely no organic loyalty, and it exhibited very good reliability (Cronbach's $\alpha=0.89$) Question items, PCA factor loading and additional information about this index is exhibited in the Appendix. 'Health orientation' also refers to an index comprising seven items that includes behavioural aspects of current eating habits with reference to health, self-reported sufficiency of current knowledge, and motivation for eating healthily. This index was also constructed on a scale of 1-100, in which one hundred corresponds to extreme orientation towards health and one to no health orientation, and it exhibited acceptable reliability (Cronbach's $\alpha=0.77$). Once again, question items, PCA factor loadings and more information about this index is exhibited in the Appendix.

Differences between segments with regard to socio-demographic factors were examined by means of multinomial logistic regression. Factors included are: age of the primary food purchaser, household income, levels of urbanisation, educational level and household composition. Further analysis of attitudes and habits among the identified segments based on the 2008 questionnaire include attitudes to organic price premiums and preferences for 'modern' as compared to 'traditional' food preferences in the household. The former is measured on a 5 point scale ranging from 'completely agree' to 'completely disagree' with the statement 'I readily pay extra to obtain an organic product instead of a similar conventional one', while the latter is measured on a 7 point scale with 'modern' and 'traditional' as anchor points. Finally, an index was constructed to measure levels of ethical concern related to consumption. This comprises five items regarding considerations about Fair Trade and food miles in consumption practices as well as boycotting and purchasing goods due to ethical considerations. This index was

also constructed on a scale of 1-100, in which one hundred corresponds to extreme orientation towards ethical consumption and one to non-existent orientation towards ethical consumption, and it exhibited acceptable reliability (Cronbach's $\alpha=0.72$). Question items, PCA factor loading and additional information about this index is exhibited in the Appendix

In order to characterise *how* organic purchasing behaviour has changed over time, data regarding actual food purchases are drawn from the GfK consumer panel and used to compute the average organic budget share of total food purchases in the households comprising each segment for the period 2001 (3rd quarter) to 2007 (4th quarter). The segmented households had entered the GfK panel at different points of time during this period. Thus, it was possible to include only 45 per cent of these households for the year 2001 in our analysis, while this proportion had slowly increased to 100 per cent in 2007.

In examining *why* segments had changed the frequency of their organic food purchases, two types of investigative approaches are employed. Firstly, qualitative and quantitative analyses were undertaken to elicit the reasons given by members of the positively minded segments for having increased their purchases of organic foods. Data from in-depth interviews and shopping trips had gathered chronological narratives regarding this issue (Lund and O'Doherty 2008). Based on the results of this study, question items were then developed for the 2008 questionnaire regarding reasons for having changed shopping practices among those who acknowledge that they had begun purchasing more organic products during the previous two years. Secondly, differences between segments with regard to where organic foods have been purchased were analysed. For this purpose, GfK household panel data pertaining to the point of purchase for organic foods were utilised to categorise 8 different types of shopping outlets. Four supermarket types were distinguished as follows: upmarket (high quality, premium prices), mass market (many products, inexpensive labels) and discount supermarkets with and without an organic sales strategy. These are relevant distinctions for our analysis, since upmarket outlets have traditionally been purchase points for organic foods, while there has also been a clear tendency for some discount chains on the Danish market to have expanded their portfolio and marketing of organic foods since 2005, while others have not. Additional purchase points were direct sales, internet sales, specialty stores, and a residual 'others' category.

Results

Identification of segments: qualitative analysis

Findings from focus groups and in-depth interviews identified six segments with reference to organic foods. Generally speaking, three of these are positively oriented towards organic foods – the *Convinced*, the *Positive and Food Involved* and the *Positive and Convenient* segments – while three further segments are either indifferent or sceptical. Table 1 outlines the characteristics of these segments in a clustered summary table. Columns depict segments and the first five rows refer to the particular dimensions pertaining to mindsets and habits that differentiate these segments, as identified by qualitative analysis.

Table 1: Clustered Summary Table: Six consumer segments and their characteristics^a on 5 pertinent dimensions and (in grey cells) their expected characteristics with regard to organic purchase share, active search for organic foods and health orientation

| Segment: | Convinced | Positive and food involved | Positive and convenient | Product focused | Indifferent | Sceptics |
|--|------------------|-----------------------------------|--------------------------------|------------------------|--------------------|-----------------|
| Food involvement | High | High | Low | High | Low | Medium |
| Price sensitivity | Low | Low | High | Medium | High | High |
| Intrinsic qualities of organic foods | Very high | High | High | Low | Low | Low |
| Altruistic concerns in food provisioning | Very high | High | High | Low | Low | Low |
| Trust in organic production | High | High | High | Indifferent | Indifferent | Low |
| | | | | | | |
| Organic share of total food purchase | Highest | Relatively high | Relatively high | Low | Low | Lowest |
| Active organic search process | High | Medium | Medium | None | None | None |
| Health orientation | Very high | High | Medium to high | Medium to high | Low | Low |

^aCharacteristics are denoted as ‘degree’ to which segments hold or exhibit the attribute in question. This gradient display ranges from very high to low (and indifference in the case of the trust dimension).

‘Food involvement’ is a complex variable referring to expressed attitudes and reported or observed practices regarding shopping and cooking as well as consumption. Apart from the importance attributed to food in everyday life, it includes such factors as time expenditure on these activities, the number of criteria at issue in choosing ingredients

and the care devoted to the selection, preparation and presentation of dishes. ‘Intrinsic qualities of organic foods’ refers to general assessments of these products including such aspects as appearance, freshness, taste and health benefits, while ‘altruistic concerns’ refer to consideration of the consequences of product choices for the environment, animal welfare or climate change.

‘Trust in organic production’ refers to the extent to which informants trust organic farmers and food processors to deliver the benefits they claim. While this latter aspect sometimes remains implicit in the narratives of organic consumers, the theme of trust/distrust is more often explicitly addressed by those who are strongly convinced or clearly sceptical towards organic products. Below we offer a brief description of the six segments that emerged from our qualitative analysis.

The *Convinced*: Consumers in this segment constitute the absolutely most positive and eager organic consumers on the Danish market. Thus, organic foods and the organic concept are conceived as intrinsic features of their everyday food consumption, and much effort is devoted to maintaining this. Compared to all other segments, the *Convinced* have a strong focus on healthy living and tend to disdain the heavy dishes associated with traditional Danish food habits. They are dedicated to ethical consumption practices: treating the world, nature, animals and other people in a just and sustainable way. Acquisition of high quality food products are at the centre of their attention because good food experiences are thought to be an important part of life. Organic foods and the organic philosophy are embedded in the pursuit of these goals. Consequently, considerable resources are expended upon trying to acquire as much and many organic variants as possible. The available resources of time and money available for this purpose vary, but can take the form of willingness to pay very much extra for organic variants as well as active search processes in and between supermarkets and other shops, which maximise the possibility of acquiring organic foods.

Positive and Food Involved: Food is a very important part of life for this segment. The meals and sociality that are obtained and reproduced by eating together with core family members, extended family and friends are central, and acquisition of good quality products is imperative. At the same time, this segment is positively oriented towards organic foods. However, compared to the *Convinced* segment, this preoccupation is less

strong, and only some of the benefits attributed to organic consumption are commonly recognised. In some cases, organic foods are bought because they are perceived as being healthier or because a particular organic variant is thought to be tastier. In other cases ethical arguments concerning superior animal welfare in organic husbandry or the ban on the use of chemical pesticides are deemed important. However, organic products are only purchased if the quality is perceived to be right and the particular organic products that are available in a shopping situation fit the specific needs pertaining to given meals and contexts of consumption.

Positive and Convenient: These consumers also attach importance to organic food. Similar to the *Positive and Food Involved* segment described above, only some of the arguments for buying organic foods are commonly recognised. However, involvement in food, as such, is low. The members of this segment do not find it important to use much time preparing tasty meals. Neither do they tend to prioritise the acquisition of the best or freshest raw ingredients on a daily basis. They exhibit relatively thrifty shopping habits. Thus, pricy products are typically avoided and discount supermarkets are often preferred. In some cases, this shopping orientation is a consequence of deep-rooted practical routines appropriated during childhood and in other cases it reflects current economic restrictions in the household. The consumers in this segment relatively often live alone, which may account for their lack of involvement in food since there is no one with whom food experiences are shared on an everyday basis.

Product Focused: Although these consumers are relatively health conscious in their food consumption and are oriented towards food quality, this has not led them to develop an interest in organic foods. This is because their attention is primarily attuned to the specific attributes of food products that can be tangibly sensed and assessed while shopping, whereas aspects regarding the production process behind any given product are not deemed important. Thus, possible adverse effects of conventional agricultural production and animal husbandry may be considered and critiqued at a conceptual level, but typically do not influence actual shopping habits. At the same time, organic products are not perceived as offering any inherent positive attributes such as being tastier or healthier. Since members of this segment are relatively price sensitive, organic products are seldom bought with deliberation. During shopping trips with members of this segment, however, organic purchases were sometimes observed to occur and were

sometimes accounted for by reason of a preferred taste, but more usually as having been coincidental purchases.

Indifferent: The members of this segment are characterised by their very low involvement with food. Their mindset is one in which food is first and foremost perceived as a means of meeting bodily needs, in particular that of satiety. In practice this means that easy to make or ready-made foods are relatively frequently purchased and consumed. Similarly, shopping for food is seen as being an unimportant part of everyday life and is undertaken on an ad hoc basis, the major concern being to accomplish this task in as cost efficient and time efficient manner as possible. These consumers are not critical, as such, towards organic production or food products. However, they do not acknowledge any compelling arguments for acquiring these products and since they are more expensive, purchasing frequency is low. When organic purchases take place, they are of a coincidental kind.

Sceptics: These consumers represent a complete contrast to the *Convinced* segment, since they consider organic products and production principles to be a hoax. This conviction is rooted in a deeply held distrust towards food producers and retailers, whose intentions in producing and selling organic foods are believed to be, solely, about making more money. Neither do they believe that organic foods are tastier, of a better quality or are healthier than their conventional counterparts. Furthermore, *Sceptics* tend to be relatively price conscious and do not believe that consumers, as such, should have responsibility for anything or anyone else than themselves and their families. Organic purchases only appear as coincidental purchases in this segment.

Identification and validation of segments: quantitative analysis

Identification:

A different number of items were used as manifest indicators of the 5 dimensions described in the text and reported in Table 1. Three items served as indicators of the ‘food involvement’ dimension, one as indicator of ‘price sensitivity’ (vis-à-vis ‘quality’), two items as indicators of the ‘intrinsic qualities of organic foods’, one item as indicator of ‘altruistic concerns in food choice’, and two items as indicators of ‘trust

in organic foods'. All questionnaire items were Likert-type variables, and were re-coded into dichotomies when carrying out the LCA procedure for statistical and substantive reasons (see coding schemes in the notes of Table 3).

As can be seen in Table 3, the two indices of fit did not concur on the optimal number of classes, since lowest BIC value appeared at the six-class solution while the lowest AIC value had not yet been identified at the ten-class solution.

**Table 2. Results from latent class model searches
(N=2722)**

| Model | BIC _{LL} | AIC _{LL} |
|------------|-------------------|-------------------|
| 1 class | 40722,9 | 40640,1 |
| 2 classes | 37615,3 | 37444,0 |
| 3 classes | 37404,7 | 37144,7 |
| 4 classes | 37309,3 | 36960,7 |
| 5 classes | 37158,0 | 36720,7 |
| 6 classes | 37116,8 | 36590,9 |
| 7 classes | 37183,5 | 36569,0 |
| 8 classes | 37257,3 | 36554,1 |
| 9 classes | 37328,4 | 36536,6 |
| 10 classes | 37377,8 | 36497,4 |

We inspected the parameter estimates of the six-class and seven-class models, since these numbers of classes were deemed relevant on substantive grounds in light of our earlier qualitative findings. The 7th class appearing in the latter model, however, did not offer substantive or novel information.

The convergence of qualitative and quantitative findings can be assessed by inspecting the LCA output of the six-class model (see Table 3 below), and comparing this output with the clustered summary of segment characteristics based on qualitative analysis (see Table 1). The numbers in Table 3 refer to the probability of responding in a particular way per class/segment. It can be seen that, generally speaking, the classes yielded by the LCA six-class model are quite similar to the segments we had earlier identified by means of qualitative analysis.

Table 3. Responses from six segments on latent class items (probabilities); (N=2722)

| DIMENSION | | Segment size: | CON- VINCED | POSITIVE AND FOOD INVOLVED | POSITIVE AND CONVENI ENT | PRODUCT- FOCUSSED | INDIF- FERENT | SCEP- TICS |
|---|--|-------------------------------|----------------|----------------------------------|-----------------------------------|----------------------|------------------|---------------|
| | | | 13,20% | 24,70% | 13,20% | 26,30% | 8,90% | 13,80% |
| 3 items used as indicators of 'food involvement' | I don't give much thought to food | Agreement | 0.7816 | 0,9470 | 0,0635 | 0,7849 | 0,0000 | 0,6775 |
| | | Not agreement ^a | 0.2184 | 0,0530 | 0,9365 | 0,2151 | 1 | 0,3225 |
| | Food is an important part of daily life | Agreement | 0.7843 | 0,8551 | 0,4472 | 0,7144 | 0,3301 | 0,8135 |
| | | Not agreement ^a | 0.2157 | 0,1449 | 0,5528 | 0,2856 | 0,6699 | 0,1865 |
| I use raw/fresh ingredients and avoid ready-made products | Agreement | 0.9499 | 0,9537 | 0,6718 | 0,9201 | 0,5680 | 0,8861 | |
| | Not agreement ^a | 0.0501 | 0,0463 | 0,3282 | 0,0799 | 0,4320 | 0,1139 | |
| 1 item used as indicator of 'price sensitivity' | Price is more important than quality | Agreement | 0.1823 | 0,2835 | 0,5311 | 0,4762 | 0,7883 | 0,5689 |
| | | Not agreement ^a | 0.8177 | 0,7165 | 0,4689 | 0,5238 | 0,2117 | 0,4311 |
| 2 items used as indicators of 'intrinsic qualities of organic products' | Organic products are healthier for me and my family | Total agreement | 0.9662 | 0,3253 | 0,4365 | 0,0738 | 0,0495 | 0,0223 |
| | | Agreement | 0.0331 | 0,5440 | 0,3772 | 0,2383 | 0,1360 | 0,1008 |
| | | Not agreement ^a | 0.0007 | 0,1307 | 0,1863 | 0,6880 | 0,8146 | 0,8769 |
| | The quality of organic products is usually poorer | Total disagreement | 0.7380 | 0,2868 | 0,3151 | 0,1053 | 0,0365 | 0,0246 |
| Disagreement | | 0.1012 | 0,3409 | 0,2740 | 0,1703 | 0,0841 | 0,1202 | |
| 1 item used as indicator of 'altruistic concerns in food provisioning' | It is important to think about consequences of what one buys | Not disagreement ^b | 0.1608 | 0,3722 | 0,4109 | 0,7245 | 0,8794 | 0,8552 |
| | | Total agreement | 0.5406 | 0,1419 | 0,1321 | 0,0839 | 0,0813 | 0,1161 |
| 2 items used as indicators of 'trust in organic production' | Organic products are a fashion fad | Agreement | 0.3557 | 0,6082 | 0,4923 | 0,3511 | 0,2596 | 0,3919 |
| | | Not agreement ^a | 0.1036 | 0,2499 | 0,3756 | 0,5651 | 0,6591 | 0,4920 |
| | | Agreement | 0.0025 | 0,0259 | 0,0310 | 0,0715 | 0,2997 | 0,8231 |
| | Organic products are a business hoax | Undecided | 0.0218 | 0,0708 | 0,1183 | 0,6932 | 0,6635 | 0,1090 |
| | | Disagreement | 0.9757 | 0,9033 | 0,8507 | 0,2352 | 0,0368 | 0,0679 |
| | | Agreement | 0.0227 | 0,0273 | 0,0251 | 0,1188 | 0,2090 | 0,7432 |
| Undecided | 0.0937 | 0,1524 | 0,2382 | 0,7116 | 0,7544 | 0,2430 | | |
| Disagreement | 0.8836 | 0,8203 | 0,7368 | 0,1695 | 0,0365 | 0,0138 | | |

^a 'Not agreement' includes all 'disagree', 'don't know' and 'undecided' response categories.

^b 'Not disagreement' includes all 'agree', 'don't know' and 'undecided' response categories.

For instance, the *Convinced* segment has a high level of involvement in food, e.g. 78% disagree that they are not interested in food and 95% prefer to use raw/fresh ingredients rather than ready-made foods. Furthermore, they score very highly on all items pertaining to organic foods. The *Indifferent* segment is also easily identified, since 100% in this class report that they are not interested in food. The *Sceptics* are very distrustful with regard to organic foods (82% agree that organic products are 'just a fashion fad'). Also, the distinction between two positively minded segments is indicated by a relatively high endorsement of organic foods and altruistic concerns in both segments, while they differ with regard to their level of food involvement and their price sensitivity as can be seen by inspecting the first four items.

Validation:

Latent Class Analysis, applied to questionnaire items, yielded a six-class model that appeared to conform well to the results of our qualitative analysis. With a view to testing the validity of this model, we had developed hypotheses that predicted the behaviour and orientation of six consumer segments on three dimensions (see Table 1, grey cells).

The results of this predictive analysis are presented in Table 4.

Table 4: Mean organic budget share (2007 data), mean organic loyalty behaviour (2008 data), and general health orientation (2008 data) per Segment. Total mean (and Eta^2)

| | Convinced (a) | Positive and Food Involved (b) | Positive and convenient (c) | Product focused (d) | Indifferent (e) | Sceptics (f) | Total mean (Eta^2) |
|--|----------------------------|--------------------------------------|-----------------------------------|---------------------------|---------------------------|-------------------------|---------------------------|
| Mean organic share (January-Dec 2007) ^a | 18,1% ^{b,c,d,e,f} | 7,8% ^{a,d,e,f} | 9,0% ^{a,d,e,f} | 2,2% ^{a,b,c} | 1,3% ^{a,b,c,d} | 1,4% ^{a,b,c} | 6,4% (0,25) |
| Organic loyalty in shopping behaviour (Index ranging from 1 - 100) ^b | 54,7 ^{b,c,d,e,f} | 38,3 ^{a,d,e,f} | 39,8 ^{a,d,e,f} | 22,9 ^{a,b,c} | 18,8 ^{a,b,c,d,f} | 18,0 ^{a,b,c} | 32,2% (0,29) |
| Health orientation (Index ranging from 1 – 100) ^a | 79,9 ^{b,c,d,e,f} | 73,6 ^{a,c,d,e,f} | 64,9 ^{a,b,d,e} | 69,2 ^{a,b,c,e,f} | 53,9 ^{a,b,c,d,f} | 64,4 ^{a,b,d,e} | 68,9% (0,14) |

^a Raised letters in the cells of this row indicate significant differences in mean (at the 0,05 level) between the segment in question and the other segments - tested by ANOVA using Tamhanes T2 Post-hoc test, in which equal variances are not assumed.

^b Raised letters in the cell of this row indicate significant differences in mean (at the 0,05 level) between the segment in question and the other segments - tested by ANOVA using Bonferronis Post-hoc test.

These results correspond very well with the hypotheses advanced on the basis of qualitative analysis. The *Convinced* segment has by far the highest mean organic budget share (18.1 per cent) and also displays the strongest loyalty towards organic shopping (index 54.7). As predicted, the *Positive and Food Involved* and the *Positive and Convenient* segments have significantly higher mean organic purchase shares than those of negative or indifferent segments, and they also exhibit significantly higher organic shopping loyalty. All three negative or indifferent segments exhibit significantly lower organic budget shares and have lower loyalty scores than positively minded segments. Relatively speaking, their scores on the loyalty index are so low as to constitute a non-existing loyalty in practice. It transpires that most Danish consumers are strongly oriented toward health (total mean, index=68.9), the only segments that clearly distinguish themselves being the *Convinced* and *Positive and Food Involved* (index 79.9 and 73.6, respectively) as compared to the *Indifferent* segment (index 53.9). These tendencies are also as predicted (see Table 1). All predictions advanced on the basis of our qualitative analysis thus conform well to actual patterns in the quantitative data. In

addition, the η^2 -values for measuring non-linear association yield medium and large effects (Cohen 1988), respectively. Hence, we conclude that these six segments exhibit acceptable validity.

Characteristics of segments: quantitative analysis

As can be seen from Table 3, the *Convinced* segment constitutes 13 per cent of Danish households and, at the opposite pole in terms of attitudes, *Sceptics* constitute around 14 per cent. Considering the relatively big sacrifices *Convinced* consumers make in order to acquire organic foods on a large scale, it might be expected that they would constitute a relatively small segment. However, adding the two additional positively minded segments to their number increases the aggregate size of positively minded households to approximately 50 per cent of Danish households.

This polarisation of attitudes among Danish householders is strongly reflected in the data regarding their actual expenditure on organic food products during the year 2007 (see Fig. 1). Thus, approximately 87 per cent of all monetary expenditure on organic food products was made by the three positively minded segments. The 13 per cent share held by negative or indifferent segments can be viewed in light of the observation made earlier, that organic purchases on their part are typically coincidental.

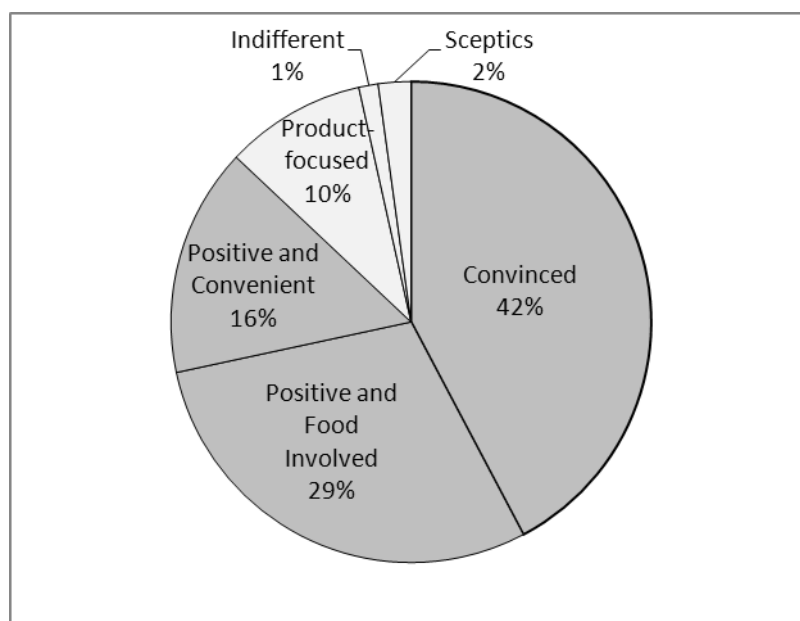


Fig 1: Relative share of all organic food sales per segment (N=1361); Danish households, 2007

It would seem that the organic market in Denmark is almost exclusively maintained by one half of Danish households. Importantly, in terms of monetary expenditure, the *Convinced* segment is not the single dominant organic segment. Although this small segment is responsible for approximately 42 per cent of all expenditure on organic food products, the two other positively minded segments also have had a high market impact in that they together account for 45 per cent of expenditures.

Socio-demographic analysis (data not shown) reveals that the age of the primary food purchaser in the household differs to only a small extent between segments with no clear tendency being evident. Differences with regard to household income are similarly modest, although highest incomes tend to be found more often among the *Convinced* and *Positive and Food Involved* segments, whereas lowest incomes tend to be found more often among the *Indifferent* and *Sceptics*. With regard to level of urbanisation, there is a tendency for positively minded segments, especially the *Convinced*, to live in or near the capital city of Copenhagen, along with a tendency for negative or indifferent segments to live in rural areas. As regards educational level, a tendency for the positively oriented segments to be more highly educated transpires, the *Indifferent* segment being characterised by a particularly low level of education. With regard to differences in household composition, it transpires that the *Indifferent* segment and the *Positive and Convenient* segment more often comprise single person households than do other segments. Apart from this clear tendency, there are no notable differences in household composition. For instance the probability of meeting households with children is approximately the same at both ends of the attitudinal spectrum, the *Convinced* and the *Sceptics*. All five factors described here are statistically significant, although with relatively small impact. Thus, pseudo R^2 -measures reveal only modest effects when these factors are inserted as predictors of segment membership in a multinomial logistic regression (McFadden $R^2=5.5$ per cent / Cox & Snell $R^2=17.4$ per cent).

Looking further into attitudinal characteristics and habits, it can be seen from Table 5 that there are considerable differences between segments: 45.2 per cent and 44.4 per cent of the *Positive and Convenient* and the *Positive and Food Involved*, respectively, report that the 'readily pay extra' for an organic product. In this respect, they are considerably more price sensitive than the *Convinced*, 81 per cent of who claim they

will readily pay extra for organic products. Interviews had also revealed that negative and indifferent segments were unwilling to pay extra for organic products (Lund & O’Doherty Jensen 2008). The latter pattern is reflected strongly in our quantitative data, since less than 10 per cent of *Product Focused*, *Indifferent* and *Sceptics* state that they are willing to pay extra for organic products.

Table 5: Sensitivity to premium prices of organic foods, orientation towards ethical consumption and ‘modern’ food habits, per segment (2008 questionnaire). Total per cent or mean (and Eta^2)

| | Convinced (a) | Positive and Food Involved (b) | Positive and convenient (c) | Product focused (d) | Indifferent (e) | Sceptics (f) | Total mean (eta^2) / total % |
|--|---------------------------|--------------------------------------|--------------------------------------|---------------------------|-------------------------|-------------------------|---|
| I readily pay extra to get an organic product instead of a similar conventional product (agree) ^a | 74,7% | 45,2% | 44,4% | 8,7% | 4,1% | 4,1% | 32,3% |
| Ethical consumption (Index ranging from 1 - 100) ^b | 77,1 ^{b,c,d,e,f} | 63,1 ^{a,d,e,f} | 62,9 ^{a,d,e,f} | 56,4 ^{a,b,c,e,f} | 48,9 ^{a,b,c,d} | 51,0 ^{a,b,c,d} | 60,1 (0,19) |
| Modern food orientation ^c | 59,6% | 55,2% | 31,7% | 34,9% | 25,8% | 36,8% | 41,3% |

^a Respondents were given the introductory text: ‘To what extent do you agree with the following statements about organic products?’ Response categories were: 1. Totally disagree, 2. Partially disagree, 3. Neither/nor, 4. Partially agree, 5. Totally agree, 6. Don’t know. Agreement reported in cells refers to accumulated percentages of response categories 4 and 5 with reference to this statement.

^b Raised letters in the cells of this row indicate significant differences in mean (at the 0,05 level) between the segment in question and the other segments - tested by ANOVA using Bonferronis Post-hoc test.

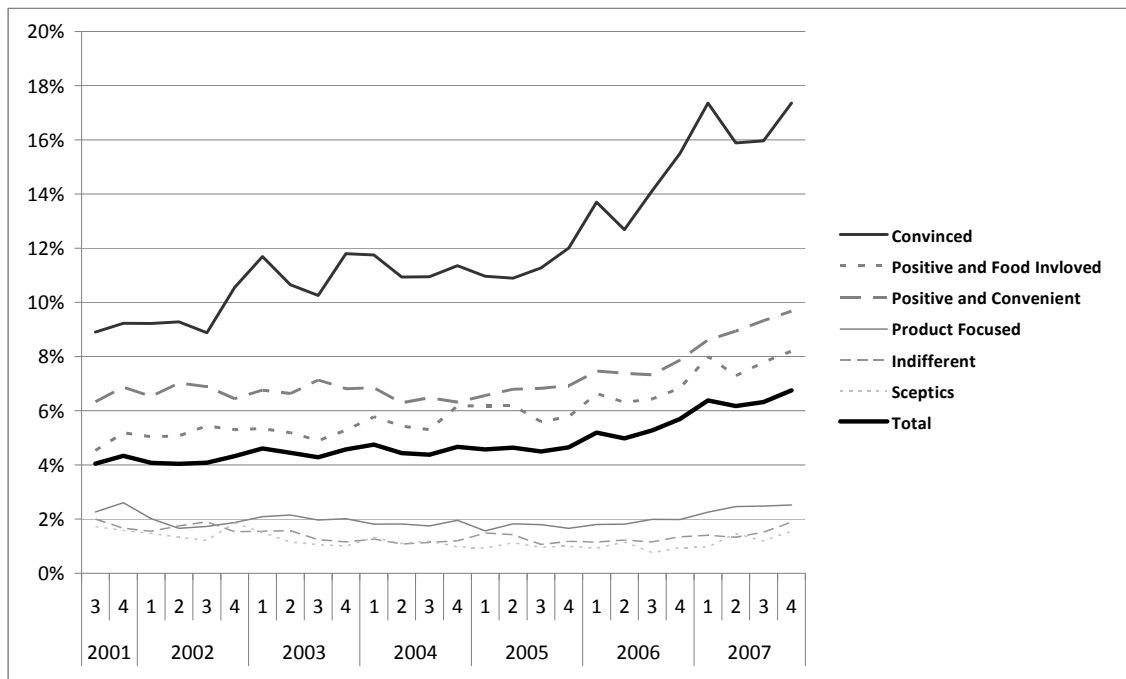
^c Introductory text was: ‘People like to eat different kinds of food. Some mostly make traditional Danish dishes, such as meatballs or cutlets. Others mostly make modern dishes such as a stir-fry or sushi. On this scale, where would you place the kind of food mostly made in your household?’ Percentages responding ‘modern’ are reported.

Differences between segments are also apparent with regard to other food related issues. Members of the *Convinced* (60 per cent) and *Positive and Food Involved* (55 per cent) segments far more often view themselves as having ‘modern’ cooking and eating habits than do all other segments, only approximately 30 per cent of whom assess their eating habits as being ‘modern’. Apart from the *Positive and Convenient* segment, which diverges significantly in this respect, this pattern suggests that a majority of organic consumers tend to be ‘first movers’ with regard to experimenting with and adapting new culinary trends, a tendency that also emerged very clearly in qualitative interviews (Lund and O’Doherty Jensen 2008). An attitudinal split between positively minded segments takes a different direction with regard to the issue of ethical consumption. Members of the *Convinced* segment are considerably more involved in ethical consumption practices (index 77) than are the *Positive and Food Involved* (index 63), who more closely resemble the *Positive and Convenient* (index 63) in this respect.

Indeed, qualitative interviews had also clearly indicated that *Convinced* consumers seek to integrate ethical concerns into everyday consumption habits to a notable extent. These concerns included efforts to limit food miles when shopping, choosing to shop in a retail chain that is known to treat its workers decently, concerns with Fair Trade and sustainable consumption habits more generally as well as seeking to insure that all savings are placed in ethically sound investments (Lund and O’Doherty Jensen 2008).

The development of demand

We now turn to characterizing the development of organic purchasing frequencies among the identified segments over time (see *Fig. 2*). The extremely clear pattern to emerge from this analysis is that the growth in the organic share of all food sales, from 4.0 per cent in 2001 to 6.7 per cent in 2007 was very largely driven by the positive segments. Thus, the *Convinced* segment increased its average organic budget share from 9.0 per cent to over 16 per cent, the *Positive and Food Involved* from 5 per cent to 8 per cent, and the *Positive and Convenient* segment from 6 per cent to 9.5 per cent. The share held by the negative or indifferent segments increased only marginally, tending to remain between 1 per cent and 2 per cent during the entire period.



**Fig 2: Mean organic share of total household food budget per segment (non-weighted data)
Period: from 2001 (3rd quarter) to 2007 (4th quarter)**

Since the growth of the organic market has been almost exclusively driven forward by positively minded segments, it is of interest to discover whether reasons for having changed their shopping habits also differ between segments.

Three pivotal explanations for having purchased more organic products had cropped up in the qualitative interviews with positively minded consumers (Lund and O’Doherty Jensen 2008). The first reason concerned the better availability of organic products in usual shopping venues, with particular emphasis on wider assortment and greater quantities. The second concerned the improved sensory quality of organic foods, in particular aspects pertaining to freshness, and the visual appearance of products. The third reason was that organic foods were perceived as having become less expensive when compared to their conventional counterparts. This did not mean that consumers tended to view organic product prices as being “reasonable”. Price, it was clear, constituted a major barrier in many instances. However, some positively minded consumers had the impression that organic products had become less pricy, and this had encouraged them to buy more.

Somewhat surprisingly, then, the factors highlighted in consumers’ own explanations of their increased consumption in recent years referred to events in the market rather than to changes in the household or to changes of mind about the benefits of organic products with reference to health, environmental or animal welfare issues. This is not to say that such value-based considerations were absent in consumer narratives about organic products or that they did not underlie motivations for buying them. Rather, by their own account, considerations of this kind were of fundamental importance. However, it transpired that such value-based views had been well-developed and even taken-for-granted at a point in time that was considerably earlier than the time at which the frequency of their organic purchases had increased. In designing the 2008 questionnaire, therefore, we sought to discover whether this finding would be replicated.

Quantitative results based on the 2008 questionnaire fully support the finding of our qualitative studies to the effect that the recent growth of the organic market can be attributed to market events (see Table 6). Among those who respond that they had

begun purchasing more organic products during the previous two years, more than 90 per cent in all three positively minded segments most frequently note ‘more organic good in the shops’ as the reason for having increased their purchases. The ‘improved quality of organic products’ is noted by two-thirds or more, while ‘cheaper organic products’ is noted as an explanation by approximately half of the *Convinced* and *Positive and Food Involved* consumers, and by 35 per cent of the *Positive and Convenient* segment. It should also be noted that a large majority in all three positive segments give as a reason for their increased consumption of organic goods that this had become ‘more important to me’ (ranging from 98 per cent of the *Convinced* to 66 per cent of the *Positive and Food Involved* consumers). Although reasons for this view are not specified, this finding suggests that value-based reasons do indeed play a role in the consumption of organic products. It may also indicate that this factor is more open to development over time than suggested by our qualitative findings.

Table 6: Overview of reasons given for having purchased more organic products in recent years (2006–07 narrative interviews; 2008 survey)

| | Convinced | Positive and Food Involved | Positive and convenient | Product focused | Indifferent | Sceptics |
|--|----------------------------------|----------------------------------|----------------------------------|-----------------|-------------|----------|
| Narrative interviews (2006-7): | | | | | | |
| Primary reasons given by consumers for having increased organic purchases in recent years | Availability Price Quality | Availability Price Quality | Availability Price Quality | | | |
| Survey (2008) | | | | | | |
| Percentage of ‘yes’ responses per segment to question: ‘Have you begun purchasing more organic products in the two last years?’ (N=1338) | 78,1% | 56,9% | 60,5% | 18,3% | 9,3% | 10,4% |
| <i>Why? (N=566)^a</i> | | | | | | |
| More organic goods in shops | 95,9% | 92,6% | 94,4% | | | |
| More important to me | 87,8% | 65,5% | 72,2% | | | |
| Improved quality of organic products | 80,2% | 74,8% | 68,3% | | | |
| Cheaper organic products | 50,4% | 62,1% | 34,9% | | | |
| Other reasons | 57,4% | 41,8% | 46,8% | | | |
| More disposable income in household | 28,5% | 36,1% | 30,4% | | | |

^a Follow-up question to those who responded ‘yes’: ‘We would like to know why you have begun buying more organic products than you did earlier. Do you agree with any of the following statements about the availability, cost and quality of organic products?’

It is interesting that all positively minded segments agree that greater availability is an important factor in their increased consumption, given that they differ from each other in regard to their attitudes on several other points. Thus, differences regarding food involvement and price sensitivity suggest that positively minded segments may also differ from each other with regard to their preferences for different types of shopping outlets.

Table 7 presents an overview of the point of purchase for organic foods for all six segments. It transpires that upmarket and mass-market chains, as well as discount chains with an organic marketing strategy, are preferred venues among the *Positive and Food Involved* segment on a level that is close to the average among all consumers.

Convinced consumers on the one hand distinguish themselves by placing 32 per cent of all their expenditures on organic foods in upmarket supermarkets, which is the highest share among all segments. *Positive and Convenient* consumers on the other hand distinguish themselves by placing 34 per cent of their expenditures in discount chains that have an organic marketing strategy, which in turn is the highest share among all segments.

Table 7. Point of purchase for organic foods per segment, presented as percentage of all organic food purchases per segment (Estimated average of quarterly shares, 2007)

| | | Convinced | Positive and Food Involved | Positive and Convenient | Product Focused | Indifferent | Sceptics | All segments |
|---------------------|------------------------------------|-----------|----------------------------|-------------------------|-----------------|-------------|----------|--------------|
| Supermarkets | Upmarket | 31,7 | 23,6 | 21,2 | 22,9 | 18,4 | 20 | 23,6 |
| | Mass market | 17,1 | 22,3 | 23,3 | 24 | 22,7 | 27,3 | 22,6 |
| | Discount with organic strategy | 27,7 | 28,4 | 34 | 30,6 | 24,5 | 24,3 | 28,9 |
| | Discounts without organic strategy | 6,5 | 6,3 | 13,7 | 10,4 | 16,6 | 11,9 | 9,8 |
| Other sale channels | Direct sale | 2,8 | 1,7 | 1 | 2 | 4,8 | 3,2 | 2,2 |
| | Internet Sale | 4,2 | 4,2 | 0,7 | 0,4 | 0,4 | 0,1 | 2 |
| | Specialty stores | 2,6 | 1,4 | 1,8 | 0,9 | 1,5 | 0,8 | 1,4 |
| | Others | 7,4 | 12,1 | 4,3 | 8,7 | 11 | 12,5 | 9,4 |
| Total ^a | | 100 | 100 | 100 | 99,9 | 99,9 | 100,1 | 99,9 |

^a All cells do not sum to 100% due to rounding errors.

Given the involvement in food quality and interest in maximising the chances of purchasing organic variants among the *Convinced*, their preference for upmarket and alternative venues is hardly surprising. Similarly, the relatively low level of involvement in food and the thrifty orientation among *Positive and Convenient* consumers would lead us to expect a preference for discount chains on their part. The fit between the distribution strategy and growing demand on this market is reflected in the fact that all positively minded segments attribute importance to the availability of these products, disregarding differences in their preferred shopping venues.

Conclusion and discussion

Six consumer segments in Denmark are distinguished with regard to their consumption of organic foods. The *Convinced* segment corresponds well to a devoted version of the 'original' organic consumer as described in earlier studies (Hughner *et al.* 2007). Alongside this segment, two further segments are identified that are less dedicated, but also positively oriented towards organic foods. The latter differ from each other insofar as one is strongly oriented towards high quality foods while the other is strongly oriented towards convenience in everyday life.

Taken together, these three segments account for a very high share (87 per cent) of all organic food sales in Denmark, and their demand also accounts for most of the growth of the organic market in recent years. Since these three positively minded segments correspond to approximately half of Danish households, this organic market can be described as highly polarised. While demand has increased and most probably has not yet reached its saturation point, attitudes among indifferent or negatively minded consumers would seem to constitute a robust barrier on the far horizon of future demand. Perhaps the only clear avenue to making organic foods more attractive to the other half of Danish households would be by means of price competition, a strategy that would hardly be deemed desirable or feasible by the organic sector.

It transpires from this study that recent growth is not due to attitudinal changes among consumers regarding the benefits of organic consumption, but rather reflects their response to changes on the supply side – especially the increased availability of a more differentiated range of products. The fact that all three positively minded segments, despite their differences, recount availability as the primary factor boosting the actual frequency of their organic purchases, suggests that a very successful distribution strategy has been implemented by the organic sector in Denmark. More specifically, the increased supply of an expanded assortment in both discount and upmarket outlets appears to correspond very well to the different needs of positively minded segments – as reflected in their different food habits and shopping orientations. Indeed, this relatively fine-grained distribution system may well serve as an example for possible

developments on other markets. However, the extent to which a similarly differentiated distribution strategy would be successful elsewhere would seem to depend on whether a relatively large proportion of consumers are aware of and endorse organic production principles, and are also able to readily identify the label(s) on organic products (Torjusen *et al.* 2004). Additionally, its success would depend upon a range of macro structural factors, the impact of which is currently little understood (Thøgersen 2010).

The segments identified in this study may have implications for the optimisation of production and marketing strategies for organic foods in the future. It has been argued recently that consumers are undergoing a sophistication process and will demand more from organic food products. More specifically, it is argued that further value-based concepts referring to ethical sourcing, traceability, carbon footprints and sustainability should be integrated into the principles of organic food production and labelling in order to combat potential or actual decline in growth rates. This overarching strategy has been coined 'Organic Plus' (Organic Market 2009; Montague-Jones 2010), and it seems to rest on the assumption that the organic market is driven forward by one dedicated segment (Schaer 2009).

However, our findings document that current demand in a mature market is not homogenous. This strongly suggests that future demand patterns will not converge, but rather split in two main directions. The first direction is driven by the *Convinced* segment, whose members are very loyal to the organic label and are least price sensitive. They are interested in new culinary trends and likely to be 'first movers' with regard to hybrid labels that mix organic concepts and production methods with additional ethical considerations. The second direction comprises the two other positively minded segments. As we have seen, they are less loyal in their shopping habits, unlikely to actively search for organic products beyond their chosen shopping venue, are relatively price sensitive and less oriented towards ethical consumption.

The pursuit of an Organic Plus strategy would most probably entail higher production prices per food unit, as a consequence of integrating ethical factors in the production process. This would in all likelihood inhibit purchasing frequencies among positively oriented, but not *Convinced*, consumer segments. Such a development would entail a dramatic decline in organic market share, since these two positively oriented segments

together account for approximately 45 per cent of total organic food sales in Denmark. On this point, we draw the conclusion that the character of consumer demand in Denmark supports the wisdom of pursuing a two-pronged production and marketing strategy, in which an 'Organic Plus' and 'traditional' concepts would co-develop and co-exist.

We have found a strong correlation between what consumers say about their attitudes and habits, as revealed by questionnaire data, and what they do, as revealed by purchase data drawn from the GfK household panel. This does not support the commonly held view that a disjuncture between claimed motivation to buy organic products and actual purchasing behaviour is a disjuncture on the demand-side (Vermeier and Verbeke 2006). Rather, as we have seen, there appears to have been a disjuncture between the motivation-to-buy among Danish consumers and the opportunity-to-buy, a factor on the supply-side. However, one important limitation of our study should also be noted. Our questionnaire data are obtained from a consumer panel, of whom much practical and organisational effort is demanded on a daily basis with regard to the scanning of household purchases. If this requirement for panel membership is only acceptable to some types of consumers and not to others, this factor may have introduced a bias in the sample as well as the results reported here. In that case, the segments we have identified on the basis of survey data may differ in size and even in kind. Ideally, then, our survey findings should be replicated on the basis of a representative random sample.

Future studies should also examine to what extent the differential character of demand in Denmark is peculiar to the Danish case or is characteristic of mature organic markets more generally. In either instance, the impact of differential demand for organic products on future production, distribution and marketing strategies calls for further elucidation. This study demonstrates how a segmented understanding of organic consumers can help to clarify the character of current challenges within the organic sector.

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APPENDIX

Organic loyalty index

This index comprises five items. All items have 6 possible response categories. All item scores were aggregated. The index was re-scaled (from the original range of 5 to 30) to range from 1 to 100, 100 corresponding to absolute organic loyalty and 1 to absolutely no organic loyalty.

| Item question formulations | Loadings ^a |
|--|-----------------------|
| Choose another organic product as a substitute ^b | .81 |
| Go to a different shop to try to get the organic product there ^b | .85 |
| Decide to try again another day ^b | .82 |
| I like to shop in several different places in order to get hold of organic products ^c | .88 |
| I choose where to shop with a view to being able to get hold of as many different kinds of organic products as possible ^c | .87 |
| <i>Cronbach's α</i> | <i>.90</i> |
| <i>Variance explained</i> | <i>71,5%</i> |

^a Factor loadings are from a principal component analysis.

^b Respondents were given the following introductory text 'If you have intended to buy an organic product and it is sold out, what would you do then?' and asked to respond to each of the statements above. Response categories were: (1) Skip the question: I do not buy organic products, (2) Almost never, (3) (No text provided), (4) Sometimes, (5) (No text provided), (6) Almost always.

^c The introductory text was: 'To what extent do you agree with each of the following statements about shopping for organic products?' Response categories were: (1) Skip the question: I do not buy organic products, (2) Hardly at all, (3) Very little, (4) Partly, (5) Very much, (6) Extremely much.

Health orientation index

This index comprises seven items. All items have 5 possible response categories. Following reverse coding of relevant items, item scores were aggregated. The index was re-scaled (from the original range of 7 to 35) to range from 1 to 100, 100 corresponding to extreme orientation towards health and 1 to no health orientation.

| Item question formulations | Loadings ^a |
|---|-----------------------|
| It is natural for me to eat healthily ^b | -.66 |
| I seldom think about whether or not the food I eat is healthy ^{b, d} | .63 |
| I am in doubt about what I should eat in order to eat healthily ^{c, d} | .62 |
| I couldn't be bothered finding out about how to eat more healthily ^{c, d} | .75 |
| The experts are always recommending new things, so I have stopped listening to them ^{c, d} | .56 |
| It is important that my food is healthy ^c | -.70 |
| I eat healthily ^c | -.72 |
| <hr/> | |
| <i>Cronbach's α</i> | .77 |
| <i>Variance explained from component 1</i> | 44% |

^a Factor loadings are from a principal component analysis.

^b The introductory text was: 'To what extent do you agree with the following statements about your everyday meals?' Response categories were: (1) Completely disagree, (2) Disagree somewhat, (3) Neither agree nor disagree, (4) Agree somewhat, (5) Completely agree.

^c The introductory text was: 'To what extent do you agree with the following statements?' Response categories were the same as those in note (b) above.

^d Responses to these statements were reverse-coded when the composite scale was computed.

Ethical consumption index

This index comprises five items. All items have 5 possible response categories. All item scores were aggregated. The index was re-scaled (from the original range of 5 to 25) to range from 1 to 100, 100 corresponding to extreme orientation towards ethical consumption and 1 to non-existent orientation towards ethical consumption.

| Item question formulations | Loadings ^a |
|--|-----------------------|
| It is important to me to boycott certain products for political or ethical reasons ^b | .84 |
| It is important to me to buy certain products for political or ethical reasons ^b | .82 |
| The individual consumer should take ethical considerations into account when shopping (for example: use of child labour, animal testing or other matters) ^c | .68 |
| I like the thought behind Fair Trade products (for example Max Havelaar products) ^d | .52 |
| I worry about the energy that has been used to produce and transport food products ^e | .54 |
| <hr/> | |
| <i>Cronbach's α</i> | .72 |
| <i>Variance explained from component 1</i> | 48,3% |

^a Factor loadings are from a principal component analysis.

^b The introductory text was: 'To what extent do you agree with the following statements about your own shopping?' Response categories were: (1) Totally disagree, (2) Partially disagree, (3) Neither agree nor disagree, (4) Partially agree, (5) Totally agree.

^c The introductory text was: 'To what extent do you agree with the following statement?'. Response categories were the same as those in note (b) above.

^d The introductory text was: 'To what extent do you agree with the following statements about food, shopping and cooking?' Response categories were the same as those in note (b) above, including a 'don't know' category.

^e Response categories were: (1) Never, (2) Seldom, (3) Sometimes, (4) Often, (5) All the time, (6) Don't know. The latter category was excluded from the analysis.