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Food system orientation and quality perception among consumers and producers of organic food in Hedmark County, Norway

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Abstract

To explore the potentials of organic agriculture, it is important to know how consumers, as well as producers, relate to food quality and food system issues. A consumer survey from the Hamar region in Southern Norway provided information on a number of these issues, and a rapid food system appraisal and a seminar revealed concerns among organic farmers in the region. Multivariate analyses showed that traditional food quality aspects such as freshness and taste, called ''observation traits,'' were important to all consumers. In addition, those who purchased organic foods were more concerned about ethical, environmental, and health issues, called ''reflection traits''. Three consumer orientations in the food market were identified. Consumers with a ''practical'' orientation were less likely, and those with a ''local'' orientation in the food market were more likely, to buy organic food, while ''social'' considerations were equally important to all. The results indicate that many interests of organic farmers coincide with concerns among those who buy organic food, and that these are more complex than the formal rules for organic agriculture. This may provide a basis for identifying common goals and improving communication and cooperation between consumers and producers in order to further develop the organic food system. [Note that organic agriculture is called ''ecological agriculture'' in the Nordic Region.]

Keywords: Consumer perception; Quality valuation; Organic food; Food systems; Norway

1. Introduction

1.1. Food system changes in the 20th century

Food production and consumption created tight bonds between people and nature, as well as among people, in Western Europe and USA societies well into the 20th century. The consumption of food depended largely on what was produced in diversified local ecosystems (Harris, 1969). The diet was monotonous and cyclic, since seasons were of major importance (Fischler, 1980). Social and ecological closeness, and the dominating role of agriculture were key characteristics of the food system, which includes production, processing, distribution, use, recycling and waste disposal (Dahlberg, 1993).

Local and regional solutions for production and consumption of food have now departed from their *domestic* location and evolved into national and international food systems. This is related to what has been called the first agricultural transition (Bawden, 1991), which took place when traditional agriculture was industrialized with the advent and widespread adoption of chemical fertilizer and mechanization, supported by science and technology. An unintended side effect was the loss of connections in food systems at the community level. Organic farming and marketing at the local level represent a new course for agriculture, described by Østergaard

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and Lieblein (1994) as a potential second substantial agricultural transition. This paper explores the opinions of producers and consumers about selected aspects of food quality and how organic food is produced, and the common ground between these groups as a means to restoring lost connections in the food system.

1.2. Organic farming

Organic agriculture has been practiced since the 1920s, initially in response to the industrialization of agriculture. Organic agriculture has evolved from an "alternative" movement to a major initiative for agricultural development and is now regulated both at a national level and in the European Union. Some overall goals of organic agriculture include:

1. To produce food of high quality in sufficient quantity;
2. To interact in a constructive and life-enhancing way with natural systems and cycles;
3. To maintain the genetic diversity of the production system and its surroundings, including the protection of plant and wildlife habitats;
4. To use, as far as possible, renewable resources in locally organized production systems;
5. To create a harmonious balance between crop production and animal husbandry;
6. To give all livestock conditions of life with due consideration for the basic aspects of their innate behavior; and
7. To progress toward an entire production, processing and distribution chain which is both socially just and ecologically responsible.

The goals of organic farming conveys a predominantly farm-oriented and production practice perspective. However, the implications reach further than the farm. Practices relevant to consumers include no use of synthetic pesticides and industrial fertilizer, no use of genetically modified organisms (GMOs) in food production, no use of synthetic growth enhancers or color additives in fodder and only medicinal use of antibiotics, security zones to separate from conventional farmland and roads, and restricted use of additives in processed foods (Debio, 1998, 1999). Practices relevant to environmental concerns include maximal use of local resources and recycling of organic material, avoiding nitrogen leakage, and reduced use of fossil resources in transportation. Ethical considerations include enhancing biological diversity, keeping high ethical standards in animal husbandry, acknowledging the animals' innate nature and needs, and working for a socially just food system. Thus, these considerations also reflect a wider social and ecological responsibility in the entire production, processing and distribution chain.

1.3. Consumer valuation of food

It has been postulated that in the wake of globalization of food systems, consumers have become alienated from the origin and wider context of the food they eat, and that this has had consequences for how they view their food. Fischler (1980) maintains that many consumers have begun to view their food as "unidentifiable edible objects, devoid of origin or history...without identity". Kloppenburg, Hendrickson and Stevenson (1996) further elaborates that "what is eaten by a great majority of North Americans comes from a global everywhere, yet from nowhere that they know in particular." What these researchers describe is not only an increased distance from production to consumption, but also a less transparent system. In this context, the local orientation and the production specifications of organic products become interesting from a consumer perspective.

The way people evaluate their food when making choices may be highly diverse and complex. In a Norwegian study of quality conceptions related to purchases of vegetables, Lien and Døving (1996) found substantial differences in how consumers, grocers, retailers and farmers understood "good quality". Consumers and producers had a common focus on quality aspects that are not immediately apparent in the store, such as nutritional value, taste and environmentally sound production methods, whereas grocers and retailers focussed more on appearance qualities, such as size, color and form.

The study above, as well as other studies from Norway, have demonstrated a great interest among the consumers in health-related aspects of food. These include aspects that the consumers may choose themselves, such as variation in food choice, low fat content, and much home made food, as well as aspects that are more difficult for the consumers to use as a basis for choices, such as environmental poisons, food additives and the way foods have been cultivated (Wandel, 1997).

Ethical and environmental considerations in food production have been reported to be relevant consumer concerns in other Nordic studies (Grünert & Kristensen, 1992; Halkier, 1998; Solér, 1997; Wandel & Bugge, 1994). However, there are great differences among various consumer groups, particularly according to gender and educational level, both in the way they value organic food and the extent to which they buy such food (Wandel & Bugge, 1994). The priority that environmental concerns had in competition with other consumer considerations, and the willingness to search for and pay for products from environmentally sound production varied in different consumer segments (Grünert & Kristensen, 1992; Hansen & Sørensen, 1993) and depending on whether or not consumers perceive meaningful connections between the products and environmental problems or other concerns and values in their everyday lives (Halkier, 1998; Iversen, 1996; Solér, 1997).

The role of the consumer has changed dramatically in recent decades in Norway (Kjærnes, 1999; Lien, 1997), and other countries (Miller, 1995). Along with rapid changes and altered power relations in the food system, new problems and new opportunities for informed and competent consumers are emerging (Tansey & Worsley, 1995). Consumers are probably the principal non-corporate actors who have any real potential to influence the system (Stevenson, 1998). There is a need for increased knowledge of consumer attitudes and valuations in the marketplace, and particularly their relation to the basic principles of organic farming. If there are similarities in goals between organic farmers and the consumers who purchase organic food, there is potential to build broad alliances or groups that can push ahead with an agenda for greater production of organic food as well as fostering re-connections within the food system.

1.4. Aim and hypothesis

The main aim of this study was to better understand consumers' concerns when buying food, and how these relate to goals of farmers in the production process. We chose to study consumers' considerations and valuations in the choice of food, in the choice of where to purchase food, and their attitudes toward where and how food is produced.

We hypothesize that:

1. Many consumers consider ethical, environmental, social and health aspects in their choices of food, including where and how food is produced in the food system;
2. These considerations form different consumer valuation patterns which have a bearing on the likelihood of buying and using organic food; and
3. The consumers of organic food have valuation patterns with concern for the health of the agroecosystem that are similar to concerns of organic farmers.

2. Methods

Three distinct methods were used to explore these hypotheses. A *vision seminar* on future interconnections among organic farmers, processors, marketers, and consumers in Hedmark County, Norway was conducted. In the seminar a diverse group of people involved in all aspects of the food system examined the current situation and explored the desired future situation, including a strategy for improving organic food production and sale in the region. Eighteen months later, in a post-graduate course, students and faculty conducted a *rapid food system appraisal* in the same region. Based on these experiences, a *comprehensive consumer survey* was conducted to better understand how and why people make decisions in food purchases, and whether these coincide with some of the goals of organic farmers. Results of the three methods are integrated to address the hypotheses above.

2.1. Vision seminar

Agricultural and nutritional scientists, farmers, agricultural advisors, local government representatives and consumers met in December 1995 for a two-day vision seminar about organic agriculture in a food system perspective. This seminar was arranged by one of the authors (GL) as part of research activities at the Agricultural University of Norway, and results and experiences are reported elsewhere (Lieblein, Francis & Torjusen, 2001). This seminar revealed key questions, concerns and issues that provided a foundation for the survey questions. Examples of key issues are the vision of organic agriculture as a bridge between food producers and consumers in a local context, and an understanding of organic agriculture as a source of nourishment in a broad sense, including cultural and social aspects, for the people in the region. The need for a survey to a larger sample of consumers representative for the area, grew from discussions in the vision seminar.

2.2. Rapid food system appraisal

Three groups of students and facilitators in a post-graduate course in May 1997 met with representatives of the different sectors of the food system: farmers, processors, retailers, consumers, and regional agricultural administrators. The activities were part of the third Nordic postgraduate course in organic farming, "From farming systems to food systems" (Lieblein, 1997). The students' task was to rapidly identify key issues in the present food system, both conventional and organic, of importance in efforts towards developing sustainable food systems.

During the week-long course, students interviewed three organic farmers with diverse enterprises in the Hedmark County. They also met with a processor of organic meat products and two retailers. They conducted key interviews with employees at the district agricultural office in Hamar, as well as focus group discussions with three consumers plus other informal dialogues with local citizens. Student groups recorded their observations, discussed these in reflection sessions, and summarized their results in a final report for the course. Results provided further background for design of the survey questions.

2.3. Consumer survey design

The survey was conducted in the same geographical area (Stange/Hamar region) as the other two activities,

in order to relate questions about organic food to the known local contexts of production and distribution. Another favorable characteristic of this particular area was the wide spectrum of organic products available from local farmers as well as various ways for consumers to buy this food — ranging from direct and specialized sale to conventional supermarkets.

To better relate the survey questions to this particular area, preliminary information about consumers' thoughts, concerns and experiences with organically grown food and purchasing practices was sought through personal interviews with 10 consumers recruited in various sales outlets for organic food: on a farm, in a health food store and at a processor and retailer of organic meat. These consumers also had experiences with buying organic food in ordinary food stores and supermarkets (Co-ops).

A mailed questionnaire was distributed to 600 randomly selected households in Stange and Hamar region in the Hedmark County in the fall of 1997. There were 14 people who were no longer residing in their homes in the area, and seven who were unable to fill out the questionnaire because of disabilities, illness and institutionalized diets. Of the remaining 578, 50% (286) completed the questionnaire, and all responses were received within three months of distribution.

The questionnaire contained 20 opinion questions and 11 background questions. The questions resulting in data for this paper are described in the following. Consumers were asked how important a number of aspects of food were to them, and they gave a rating on a four-step scale from very important to not important. The aspects were food freshness, taste, use of GMOs, health-harming substances in food, shelf life, food additives, nutrients, degree of processing, environmentally sound production, animal welfare, convenient preparation, ethical and political considerations, and visible quality attributes.

Another key question was related to where consumers chose to buy food. They were again rated on the same four-step scale from very important to not important. Aspects related to food purchases were availability of high quality foods, that it was nice to shop there, a wide selection of foods, easy to park, low food prices, short distance between home/work and store, personal information and feedback, support for local business, availability of organically produced foods, owner and organizational structure of the store, locally produced foods, and other shops nearby. The questionnaire also included questions on whether or not the respondents used organically produced food and how frequently (always, as often as possible, sometimes, seldom, never) they purchased them.

The background questions used in this paper were: gender, age in years, income in 100 000 NOK (1 USD was 8 NOK at the time of the survey), highest completed education in three categories (elementary school, high school, university/college).

2.4. Consumer study statistical analyses

Analyses of the data were carried out, using the SPSS/WIN statistical program package. Two factor analyses were performed, based on the responses to the questions about perceptions of food quality and reasons for choosing where to do food shopping, described above. The responses were given on a 4-step scale (very important, of some importance, of little importance, and not important), i.e. the variables are measured on an ordinal scale. In the factor analysis, the results are treated as if they were measured on interval or ratio scales. The purpose was to explore underlying dimensions, which could be used to characterize value orientations of the consumer groups, which in turn may have a bearing on their behavior towards organic foods.

The factor analyses were performed using the Varimax method for rotation. Eigenvalue above 1 was used as the criterion for extraction of factors. Variables with loadings above 0.5 in the factor analyses were then selected to construct indexes with the same name as the factors in the factor analysis. The construction of indexes is described in Section 3. The indexes were used as independent variables in logistic regression models.

The dependent variable for the logistic regression analyses was constructed from questions about buying and consumption of organically produced food. Those who responded that they had both bought (as often as possible–seldom) and consumed organically produced food were given code 1, and those who answered ''no'' or ''do not know'' to the question of consumption and/or responded with ''never'' on the question of buying, were given code 0. *P*-values below 0.05 were classified as significant.

3. Results

3.1. Goals of organic farmers in the Stange/Hamar food system

In the course of the rapid food system appraisal, the students discovered a number of attitude and behavior patterns that are relevant to future organic food systems. The following goals were expressed by the farmers.

1. Produce healthy products.
2. Use as large a part of the farm as possible to produce food for direct human consumption. This issue reflects a concern about the inefficiency of livestock production in terms of direct contribution to human diets, compared to cereal grains.
3. Produce more food for direct sale and consumption in the local community.
4. Cater to the needs of consumers by improving communication between farmers and consumers,

and thus involve consumers in decisions being made on the farm.
5. Increase biological diversity on the farm.
6. Establish an appropriate balance between animal and crop production. Even though inefficient compared to grains, animal husbandry helps enable a good crop rotation and overall diversity of the production system.
7. Increase the number of people who can live on the farms.
8. Take good care of the landscape and environment and the animals living on the farm.

These issues reflect a concern about the multiple functions and consequences of farming as part of food systems. They may be compared with the overall goals of organic agriculture mentioned in the introduction. A harmonious balance between animal and crop production and due considerations for animals and the environment are central to both the farmers in this study and in the formal goals. Furthermore, the focus on enhancing and maintaining biological diversity is a common goal. The local orientation by the farmers in this study corresponds to the formal goal of ecologically responsible distribution, and the wish to produce healthy foods may be seen as a priority in terms of quality made by the farmers. Production of high quality food in sufficient quantity is one of the overall goals of organic agriculture. Thus, there is a close correspondence between farmer goals in this region and the formal overall goals of organic farming.

3.2. Food attributes important to consumers; relevance for organic food consumption

In order to explore the similarities and differences in understanding and concern between organic farmers and consumers regarding the multifunctional goals of organic farming, the respondents in the consumer survey were asked questions relating to the aspects they consider important in the choice of foods. These questions included the sensory and health-related aspects which are characteristics of the end product in the food chain, as well as the aspects pertaining to the food production process which are related to the early steps in the food chain and the holistic goals of organic farming. Many of the questions were related to criteria used for approval of organic production in Norway (Debio, 1998). Some of them also have been the focus of public debate on food, health and the environment (Torjusen, Nyberg & Wandel, 1999; Wandel, 1997).

It is apparent that most respondents emphasized traditional quality aspects, such as freshness and taste (Table 1). It is evident that the organic products offered must score highly according to these criteria to gain a broad interest among consumers, since over 70% of the respondents regarded them as very important. However, the majority of consumers were also very concerned about aspects related to the production and processing of food, and wanted foods that have not been genetically transformed, foods with no health harming substances, and foods with fewest possible food additives. Many were also concerned about the nutrient content of foods, and about animal welfare.

The responses to these questions were then evaluated by multivariate factor analysis in order to determine if it was possible to discern any underlying factors that may help us understand consumer concern and behavior with regard to food. Two significant factors were found, accounting for 49.7% of the total variation in the matrix. Fig. 1 shows that the first factor, accounting for 35.2% of the total variation, had high positive loadings (above 0.5) for variables related to nutritional quality and the multifunctional goals of organic food production and processing. These were: (1) nutrient content; (2) use of fewest possible food additives; (3) no health harming substances; (4) environmentally friendly production; (5) no use of GMOs; (6) animal welfare; and (7) other ethical and political considerations. We call

Table 1
Consumer considerations in the choice of food: How important are the following aspects for you? (per cent of all respondents; $n = 286$)

	Very important	Rather important	Slightly important	Not important	No answer
Freshness	79	18	1	0	3
Taste	75	22	1	0	2
No use of genetically modified organisms	63	22	8	4	4
No health harming substances	61	23	10	1	5
Shelf life	54	39	4	0	3
Fewest possible additives	46	37	12	2	3
Nutrients	36	47	11	2	4
Least possible processed food	28	38	24	5	5
Environmentally sound production	26	47	19	2	6
Animal welfare	26	35	23	8	8
Convenient preparation	22	42	28	5	4
Ethical and political considerations	18	35	27	9	12
Visible quality attributes	16	43	28	6	7

this a "reflection" factor because it is linked to food attributes that are not directly observable, but demand reflection on the part of the consumer. The second factor, accounting for 14.2% of the total variation, had high loadings for sensory variables. These were: (1) visible quality; (2) taste; and (3) freshness. We call this an "observation" factor because it is linked to food attributes that are directly observable, either through the eye or through other senses.

The first factor could be more broadly interpreted in terms of health, both human health and agroecosystem health, i.e. health both for the consumer and for the environment (Haworth, Brunk, Jennex & Arai, 1998). The second factor could further be interpreted as a gourmet factor, reflecting what meets the eye and the mouth, when considering what is important about food.

The responses shown in Table 1 and the results from the factor analysis were then used to calculate two indexes, called "reflection" and "observation". This procedure is based on the assumption that the higher the respondents have scored on each of these questions of food quality attributes, the more "reflection" or "observation" oriented are they. Thus, for "reflection" the seven variables contributing this factor were multiplied by the score (1–4) which was given by each of the respondents. This procedure results in an index with values from 7 to 28. The "observation" index, which was calculated in the same way, had values from 3 to 12.

The new indexes were used as independent variables in logistic regression analyses to test whether these two consumer orientations had any bearing on consumer shopping patterns with regard to organically produced food. The dependent variable in the analysis was whether or not the respondents had bought organic food for their own use: 154 respondents (54%) had purchased organic food for their own consumption. Table 2 reveals that those who scored higher on the "reflection" index (significantly positive regression coefficient) were more likely to buy organically produced foods, whereas the organic and conventional consumers were not different regarding the "observation" index.

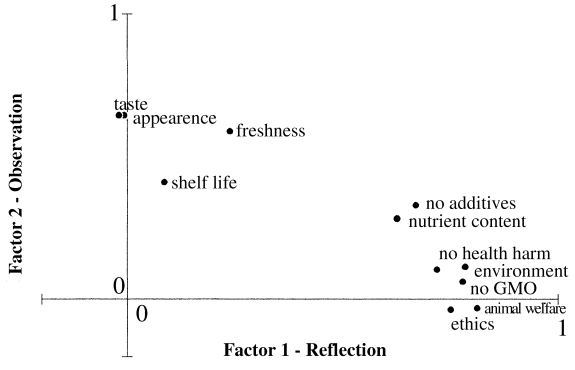

Fig. 1. Factor analysis loadings for variables that relate to *reflection* and *observation*.

There may be large differences in the way various consumer groups value the food attributes used in these analyses. We tested a second model to determine if the relationships we had found could be explained by gender, age, education, or income. We found a positive relationship between household income and the likelihood of buying organically produced food (Table 2). Since organic food generally has a higher price than conventional food, the association of consumer buying habits with household income could be expected. However, this did not affect the relationship we had found between the scores on the reflection index and the likelihood of buying organic food. The observation index became borderline significant in model 2. Since the regression coefficient was negative there may be a tendency for the consumers of organic food to put less value on the directly observable organoleptic (or sensory) attributes of food.

Many of the attributes in the reflection index are related to the health aspect of food. This concern is also embraced by organic farmers and specified in the criteria used for approval of organic food (Debio, 1998, 1999). Thus, the results indicate that the organic farmers and consumers of organic food share many of the same ideas, whereas the conventional consumers focus mostly on the observational aspects.

Table 2
Choice of organically produced food as a function of socio-economic factors and consumer orientation with regard to food quality attributes (logistic regression analysis)

	Model 1[a]		Model 2[b]	
	Regression coefficient	Significance	Regression coefficient	Significance
Food quality attributes[c]				
Reflection	0.19	0.000	0.20	0.000
Observation	−0.18	0.155	−0.28	0.055
Gender, man (reference: woman)			−0.13	0.704
Age[c]			0.00	0.775
Education				
High school			0.27	0.502
University (reference: elementary school)			0.45	0.349
Household income[c]			0.53	0.025
Constant	−1.99	0.138	−2.64	0.133
n		235		225
Chi-square/sign.	28.7	0.000	37.4	0.000
d.f.		2		7

[a] Model 1 relates likelihood to buy organic food to reflection and observation indexes.

[b] Model 2 relates purchase to demographic variables as well.

[c] The scores for food quality attributes, age in years and household income in Norwegian kroner, were treated as continuous variables in the analysis.

3.3. Consumer orientation in the food market

The goals and values of consumers may also be revealed by their orientation in the food market, as well as in choosing products. Table 3 shows the responses to questions pertaining to where people buy food. Foods of high quality and a pleasant and friendly atmosphere that made the consumers feel it was nice to do shopping there, were the aspects most found important. Good selection of foods, good prices, and practical aspects such as convenient parking and short distance from home were also important. Some of the respondents felt that attributes related to the local food system, such as supporting local business and buying local produce, were important when choosing where to buy food.

In order to study underlying factors with regard to consumer orientation in the food market, the consumer considerations shown in Table 3 were treated by multivariate factor analysis. Three significant factors were found, accounting for 47.6% of the total variation in the matrix. Fig. 2 shows that the first factor, accounting for 16.7% of the total variation, has high positive loadings for variables that describe locally produced food as well as support to local production. We call this a "local orientation" or a food system awareness factor. The second factor, accounting for 16.1% of the total variation, has high loadings for variables that address social aspects of buying, such as giving and receiving information through personal contact and experiencing the shopping as pleasant. We call this factor "social orientation".

Fig. 3 shows that the third factor, accounting for 14.8% of the total variation, had high loadings for variables that describe more traditional consumer aspects, such as low price and convenience through easy parking, a broad selection of foods and proximity to other shops. We call this factor "practical orientation".

The results from the responses in Table 3 and the factor analyses were then used to calculate indexes with the same name as the factors in the same way as described for food quality. These were: "local orientation" which was constructed from the following variables: (1) support local business; (2) locally produced food; and (3) ownership; "social orientation" which was constructed from the following variables: (1) nice to shop; and (2) personal contact; and "practical orientation" which was constructed from the following variables: (1) wide food selection; (2) easy to park; (3) other shops nearby; and (4) low price. The indexes were then applied as independent variables in a logistic regression analysis. The dependent variable was whether or not the respondents had bought organic food for their own use.

Table 3
Consumer considerations when choosing where to buy food: How important are the following aspects for you? (per cent of all respondents; $n = 286$)

	Very important	Rather important	Slightly important	Not important	No answer
Availability of high quality foods	63	34	1	0	2
Nice to shop there	57	39	3	0	2
Wide selection of food	46	49	2	1	2
Easy to park	41	35	13	6	5
Low food prices	36	50	9	1	2
Short distance between home/work and store	32	50	12	2	5
Personal information and feedback	21	46	23	4	6
Support local business	20	50	21	5	4
Availability of organically produced foods	13	30	42	12	4
Owner and organizational structure of the store	8	14	46	27	5
Locally produced foods	8	23	50	15	5
Other shops nearby	5	27	46	18	4

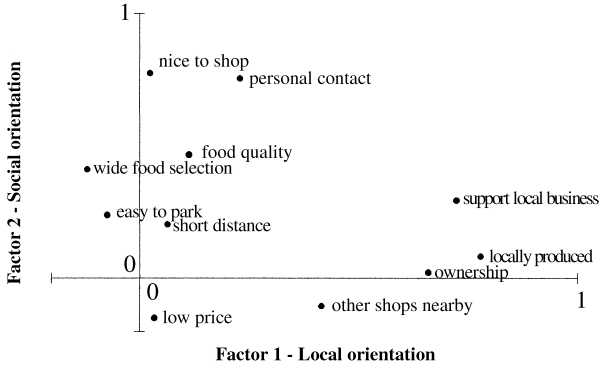

Fig. 2. Factor analysis loadings for variables that relate to *local* and *social orientation*.

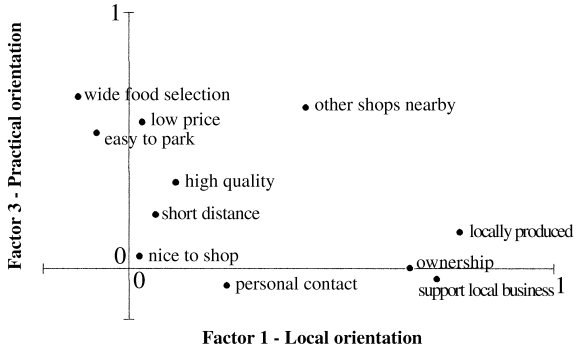

Fig. 3. Factor analysis loadings for variables that relate to *local* and *practical orientation*.

Table 4 shows that "locally oriented" consumers were more likely, and those who were "practically oriented" were less likely, to buy organically produced foods, whereas organic and conventional consumers were not significantly different with regard to social orientation in their choice of where to buy food.

Socio-economic and demographic variables were introduced into this analysis in order to detect spurious relationships. Household income again had significant bearing on the consumption of organic foods. However, the introduction of these new variables into the analysis did not change the significance of the variables relating to the local and practical orientation in the food market.

We conclude that the results show similarities between organic farmers and consumers who buy organic food, with regard to their market orientation. The organic farmers in this study had distribution of their produce within the local community as one of their explicit goals and the organic consumers had a specific local orientation that was different from the conventional consumers.

4. Discussion

A consumer survey confined to one region (Stange/Hamar) has the disadvantage of providing results relevant only to the study area, rather than generalizable results for Norway as a whole. An advantage of selecting a well documented region was the chance to relate the survey results to the known goals of local organic farmers (from a prior rapid appraisal), as well as knowledge of the availability of organic foods in the area. Using a known region allowed design of a questionnaire that is sensitive to the local situation, thus increasing the response quality.

The results from the consumer survey indicate that many consumers consider ethical, environmental, social and health aspects in their choice of food. Many of these aspects are related to how the food has been produced, processed and distributed and are not readily observable or subject to direct experience. These results, which address the first hypothesis, are in line with earlier research on Norwegian consumers (Lien & Døving, 1996; Wandel & Bugge, 1996). Lien and Døving use the term "credence quality" for characteristics that are difficult for the consumer to ascertain. As a consequence of the relative inaccessibility of this information, trust becomes a key issue for consumers who consider these aspects when buying food.

How can such broad interests of consumers be understood? According to the sociologists Ulrich Beck (1992) and Anthony Giddens (1991), modern society is among other things characterized by a higher level of reflection and risk consciousness among lay people. Beck argues that we have moved from "industrial society" to "risk society", where the latter is characterized by an increased recognition of the potential negative effects of scientific and technological developments. Another social scientist, Claude Fischler (1988) argues that modern, industrialized food production and distribution are challenging because it is difficult for consumers to identify the origin, production methods, and properties of food. Fischler claims that this creates consumer unease. The types of risks people feel confronted with in this context are neither limited in time (future generations may be affected) or space (beyond the local community). Potential risks and hazards connected to modern, industrial food production is one arena for such concern.

Several authors have pointed out that food offers a special opportunity for us to re-link with both the natural and cultural environment (Fischler, 1988; Kloppenburg et al., 1996; Stevenson, 1998). Related to these complex functions of food, consumers' interest in information about the origin of the food, and its further "identity" along the food chain (food additives, degree of processing, distance traveled) can be interpreted as their way of finding alternatives to the complexity and numerous risks related to the modern, industrialized food system.

The results from the present study show connections between consumers' understanding of food quality, as well as preferences in market orientation, and their

Table 4
Choice of organically produced food as a function of socio-economic factors and consumer orientation in the food market (logistic regression analysis)

	Model 1[a]		Model 2[b]	
	Regression coefficient	Significance	Regression coefficient	Significance
Orientation[c]				
Locally oriented	0.26	0.001	0.29	0.001
Socially oriented	−0.13	0.257	−0.08	0.542
Practically oriented	−0.16	0.037	−0.16	0.046
Gender, man (reference: woman)			−0.37	0.242
Age[c]			0.01	0.561
Education				
High school			0.26	0.491
University/College (reference: elementary school)			0.53	0.241
Household income[c]			0.50	0.022
Constant	1.20	0.259	−0.73	0.597
n		256		242
Chi-square/sign.	14.5	0.002	26.6	0.001
d.f.		3		8

[a] Model 1 relates likelihood to buy organic food to reflection and observation indexes.

[b] Model 2 relates purchase to demographic variables as well.

[c] The scores for food quality attributes, age in years and household income in Norwegian kroner, were treated as continuous variables in the analysis.

choice of organic food. What distinguished consumers who frequently purchased organic food was their concern for what we have named "reflection traits," that is aspects that are related to health in a wide perspective. These aspects, which are not readily observable or subject to direct experience, are somewhat broader than what Lien and Døving (1996) called "credence quality." They reflect consumer concerns with many parts of the food system: how the food was produced, processed and handled, and how this may have affected people, animals and nature along the way.

"Observation" traits, such as appearance, taste, freshness and shelf-life are important for both organic and conventional consumers. From the perspective of farmers and others in the food system, it is important to keep high goals of traditional quality criteria as well as pursuing measures to meet other broader criteria connected to the "reflection" aspects of food decisions. The fact that income was significantly associated with the propensity to buy and use organic foods may indicate that these foods are within reach only for the more well to do consumers, and that present prices may be too high for a wider spectrum of consumers.

Results from the present study showed that consumers of organic food recognize their role in the food system, including concern for their local environment. Analogous to the understanding of the broader issues in food quality evaluation, the local orientation in buying food can be interpreted as a strategy to counteract the distance and lack of transparency in the dominant, global food system. Both evolve around the concept of food system awareness, and both may originate from an unease with physical and mental/emotional distance from food in current systems (Lieblein et al., 2000). Organic consumers are less concerned about a wide selection of food, low price and issues of convenience, what was called "practical" aspects of food procurement, compared to conventional consumers.

These results address the second hypothesis that conventional consumers and those who purchase organic food have different valuation patterns regarding food and food procurement. Purchasing certified organic food is one way for consumers to get information about the non-observable food quality aspects. This may be a relevant strategy, partly because it is a documented form of production, based on premises that directly address issues of concern for many consumers such as environmental considerations, no GMO, animal welfare, less additives, and no pesticides. Because organic agricultural practices can be expected to exert less strain on the environment, and have high animal welfare standards, it may also be perceived as a direct way of acting in line with ethical and environmental concerns. Choosing organic food may be interpreted as a way of coping with perceived risks related to modern, industrial food production. It may be seen as a way of seeking security, or re-linking with the broader natural and cultural contexts where we live and eat. Furthermore, it may be a strategy to counteract the longer distance and lack of transparency that characterize the conventional food system.

The results from the rapid food system appraisal showed that formalized goals of organic farming were reflected by the interviewed farmers, and that the farmers' goals in some cases go beyond this. Multiple goals that organic farmers include in their farming decisions, such as use of locally available resources, health and safety of their families and workers, and impacts of farming on the local ecosystem and community, are also reported by others (Lampkin & Measures, 1999). Their priorities illustrate a broader understanding of organic agriculture in a food system perspective. Some of the concerns held by the farmers, such as high quality food, organic labels, producing for a "sustainable diet" with more food for direct human consumption, can be interpreted as an interest in "catering to the needs of the consumer."

The results of three methods have thus shown that many of the interests of the organic farmers and the consumers who purchase organic food coincide, even beyond the apparent rules for organic certification. These results address the third hypothesis. The organic consumers and producers share a common concern for health of people, and for the natural environment and production system where food is produced. This is what Haworth et al. (1998) describe as agroecosystem health. Concerns for food quality, human health, animal welfare and the natural environment thus come together in the broad food system perspective.

5. Conclusions

We conclude that these shared interests of producers and consumers of organic food indicate a potential for building alliances between them to further encourage production, processing and distribution of organic food. In a narrow market perspective, increasing the frequency of organic food purchases among consumers who already buy some organic food, through improved availability and sensitivity to food quality and market preferences, would represent a major potential for increased market shares.

These results also indicate that some of the goals and practices used by organic farmers are relevant and important for a wide spectrum of consumers, including some of those who do not buy organic food today. The potential market for organic foods may be large if foods of good visual quality are available at reasonable prices and in marketplaces that cater to the practical and social aspects that these consumers find important.

In a broader perspective, these results suggest a potential of organic food to illuminate and bring forward

common food system concerns among producers and consumers — both conceptually and in practice. Through their awareness and interest in food system issues, which may be referred to as agroecosystem health, producers and consumers of organic food come together in common concerns which are of high relevance for addressing vital and complex environmental and societal problems related to food production, distribution and consumption.

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References

Bawden, R. (1991). Systems thinking and practice in agriculture. *Journal of Dairy Science, 74*, 2362–2373.

Beck, U. (1992). *Risk society: towards a new modernity*. London: SAGE.

Dahlberg, K. A. (1993). Regenerative food systems: broadening the scope and agenda of sustainability. In P. Allen, *Food for the future: conditions and contradictions of sustainability* (pp. 75–102). John Wiley and Sons, Inc.

Debio (1998). *Regler for økologisk landbruksproduksjon. (Norwegian certification rules for organic farming)*. Norway: Debio, Bjørkelangen.

Debio (1999). *Regler for foredling, import og omsetning. (Rules for processing, import and trade)*. Norway: Debio, Bjørkelangen.

Fischler, C. (1980). Food habits, social change and the nature/culture dilemma. *Anthropology of food. Social Science Information* (pp. 937–953). London: SAGE.

Fischler, C. (1988). Food, self and identity. *Anthropology of food. Social Science Information* (pp. 275–292). London: SAGE.

Giddens, A. (1991). *Modernity and self-identity: self and society in the late modern age*. Cambridge: Polity Press, Oxford: Basil Blackwell.

Grünert, S. C., & Kristensen, K. (1992). *Den danske forbruker og økologiske fødevarer* (Report in Series H No. 62). Denmark: Department of Information Science, The Aarhus School of Business.

Halkier, B. (1998). *Miljøhensyn i Forbrug. Erfaringer og Forhandlinger i Ambivalente Hverdagsliv*. Dissertation, Department of Environment, Technology and Social Studies, Roskilde University, Denmark.

Hansen, J. K., & Sørensen, H. C. (1993). *The importance of price for sale of ecological products* (MAPP working paper No. 13). Denmark: The Aarhus School of Business.

Harris, D. R. (1969). Agricultural systems, ecosystems and the origins of agriculture. In P. J. Ucko, & G. W. Dimbledy, *The domestication and exploitation of plants and animals*. Chicago, IL: Aldine.

Haworth, L., Brunk, C., Jennex, D., & Arai, S. (1998). A dual-perspective model of agroecosystem health: System functions and system goals. *Journal of Agricultural and Environmental Ethics, 10*, 127–152.

Iversen, T. (1996). *Miljøproblematikken i Hverdagslivet*. University of Copenhagen: Institute for Anthropology.

Kjærnes, U. (1999). Food risks and trust relations. *Sosiologisk tidsskrift, 7*(4), 265–283.

Kloppenburg Jr., J., Hendrickson, J., & Stevenson, G. W. (1996). Coming into the foodshed. *Agriculture and Human Values, 13*(3), 33–43.

Lampkin, N., & Measures, M. (1999). *Organic farm management handbook*. Berkshire, UK: University of Wales, Aberystwyth, Elm Farm research Centre.

Lieblein, G. (1997). *From farming systems to food systems. Third Nordic postgraduate course in organic farming*. Dep. Hort. & Crop Sciences, Agric. Univ. Norway (NLH), P.O. Box 5022, 1432 Ås, Norway.

Lieblein, G., Francis, C. A., & Torjusen, H. (2001). Future interconnections among farmers, processors, and consumers in Hedmark County, Norway: creating shared vision. *Human Ecology Review, 8*(1) (in press).

Lien, M. E. (1997). *Marketing and modernity*. Oxford: Berg.

Lien, M. E., & Døving, R. (1996). *Grønnsaker som mat og handelsvare. Kvalitetsoppfatninger fra produsent til forbruker. (Vegetables as food and commodities. Conceptions of quality in the trade and among consumers)* (Report No. 2-1996 (English summary)). Lysaker, Norway: The National Institute for Consumer Research.

Miller, D. (1995). *Acknowledging consumption. A review of new studies*. London and New York: Routledge.

Østergaard, E., & Lieblein, G. (1994). Converting to ecological agriculture in practice and research. Proceedings from the Conference "Converting to organic agriculture". St Michel, Finland. NJF-utrednind/rapport nr. 93. 128–135.

Solér, C. (1997). *Att köpa miljövänliga dagligvaror*. Dissertation, Gothenburg Research Institute, Nerenius & Santérus, Stockholm.

Stevenson, G. W. (1998). Agrifood systems for competent, ordinary people. *Agriculture and Human Values, 15*, 199–207.

Tansey, G., & Worsley, T. (1995). *The food system*. London: Earthscan Publications Ltd.

Torjusen, H., Nyberg, A., & Wandel, M. (1999). *Økologisk produsert mat: Forbrukernes vurderinger og bruksmønster (Organic food: Consumers' perceptions and dietary choices)* (Report No. 5-1999 (English summary)). Lysaker, Norway: National Institute for Consumer Research.

Wandel, M. (1997). *Mat og helse. Forbrukeroppfatninger og strategier. (Food and health. Consumer views and strategies)* (Report No. 5-1997 (English summary)). Lysaker, Norway: The National Institute for Consumer Research.

Wandel, M. & Bugge, A. (1994) *Til bords med forbrukerne. Forbrukernes ønsker og prioriteringer på matområdet i 90-årene. (Consumers, food and the market. Consumer valuations and priorities in the nineties)* (Report No. 2-1994 (English summary)). Lysaker, Norway: National Institute for Consumer Research.

Wandel, M., & Bugge, A. (1996). Environmental concern in consumer evaluation of food quality. *Food Quality and Preference, 8*(1), 19–26.