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The Foundations and Limitations of Public Information on Sustainability and Food Purchasing in Sweden



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Abstract

This thesis examines the nature and effects of current public information about food production, purchasing and sustainability that is available in Sweden. The thesis follows a two part structure based on the Action Research Cycle; it focuses predominantly on the initial diagnostic stage, using document review, questionnaires and Cultural Probes to examine what information is currently available to Swedish consumers, as well as how they respond to this information. The thesis then moves towards the action planning stage of the Action Research Cycle, using current academic literature in IS with the findings of my diagnostic research to suggest ways in which information-communication technology can be used to improve upon the current situation, and paving the way for future research in the area of public information and food sustainability.

Keywords:

Food, Food Sustainability, Food Purchasing, Public Information, Consumer Information, ICT, IS.

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Abbreviations

E-Commerce: Electronic Commerce
EU: European Union
FAO: Food and Agriculture Organization
FSC: Food Supply Chain
FTS: Food Traceability System
GM: Genetically Modified
GMO: Genetically Modified Organisms
IS: Information Systems
ICT: Information and Communication Technology
IoT: Internet of Things
UNEP: United National Environment Programme

1 Introduction

I propose a critical examination of Information Exchange, with particular focus on public information in the context of food purchasing habits and the public narrative of sustainability in Sweden. In the World Commission on Environment and Development (WCED) report called “Our Common Future” (WCED, 1987) sustainability is defined as developments in society which meet “the needs of the present without compromising the ability of future generations to meet their own needs” (p. 16). Mörtberg, Stuedahl and Alander (2010) note that this report, written in 1987, “was a starting point for integrating social, economic, and ecological dimensions in the objective of achieving sustainable futures” (p. 71); an issue which is central to this research.

Food sustainability is an increasingly important issue throughout the world; as Horrigan, Lawrence and Walker (2002, p. 445) note, there are a vast number of “environmental and human health problems associated with current food production practice” Furthermore, 2014 saw the founding of The United National Environment Programme (UNEP) and Food and Agriculture Organization of the United Nations, FAO’s *Sustainable Food Systems Programme*, which works to promote a “shift to sustainable consumption and production in both developing and developed countries” (Unep.org, 2015). Such a shift is necessary, they argue, in order to secure both nutritional and environmental security throughout the world (Unep.org, 2015). The Bruntland report (WCED, 1987) also states that “Living standards that go beyond the basic minimum are sustainable only if consumption standards everywhere have regard for long-term sustainability. Yet many of us live beyond the world’s ecological means”, and that “Perceived needs are socially and culturally determined, and sustainable development requires the promotion of values that encourage consumption standards that are within the bounds of the ecological possible and to which all can reasonably aspire” (pp.35-36). For this reason, although there are many factors involved in producing a more sustainable food culture, this thesis will focus specifically on the role and influence of public information systems in this area. That is, the way in which the “perceived needs” of Swedish consumers are “socially and culturally determined”. The role played by public information systems in the creation of sustainable food systems is particularly important in the developed world. As the Sustainable Food Systems Programme (Unep.org, 2015) has identified “customer demand drives production”, that is, customer choices have an important impact upon the way in which food is produced, transported and sold throughout the world.

This study therefore sets out to explore the nature of the information about food production and sustainability that is provided to the Swedish public, as well as examining the way in which consumers respond to this information and how it affects their purchasing decisions which, as the SFSP suggest, can have a significant impact on food production strategies globally.

1.1 Motivations

Many factors motivated me to begin this study. Firstly, for reasons such as those outlined above, I believe that the dominant food production and purchasing system is highly problematic in a number of ways, from the poor treatment of animals in industrially produced meat, which Harari (2015) describes as “one of the worst crimes in history”, to the spraying of fresh fruit and vegetables with chemicals and pesticides, and the draining of soil fertility through repeated ploughing of huge section of land.

I also believe that a change in the methods of food production, towards smaller scale more organic and locally focused agriculture could make a huge and very positive difference to the current food production system. In light of this, I have started my own small scale organic farm in the hope of altering the food production and purchasing system in my local area on a small scale.

I also believe, however, that a shift in food production habits on a large scale is necessary, and that this will not occur unless it is driven by customer demand. As stated above, The Sustainable Food Systems Programme (Unep.org, 2015) has identified that “customer demand drives production”. It is this factor that has motivated me to examine public information about food production as one of the key elements in the creation of more sustainable food systems in the future. If the public were provided with more accurate information about the production history of their food, I believe, and then more people may make more ethical and sustainable purchasing decisions which, in turn, may lead to the increase in the amount of sustainably produced food and a correlating decrease in conventionally farmed produce. Thus, it can be seen that I believe that public information systems – by which I mean the modes and content of the information which is made available to the public- can play a vital role and are an important site for study in the exploration of a more sustainable food future.

This study was also inspired by Gunilla Bradley’s (2010) idea of a “good ICT society”. Bradley (2001, cited in Bradley, 2010, p. 188) states that ICT “should contribute to goals such as: Information access for all, Wellbeing and quality of life for all, Enrichment in social contact between people [...] E-cooperation and peace, Sustainability in a broad sense, including the environment, economy and human side”. For this reason, I have developed a two-fold research project, which first, following the Action Research Cycle (Baskerville, 1999) seeks to diagnose (Blum, 1955 cited in Baskerville, 1999) the quality of the current public information about food production in Sweden and, secondly, begins to suggest ways in which this could be improved upon through ICT solutions which meet all of Bradley’s (2010) criteria. While this study, focuses mostly on understanding the nature and implications of the current information system, it does this in order to gain the knowledge which myself or other designers could employ in the creation of an ICT system capable of improving the way in which food is produced and purchased on a large scale.

1.2 Topic Justification

The significance of information systems to a sustainable food culture first presented itself to me when I worked in organic agricultural production in Sweden. Something which surprised me during this experience was the lack of communication and subsequent loss of information between Swedish farmers and consumers. This was compounded when I began the market research for my own organic farm, selling local, seasonal produce. When speaking to the public about my business, many of those asked declared themselves to be concerned about ‘ethical purchasing’, which Crane and Matten (2004) define as “the conscious and deliberate choice to make certain consumption choices due to personal and moral beliefs” (cited in Dowd and Burke, 2013, p. 137), however, their ideas about what exactly constitutes ethical consumer choices were surprisingly limited. This deficit in public knowledge is likely to have a significant influence on the purchasing decisions of consumers, even those who wish to purchase ‘ethically’.

This dilemma prompted my investigation into the information about food production and food sustainability that is available to Swedish consumers, as well as the ways in which the customers respond to this information. This, in turn, I hope may lay the groundwork for further investigation or designs, which may seek to improve any informational shortcomings, misunderstandings or asymmetries describes in this research, and help to contribute towards the production of a more sustainable food system in Sweden.

This issue of public information in relation to food sustainability is particularly relevant to the Swedish market, where a large percentage of customers have the financial security to make purchasing decisions based on extra-economic factors. As mentioned above, many of the participants questioned in my market research declared that they were concerned about making ethical purchasing decisions. This is reflected in their inclination to buy organic food, a trend which is mirrored throughout Sweden. The Swedish Chambers of Commerce (2010), for example, states “Sweden belongs in one of the top five nations when measuring the organic market share within the retail sector” (p. 5). Significantly, this report attributes the growth in the Swedish organic market to “more marketing of organic items” alongside the importance of customer “perception” of organic food as both healthier and of better quality (Swedish Chambers of Commerce, 2010, p. 9). This foregrounding of “marketing” and customer “perception” suggests how much influence information (evident, for example in the abundance of supermarket signage, food labelling and government initiatives) has on consumer purchasing habits.

Conversely, the Swedish Chambers of Commerce (2010, p. 2) report also notes that “many of the organic food products on the [Swedish] market are imported” and mentions little about public interest or concern for local, seasonal produce. This limited interest, I suggest, corresponds to a lack of readily available public information about the environmental and health benefits of purchasing locally produced food. Thus it can be seen that a cursory examination of these trends in the Swedish food market suggests that while the public are interested in making sustainable purchasing decisions, their ability to do so is shaped by the information about sustainable food purchasing which is readily and publicly available. It is the nature and structure of this information that my thesis sets out to examine.

This investigation also feeds into recent research about food and information systems and technology, such as that of Pang et al. (2012) which examines the food supply chain in relation to the “Internet of Things”. They describe the Internet of Things (IoT), as “a vision of connectivity for anything, at anytime and anywhere” (Pang et al., 2012, p. 1), which, through providing “multiple visions from different viewpoints [...] offers immense potential to consumers, companies and public sectors by enabling innovative applications and services in nearly all sectors of economy” (Pang et al., 2012, p. 2). In relation to food supply, they state that the increased information available through the internet of things could revolutionise Food Supply Chains (FSCs), stating that, “from precision agriculture, to food production, processing, storage, distribution, and consuming, so-called farm-to-plate, IoT solutions provide promising potentials to address the traceability, visibility and controllability challenges. [so that] safer, more efficient, and sustainable FSCs (Food Supply Chains) are expectable in the near future” (Pang et al., 2012, p. 2). This, for example, offers one solution to the informational gap between farmers and consumers which first inspired this project.

Similarly, Dowd and Burke (2013, p. 137) state that “while the organic market has generated a lot of research, there is evidence to suggest that there is a considerable amount of consumer interest in issues not necessarily captured by the organic label [...] sustainable produce has been neglected in ethical consumption literature, not least because it is an emerging concept”. While Dowd and Burke (2013, p. 138) examine this issue from the standpoint of the “Theory of Planned Behaviour” and consumer self-image, their study indicates the need for contemporary academic studies in to the field of sustainable food purchasing, which I approach from an information systems standpoint. Thus it can be seen that the interaction of Information systems- in this case, the way in which, and the content of the information about food production and purchasing which is communicated to the public- and Information and Communication Technology (ICT) is a relevant contemporary site of study, to which my work seeks to contribute by examining the nature of current information about food production which is provided to the public and suggesting ways in which ICT could be used to improve the current system. In this way, my study contributes to work such as Bradley’s (2010) idea of the “good ICT society” in examining ways in which ICT can fulfil a social function.

1.3 Aims and Objectives

My investigation is structured around a central research question which elucidates the nature of public information about sustainability currently available in Sweden.

This question asks:

- What is the nature of current consumer information about food sustainability available in Sweden?

This is approached through more specific sub-questions such as:

- Where do people get their information about sustainable food?
- How do the public respond to the information they are given? How do they understand it? Do they feel that there is enough of it?

This question is answered primarily through the initial, “diagnostic” stage of action research (Blum, 1995, cited in Baskerville 1999), which seeks to understand an on-going situation. More specifically, I analyse the information provided to consumers by the supermarkets, as well as conducting e-mail-questionnaires which investigate the way in which the consumers themselves understand and respond to this information. This is followed by the analysis of consumer responses to more detailed, although less structured, cultural probes which, in addition to further examination of customer response to current information, also begins to test the way in which new forms of information may influence purchasing decisions. In this way, my investigation also moves towards the second, “therapeutic” stage of action research (Blum, 1995, cited in Baskerville 1999), thus laying the groundwork for further informed investigations or designs for the improvements of the current information systems.

My ability to formulate and answer these questions has been aided by a substantial literature review which examines current academic work regarding food supply and sustainability in relation to information systems and other disciplines. By answering these questions, my thesis delineates the nature of public information about sustainable food purchasing presented to Swedish consumers, examining and exploring the information that is available and the way in which consumers respond to it. In this

way, my thesis lays the important contextual groundwork for future researchers to design new, improved food information systems. Some suggested starting points for this is included in the conclusion of my findings later in this study.

1.4 Thesis Structure

This introductory chapter seeks to outline the subject area, relevance and direction of my study and to identify the research questions and intended outcome of the work, and its contribution to the field of study.

- In chapter two I conduct a detailed literature review of current work about the interrelating issues of food purchasing, public information and food sustainability. The main issues covered in this literature review are:
 - An overview of the contemporary food system
 - A discussion of the current trend towards consumer concern for the “non-sensory aspects of food quality” (Svenfeldt and Carlsson-Kanyama, 2010, p. 462).
 - The role of food labelling and information provision
 - Informational Asymmetry and food purchasing
 - Alternative food systems, including the role of ICT in the provision of food information.
- In chapter three I offer a detailed description and justification of my methodology for data collection and analysis, as well as considerations of the ways in which the reliability of my study is ensured, the steps I have taken to conduct my research within ethical guidelines and discussion of any limitations of my study.
- In the fourth chapter I present my detailed analysis of the data I have collected. Each of my three data collection techniques is analysed individually and comparatively. Conclusions are also drawn from this analysis and my findings are outlined.
- Chapter five includes the discussion of diagnosis phase and findings and relates them to three key sites based on the review of literature, gesturing towards sites for further examination and design.
- In chapter six, I discuss and draw ideas for action planning stage of my investigation, intending to inspire future research and design into alternative public information systems about food production and sustainability.
- The seventh chapter discusses the wider implications of my study within Information Systems research, alongside the theoretical and practical implications of my study.
- The eighth chapter of my study draws conclusions from my research; summarising the central findings.
- The ninth and final chapter gestures towards the way in which my study could lead to further research.

2 Literature Review

In this chapter I offer an overview of existing academic studies related to the issues of food information and purchasing habits. The first section offers an overview of the current food system in developed countries, before moving to a discussion of academic literature that examines the current trend towards consumer concern for what Svenfelt and Carlsson-Kanyama (2010, p. 462) refer to as the “non-sensory aspects of food quality” such as “nutritional values, contamination with chemicals and animal welfare”. I then examine literature which discusses and evaluates the role of food labelling and other forms of consumer information. From here I move to the related issue of informational asymmetry in the field of food purchasing. I then examine some of the proposed improvements or alternative ideas for food purchasing and information provision that have been suggested by other researchers and academics. Of key interest here is the role of ICT in the provision of food information, for example through the Internet of Things (IoT), as proposed by Pang et al. (2012), and the way in which, as Bradley (2010) has suggested, ICT can be used to contribute to the improvement of entire societies. In this way, I am able to situate my study within the context of current research.

2.1 An Overview of the Contemporary Food System

As many researchers have noted, food sustainability is becoming an increasingly relevant and also increasingly complex site of study. Lehman et al. (2011) for example, observe that “several global developments [...] have led to a changing attitude of society towards the consequences of food system activities for social, economic and environmental issues captured in the term sustainability” (p. 125). A review of the literature surrounding this complex and multifarious topic reveals the ideas surrounding food sustainability to be an important site of research not only in terms of their environmental implications, but also in terms of contemporary society, people’s purchasing habits, motivations, and relationships to the organisations which provide their food. The literature reveals that the food industry is not simply an economic issue, instead, as Marsden and Arce (1995) note, “to understand the developments in the food market we therefore need a ‘sociology of the market’, which attempts to unravel the patterns of social interaction between different actors in the agro-food chain” (cited in Renting, Marsden and Banks, 2003, p. 399). This trend in the literature addressing the food industry and questions of sustainability suggests the importance of public knowledge, perception and information to an understanding of this topic.

An important theme with which to begin this literature review is an overview of the contemporary food system and its relation to consumers. It should be noted here that the food systems referred to in this literature survey are those of first world, developed economies, such as Sweden, with an abundance of food and consumer choice available.

The common theme which runs through the literature surveyed on this topic is that of a mass-market system which creates a spatial, temporal and, consequently informational gap between customers and the production conditions of their food. In their study of consumer knowledge about food production in Sweden, *Farmers Markets: Linking Food Consumption and the Ecology of Food Production?* Svenfelt and Carlsson-Kanyama (2010), for example, state that:

“food systems are becoming increasingly globalised [and] [...] due to this separation, urban consumers gain little knowledge about production systems and the state of local ecosystems in which they are embedded and the distant ones upon which they depend” (p.453).

Indeed, they note, this informational gap is even evident in terms of academic literature, with very few studies addressing the attitude of consumers in urban areas towards the sourcing and production history of their food (Svenfelt and Carlsson-Kanyama, 2010). This lack of information and, consequently, of knowledge about the production history of food items, they argue, greatly weakens the possibility of either the food industry or the public to make positive changes in their purchasing habits.

Similarly, Yoo, Parameswaran and Kishore (2015) argue that:

“Information about the when the where and the how of food production and distribution, ie/ the food supply chain, has hitherto been available mostly to the producers, distributors, suppliers, and retailers of food and grocery products, and consumers are mostly out of the loop with respect to such food supply chain information. This vast difference in the amount of food supply chain information known to the sellers vis-à-vis their customers creates a high degree of information asymmetry between these two parties in the retail context” (p. 691).

The globalized nature of the contemporary food system is thus problematized by Svenfelt and Carlsson-Kanyama (2010) and Yoo, Parameswaran and Kishore (2015), in terms of the gaps in public information about food production that it creates, Svenfelt and Carlsson-Kanyama’s (2010) article summarises the situation thusly:

“Today, trust in the modern food system is no longer shaped by direct face to face relationship [...] instead, trust in abstract systems i.e. Symbolic tokens and expert systems has developed. This is one of the weaknesses of the global food supply system and it has become utterly important for global firms to establish customer trust through investing in brand names and getting the customer to buy into this form of constructed trust” (p. 462).

It is the information and brand names presented to the public with the aim of constructing this trust that my investigation brings under scrutiny.

2.2 Non-Sensory Aspects of Food Quality

A second trend which ran through the literature surveyed was the observation of a current trend in consumers towards increasing concern about the “non-sensory aspects of food quality, for example, nutritional value, contamination with chemicals and animal welfare” (Svenfelt and Carlsson-Kanyama, 2010, p. 462). Rousseau and Vranken (2013, p. 1), for example, state that “several studies show that consumers are increasingly interested in products produced in a social-, environmental- and health-friendly way”. In a survey conducted by Gutierrez and Thornton (2014), the average response of the public regarding the sustainable sourcing of their food was “between moderately important and important” (p. 8205). Similarly, Lehmann et al. (2011) observe that “consumers, especially those in countries with an abundance of food, show increasing interest in the characteristics of food such as origin, quality or the

environmental impact of its production and, in turn, on the availability of related information and guarantees” (p. 125). This characteristic is particularly evident in Sweden, where Granvik (2012, p. 115) notes that “research [...] shows that the level of interest in ecologically and locally produced food has increased among both consumers and traders in the last couple of years”.

Similarly, a study of *Attitudes Towards Organic Foods among Swedish Consumers* by Magnusson et al. (2001) observed that in a survey of Swedish consumers

“The majority demonstrated positive attitudes towards buying the four organic target foods. Between 46 per cent and 67 per cent of all respondents agreed that it is quite or very good, wise and important to buy organic.” (p. 216).

A related issue highlighted in much of the literature, however, is that this increase in consumer interest about the sourcing of their food is combined with an increasing scepticism towards the food industry. Renting, Marsden and Banks (2003) for example argue that:

“changing consumer perceptions have been fed by a growing distrust of the quality of food stemming from conventional agriculture [...] new events [...] are perceived in the subjective reality of many consumers as confirmation of this pre-established negative image of modern food production” (pp.395-396).

Thus a literature review of the contemporary food industry in developed countries reveals a situation in which customers are both increasingly concerned about, and increasingly removed from the production history of their food. As the quotation from Svenfelt and Carlsson-Kanyama (2010) above suggests, this means that the information provided to customers about the food products available to them plays a central role in dictating their purchasing habits. These purchasing habits, many critics have observed, can exert a large force on the market and help to alter production practices. (Redman and Redman, 2014), for example, observe that “changing from current unstable production, consumption and disposal patterns will clearly require [...] individual behaviour change” (Redman and Redman, 2014, p. 147) and Svenfelt and Carlsson-Kanyama (2010, p. 454) argue that “consumption patterns drive management in agriculture through the demand for food products”. Public information can thus be seen as central to both an understanding of the current food industry and purchasing choices, and to the movement towards a more sustainable food system which critics such as Horrigan, Lawrence and Walker (2002) and the UNEP (Unep.org, 2015) argue is essential.

While information may be central to the purchasing practice of consumers, as the scepticism described above by Renting, Marsden and Banks (2003) suggests, my literature review revealed food information and the way in which it is understood by the public to be an intensely problematic issue. This study focuses particularly on information provided to the public about the sustainability or ecological characteristics of the food, and finds that information or communication failures exist not only in the information made available to the public, but also much closer to the sources of the information, in the production chains and in the formulation of government policy (Svenfelt and Carlsson-Kanyama, 2010, Lehmann et al., 2011 and Granvik, 2012).

2.3 The Role of Food Labeling and Information Provision

As Svenfelt and Carlsson-Kanyama (2010) note, the public is increasingly reliant upon manufactured information and food labels to understand the production history of their food; in terms of sustainable produce this can be understood in relation to the various “eco labels” presented on food packaging. As Gutierrez and Thornton (2014) discuss in their study of sea-food eco labels, however, this system can cause more confusion for customers than it eliminates. In terms of sea-food eco labels, Gutierrez and Thornton (2014) note, a range of subject specific eco labels exist, alongside those which symbolise food which has been sourced in a fully sustainable manner.

In public interviews and questionnaires, the researchers found that customers tended to conflate the issues addressed on the labels, understanding the “dolphin-safe” label for example, to mean fully sustainably sourced (Gutierrez and Thornton, 2014, p. 8195). The findings of this survey lead them to conclude that “eco labels may not resolve the informational asymmetry they were designed to mitigate without proper context and understanding by consumers” (Gutierrez and Thornton, 2014, p. 8199). Their research also observed that “when additional information is given to consumers about fisheries status that is deemed credible it increases preference for eco-labels” (Gutierrez and Thornton, 2014, p. 8205). The results of this study therefore suggest both that the current information provided to the public about sustainable purchasing is inadequate and confusing, and that if the public had access to more accurate, understandable or trusted information about sustainability it could alter their purchasing habits.

This view is supported by the work of Rousseau and Vranken (2013) who notes that “Despite the growing interest [in ecologically sourced food], market shares of products produced in a socially responsible way remains low.” They argue that “Information asymmetries between consumers and sellers are thought to be the main cause of this gap between consumer behaviour and consumer preferences”, also noting that “Labels have the potential to reduce this informational asymmetry, but only if they are credible and imply a significant impact of changing production process towards more sustainable methods” (Rousseau and Vranken, 2013, p. 1).

2.4 Informational Asymmetry and Food Purchasing

Much of the literature about sustainable food purchasing sampled in this review makes reference to original theories of Information Asymmetry, explicated by Akerlof (1970, 1976). In simpler words, Information Asymmetry is defined by Lofgren, Persson and Weibull (2002, p. 196) as “a common feature of market interactions [where in the] seller of a good often knows more about its quality than the perspective buyer”. In relation to the food industry though, Turra et al. (2011) note that:

“Informational asymmetry is a common phenomenon in the food sector since the industry has a great amount of information about a specific product that is not transmitted to consumers. Where there is informational asymmetry, there is a space for the exercise of opportunistic behaviour, resulting in a transaction cost increase (Williams, 1985). Productive sector agents may reveal information in a selective way, utilizing informational asymmetry to their own benefit.” (p. 21).

One illustrative example of such informational asymmetry is examined by Hartman (2014, p. 48) who explores the “information asymmetry inherent in the current system of selling Genetically Modified (GM) and non GM foods alongside each other with no consistent signal of quality across food products”, concluding that “mandatory labelling would maximise social welfare, enabling informed purchasing for all consumers”. This theory becomes increasingly comprehensible when read in the context of the globalized food system described in the work of Svenfelt and Carlsson-Kanyama (2010) and above, which creates greater scope for informational asymmetry between sellers and consumers.

A related issue concerning public information and attitudes towards sustainable food purchasing highlighted in the academic literature is that of “Greenwashing” (Fernando, Suganthi and Sivakumaran, 2014). This is defined by Fernando, Suganthi and Sivakumaran (2014, p. 167) as “potentially misleading environmental claims made by companies”. Such claims, they argue, are “prevalent”, and, as a result of this “most green initiatives of a firm are viewed with scepticism and considered misleading by consumers” (Fernando, Suganthi and Sivakumaran, 2014, p. 167). Again, this characteristic points to the failings in customer information about sustainable purchasing and to the way in which this is preventing consumers from making more sustainable purchasing choices by creating a climate of scepticism around environmental claims.

Interestingly, a review of relevant literature did not reveal simple informational asymmetries between suppliers and consumers. Instead, as the work of Lehman et al. (2011) on the European Pork industry suggests, lack or loss of information exists within food production and sales enterprises. Their study of *Information Services for European Pork Chains* notes that increased customer concern about the origins of their food necessitates “new solutions for the determination and communication of sustainability [in the] agro-food sector” (Lehmann et al., 2011, p. 125). The study examines the information exchange within enterprises in the pork industry (including feed production, pig husbandry, slaughter, transport, and sale) and notes three forms of information deficiency between the different actors in this enterprise:

“information gaps indicate information that is not yet available in the information infrastructure, preparation gaps indicate information that is available but not sufficiently complying with actual demands, and communication gaps indicate information that is available but not communicated amongst different actors in a supply chain” (Lehmann et al., 2011, p. 135).

This research indicates the difficulties that exist in providing the public with accurate information about the sourcing and sustainability of their food in a globalised market including a range of intermediary bodies between producers and consumers. Lehman et al. (2011) propose an ICT system to address this informational deficiency, suggesting the way in which information systems can help to address the informational shortcomings in the existing food system.

2.5 Alternative Food System and Role of ICT

Yoo, Parameswaran and Kishore (2015) note that “some types of Information Systems (ISs) can play an important role in reducing information asymmetry between vendors and consumers [...] by providing customers with more information regarding the food

products they want to buy” (p. 693). They state the examples of “Product Search Systems, which provide customers with information about grocery products’ location and stock and Food Tractability Systems (FTSs), which provide customers with information about production region, producer, timing and other details on the production and distribution process” (Yoo, Parameswaran and Kishore, 2015, p. 693). Such systems would address many of the issues described by Svenfelt and Carlsson-Kanyanna (2010) as missing in the current food information systems.

While Lehman et al. (2011) and Yoo, Parameswaran and Kishore (2015) suggest an ICT/IS solution to the informational gaps they have identified; other literature such as Renting, Marsden and Banks (2003) describes the emergence of “alternative food networks” which are already enacting new modes of food production and distribution with the aim of bypassing the informational gaps of the dominant food system.

One of the main alternative systems identified in the literature is farmer’s markets, which involve both locally sourced produce and direct interaction between producer and consumer which suggests a non-mediated, accurate and high quality informational exchange (Svenfelt and Carlsson-Kanyama 2010). In fact, Svenfelt and Carlsson-Kanyama (2010, p. 454) note that “several authors have suggested that local produce provided for local consumption can increase customer knowledge about food production and awareness of human dependence on surrounding agricultural landscape and ecosystems”. A central factor identified in the discussions of farmers markets covered in this study is that of the customers’ trust in the producers (Kirwan 2006, cited in Svenfelt and Carlsson-Kanyama 2010). This exists in pointed contrast to the scepticism about public food information described in the analysis of the dominant food system. The direct exchange of trusted information between producer and consumer, then, seems to be the essential to the emerging alternative food systems, which Renting, Marsden and Banks (2003) argue that are increasing in popularity as faith in the conventional food industry wains.

Svenfelt and Carlsson-Kanyama (2010) also note that the direct exchange of information facilitated by the farmer’s market provides ‘learning opportunities’ for consumers, leading them to make more sustainable purchasing choices in future. Through their interviews with customers at a Stockholm farmers market, they note, for example, that customers at farmers market learn more about the seasonality of produce, and that “such knowledge is a prerequisite for changing to a seasonally adapted diet, which is favourable from an environmental point of view” (Svenfelt and Carlsson-Kanyama, 2010, p. 461). They also note that the direct communication facilitated by the farmer’s market helped to promote an exchange between vendors and customers (Svenfelt and Carlsson-Kanyama, 2010). Their study also observes that farmer’s market shopping alerted customers to the fact that local produce was, indeed available and produced in their area. They note that:

“some [interviewees] were astonished to learn...that so much food was actually produced in the vicinity of Stockholm. Interviewees noted that when they bought food in conventional shops, most vegetables came from Holland and some from Sweden, with origin not specified, so local food is not available or visible” (Svenfelt and Carlsson-Kanyama, 2010, p. 459).

This alternative mode of food purchasing, then, can be seen to provide a customers with a much greater range of trusted information than is available through the highly mediated conventional food retail system. This information, in turn, Svenfelt and Carlsson-Kanyama (2010) suggest, can lead consumers to make more ethical purchasing choices. Interestingly, while alternative food systems such as farmers markets are a growing trend, Renting, Marsden and Banks (2003, p. 3) note that very little academic research has been carried out into this development and there is a “current scarcity of theoretical and empirical work conducted upon them [Alternative Food Networks]” (p. 394). This, once again, interestingly highlights the dearth of alternative information in the food retail industry.

While the alternative food systems described by Renting, Marsden and Banks (2003) and Svenfelt and Carlsson-Kanyama (2010) work to improve informational exchange between producers and consumers through direct, inter-personal, face to face contact, some of the literature surveyed also suggested that computerised systems could work to improve informational shortcomings in the contemporary food industry. As mentioned above, for example, the work of Lehman et al. (2011, p. 135) suggests “integrated, computer based information services” as a possible solution to information mismanagement and loss in the pork supply chain. Similarly, Bodini and Zanolli (2011) suggest that e-commerce may offer a number of possibilities for changes in the agro-food industry. They argue that this “new technology [...] includes [...] a new way of organising the production, distribution”, and “relationship to the market and consumers” and that “electronic commerce may present a competitive advantage to make enterprises in the agro food sector more visible to consumers” (Bodini and Zanolli, 2011, p. 257).

Interestingly, one of the central features which Bodini and Zanolli (2011) highlight as most beneficial in e-commerce is that of “communication”, that is, the transfer of information between producer and consumer. They (Bodini and Zanolli, 2011) argue, like Svenfelt and Carlsson-Kanyama (2010), that “trust seems to represent a crucial issue when customer approach new purchase and distribution channels” (p. 256), and that this can be addressed through e-commerce systems which offer the consumers “added value”, defined as “additional information (advice and suggestions on coupling wine and food etc.) and relation to the territory (producer), enhancing the feeling of being part of the community” (Bodini and Zanolli, 2011, p. 256).

The work of Bodini and Zanolli (2011) relates interestingly to Pang et al.’s (2012) description of “the Internet of Things” (IoT). Their work describes IoT as “a vision of connectivity, for anything, at anytime, anywhere (Pang et al., 2012, p. 1). In relation to food supply, they state that the increased information available through the internet of things could revolutionise food supply chains through greatly increasing food traceability for all actors involved in the supply chain (Pang et al., 2012, p. 2). In this way, the idea of the internet of things can be seen as gesturing towards a solution of the problem diagnosed by Bodini and Zanolli (2011).

It is noteworthy that the benefits and opportunities for information exchange that Bodini and Zanolli (2011), identify in e-commerce almost directly mirror those which Svenfelt and Carlsson-Kanyama (2010) identified in the small scale, direct communication of farmer’s markets (the manufacturing of trust, the establishment of community, and the transfer of tips and information about the food sold). This suggests one a way in which the benefits of the farmer’s market could be brought in to the more

visible and public domain, allowing a greater percentage of the public access to more trusted information about the production history of their food.

The above ideas also have relevance in relation to Bradley's (2010) idea of the "Good ICT society" in which developments in ICT are read in relation to their social and psychological benefits. She states that:

"We now have a whole new chance to explore the human side of societal change, taking advantage of technology to shape a good and balanced life. Let us use this opportunity (of ICT) to redesign society towards [...] welfare of quality of life for all" (Bradley, 2001, cited in Bradley 2010 p. 189).

Also in direct relation to the idea of sustainability, she states that:

"Sustainability and the use of ICT are closely connected. Sustainability can be defined as a convergence between environmental, economical, social and cultural sustainability [...] Social informatics is highlighting a field of research, practice and education with accelerated speed of change and complexity as well as urgency" (Bradley, 2010, p. 188) .

Bradley's (2010) theory suggests that the development of information and communication technologies can and should be central to improving social problems such as those within the food industry described above.

2.6 Conclusion

Thus it can be seen that my review of the literature about public information and sustainable food purchasing suggests that the currently dominant globalized and mass market food system does not provide either sufficient or sufficiently trusted information to consumers about the production history of their food. This, my review suggests, results in customers who are either confused by or distrustful of the limited information which is supplied to them and therefore unable or unwilling to make informed purchasing decisions with regard to the sustainability of their food. Moreover, as the work of Lehman et al. (2011), suggests, the current food industry may, in fact, be incapable of providing customers with sufficient information about the production history of their food, as the long, poorly systematised chains of production mean that information is lost long before the product reaches the consumers. As a result of this, my study suggest, alternative food systems which allow the consumer access to less mediated and higher quality information about the production history of their food have begun to develop. As of yet, however, my literature review suggests that these alternative systems have received little scholarly attention.

While the development of new food information systems is an important site for study, my research in this paper builds upon work such as that of Svenfelt and Carlsson-Kanyama (2010) and Gutierrez and Thornton (2014), in pursuing a close investigation of the current information systems, in the belief that improvements can only be implemented once the current state of affairs has been sufficiently analysed. In this way, my study follows the model of the Action Research Cycle (see Methodology chapter) which pursues a "diagnosis" of the status-quo before moving to the "therapeutic" stage (Blum, 1995, cited in Baskerville 1999).

My study differs from those discussed here, however, in that it examines not only what information is provided to the customers, but also how customers understand and respond to this information and the terms it includes. While the studies above suggest that many consumers may wish to buy organic food, for example, they do not explore the differing ways in which different consumers – and, indeed, different labelling schemes- understand the term ‘organic’, and therefore, the way in which they can successfully understand and respond to the labels on their food. My study examines the information available alongside the way in which customers respond to and understand the terms and logos which make up the bulk of this information. In addition to this, my cultural probe package presents customers with different forms of information about food products in the hope of gauging variations in their responses to different forms of information, and the ways in which this alters ways of understanding and purchasing decisions. In this way my investigation arrives at a detailed understanding or ‘diagnosis’ of the nature of current consumer information about food purchasing available to Swedish consumers, which includes the way in which customers respond to and understand this information. This, I believe sets a valuable grounding for future studies such as those discussed above which seek to design and improved information systems in the food sector.

3 Methodology

This chapter provides explanation about the methodology that is used to conduct my research, including the philosophical perspective, research method and mode. In this chapter I also elaborate on the data collection methods, including the sources of the data and the data analysis mode to be used in my research.

My study examines the nature of food information provided to Swedish consumers, with particular focus on information about sustainable purchasing. This study is undertaken in order to discover whether any improvements to public information could be made in order to increase consumer knowledge about sustainable purchasing. My study examines both the information available to the public, as well as conducting questionnaires and cultural probes which investigate the way in which consumers understand and respond to the information they are given. This thorough and multi-dimensional examination of public information about sustainable food purchasing enacts the diagnostic stage of Action Research, while also gesturing towards and opening a space for later therapeutic research and design to move towards an IS solution or improvement to the current system.

3.1 Empirical Settings

As the UNEP study (Unep.org, 2015) mentioned above suggests, the production of sustainable food systems is an issue of global concern. As food systems and the factors which contribute to their sustainability differ greatly between countries, however, my study focus solely on the Swedish market and Swedish consumers. I believe that information systems involving the consumer are particularly relevant to the Swedish context because Sweden is a wealthy country in which retailers provide a choice of food products, and the majority of consumers have the financial security to make extra-economic choices about their food purchases.

Moreover, as the Swedish Chamber of Commerce statistics stated above suggest, Sweden has been one of the most active countries in responding to information about organic food, suggesting that consumers respond positively to information about sustainability provided to them (Swedish Chambers of Commerce, 2010).

My research question is addressed by two distinct types of data collection and analysis. I firstly conduct my own review of the literature which is most readily available to Swedish consumers. After living and purchasing food in Sweden myself, and speaking with a range of people also living in the country, I found that the majority of freely and readily available information about the food available to purchase was provided by the advertisements, magazines or other literature offered by supermarkets. I therefore decided that this literature would be of the most value to my study. I chose to examine the information about sustainable food purchasing provided by two of Sweden's major supermarkets, ICA and Willy's. These supermarkets were chosen at random as a representative sample of the types of literature provided by the supermarkets to Swedish consumers.

This empirical setting is particularly suited to an examination of the food and information system in Sweden because, as the Swedish Chamber of Commerce states, the Swedish food sales industry is heavily monopolised, with four trade groups, ICA, COOP, Axfood and Bergendahls dominating the market and the majority of customers throughout the country purchasing their food from one or more of these chains

(Swedish Chamber of Commerce, 2012). The significance of this for my study is that the majority of customers throughout the country are therefore receiving the same or similar information about their food. This makes my examination of the information provided by supermarket literature highly appropriate for an understanding of the public information about food production and sustainability which is available to the Swedish public.

My research then utilise communication with the Swedish public to build upon the understanding gained by my review of readily available literature. I question a group of Swedish consumers, including adults of a mix of genders, ages, occupations, familial statuses, nationalities and from a range of locations throughout Sweden. While I am aware that these and a number of other factors have significant influence on purchasing habits, this investigation seeks to understand the effect of public information on Swedish consumers as a whole and so seeks responses from a cross section of the public.

My seven participants are:

- a) A female student, in her early 20s from Germany, who has lived in Sweden for 3 years, living alone in Lund.
- b) A Swedish male, retired and in his 60s, living with his wife in Jonslund.
- c) A Swedish female, nurse in her 40s, living with her family in Jönköping.
- d) A Swedish female, shop assistant in her 30s living with her partner in Gothenburg.
- e) A British woman, in her 50s living with her husband in Nossebro.
- f) A Swedish male, truck driver in his 40s living with his family in Huskvarna.
- g) A Swedish male, forestry worker in his 30s living alone in Skövde.

My data is collected in two ways; I firstly conduct questionnaires (Myers and Avison 2002) via e-mail (Birnbaum, 2004; Chisnall, 2007; Couper, 2000) which participants asked questions relating to their knowledge of sustainable purchasing and the sources of this information. My aim is to question of a cross section of the public facilitated by my use of questionnaire, which allows me to access a much broader range of participants than is facilitate by face to face contact.

In addition to this, I also use a more exploratory data setting in which several participants are asked to complete a cultural probe. I chose four participants to conduct this task. Each participant received a probe package including photographs, questions and description cards. These are posted to participants, again allowing me to access a wider cross section of the population than is facilitated by face to face contact. In addition to this, receiving and returning the probes through the post creates a sense of anonymity, perhaps encouraging more honesty than face to face contact with the researcher.

3.2 Research Approach

My thesis uses a qualitative research approach. Myers (1997, pp.2-15) defines qualitative research as “developed in the social sciences to enable researchers to study social and cultural phenomena. [...and] to help researchers understand people and the social cultural contexts in which they live” or Creswell (2007) states “qualitative research begins with assumptions, a worldview, the possible use of a theoretical lens, and the study of research problems inquiring into the meaning individuals or groups ascribe to a social or human problem” (cited in Sullivan 2013, p. 54). This is most

applicable to my study, which examines not pure knowledge, but the information which is provided to the public, and the way in which they respond to this information in a real socio-cultural context.

My study follows a critical approach, which Myers (1997) defines as one in which:

“Researchers assume that social reality is historically constituted [...] although people can consciously act to change their social and economic circumstances, critical researchers recognize that their ability to do so is constrained by various forms of social, cultural and political domination” (p. 5).

The primary aim of the critical researcher, he suggests, is to elucidate the ways in which people’s capacity to act constructively is limited by various forms of social domination, and to help to “eliminate the causes of alienation and domination” in daily life (Myers 1997, p. 6). As Orlikowski and Baroudi (1991, p. 19) note, the “critical researcher attempts to critically evaluate and transform the social reality under investigation”.

My study investigates and critically evaluate the current state of public information about sustainable food in order to identify the shortcomings of the status quo and to enable me to move towards an IS solution to help transform this reality.

As Ngwenyama (1990, p. 2) notes, critical social theory is one which takes into account “the human construction of all social forms “and, consequently, their potential to be changed. The theory, he notes is “concerned with finding alternatives to existing social conditions which more adequately address human desires, its research focuses on the emancipation of individuals and the human species in general” (Ngwenyama, 1990, p. 2). My research stems from the premise that the current food system is socially constructed and therefore changeable. I shall therefore investigate the nature of information exchange and public information in the current Swedish system in order to better understand both the current system and the way in which beneficial changes could be brought about.

3.3 Research Methodology

I employ the research method of Participatory Action Research, which Baskerville, adapting Hult and Lennung (1980), notes “aims at an increased understanding of an immediate social situation, with emphasis on the complex and multivariate nature of this social setting in the IS domain” (cited in Baskerville, 1999, p. 6). He notes that “the method produces highly relevant research results because it is grounded in practical action, aimed at solving an immediate problem situation while carefully informing theory” (Baskerville 1999, p. 2).

Action Research is usually formulated as a research cycle. This is illustrated in the figure below by Baskerville (1999, p. 14):

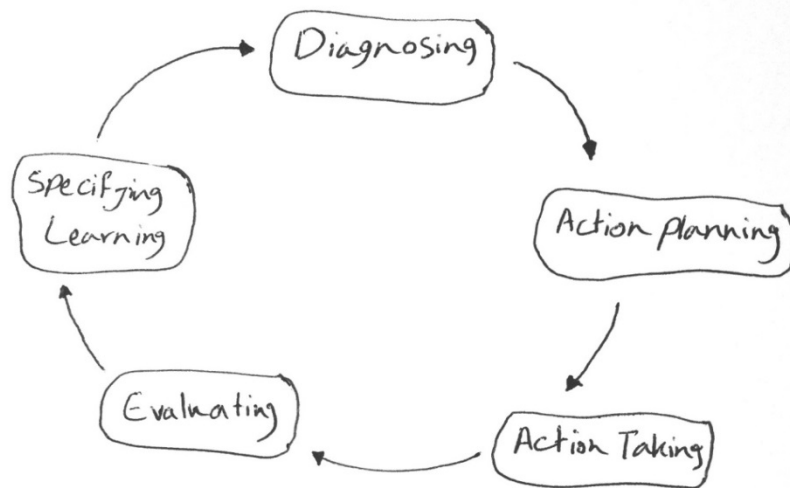


Figure 1: Action Research Cycle Adopted from Baskerville (1999, p. 14)

The researcher enters a situation he/she has identified as an interesting or problematic site for study, observes the situation then implements changes based on observation. The researcher then observes the results of these changes, and reflects and draws conclusions on the results of this. This, in turn, can yield new sites and ideas for further study (Baskerville and Wood-Harper, 1996; Checkland and Holwell, 1998).

Baskerville (1999) thus defines Action Research as a two part study including “diagnostic” and “therapeutic” sections as based on what Blum (1955 cited in Baskerville, 1999) described:

“First, the *diagnostic stage* involves a collaborative analysis of the social situation by the researcher and the subjects of the research. Theories are concerning the nature of the research domain.

Second, the *therapeutic stage* involves collaborative change experiments. In this stage changes are introduced and the effects are studied” (p. 6).

While my study was initially intended to complete the whole of the research cycle, I found the initial observing and understanding of my site of study to be complex and wide ranging. For this reason, this study focuses primarily on the on the initial “diagnostic” stage of the process, while gesturing towards the therapeutic stage. As Susman and Everett (1978, p. 588) note, “action research projects may differ in the number of phases which are carried out in collaboration between action researcher and the client system”.

The diagnostic stage, Baskerville (1999) notes “corresponds to the identification of primary problems that are the underlying causes of [...] desire for change. Diagnosing involves self interpretation of the complex [...] problem not through reduction and simplification, but rather in a holistic fashion. This diagnosis develops certain theoretical assumptions [...] about the nature of the [...] problem domain” (p. 15). It is this diagnosis that it the intended outcome of my study, which investigates the current state of public information on sustainable food purchasing, and the public attitude towards this information.

A second key feature of Participatory Action Research is the collaboration of the researcher with the organization or participants under study. Action Research is described by Rapoport (1970) as a method which “aims to contribute both to the practical concerns of people in an immediately problematic situation, and to the goals of social science by joint collaboration” (cited in Avison, Baskerville, and Myers, 2001, p. 20) and as Stringer (2013) defines, “a collaborative approach to inquiry or investigation that provides people with the means to take systematic action to resolve specific problems” (p. 8).

Similarly, Baskerville (1999) describes one of the major developments of the participatory action research method as “the realignment of roles of researcher and subject into more collaborative and synergistic forms” (p. 17). He cites Whyte et al. (1999) as describing research in which “members of the organization we study are actively engaged in the quest for information and ideas to guide their future actions” (cited in Baskerville, 1999, p. 17).

The use of collaboration with participants is also central to my study, particularly in the use of Cultural Probes (see Data Collection section). Through this section of my data collection, which is designed to encourage creative and cognitive participation on the part of my subjects, my study begins to gesture towards the therapeutic stage of the action research cycle, by opening up a space for discussion which enables my own later research or that of future researchers to begin to propose and test a “therapeutic” solution.

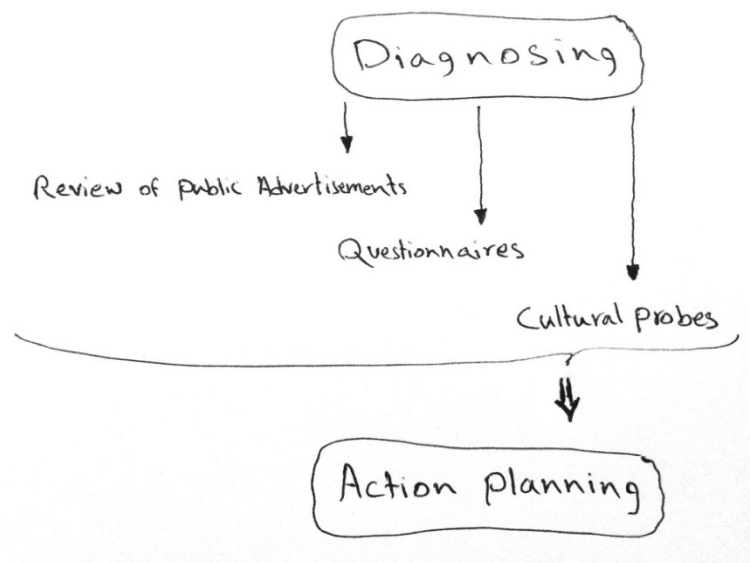


Figure 2: The Diagnostic Phase to the Action Planning stage in Action Research Cycle

Ngwenyama (1990) notes that action research is particularly suited to a critical approach because the two share

“similar core assumptions: (1) critique of the status quo and a search for alternatives to it; (2) collaborative action for learning and fundamental change; (3) free and open participation by individuals in the creation of their social world” (p. 8).

Similarly, Glassman and Erdem (2014) note that participatory action research has helped to present the views of underrepresented minorities, challenging and changing the status-quo. I believe that for these reasons that the initial stages of the action research cycle offer the best possible research method for my study.

3.4 Data Collection

The data collection phase includes multiple data sources in order to facilitate the most wide reaching understanding of the case as possible and to validate my research findings. The data collection and analysis includes three modes discussed below. The discussion covers both the mode of collection employed alongside how, and to what end it is to be analysed.

3.4.1 Review of Public Advertisement

My research begins with a study of readily available public advertisements on the subject of sustainable purchasing in Sweden. All of the large supermarkets in Sweden have available posters or take-home information in the form of magazines and brochures about the purchasing of 'Ekologiskt' (translates in English to Organic) organic food; additionally, the bundle of supermarket advertisements delivered weekly by the post often contains pages dedicated to the sale of organic food. The main justification of choosing to review these advertisements is regarding to their huge influence of them on the customers.

The first part of my data collection amasses a representative selection of such public information, which then analysed using the pattern and categorization methods. I have chosen to select the information made available by two major Swedish supermarkets, ICA and Willy's, in the month of April 2015.

This secondary data is employed in order to facilitate my general understanding of the case and to begin to answer my research question "what is the nature of current consumer information about food sustainability available in Sweden?" It also helps to shape the focus of my research, helping me to formulate the most relevant questions to put to the public in my questionnaire, which is to examine the way in which the public use, understand and respond to the information they are given.

3.4.2 Questionnaires

The first method of primary data collection involved in this study is that of the questionnaire (Myers, 1977; Myers and Avison, 2002) via e-mail (Birnbbaum, 2004; Chisnall, 2007; Couper, 2000), presented to a range of consumers across Sweden. The preparation of this questionnaire employs the analysis of readily available public advertisements outlined above to produce a data collection tool designed to probe the way in which people use, understand and respond to the information available to them, as well as locating any additional sources of public information not yet considered in my research. The design of the questionnaire considers a number of factors in order to elicit the most informative and helpful responses for my research. Firstly, the questionnaire is split into two related sections, both key to my research themes. The first questionnaire focuses on 'Sustainability and Information', and is intended to find out how much people know about the various aspects of sustainable food purchasing and production history, as well as the main sources of this information. The second questionnaire moves to examine the way in which the public respond to this information by examining their purchasing habits in relation to food sustainability. This approach, coupled with the review of readily available public literature described

above provides me with a step-by-step understanding of the information people receive, how they assimilate and understand it, and, finally, the way in which they respond to this information through their purchasing decisions.

Both questionnaires focus heavily on food labels and what the participants understand them to mean. Food labels seemed to me to be the best way to understand consumers' knowledge of the issues surrounding food sustainability because I predict that they are one of the primary sources of food information used by most Swedish consumers. The logos listed in my questionnaire address different aspects of food sustainability. The logos which consumers can identify indicate the issues about which they have the most knowledge. Simple identification of the logo identifies a degree of knowledge, while a full description indicates deeper concern or more detailed information about both the logos and the issues of food sustainability they depict. Thus my questionnaire identifies both the range and the degree of knowledge held by my participants. For ease of the reader, a full description of the meaning of each logo is given in the data analysis section before the discussion of my results.

In order for this form of analysis to be successful, I hope to elicit longer descriptive answers from my participants. My questionnaire is designed to encourage such answers by asking open ended questions and leaving a large space for response. For example, the wording of the first question "Please describe what each of these labels signifies to you?" asks people not simply to identify the labels, but to elaborate on what each label connotes or signifies to them. The intention to elicit long, descriptive answers is complimented by the layout of the survey. In their essay "Design: Cultural Probes", Gaver, Dunne and Pacenti (1999) argue that the aesthetics of a data collection method influences the way in which people respond to it, inspired by their ideas for creating my questionnaires, I have therefore created a colourful questionnaire, informal looking, with large type and lots of space for participant response in order to promote more open and discursive answers from my participants.

3.4.3 Cultural Probes

The final element of my data collection serves a dual purpose in that it looks to both deepen my understanding of public information and knowledge about sustainable food production, and to open up a discussion with my participants which could lead to future research towards developing an improved information and/ or food purchasing systems based on the insufficiencies suggested by my data collection. The suitability of this mode of dual data collection presented itself to me after analysis of the questionnaires discussed above.

This analysis noted a general, but very vague awareness among my participants about the issues surrounding food sustainability, and a curiosity or desire for more information among many participants. This suggests that while the current information systems has prepared the ground for thought and dialogue about issues of food sustainability, this dialogue is yet to be had. My final element of data collection seeks to begin this dialogue and, in doing so, to gather both information about the status quo, and information which could lead towards the participatory design of a new information and/or food purchasing system.

This is achieved by following a method inspired by Gaver, Dunne and Pacenti's (1999) definition of "Cultural Probe". In their original use of cultural probes, Gaver, Dunne and Pacenti (1999), who sought to design new technologies for the elderly, produced a

collection of physical items, each with an associated task that the participant was asked to perform. Participants could complete as few or as many of the tasks as they liked, over a longer space of time than is offered in conventional research (Gaver, Dunne and Pacenti, 1999). Items included annotating maps and a disposable camera with which participants were asked to photograph a range of things such as “What you will wear today” and more subjective images such as “something desirable”, additionally Gaver, Dunne and Pacenti (1999) note, “about half the pictures were unassigned, and the [participants] were asked to photograph whatever they wanted to show us before mailing the camera back to us” (p. 23). The researchers then used the feedback from the completed probes as an inspiration for their designs.

As Bohner et al. (2007) note, this original use of probes has inspired many research projects in both design and the social sciences, and while the process was initially employed as a means of design preparation, the method has since been used for other forms of data collection and ethnography, leading researchers towards a “holistic understanding” of a given situation (p. 3).

The types of probes offered to participants, they note, can take a number of different forms, some of which adhere closely to those used by Gaver, Dunne and Pacenti (1999), and some of which par down or greatly build upon the original. Some researchers, Bohner et al. (2007) note:

“expand the probe packet range by developing variations of evocative tasks, such as using Indian rasas to categorize feelings [...], drawing from Gardner's theory of multiple intelligence to design probes that engage alternate forms of self expression [...], and chaining probe responses together by using matchbooks littered around the city” (p. 2).

One of the main benefits of the cultural probes is that it allows for freedom and creative subjectivity on the part of the participant. Gaver, Dunne and Pacenti (1999) also note that a researcher implementing cultural probes will “lead a discussion with the groups toward unexpected ideas” (p. 22). In their description of the probes process, Bohner, Gaver and Boucher (2012) describe this as a method which engenders “new ways of thinking”, “provoke[s] new [...] ideas and move[s] both designers [/researchers] and participants out of their comfort zones (cited in Lury and Wakeford, 2012, p. 194). The use of probes, they argue, “leads to the opening up of conversations. The probe process is a back and forth gifting (ibid.) between designers and participants” (Bohner, Gaver and Boucher 2012, cited in Lury and Wakeford, 2012, p. 195), which that creates new knowledge and ideas.

This research method is well suited to my investigation because my research assumes both that public information in this area is incomplete and that if given more information and space for dialogue about these issues, the public response would change. As is suggested above, a key feature of cultural probes as a research method is its ‘participatory nature’. Bohner et al. (2007, p. 3) note that “for some, a value of probes approaches is that they support reflection by users themselves as part of data acquisition”. It is hoped that my cultural probes facilitates participants to think more independently and creatively about issues of food sustainability and the nature of information with which they are currently provided.

My cultural probes therefore serve the two fold function of following up on my more conventional data collection through comparative analysis, and of opening a dialogue and beginning to gather information which could form the basis for the design of a solution to the problems I have identified.

3.4.3.1 Designing the Cultural Probes Package

With this aim in mind, I designed a cultural probe containing several items designed to open dialogue and draw information from my participants. The cultural probe packages were sent by the postal service to my participants' addresses to be completed by them independently and at their leisure, before being posted back to me. The package included an empty addressed envelope and sufficient stamps for the probes to be returned to me. For this reason, the tasks included in the package were simple to understand and to complete without the intervention of the researcher. This lack of researcher intervention was intended to give participants more of an opportunity to answer freely. The cards were written in English, and participants were asked before their involvement in the study if they were happy to respond in this language.



Figure 3: Cultural Probe Package - Photo by Roohollah Alimohammad

The probe was given to the same participants used for my questionnaires, and contains:

- A task card and collection of photographs relating to issues of food production or sustainability
- One map of the world, one map of Sweden and a task card asking participants to examine some items of their grocery shopping and mark relevant information on the map.
- A cut and paste task, asking participants to past relevant adverts to the task card
- A task card which asks participants to note their response to completing the cultural probes.

The function of each element of the Cultural Probes package is described below:

A) Visual Images in Cultural Probes

A task card and a collection of photographs relating to the issue of food production or sustainability.

The photographs contain images from both sustainable and conventional meat, egg/chicken and vegetable production. The task card asks participants to consider each image and to note their responses on the back. In contrast to more conventional data collection methods, participants are free to respond in any way they like, although the task card does contain prompts to help uncertain participants. The use of visual imagery was chosen for use in my probe for a number of reasons. As Harper (2005 cited in Denzin and Lincoln, 2005, p. 748) notes, the use of visual imagery, particularly photography is becoming increasingly important for social science research. A key feature of visual data, he explains, is that it “subjectively connect[s] the viewer to the argument” and encourages “sociological thinking [that] emerges directly from images, rather than reinforcing and elaborating on word based thinking” (Harper, 2005 cited in Denzin and Lincoln 2005, p. 749). By offering visual and concrete examples of both sustainable and conventional food production, presented without any written prompts for interpretation, my cultural probes are intended to move participants to develop a deeper and more independent understanding and interpretation of the issues surrounding food sustainability. The interpretations prompted by the images then to be compared with the responses given to terms and logos in the answers to my questionnaires in order to analyse how differences in the type of information given alter consumer attitudes and ideas about food sustainability.

In addition to this, it is possible that this type of information, coupled with the space for discussion provided by the probe format may open a dialogue about ways in which consumers would like to see both the food information and food production system changed.

B) Map Task in Cultural Probes

One map of the world, one map of Sweden and a task card asking participants to examine some items of their grocery shopping and to mark the distance from the origin of the product to their home town. Participants are then asked to guess the age of their food item.

This task asks participants to engage with their food production in a way in which they normally would not. While the place of origin is indicated on packaging of most products, the environmental and health implications of this issue are often elided (for example in the ICA magazine –Månadens Skörd-article on ‘green bananas’ analysed below) and were mentioned only once in all of the responses to my questionnaires. In this task, participants themselves convert the words on the packaging into visual evidence. The final task card asks participants not note their responses to this task; once again, I examine the way in which changes to the form of information presented to consumers alters their attitudes to issues of food production/ sustainability.

C) Cut and Paste Task in Cultural Probes

A cut and paste task, where participants are asked to cut items which they identify as sustainably produced food advertised in Reklam (translates in English to Advertisements) -all sorts of posted advertising magazines and brochures- and to analyse the types of information provided. In this task, participants perform a minor version of the document analysis which forms the initial part of my data collection.

As with the other probes in this package, this task works to defamiliarise the nature of the information that they are presented with everyday, asking them to reassess it with fresh and, possibly, and more critical eyes. Participants are then asked to note types of information that they feel are absent from the Reklam, thus opening a dialogue and paving the way for a process of participatory design in order to improve the current food processing/ information systems.

D) Response Task in Cultural Probes

A task card which asks participants to note their responses to completing these tasks. Prompt questions here include whether anything has surprised the participant, whether they have learned anything, whether this has impacted the way in which they will or would like to purchase food, and whether the process has left them with any questions.

This final task allows me to analyse the way in which changes in the form, amount and nature of information provided to consumers alters their attitude towards ideas of food sustainability. In addition to this, the space for discussion provided by the probe format allows participants to suggest changes that they would make to the current system.

Thus my cultural probe data collection helps me to analyse the nature of and public response to the current information systems, while also opening up a space for discussion with participants which begins to open a path for the informed and participatory design of an improved information/ food purchasing system.

3.5 Method of Data Analysis

In order to conduct the initial analysis, I examined each section of my data collection tasks in order to find patterns and commonalities within the answers of my participants. I moved from here to examine the presence of such patterns across the responses to all of my data collection tasks, and to attempt to link patterns in the responses of my participants to patterns I have found in my review of the advertisements provided by the supermarkets. This analysis of pattern within my data collection will be focalised through my literature review, which I used as a framework for understanding trends in my data.

As Lichtman (2013) states, “the final step in (making sense of data) is to identify key concepts that reflect the meaning you attach to the data you collect” (p. 254). Any deviations from these trends also discussed and examined within the framework provided by my literature review. In this way I hope to arrive at a more detailed understanding of the nature and effect of public information about food production, purchasing and sustainability that is available to Swedish consumers.

The second stage of my data analysis builds upon the diagnostic work described above in order to begin to discuss the ways in which this state of affairs could be improved upon. Again, I will return to my literature review, particularly the section that examines the ways in which ICT has impacted upon the food industry, alongside Bradley's (2010) idea of the "good ICT society" in order to propose informed solutions to be developed and tested in future research which would complete the Action Research Cycle that my work has opened.

3.6 Validity and Reliability

As Given (2008) and Shenton (2004) state, the validity of qualitative studies have been questioned by more positivist critics. While this is true, Shenton (2004, p. 63) notes that "frameworks for ensuring rigor in this form of work have been in existence for many years" in the form of four criteria on credibility, transferability, dependability and confirmability.

Shenton (2004) describes credibility as an "attempt to demonstrate that a true picture of the phenomenon under scrutiny is being presented" (p. 63). In order to ensure that my study is as credible as possible, I used a plurality of data collection methods in order to gather information from all perspectives related to public information on food sustainability. For example, I did not just examine the information given, but also the way in which this is received and understood by consumers. Additionally, Shenton (2004) also describes such "triangulation" as an important means of ensuring the credibility of a study. He states that "the use of different methods in concert compensates for their individual limitations and exploits their respective benefits" (p. 65).

In addition to this, I did not limit my data collection to a small area in Sweden, but tried, though the use of post and e-mail questionnaires, to gather information from throughout the country in order to create a more accurate and credible understanding of the nature of public information in Sweden. In this way, my study attempts to resemble what Hamel, Dufour and Fortin (1993) label a "macroscopic" study (cited in Shenton, 2004, p. 65) in which the views of participants can more easily be accepted to reflect "members of a broader 'selected society'".

I also attempted, during my data collection procedures to employ Shenton's "tactics to help ensure honesty in informants" (2004, p. 66). For example, each person who was asked to participate was given the choice whether or not to participate in my project, thus ensuring that data collection sessions involved "only those who are genuinely willing to take part and prepared to offer freely" (Shenton, 2004, p. 66).

My study has also been available at all levels of its development for peer scrutiny through tutoring sessions and seminars. As Shenton (2004) notes "the fresh perspective that such [opportunities] may be able to bring may allow them to challenge assumptions made by the investigator, whose closeness to the project frequently inhibits his or her ability to view with real detachment" (p. 67).

Shenton (2004) defines the second criteria for validity in research as "transferability", which is "concerned with the extent to which the findings of one study can be applied to other situations". However, there is debate among scholars and researchers as to how important the transferability of a study is. Erlandson et al. (1993), for example argue that "in practice, even conventional generalisability is never possible as all

observations are defined by specific contexts in which they occur” (Shenton, 2004, p. 69). Lincoln and Guba (1985), and Firestone (1993), mediate this debate by suggesting that transferability is, in fact, the responsibility of the reader, while the researcher is responsible for providing sufficient contextual information to make this possible (cited in Shenton, 2004, p. 69). They note that “since the researcher knows only the ‘sending context’, he or she cannot make transferability inferences” (cited in Shenton, 2004, p. 70). What the researcher can do, however, is to provide

“sufficient thick description of the phenomenon under investigation [...] to allow the readers to have a proper understanding of it, thereby enabling them to compare the instances of the phenomenon described in the research report with those that they have seen emerge in their situations” (Shenton, 2004, p. 70).

In light of this, I have attempted to describe and contextualise my site of study in sufficient detail to allow readers to make independent decisions about the transferability of my findings.

Shenton’s third criteria for validity is “dependability” (2004, p. 71). He notes that in order to assure dependability “the process within the study should be reported in detail, thereby enabling a future researcher to repeat the work, if not necessarily to gain the same results”. He also notes that “Such in-depth coverage also allows the reader to address the extent to which the proper research practices have been followed” (Shenton, 2004, p. 71). In order to adhere to this criteria, the methodology section of my study lays out clear instructions of the steps taken to collect my data, making my research repeatable and therefore dependable.

Shenton’s final criteria for validity in qualitative research is “conformability”. This is traditionally associated with scientific objectivity. However, Patton notes that in qualitative research this is almost impossible, “since...even tests and questionnaires are designed by humans, the intrusion of the researchers bias is inevitable” (Shenton, 2004, p. 72).

Shenton (2004) does, however, list ways to limit the bias of the researcher from influencing his or her findings. One important way of ensuring this is the technique of “triangulation”. I have attempted to use this technique both in my data collection and in my selection of sources. Breitmayer, Ayres and Knafl (1993) describe the strategy of data source triangulation as one in which “the investigator explicitly attempts to maximise the range of data that might contribute to a more complete understanding of the topic being investigated” (p. 233). In light of this, I have attempted, through my use of e-mail questionnaires and post, to question participants from across Sweden. I also attempted to question participants across a range of age groups, economic and familial situations and of all genders.

I have also used the technique of triangulation in my research methods. As Golafshani (2003) notes, “triangulation is typically a strategy (test) for improving the validity and reliability of research or evaluation of findings” (p. 603). Breitmayer, Ayres and Knafl (1993) state, this includes “using a variety of data collection techniques [...] which have been selected because each taps a different aspect or dimension of the problem being studied” (p. 234). In light of this, I have used a literature review which analyses the information as it is presented to the consumers, as well as questionnaires and

cultural probes which investigate the ways in which this information is received and understood.

In these ways my research attempts to adhere to Shenton's (2004) framework for validity and to produce the most reliable results possible.

3.7 Ethical Considerations

My data collection was completed with awareness of the ethical considerations of research in mind, which Creswell (2009) and Hart (2005) argue are important in any research planning. Primarily in my case, this was done by the insurance of participant anonymity. Participants were first asked whether they would be happy to participate in my study and made aware of all tasks they would be asked to complete in the cultural probe analysis. In addition to this, participants were guaranteed that their personal information would not be shared, and that their responses would be used for academic purposes only. Participants were also offered the opportunity to withdraw from the study at any point and to see my analysis and presentation of their responses prior to them being made public.

I opted against the use of a written consent form because all of the responses used in my study are anonymous and the information I sought from my participants is neither particularly personal nor sensitive. I instead gained the oral consent of my participants.

In order to ensure the academic rigor of my investigation, I also guarantee that none of the information used was fabricated or falsified. This is ensured by the transcripts of responses, which can be seen on request, and through all of the techniques for ensuring validity described above, which mean that my methods are repeatable and therefore testable.

3.8 Limitations

While I have taken many steps to ensure the validity and reliability of my study, my research does, of course have some limitations. Primary among these is the limited time frame for conducting my data collection. This has meant that I did not access as many participants as I would perhaps have liked; the more participants asked obviously corresponding to the greater representability of the data collected. I attempted to remedy this, however through my triangulation of a range of data collection methods which gives a more rounded view of the issue under study, examining both the information given and its reception, for example. This is a characteristic that I found in my literature review to be absent from many other studies of this type.

Additionally, I did encounter the limitation of language during the completion of my study. My Swedish is limited so in examining the literature made available to Swedish consumers I had to rely on translations. This may have limited my interpretation at some level. In addition to this, the majority of my questionnaires and probe packages were answered by participants that speak English as a second language. This may have altered or hindered their ability to engage and respond fully with my data collection methods. While this is true, however, I attempted to use simple English in my questionnaires and probes and asked all participants beforehand if they were comfortable with English language communication, in order to limit inaccuracies due to language.

3.9 Conclusion

Thus I have shown that the first section of my data collection works to help me to understand the narrative of sustainable food purchasing as it is presented to the Swedish public. It moves from individual pieces of writing to an understanding of the overall ideas that are commonly presented about sustainable food purchasing. My use of questionnaires moves from here to analyse the way in which the intended audience of this information responds to and understands the information they are given, which compared with the actual intended meaning of the terms and logos discussed. Any repeated gaps or shortcomings in the understanding of my participants indicate space for improvement in the form or character of the information presented. Finally, my use of cultural probes build upon this to both cement the findings of my review of readily available advertising and questionnaire, and to gesture towards the diagnostic stage of Participatory Action Research, which, it is hoped allows myself or future researchers work collaboratively with the public to produce designs for an improved public information system concerning sustainable purchasing.

4 Analysis

In this chapter I analyse the data generated during my study. I have chosen to use the method of the pattern and categorization in order to answer my primary research question, which asks about the nature of current consumer information about food sustainability available in Sweden. Patterns will be identified within my data, and related to key themes and topics with the help of my literature review.

My analysis is split into two phases of the action research cycle, firstly diagnostic, which seeks to understand the current situation in terms of public information about food sustainability and, secondly, suggestions toward the action planning phase, which uses my diagnostic analysis in order to pick out and highlight issues and spaces which may be a site for future design proposal and development in this area.

The diagnostic stage of my analysis is split into three sections, corresponding to each of my three data collection methods. I firstly analyse the public advertisements and magazines made readily available by the supermarkets in order to understand directly what information is being presented to consumers. From here my analysis moves to examine my questionnaires, which were e-mailed to participants and seek to discover how consumers use, understand and respond to the advertisements they are given, such as those described above.

The analysis then moves to examine the findings of my Cultural Probes packages, which offered my participants a freer space to express their own ideas about the nature of the food information they are provided with, as well as examining ways in which changes to the form of the information given may alter purchasing decisions. This final phase of analysis, which offers suggestions for alternative approaches to public information about food sustainability leads into the action planning phase of my research, with which I close my analysis and hope to inspire further studies.

4.1 Diagnostic Phase

4.1.1 Review of readily available public advertisements about sustainable food

My research began with analysis of readily available public documents and advertisements on the subject of sustainable purchasing in Sweden. As ICA supermarket's free, monthly magazine from April 2015 –*Månadens Skörd*– states, "Sverige är det land i världen där efterfrågan på ekologisk växter snabbast" (translates in English to: Sweden is the country in the world where the market for ecologic/organic food is growing most quickly) (*Månadens Skörd*-ICA, 2015, p. 19). This growth in the market for ecologically/organically produced food suggests that the Swedish public must have available to them a degree of information about the benefits of purchasing sustainably- or, at least, organically- produced food, a suggestion which is borne out by a cursory visit to any of the large supermarket chains in Sweden. All of the stores have available posters or take-home literature about the purchasing of 'ekologiskt' or organic food; additionally, the bundle of supermarket advertisements delivered weekly by the post often contains pages dedicated to the sale of organic food.

This preliminary section of my data analysis seeks to gain a first-hand understanding of the general nature of public information about sustainable purchasing in Sweden. As mentioned above, a great deal of literature on the subject of sustainability is available, and it is beyond the scope of this study to analyse all of it. I have therefore chosen a representative selection of the literature available. One of the main sources of readily

available public information about food is the major supermarkets. I have therefore chosen to analyse the data made available by ICA and Willie's supermarkets about sustainable food purchasing in April 2015.

4.1.1.1 ICA Supermarket Monthly Magazine April 2015

The magazine called "Månadens Skörd" is freely available for customers to take home from the shops or to access online; it contains recipes, opinion and information about ICA products. The front cover of the magazine for April contained two headlines regarding "Eko-mat", "Eko-mat världen runt"/ translates to English as: Organic food around the world, and "Därfor är eko bananer en ny favorit i hyllan"/ translates to English as: Because organic bananas are a new favourite on the shelf. The cover contains four headlines in total, and the fact that the majority of these relate to organic food suggests the importance of this topic to the both supermarket and the Swedish consumer, as well as indicating a high quality and abundance of public information about this subject.

The first article on organic food, interestingly, opens with a headline declaring that organic food is "-i ropet världen över", which can be translated in English to: fashionable/ popular all over the world (Månadens Skörd-ICA, 2015, p. 19). The one page article presents a map of the world accompanied by statistics about the growth in the purchasing of organic fruit and vegetables in various countries. While this infographic provides a great deal of statistical information about purchasing habits for organic food throughout the world, it does not offer any reason for this growth other than the fact that buying organic food is now increasingly popular or fashionable ("i ropet"). Thus the article implies that the growth in popularity of organic food may be simply due to fashion, and customers are encouraged to buy more organic not for independent logical reasons, but because other people are doing so. Despite its infographic appearance and wealth of statistics, then, this article actually contributes very little to public knowledge about food sustainability and the importance of sustainable purchasing.

The second article concerning "eko-mat" in the ICA magazine is a longer; three page piece about "Gröna bananer" (translates in English to: Greener bananas) (Månadens Skörd-ICA, 2015, p. 25). This article contains information concerning the reasons for buying ICA organic bananas which addresses a range of food sustainability issues including the health of the soil and environment, as well as the treatment of the workers who produce the bananas. The article states not only that "Vid ekologisk odling används en teknik som använder naturgödsel, compost och kvävefixerande växter istället för kemiska bekämpningsmedel", (translates in English to: In organic farming, a technique that uses manure, compost and nitrogen fixing plants instead of chemical pesticides), but also that "Inom ramarna för I love eco-sortimentet har ICA till exempel länge samarbetat med organisationen Fairtrade i syfte att höja lönerna och förbättra arbetsmiljön för bananarbetare i Dominikanska republiken", (translates in English to: Within the framework of I love eco-product range, ICA has such a long association with the organization Fair Trade in order to raise wages and improve working conditions for banana workers in the Dominican Republic (Månadens Skörd-ICA, 2015, pp.25-26).

Thus it can be seen that this article provides fairly detailed information about many of the reasons for choosing sustainable food. One interesting feature of the article,

however, is its conflation of the issues, so that organically grown becomes synonymous with fair trade and community development.

4.1.1.2 Willy's "Eko för alla" campaign

On entering a Willy's supermarket, the customer is greeted by very large posters, proclaiming "Eko För alla" (translated in to English as Organic For Everyone). Organic produce in store is then indicated by a green price label, making organic food easier to locate and select. Little other information about sustainable or organic purchasing is available in store, suggesting that the supermarket assumes a degree of interest or knowledge about the benefits of organic food on the part of their customers.

While this is the extent of the information available in store, the Willy's website does elaborate on the motivation behind their campaign (it should be in mind, however, that as the majority of this information is online, it must be sought out by the consumers who should therefore already have a degree of interest in or knowledge about the issue).

The central feature of Willy's "Eko för alla" campaign is the idea that organic food should be affordable for everyone who wants to buy it. The "Eko för alla" section of their website opens with the claim that:

"Intresset för ekologisk mat har ökat i rekordfart och idag vill allt fler kunder handla grönt. Trots det är det fortfarande många som väljer bort eko på grund av det högre priset. Eftersom låga priser är det vi kan bäst sätta vi oss ner och funderade på hur ekologiskt skulle kunna bli mer ekonomiskt" (Willys.se, 2015).

(This translates to English as: Interest in organic food has increased at a record pace, and today more and more customers buy green. Nevertheless, many people still do not choose eco because of the higher price. Because low prices are what we do best, we sat down and thought about how organic could be more economically)

Like the ICA articles discussed above, this piece interestingly presents the primary reason for choosing organic food not in terms of health or environment, but in terms of popularity and increased public interest. The bulk of the article focuses on the ways in which Willy's have managed to cut the cost of their organic produce, rather than the benefits or motivation behind choosing organic. As with the ICA article discussed above, then, the information provided by Willy's assumes an existing knowledge about the benefits and characteristics of organic food on the part of the customer.

What differentiates Willy's from ICA, however, is the way in which it addresses the problem of cost and sustainability. In publicly addressing this issue, Willy's helps to counter one of the largest barriers to larger scale organic consumption. Again, however, the focus on the extra-financial reasons involved in making this switch is interestingly minimal.

4.1.1.3 Overview

Thus it can be seen from my readings that while a great deal of readily available and public information about sustainable purchasing is presented to Swedish consumers, a predominant pattern is that much of this material works to simply highlight the existing popularity of organic food, without providing analysis or reasons behind this

popularity. This, I would suggest, works to create both a general awareness and narrative of positivity and virtue about organic food, but offers consumers little possibility to make a fully informed decision about their food purchases. Indeed, the map of organic purchasing presented in the ICA magazine could be read as a rallying cry in a competition over which country can be the most virtuous by buying the most organic food, contributing to the abstract idea that organic food is a good thing, without providing any information as to why this is the case. This idea is to be explored further in my later analysis and action planning.

A second key pattern revealed by my analysis is that among the many various issues involved in food sustainability, organic production receives an overwhelming majority of the attention, once again limiting consumers' knowledge of the issues surrounding food sustainability and their ability to make the most ethical purchasing decisions.

These characteristics may be due to a large extent to the dual role of the sources I have analysed as both advertisement and information. A possible reason for this might be that as advertisements for large supermarkets which stock a full range of food, the magazines cannot present unsustainable food in a negative light and so must concentrate on creating a positive aura around organic produce without compromising their other sales. Thus this information, which I have chosen to analyse as it is the most readily available to Swedish consumers, is designed to encourage people to buy organic food, rather than to provide accurate information on food sustainability and to promote fully considered purchasing decisions. Thus this information creates a loose and abstract narrative which presents sustainable-particularly organic- food as a generally virtuous and positive thing, a narrative which has become so dominant that it has virtually eliminated the need for real information as to why this is the case.

4.1.2 Questionnaire

The second stage of my data collection used the document analysis outlined above to produce a questionnaire designed to probe the way in which people use, understand and respond to the information available to them, as well as locating any additional sources of public information about food sustainability. This questionnaire was split into two sections. The first section, dealing with the issues of "Sustainability and Information" is intended to discover how much people know about aspects of sustainable food production and purchasing, as well as how they find this information. The second section of the questionnaire, "Sustainability and Purchasing Habits" examines how the public respond to this information through the lens of their food purchasing habits. As above, my analysis seeks to find patterns in the responses of my participants.

4.1.2.1 Questionnaire 1 "Sustainability and Information"

A) Logo Identification

One question on my survey asked participants to name their "primary source of information about the sustainability/production history" of the food they purchase. In response to this question, all of the participants replied that food labels were one of their primary sources of this information. This would suggest that these participants should have easily been able to identify the common eco (eko)-labels that are found on food products in the Swedish supermarket. The questionnaire responses to this task, however, lead to a slightly different conclusion.

The first question asked consumers to identify the KRAV logo. This is a Swedish label which indicates organic, ethical and environmentally friendly production. Food with the KRAV label has been produced without artificial fertilizers or pesticides and “indicates animal husbandry that is adapted to an animal’s natural needs” (KRAV, 2015). Additionally, the KRAV website claims that KRAV labelled food “is as honest as possible, without synthetic flavours, sweeteners or hydrogenated fats”.

Here, five out of seven participants were able to recognise that the KRAV logo indicates organic food. The two participants who did not identify KRAV as indicating organic food both associated the label with animal welfare. This pattern suggests that the signification of the KRAV label is fairly well recognised by Swedish consumers, and that even those who are unsure of its meaning associate it with sustainable food practices.

The questionnaire, however, did not simply ask participants to identify the logo, but also to describe it. Here, my data becomes more interesting. Of the five participants who were able to identify the KRAV logo as indicating organic food, three participants couldn’t elaborate on this, with two stating that the image signified to them “the Swedish ecological/organic food sign” or “the organic certification logo in Sweden” and one simply stating that the logo signified “organic food”. Both the wording of the question and my interaction with the participants before completing the survey asked, if possible, for a detailed description of the logo’s meaning, which the majority of participants have been unable to supply. This pattern suggests that while the language, imagery and ideas of organic food are well known to the Swedish public, the specific meaning or significance of these terms, for the majority of consumers, remains vague. Interestingly, the two participants who could not identify KRAV as indicating organic did offer an accurate response to one part of the meaning of the KRAV logo.

Of the two participants who were able to provide a more descriptive answer, the definition of the KRAV logo is accurate; both answers describe animal welfare and the absence of pesticides, fertilizers or “chemicals” in the production of the food. Neither answer mentioned the absence of synthetic flavours or sweeteners from KRAV food.

The Euroleaf eco label yielded similar results to KRAV. This label is the organic food certification logo of the European Union. The relevant section of the European Union website states that if used on a product, the EU organic logo indicates that this product is in full conformity with the conditions and regulations for the organic farming sector established by the European Union. For processed products it means that at least 95% of the agricultural ingredients are organic (Ec.europa.eu, 2015).

Organic production is defined by the EU as comprising of having “the lowest possible presence of GMOs [Genetically Modified Organisms]”, the use of renewable resources and “locally organised agricultural systems”, a focus on maintaining “soil fertility” and, in terms of meat production “should respect high animal welfare standards and meet animals' species-specific behavioural needs while animal-health management should be based on disease prevention. In this

respect, particular attention should be paid to housing conditions, husbandry practices and stocking densities. Moreover, the choice of breeds should take account of their capacity to adapt to local conditions” (Eur-lex.europa.eu, 2015).

Six out of seven of my participants could recognise that this indicated organic or ecological food, while one participant left this section blank. Three of the participants were able to identify that this was specifically a European label and one participant offered a comparative analysis that “I think KRAV has slightly stricter certification criteria”. Again, five of my participants failed to offer any description of the meaning of this logo beyond the words ‘organic’ or ‘ecological’. Indeed, the language of one participant was very dismissive, describing the euro leaf as “some other eko sign”. This conforms with the patterns found in the analysis of the KRAV logo and, again, suggests that while the language of sustainable produce is fairly well known among the Swedish public, the actual meaning or signification behind these terms remains vague.

In contrast to the organic labels discussed above, all of participants were able to identify the fair-trade label (although this label does have “fair-trade” written on it, which may have helped somewhat! This writing was left in place as I wanted to present participants with the same labels they see in store). The Fair-trade logo signifies “poverty alleviation and sustainable development. Its purpose is to create opportunities for producers and workers who have been economically disadvantaged or marginalized by the conventional trading system” (Chief, 2015). Moreover, six out of seven participants were able to write some description of the concrete significance of this logo. The focus of the majority of answers here was financial, with four of seven participants mentioning the “fair” wage paid to the workers and one more mentioning the role of the consumer who pays a “fair price for good food”. The fact that people were more able to write a description of fair trade than of organic may suggest that humanitarian issues are more easily conceptualised and understood than those which concern food or the environment (indeed, one participant noted that “I think this logo is more about ethical issues than environmental”). The responses to this label, when compared to those described above, highlights the limited public knowledge about the meaning behind words (and labels) such as ‘organic’ or ‘sustainable’.

The third label that consumers were asked to identify was that of the Rainforest Alliance. Products bearing this logo originate from, or contain ingredients from Rainforest Alliance certified producers. The Rainforest Alliance are “taking steps to...maintain or increase tree cover, conserve soil quality and prevent erosion, reduce chemical use, protect wildlife, ensure the well-being of workers and their families by facilitating access to education and healthcare”. (Rainforest-alliance.org, 2015)

As above, a clear pattern emerged in the responses to this label. The majority of participants stated that they were unsure as to the meaning of this logo. One sheet was left blank, two participants claimed to be “not really sure” of the meaning of the label. The few answers that were offered spoke in vague terms about “forests” or “forest protection”. None of the answers addressed the issues of soil quality, chemical use or worker welfare that are described by the Rainforest Alliance website. Additionally while one participant described this logo as signifying organic produce, another stated that Rainforest Alliance certified produce is “not

organic”. (The reality is somewhere in-between; the Rainforest Alliance is working towards the use of fewer chemicals in their certified produce). The pattern of results from this label strongly suggest that while information such as eco labels are provided to consumers, often the actual meaning of these labels remains opaque to the majority of consumers who have, at best, a vague idea about the issues represented by the label. This is perfectly encapsulated by one participant’s answer to this question which notes “Yes [I can identify the logo], but I am not really sure what it exactly stands for (except for representing something ekologiskt/sustainable).”

The final logo on the questionnaire is the Nordic keyhole for healthy food. This symbol indicates foods which are healthy choices for the consumer. The Nordic Council of Ministers website defined this logo as “setting criteria for certain food groups, it has made it easier for consumers to choose food that contains less fat, salt and sugar and more whole grain and fibre” (Nordic Council of Ministers, 2008). Here, six out of seven participants could identify the logo as being associated with more healthy food choices. Few participants felt the need to elaborate on the logo beyond this. Interestingly, one participant described the keyhole as “one more eko-sign”. This response perhaps suggests that the abundance of labels and signs on foods have the effect of cancelling each other out, and numbing consumers to the individual issues they depict.

In conclusion to this section of my study I found that for each label (with the possible exception of Rainforest Alliance logo where there was a pattern among participants to begin their answer with “I’m not sure, but [...]”), the majority of participants could name the element of sustainability that the label refers to. This is in keeping with the results of the literature review above, which showed that ideas of organic and ethical food are prevalent in the advertising and literature which is readily available to Swedish consumers. While this suggests level of awareness and, correspondingly, knowledge about the issues surrounding food sustainability, my questionnaires also revealed that while the majority of my participants were able to convert the image presented them into a singular word or concept such as ‘organic’, ‘eco,’ or ‘fair’, almost all of the participants struggled to describe or define these words. This suggests that, contrary to initial surface impressions, knowledge about the issues surrounding food sustainability is actually surprisingly limited among Swedish consumers. This, in turn, suggests problems or limitations in the public information available which, although abundant, may not be particularly helpful or informative.

B) Term Identification

The answers provided to my second question, “What does the term ‘Sustainable food’ mean to you?” supports the patterns found above. Here participants were again asked to describe and define the concept of sustainable food; that is, to move beyond simple terms or names such as those provided in response to the first question, and to provide a full description of the meaning behind them. As above, the answers to this question suggested that the majority of my participants had surprisingly limited real or detailed knowledge about the issues surrounding food sustainability.

Interestingly, the answers received to this question fall very neatly into groups of similar answers. The first group, consisting of two of my questionnaire participants

associated sustainable food simply with very small scale foraging. These answers described 'sustainable food' as "wild plants [...] not over harvested" or "food pick and come again". This suggests that these participants understand sustainable food as, at best, a small addition to a person's ordinary diet. The implication of such answers (which do, indeed, describe one small element of food sustainability) is that sustainability is an issue which is entirely separate from normal or everyday food purchasing and consumption. This, in turn, suggests a limited knowledge about the possibilities of more sustainable purchasing habits and places a question mark over the nature of public information on the subject.

While this is true, however, it should be noted that a separate two participants were able to offer rather full descriptions of the term "food sustainability". These included reference to organic and local production, fair wages and conditions for producers, healthy living conditions for animals, and provision for future generations. Such answers suggest that members of the Swedish public do have an interest in issues of food sustainability and that more detailed information can be found if it is actively sought.

The majority of responses to this question, however, fall into a third category. Three respondents simply repeated the key words of the question, replying with variations on the response that sustainable food is "food which has been produced sustainably". This tautology, offered by almost half of my questionnaire participants neatly summarizes the patterns described above, which suggest that although the majority of the Swedish public have a fairly high awareness of the idea that food sustainability is important and have knowledge of the popular key words associated with this issues, a much smaller percentage of the population have real, working knowledge of this issue.

C) What's missing?

These findings are also supported by the responses to the final question in this survey, which asks participants whether they feel that they are provided with sufficient information about the sustainability/ production history of their food, and to identify the types of additional information they would like to be provided with. Here, six of participants replied that they were not provided with sufficient information about the sustainability/ production history of their food. This supports the conclusions drawn above, that while Swedish consumers initially appear to be provided with a great deal of information about their food, in the form of eco-labels and readily available literature provided by supermarkets, this information is failing to convey useful knowledge to consumers.

The types of information that my participants described as missing include specific details about the origin of the food, including place (five out of seven participants) and date (two out of seven participants). One participant interestingly noted that although a use-by date is usually provided, the date of production is much less common. Two participants also noted that they would like the artificial aspects of the food, such as the GMOs (Genetically Modified Organisms) used in the production of each item.

Interestingly, almost all of my participants wrote a much longer answer to this question than to the questions which asked them for definitions of ecological terms or labels. This supports the lack of knowledge about food sustainability described

above, but also indicates a level of concern and a desire to know more about this issue on the part of my participants. (It should be noted here, however, that one participant jocularly noted “I want the name of the cow who produces the milk”). This answer suggests, in fact that this participant is satisfied with the level of food information that is currently available.). The curiosity and openness to questions of food sustainability on the part of the majority of my participants could be seen as a direct result of the readily available literature and popularisation of terms such as ‘ekologiskt’ discussed above.

Thus, the results of my “Sustainability and Information” questionnaire suggest that while my participants had been provided with enough information to make them generally aware of the terms and images associated with sustainable food purchasing in the Swedish market, the majority of participants had little knowledge of the meaning and ideas behind these words or images. These findings suggest insufficiencies in the forms of information that is currently readily available to consumers. In addition to this, as described above, the results of the questionnaire also indicate a curiosity and desire for more information on the part of my participants. This suggests to me that the information which is currently available has done a valuable job in developing public curiosity and public awareness of the need for a better information system.

4.1.2.2 Questionnaire 2 “Sustainability and Purchasing”

This questionnaire was designed to look more specifically at the way in which current levels of information about food sustainability influence the purchasing decisions of my participants, thus examining the often complicated link between information held and purchasing choices made, and enabling me to answer my research sub-question “how do the public respond to the information they are given?”.

Firstly, it should be noted for context that all of my participants stated that they buy the majority of their food from supermarkets. My second question asked how; if at all, issues of food sustainability influence their purchasing decisions. Here, four participants described a preference for organic food, with two participants directly referencing the KRAV logo. Interestingly, however, the two participants who mentioned KRAV did not offer a detailed description of the meaning of the logo in the previous questionnaire. This supports my conclusions that many consumers are aware of generally positive connotations surrounding organic food, but are not supplied with more detailed information about why organic produce is a positive thing. This is neatly encapsulated in the response of one participant who stated that issues of food sustainability influences her purchasing choices “not a lot- but Eko coffee definitely tastes better”. While superior taste may be the case, evidence from the rest of my data analysis would lead me to read this as evidence of the general and nonspecific positive aura surrounding organic food.

The remaining three responses suggested that issues of sustainability did not affect the purchasing choices of participants. One of these answers is very interesting. The participant stated that “if the question is if I would buy food even though I don't know exactly where it is from, then it sounds kind of dangerous to do that, because you never know, but again that's basically what I am doing almost every time I go buy food.”

This answer suggests that the question itself caused the participant to think in more depth about the food available at supermarkets. This interestingly suggests that a little

bit more information or public discussion about food sustainability could lead to a large change in public attitude and purchasing habits. This answer prompted me to move on to my second form of data collection, cultural probes, which seeks to open a dialogue and discussion with participants in order to move towards the design of a more useful system of food information in the public sphere.

The final question in this survey returned to the eco-labels discussed above. Here, participants were asked how the presence of the logo influences their purchasing decisions. Firstly, participants were asked about the KRAV logo, which all of the participants expressed positive feelings about five of seven participants said that they opted to buy KRAV certified products when possible, and the remainder said that while they do not actively seek out the KRAV logo, they are pleased to see it on products they have chosen.

Next, participants were asked about the European eco-leaf. Here four of seven of participants said that they try to buy products with this logo, and a further participant stated that they would be pleased to find it on products they had chosen. Two participants left this section of the questionnaire blank, which suggests that the KRAV logo is better known and trusted than the Euro-leaf. Indeed, one participant noted that they look for the eco-leaf only when the KRAV logo is absent.

The Fair Trade and Rainforest Alliance logo can, for the sake of this analysis be discussed together. Here, the majority of participants said that these labels do not influence their purchasing decisions. The answers ranged from “not at all” to “where possible I opt for fair trade products, but I do not seek out this label”. Interestingly, one participant noted that they would, in fact, be discouraged from purchasing food with the Fair Trade logo as this product “can involve long transports”.

It is interesting to note here that in the previous questionnaire, the majority of participants were able to give a much more detailed description of the meaning of the Fair Trade logo than of either of the organic logos, yet their purchasing decisions show an opposite trend and a much greater tendency to look for organic food labels. This interesting tendency may be better understood when read alongside the bulk of readily available literature described above, which places a great deal more emphasis on organic food production than on other elements of food sustainability. This suggests that while few participants noted the influence of supermarket produced literature or advertising on their food information or purchasing decisions, this literature, alongside the general popularity of terms such as ‘organic’ actually have an important influence on purchasing decisions, whether or not they are accompanied by full and accurate information.

4.1.2.3 Overview

Thus, the results of my ‘Sustainability’ questionnaires, combined with my preliminary review of readily available literature seem to suggest that the Swedish public have been provided with sufficient information to make them aware of the idea and availability of organic or sustainably produced food, and that this literature works to promote such food choices in a generally positive light. The ‘Sustainability and Purchasing Habits’ questionnaire suggests that consumers respond to this type of information very positively, and that its influence can be seen in their purchasing habits. This is particularly suggested by the fact that most of the readily available literature examined for this survey placed a heavy focus specifically on the organic/

eco element of sustainable food. Interestingly, despite displaying very incomplete knowledge of this issue in the ‘Sustainability and Information’ questionnaire, the majority of my participants stated that the KRAV or Eco-leaf labels- signifying organic food- were the most likely to influence their purchasing habits. By contrast, while the majority of participants could give a much more detailed and accurate description of the meaning of Fair Trade, very few said that this issue influenced their purchasing habits.

While it is true that the Swedish public have been provided with sufficient information to make them aware of the idea of sustainably- particularly organically- produced food, and even to encourage the purchase of such food items, my research also suggests, however, that beyond a vague and general awareness of these terms and a feeling that they are generally positive, the majority of Swedish consumers have very little real knowledge about the majority of issues associated with food sustainability. The information that is currently available, I would suggest, has introduced the Swedish consumer to ideas about food sustainability and created a generally positive feeling around such issues, which can be seen in the increasing readiness of consumers to seek out the KRAV or Eco-leaf logos. While my research suggests that the quality of public information about food sustainability is currently insufficient, it also seems to suggest a curiosity and readiness for more information on the part of Swedish consumers. For this reason, my research now moves from more conventional modes of data collecting to the implementation of a Cultural probes method which seeks to open a dialogue with consumers about issues of food sustainability, information and purchasing habits, with an eye to aiding in the development of a new information and purchasing system, which my research has indicated Swedish consumers are ready for.

4.1.3 Cultural Probes

The final method of data collection employed in this study is inspired by the cultural probes methodology of Gaver, Dunne and Pacenti (1999). This approach is employed in order to both examine the way in which participant responses alter in relation the form of the information they are presented with, and to open up a space for discussion in which participants can begin to offer their opinions and suggestions, thus paving the way for a participatory design process for an improved food purchasing/ information systems, which could be developed through further studies.

4.1.3.1 Responses to photograph

The cultural probes were presented to participants as a free selection of tasks, to be completed in any order. My analysis first focuses the photography responses task, in which participants were presented with images from both conventional and sustainable farming and asked to note their responses. The probe contained images of conventional and sustainable chicken/egg farming, vegetable farming and methods of vegetable purchasing. These images were presented to the participants as a random selection, allowing them to use a comparative method of analysis only if they chose; for the sake of this study, however, the results are discussed in terms of pairs of images.

A) Chicken Farm Photos

The image of conventional chicken/egg farming was the most shocking image in the packet of photographs, and produced violent responses from most participants. One participant opened their response to this photo with “I would like to free all the hens and burn the place”, while another described the image as “chicken quarantine” and used capital letters to indicate their “SHOCK”.

One repeated characteristic of responses to this image is the question of human or institutional culpability. One participant said that this image “demonstrates how utterly selfish and blinkered human beings can be”, while another stated that:

“It’s so ridiculous and sad and I cannot understand how people can work there and support this kind of animal treatment or how they can live with themselves when they see this horrible place everyday”. A third response declared that “I hate the idea that [...] supermarkets are allowed to sell eggs that are produced like this”, while the fourth participant queried whether or not the image depicted “a normal chicken farm”.

This shock, incredulity and apportioning of blame in response to this image indicates a severe lack of information among my participants about the production history of conventionally farmed food. This supports the analysis drawn from my questionnaires and review of readily available literature that the current information systems suppresses or avoids providing information about the negative impacts of conventional agriculture and works instead to create a generally positive aura around ideas of sustainable or organic food without damaging the reputation – or sales- of their conventional counterparts. The responses to this photograph also suggest that if they were provided with more information about the conditions of conventional agriculture, it may have a severe impact on their purchasing habits, certainly more severe than the use of eco (eko) labels to indicate positive choices. This indicates one area to be elaborated upon in the action planning phase of my analysis.

In contrast to the answers above, all of the responses to the photographs of free range chickens contained positive language and the assertion that the participants would be happy to eat this food. One participant noted that the image is “very peaceful and makes me smile”, while another stated that “I believe they will be healthier to eat” [than the battery hens presented in the above picture]. The language used to describe this image is much stronger and more concrete than the responses to the organic food labels presented in my questionnaire. Thus the responses to the chicken photographs strongly indicate that alterations in the focus and the form of the information provided to consumers can have a very large impact on their attitudes towards food, and on their purchasing habits. This pattern and interpretation is supported by participant responses to the next set of photographs.

B) The Crop Farming Photos

Here again, participants were presented with photographs of conventional and sustainable crop or vegetable farming. This image of conventional agriculture provided very interesting responses; here, almost all of the participants noted that this image depicted the type of food that they buy and eat. One participant noted that they do and would eat food produced in this way “since I shop at supermarkets”, and another noted that “I often do not buy organic vegetables because they are more expensive so I have probably eaten a lot of this spray”. Furthermore, a common theme among many of the answers was the idea that this form of agriculture is necessary to feed the world’s population. This idea was expressed by three out of four probe participants, by saying “mass

produced farming, necessary to feed us” or other one responded “Due to the world’s population I think we need these types of farming” or as other one noted “this might be (at some point) necessary to provide food for everybody”.

Coupled with the acknowledgement that this is the way their food is produced (“this is probably what a non-ekologiskt farm looks like”) and of its necessity, however, all of the respondents registered a degree of regret or suspicion about the farming methods depicted. One participant, for example stated that “it makes me a bit sad to think about that this might be (at some point) necessary to provide food for everybody”, while another, acknowledging the fact that they eat vegetables produced in this manner noted “this is very scary to think about”. Even the one respondent who stated that “I would be happy to eat this food” followed with the caveat “although I would prefer organic”.

This sense of general resignation and dissatisfaction about the food respondents purchase regularly gestures towards problems in the food production system which should be addressed. The fact that these issues came up only in response to the images of conventionally produced food, rather than in my questionnaires or document analysis might suggest that these issues remain opaque in the current food information provided to the Swedish public. This, I would argue, makes food produced in this way appear to be inevitable and leads to the assumption that this is the only way to feed the world. While I am not placed to say whether or not this is the only way to provide food for the world’s population, I can assert that there are compelling arguments on both sides of this issue which belie the idea of inevitability expressed by so many participants. This issue and potential solutions therefore be examined further in the action planning phase of this analysis.

Many of the responses also made reference to the spray being applied to the plants, and expressed concern that they do not know what this spray contains. One participant –despite noting that they eat this food- mentioned the word “poison”, while another chose the word “chemicals” and another described the spray as “whatever it is the farmer puts on the plants...probably not something you actually want to eat”. This uncertainty and distrust about the nature of the spray applied to vegetables sold to the public again indicates a substantial gap in the information provided to consumers about conventionally produced food.

The responses to the photograph of small scale, organic agriculture support the ideas expressed above. Here, the majority of participants stated that they would “definitely” be “very happy” to buy and eat this produce, indicating a much more positive attitude than was expressed towards the industrial image. Many of the participants however also expressed concern about the amount of work involved in this type of production, and the feasibility of this type of agriculture on a global scale.

C) The Food Purchasing Photos

Participants were presented with a photograph of a conventional supermarket fruit and vegetable section. Here, responses mirrored those discussed above in relation to conventional crop production. The majority of participants acknowledged that this is how they purchase most of their food, but also indicated a degree of distrust or dissatisfaction with the produce available. One

participant noted that while the image shows “a wide selection of fresh fruit and vegetables, similar to what I usually purchase”, the items are “perfectly formed and are likely to be produced with the use of chemicals”. Even more explicitly, another participant noted that “I do buy most of my food this way, but I would much rather not”, and a third participant claimed that “supermarkets are my only choice of shopping, so yes [I would be happy to eat this food]. This again suggests that the public are unhappy with the limited modes of purchasing available to them, but are unaware of or unable to access alternatives. This analysis could be used to inspire new designs of food purchasing systems. Again, the criticism of the supermarket food system came to light only during my cultural probes. I would suggest that the context of the other images prompted participants to review or to think more carefully about the implications of supermarket produce which they would under normal circumstances take for granted.

Once again, the responses to the farmers’ market image were much more unambiguously positive. Participants praised the ability to talk about the food with the producers, as well as the guaranteed freshness and local production that the market setting implies. This again could point the way towards the participatory design of a new food purchasing and information systems. Thus, the photographic element of my cultural probes has led me to conclude that when the form and perspective of the information offered to the public is altered, their responses to and ideas about food production and sustainability also changes considerably. For example, participants reacted very strongly to the image of conventional egg production and indicated that the information provided by this picture would alter their purchasing habits. This, in turn, suggests that the current information provided to customers is both limited and limiting, and that alterations to this information could impact both public knowledge and purchasing habits. This finding provides the impetus for the action planning phase which follows this analysis.

4.1.3.2 The Map Task

For the second task in my cultural probe, participants were provided with a map and asked to mark the location of origin - if noted on the product- and location of purchase of various food products on map of the world. Based on this map, participants were then asked to guess the age of their food. The dairy products chosen by all of the participants were sourced from within Sweden, although three of the four participants could not find information about the exact location within Sweden. This lead one participant to conclude “I think the milk is from so many farms”. Here only two participants mentioned the age of their food, both noted that the production date was mentioned on the packet.

For the meat items, the three participants who answered this question (the fourth participant does not eat meat) noted that their meat came from within Sweden, although again two of these respondents could not find more exact information about sourcing. One participant noted that they got their meat directly from a farmer so could assert that it came from Jönköping.

In relation to fruit and vegetables, one participant chose a melon and noted that its location of origin was not mentioned, but that “it looks fresh, but has probably travelled a long way”. Another participant chose a banana from Ecuador, and a third

chose tomatoes from Spain. The final participant chose tomatoes which they noted were from Sweden “but I cannot find out where exactly”. Here, none of the participants chose to guess the age of their food, once again indicating a lack of information about freshness, even when the location of origin is specified.

Participants were then asked to perform the task for a food item of their own choice. Two participants chose preserved tomatoes which had travelled from Italy, one chose honey which contained “a mix of EC and non EC honeys”, leading them to note “so it could have come from anywhere!”, and the final participant chose Rice Waffles produced in Germany.

This task offers a cross sectional picture of the distances travelled by food commonly consumed in Sweden. Interestingly, the majority of ‘fresh’ items such as fruit and vegetables were sourced from outside of the country and participants could not guess the age of their produce. Additionally, all of the free choice items examined by participants were sourced from outside of Sweden. In addition to this, analysis of the answers to the map task also indicates the fairly minimal information about freshness and origin which is provided to consumers. The melon, for example contained no information, the majority of meat and milk which advertises itself as Swedish does not specify a more accurate location, and the location label on the honey is almost semantically redundant.

4.1.3.3 The Reklam Task

In this task, participants were asked, on a very small scale, to complete their own review of related documents. They were asked to cut and paste one advert for a food product they deemed sustainable, and to highlight and respond to the information available, as well as noting any missing information they would like to have. Only two participants chose to complete this task, the first participant chose ecological bananas, noting that “I think my reason [for this choice] is because I don’t know how they have been produced in South America or where they are coming from. I read once they put so much chemicals on them”. Interestingly, this information almost directly mirrors the information provided by the ICA magazine article on green bananas described above. This indicates the way in which the public trust and respond to the information they are provided with. The advert describes the bananas as “klass 1”, but the participant notes “I don’t know what is klass 1”. This response mirrors the responses to the eco labels in my questionnaires, in which the participants failed to articulate the meaning of the signs and logos which from the majority of the information on food production, further supporting this pattern in my findings.

The second participant chose ekologiskt pasta. They noted that “price is mentioned three times in the advert”, including price per packet, savings made and price per kg. Aside from the European eco-leaf, the participant noted “there is not other information about organic production or what this is”. This again mirrors the findings of my questionnaire which found that the key source of information about sustainable purchasing available to Swedish consumers are eco labels, about the meaning of which the majority of consumers have only a vague idea.

4.1.3.4 Responses Cards

The final task included in my cultural probes asked participants to describe their responses to completing the cultural probes which, in part, resembled a small scale version of my own investigation. Three of the four participants mentioned that the

photographs had provided them with information that they are not usually exposed to, and that this gave them pause for thought. One participant noted that “photos made me think about how vegetables produced, or meat, since in daily life you don’t really think about these things”, while another noted in reference to the chicken photo that “Although on some level I probably knew that this is the case, food in the supermarket seems so removed from these images that you don’t think about them”. A third participant went further, noting that: “The problem is that nice, friendly packages or something like the supermarket in picture fool you. If everything seems perfect and nice, why should you consider that there is something bad? Nothing suggests badness in your mind so you don’t come to think about it [...] [In the supermarket] you don’t have to think too much if you don’t want because they only show you their fancy side and don’t inform you about the things you should know in order to be fully able to judge [...] If they showed the picture with the hens in cages next to the egg boxes in supermarkets [...] not so many people would buy it anymore. But if you’re not forced to think about it you don’t know and thus you don’t care to change, I think”. This response neatly summarises many of the findings of my study, both in terms of the food information provided to the public, which, as suggested above suppresses the negative sides of conventional agriculture and, in turn, suppresses consumers’ curiosity about the production of their food. This response also gestures towards a key finding of my cultural probes research, that if the form, character and nature of the information provided to the public is altered, then it is likely that attitude and purchasing habits would also change. Indeed, one participant noted that as a result of completing the cultural probes task they “will certainly try to buy organic vegetables more often and will try not to buy non free-range eggs, even though they are cheaper in the shops”.

Two participants also expressed surprise at being unable to find the country of origin for their food; while one noted that “I will look [for this] more from now on”. This again indicates insufficiencies in the food information currently available, as well as the way in which the normalisation of this has dulled public sensitivity to it. When this idea was suggested through my cultural probes, however, my participants became curious about the information level, the distance travelled by their food and the implications of both issues. This again suggests that more thorough public information about food production, particularly in relation to conventionally produced food would lead to a positive change in purchasing habits.

5 Discussion of the Diagnostic Phase

I began this research from the idea that improvements in the current information systems in Sweden would encourage and facilitate more people to buy more sustainably produced food. With this in mind, I undertook my detailed investigation of the nature of the current information systems, in order to identify areas which may perhaps reveal room for improvements through an informational or ICT solution. Through my data collection and analysis, I identified three key issues, or sites for further examination and design. These issues are discussed below:

5.1 Food Labels

The first issue that became apparent in my data collection and analysis was that of food labelling. A key pattern among my participants was that all of them mentioned food labels as one of their key sources of food and sustainability information. This commonality, however, highlights a second, related pattern in my findings; that the majority of my participants had only very vague ideas about what various logos actually mean, and that this is affecting their purchasing decisions. This issue has also been discussed by Rousseau and Vranken (2013) who investigate the effects of information provision on consumers' willingness to pay more money for organically produced food. They conducted an experiment in which they found that Flemish consumers "are willing to pay a positive price premium of some 33 eurocent per kg" for organic apples which are simply marked with an organic logo, but that when additional information about "the actual environmental and health effects of organic apple production" is provided to the participants, "the price premium becomes even more pronounced and increases to 57 eurocent per kg" (p. 31). This study, like my own results suggests that the system of organic labelling could be improved by providing consumers with more information. They also note that:

"the effect of information provision is more pronounced for certain groups of consumers such as non-vegetarians, infrequent buyers of organic food and members of a nature protection organization" (Rousseau and Vranken, 2013, p. 31).

This further suggests that the provision of more information than is currently available on food labels would be crucial in widening public awareness about issues of sustainable purchasing habits, and engaging with consumers who may not previously have considered the difference between sustainably and conventionally produced food. My study yielded similar results, particularly in the comparison of my questionnaire responses to those of my cultural probes.

The eco-logos presented to participants in the questionnaires yielded mostly vague, non-committal and sometimes inaccurate answers, but when participants were presented in my cultural probe task with photographs illustrating similar issues, all participants responded with much more thoughtful and engaged responses, with many claiming a desire to change their purchasing habits. This, once again, suggests that more information or a change in the form of information provided to participants can have a great effect on their purchasing habits in relation to sustainably produced food.

As Rousseau and Vranken (2013) note:

“not much research has been done on how policy makers can affect consumers’ willingness-to-pay for organic labels by making information about the true impact of organic food production on health, the environment, the development of rural societies and the local economy available to consumers” (p. 31).

Indeed, there are many issues of practicality involved in this idea. However, one solution that is suggested by my study would be the addition to packaging of a small illustration or photograph of the production conditions of an individual food item, through which customers can directly understand the production conditions of their food. While this may be difficult in the current supermarket-dominated system, an e-commerce system, to be discussed later in this section, would make the presentation of any form of additional product information much easier.

5.2 Traceability

A second issue that became apparent through the completion of my study was that of food traceability. Firstly, my compilation of the logo section of my questionnaire revealed that there is no standard label identifying locally produced food and, secondly, I found that participants struggled, when completing the map task involved in my cultural probes, to accurately source the origin of their selected food product, even when (as I do not imagine is the case with the majority of consumers) they actively sought to do so. I believe that if customers were made more aware about the origin of their food, it would have an important effect on their purchasing habits. In the photograph from the farmers market included in my cultural probes, for example, participants wrote positively about the “local” nature of that food. Similarly in response to the completion of the map task, many of my participants expressed surprise about being unable to trace the country of origin for their food and one noted that “I will look [for this] more from now on”. This surprised response highlights both that the issue of production location is important to my participants, but that until the lack of information was highlighted for them through the completion of my cultural probes task, it was not an issue that they thought about when purchasing food. In this way my study highlights the two-fold importance of the provision to consumers of more accurate information about the origin and production location of their food.

One way in which this issue could be addressed would be through an ICT solution involving the internet. Pang et al. (2012), for example, discuss the concept of the internet of things”, where, through the online connectivity of objects, food traceability could become much easier for both sellers and consumers. If customers were provided with and made aware of a web portal or application through which they could easily trace the food products which they have or will purchase, I believe that the issue of food origin would gradually gain importance in customer purchasing decisions.

5.3 Accessibility –Modes of Purchase-

A third issues that came out of my research concerns the way in which my participants purchase their food. All of the participants in the study said that they mainly conduct their food shopping at supermarkets. However, when they were presented with pictures of a farmers market and a conventional supermarket as part of my cultural probes task, a key pattern that emerged was dissatisfaction with the idea of the supermarket while

participants were correspondingly enthusiastic about the idea of a farmers market, but deemed it inaccessible for regular shopping (for examples see the diagnostic stage of my Analysis section). This pattern is supported by the work of Svenfeldt and Carlsson-Kanyama (2010), who argue that farmers markets have a number of advantages, including the ongoing exchange of information between vendors and consumers, which provides customers with a great deal more information about the products available than does more conventional food purchasing methods.

A key disadvantage to the farmers market, specifically in Sweden, however, is accessibility and regular availability. While supermarkets are open seven days a week from morning until evening, farmers markets tend to be much less regular, even in the harvesting seasons. Thus, this presents a practicality challenge for the Swedish market. As is suggested above, one way to fuse the high informational quality of a farmers market with the wide opening hours and availability of the supermarkets would be through an e-commerce food purchasing system. The unlimited space that the internet provides would allow sellers to provide a much greater range of information on the site of purchase, while also allowing consumers to shop at a time of their convenience.

One example that future designers might wish to consult in relation to this is the UK e-commerce farm food business, Riverfords (www.riverford.co.uk). Via the Riverford website, customers can order locally sourced food while also using the website to access a great deal of information about the modes of the production employed, alongside additional information such as recipes for produce. This is compounded by links to the Riverford's YouTube channel which further utilises the space afforded by the internet to provide more information to consumers. The site works throughout the whole of England, through the connection of a range of small, local farms throughout the country, and in addition to the online information, produce is delivered locally by a deliveryman whom the Riverford website claims is knowledgeable about the produce he delivers. In this way, the Riverford design conflates both the e-commerce and the face to face approaches to alternate food systems described by Bodini and Zanoli (2011) and Svenfeldt and Carlsson-Kanyama (2010) respectively, and outlined in my literature review.

Future researchers might wish to consider a similar e-commerce system which uses the internet to connect a number of suppliers, creating greater freedom of choice for the consumer, and which utilised the alternative space and connectivity of the internet to provide consumers with different, more easily comprehensible forms of information.

While I believe that this offers a very viable solution for many of the issues rose in my research, it fails to address one issue that I have personally experienced. For a number of small, local farmers, the option of an e-commerce system (which often includes delivery) is not financially possible. Similarly, small farmers may only produce one type of item such as meat, grains/ bread or vegetables thus failing to address all of the needs of consumers. This could be addressed through coordination in local areas (within Kommuns, for example), of an online network of local producers. Here customers could select items from individual producers, which could be collaborated into one online order collected and delivered by the coordinating body. This would help to dilute and distribute the cost of an expensive e-commerce system among local producers while also providing consumers with all of the advantages of the farmers market and e-commerce solutions outlined above.

6 Action Planning

The above analysis comprises the diagnostic section of my study, from here I now draw ideas for action planning, intended to inspire future research and design into alternative public information systems about food production and sustainability. My analysis located some key patterns in consumer responses, which should be addressed in an IS alternative or improvement to the current information systems.

The first of the key patterns is that the majority of consumers have little to no information about the production conditions of conventional agriculture. This was particularly highlighted in my Cultural Probes research, which, when it provided illustrations of many areas of conventional agriculture, shocked the majority of participants and prompted them to claim that they would like to alter their purchasing habits. The converse, but related pattern in my document analysis revealed that no mention of the conditions of conventional agriculture was made in these documents.

Secondly, my research revealed that while consumers can mostly recognise various sustainability labels, they often have little or limited knowledge about the specific meaning of these labels, thus limiting the influence of sustainability or eco-labels on purchasing choices. Similarly, the map task involved in my cultural probes revealed that consumers struggle to trace the production history of their food even, as in the case of this task, they are interested in doing so.

The third key pattern to emerge from my research is a resignation among consumers about the food that they buy. In response to both the crop farming and the food purchasing task, participants noted that they do buy their food this way, but would much rather not if it were easy and affordable to do so.

I would suggest that internet solutions may be central to addressing many of these issues. This is supported by the contemporary work of Henryks et al. (2015) who examine the information systems surrounding organic food purchasing in Australia. Their analysis, much like mine, suggests that one central, although under explored, barrier to the purchase of organic food is “potentially inadequate information on product labels” (p. 45). They state in closing that “the most important conclusion from the results presented [...] is the recognition of the dominant role played by the Internet as the most important source of information about organic food” (Henryks et al., 2015, p. 51).

The first two patterns outlined above describe an informational asymmetry between producers, sellers and consumers, which the findings of my cultural probes suggest is greatly affecting purchasing decisions. Such asymmetry, as critics, such as Saxton and Anker (2013) in the field of economics or Yoo, Parameswaran and Kishore (2015) in relation to food transport systems, have argued, can be addressed through electronically available public information. In this case, the information would concern the production history of conventional and organic food. My research has indicated that a useful informational tool in this context is an image of the conditions of food production. While the use of images such as those included in my probe package are not practical on the small space provided on a food products label (resulting perhaps in the use of eco-labels which my study suggest to be of limited usefulness to consumers) the unlimited space provided by the internet would facilitate this mode of communicating information, which my analysis has suggested is most helpful and engaging to consumers.

Furthermore, the connectivity associated with the internet would mean that such an informational source could, perhaps, be connected to an e-commerce system, whereby consumers could see images of the production history of the specific food products they purchase. Such an idea is implied in the concept of the “Internet of Things”, which the European Commission Information Society (2008) has defined as “Things having identities and virtual personalities operating in smart spaces using intelligent interfaces to connect and communicate within social, environmental, and user contexts” or “Interconnected objects having an active role in what might be called the Future Internet” (cited in Pang et al. 2012 p. 1). The article specifically mentions “food traceability” as one of the important implication of the internet of things (p.2); this is particularly useful in addressing the difficulty that my cultural probe participants had in tracing the origin of their food. This research, coupled with my findings about the importance of imagery and the way in which consumers respond to different forms of information could provide a fruitful starting point for the design of an improved information system within the context of food purchasing and sustainability.

The development of an e-commerce and internet of things based solution would also address the third pattern that became apparent in my analysis, consumer resignation and dissatisfaction about their limited purchasing options. An e-commerce system for sustainably sourced and easily-traced food would offer Swedish consumers a new option for food purchasing, one which could be much more easily coupled, because of its online location, with a much higher level and variety of forms of product information.

Additionally, as Mörtberg, Stuedahl and Alander (2010) note, the development of such a collectively and sustainably focused ICT solution must include “the consideration of additional principles [...] in order to enhance participation – so that the IT systems [...] will support citizens and prospective users in their everyday activities” (p.72). The ideas of collectivity and participation cited by Mörtberg, Stuedahl and Alander (2010) mirror the effects, in an ICT context, of my cultural probes data collection, with which my participants engaged actively. Any proposed ICT solution must attempt to create a similarly user friendly and engaging interface.

7 Implications for IS

My study worked within the area of food and public information, which analyses the nature of public information about food products and purchasing choices. Much of the existing academic literature on this subject works around theories of Informational Asymmetry explicated by Akerlof (1970, 1976). This theory describes a state of affairs in which one party involved in a transaction holds more relevant information than another party, thus influencing the transaction decisions made. As Turra et al. (2011, p. 21) note, “Informational asymmetry is a common phenomenon in the food sector, since the industry has a great amount of information [...] that is not transmitted to consumers”. They further observe that:

“Market imperfections regarding interests between public and private assets, may cause differences between what is desired by the public and private sectors in terms of quality and safety. This leads to opportunistic actions by organizations that may use or retain the knowledge and information about some aspects of the product” (Turra et al., 2011, p. 21).

In other research, for example, that of Hartman (2014), informational asymmetry is revealed between the information held by sellers and that which is made available to consumers (in Hartman’s (2014) case, information about whether or not the food contains genetically modified organisms). My study examined public information in Sweden about sustainable purchasing. My findings revealed that, in fact, there is a large amount of information available about sustainably produced food, which may initially suggest that informational asymmetry is being eliminated. Customers are presented clearly with choices about many elements of sustainable purchasing such as organic, fair trade and even good for the health. While this is true, however, my research did reveal one very substantial informational asymmetry and hidden informational asymmetry between Swedish sellers and consumers; that is, in the information which is made available about conventional food production. When my participants-consumers were presented with a sample of such information through my cultural probes, almost all participants indicated that their purchasing choices would change if this information was made available to them in store. This has large implications in the field of food sustainability and information, revealing a glaring informational asymmetry even when consumers seem to be provided with a large choice of well labelled food products and with a substantial identification scheme for sustainable products. My study suggests that the majority of consumers are not even aware of the existence of this informational asymmetry and that, as such, it has great, albeit unconscious, effect on their purchasing habits.

My study also differed from others in this area in that it examined both the information made available to the public, and the consumers’ response to and understanding of this information. Here, again, I found information asymmetry interestingly at work. While Sweden does have clear labels indicating sustainably produced food, I found that many consumers failed to properly understand the meaning of these labels, thus rendering them almost useless. This, again, I believe is due to the informational asymmetry regarding conventional food production in that consumers are not given a point of comparison from which to understand the benefits of sustainably produced food. Thus, it can be seen that, in Sweden’s ostensibly informative market, informational asymmetry still plays a central, though hidden role. This is a crucial point to understand if a new and more functional public information system is to be designed.

8 Conclusion

This research project set out to analyse the nature of public information about sustainable food purchasing in Sweden. With this in mind, I set myself the primary research question:

What is the nature of current consumer information about food sustainability available in Sweden?

This was approached through two separate sub questions: “Where do people get their information about sustainable food?” and “How do the public respond to the information they are given?”. This section of my study outlines my answers to these questions before drawing conclusions from this data.

The public information about food sustainability offered to Swedish consumers, I found, was fairly abundant in terms of the numbers of articles, posters, supermarket campaigns and adverts, but in content was, at best, vague. All of the documents about sustainable food that I examined worked to create a generally positive aura surrounding the term and the produce, but failed to explain in a concrete manner why this is a good thing. One reading of this pattern in my analysis could utilise the lens of informational asymmetry. This reading might suggest that the majority of readily available information about food sustainability or food production history is produced by the supermarkets, and that to provide more detail about the benefits of sustainably produced food would encourage a negatively comparative understanding of conventionally produced foods, i.e./ the majority of supermarket stock, which it is their primary objective to sell. Thus, the nature of public information about food sustainability in Sweden seems to be that it creates a vague sense of vogue and positivity around the idea of sustainable food in order to encourage people to buy it, but it provides very little real information which would enable people to make informed choices about their purchasing habits and may impact supermarket sales.

The answers to my sub question, “how do people respond to the information they are given?” supports this conclusion. When answering my questionnaire, all of my participants noted that they receive most of their food information from labels and packaging. While this is true, however, when asked to give a detailed description of the meaning of various eco-labels, most participants failed to do more than translate the logo image to one key word such as “Organic / Ekologiskt” or “Fair Trade”, which they failed to describe further. As might be expected in this situation, the participants then said that the presence of these eco labels did not influence their purchasing very substantially. Thus the initial part of my study suggests that public information about issues surrounding food sustainability is insufficient and is an issue that could be addressed through an IS or ICT design proposal.

The final section of my investigation moved to examine the way in which changing the form of the information and heightening the awareness of participants about issues of food sustainability alters their attitudes towards this subject. I found that by offering visual information about both conventional and sustainable food purchasing and asking participants to investigate their food independently, they became much more concerned about both their purchasing choices and the nature of information which is currently available to them. This indicates that changes to the nature and quality of

public information about food sustainability could have a major impact on the purchasing habits of Swedish consumers.

One feature of this change in the nature of this information which is suggested by my research might, in fact, be an increase in information about the reality of conventional agriculture and the food that the majority of consumers purchase unthinkingly. There is currently a dearth of information about the production of this type of food which, in turn, makes it seem unquestionable, inevitable and unproblematic. I believe that this is a key factor in muting public interest about ideas of sustainable food. When asked about sustainable food in my questionnaire, participants were uninformed and apathetic- one making the dismissive joke “I want to know the name of the cow that the milk comes from”; when given pictures of both conventional and sustainable production in my cultural probes study, however, the interest in organic production and the expressivity of my participants increased greatly. This suggests that one central concern to designers looking to address these problems may be the form of the information that provided to consumers.

The second part of my analysis moved to initiate the action planning stage of the action research cycle, using the answers to my research questions summarised above to suggest that the internet, with its increased informational space, and ability to connect producers and consumers directly may be central to the design of an alternative information and even food purchasing systems. This could include greater food traceability through, for example, an Internet of Things based solution as a companion to the current use of food labels and to counter the current lack of information provided about conventionally produced food, which was one of the key patterns found in my diagnostic research. Additionally, the internet could be used a mode to connect smaller scale producers and to make their products more easily available to a wider range of consumers.

9 Suggestions for Further Research

As is mentioned in my methodology, chapter three, my research enacts the first, “diagnostic” stage of the action research cycle, which “involves a collaborative analysis of the social situation by the researcher and the subjects of the research” (Blum 1995, cited in Baskerville 1999, p. 6). My study has worked to identify and understand the problem of informational insufficiency in relation to public information about sustainable food.

Through my cultural probes and the action planning stage of my analysis, however, my research also begins to open a path for the second, ‘therapeutic’ stage of the action research process, in which a solution is developed and tested. The probes begin to open a dialogue about issues of food production which have been muted by the current information systems, and which could be the starting point of a participatory design process while the action planning section uses existing models and research to suggest the form that such a system may take. It is hoped that future research, by myself or others, will build upon my diagnostic analysis and action planning suggestion to complete the action research cycle in the design of an alternative or improved information system regarding food sustainability.

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Appendices


Appendix A: Questionnaires





Questionnaire (1)


Sustainability and Information


1. Can you identify these eco labels?
Please describe what each label signifies to you


a) 

b) 

c) 

d) 

e) 



1

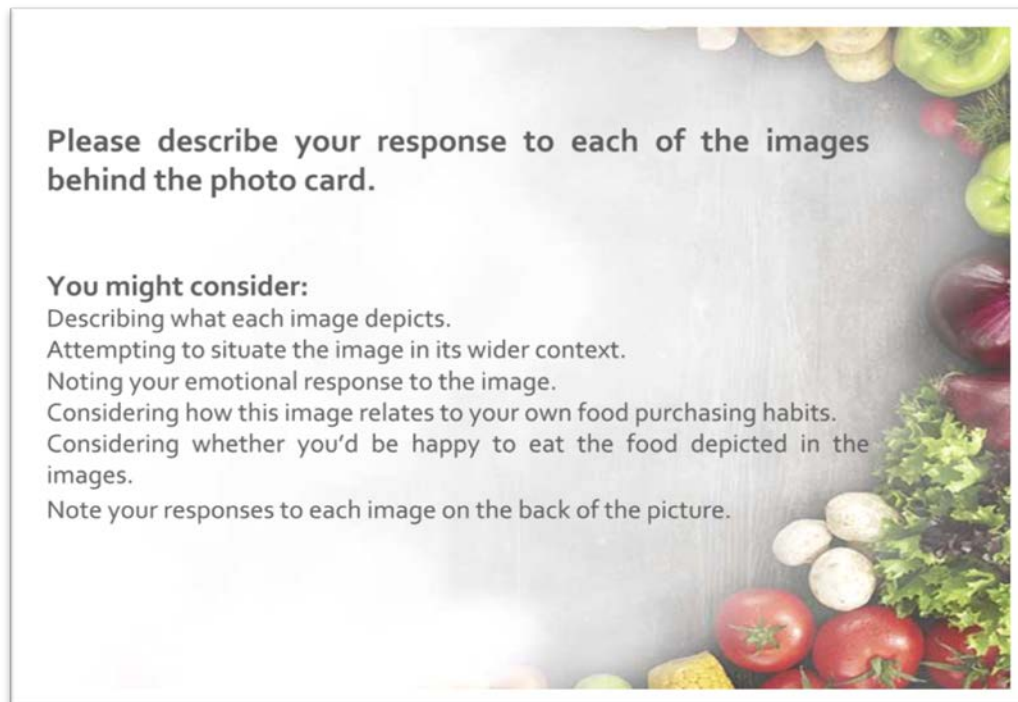
Questionnaire (2)

Sustainability and Purchasing Habits

1. Where do you do your food shopping?
2. How, if at all, do issues of food sustainability/ production history affect your purchasing decisions?
3. Please describe how, if at all, the presence of the following eco-label on food products affects your purchasing decisions.



Appendix B: Cultural Probes Cards





in cupboard and select four items
ing.

Also note why you selected this item)


the product and the maps, and put a star
location(s) of origin for each product and

m?

One item of your choice (Please also note why you selected this item)

Can you guess how old is your item?






Please if you receive Reklam / Advertisement magazines from supermarkets, chose one or two organic products, cut it out and stick it to the card attached.

Can you write or highlight what kinds of information you receive from those ads about the product?

Please also note if there is any information missing that you wish to know.

Reklam / Advertisements





response to completing these
 ,
 about your food/ food production?
 ed the way in which you would like to
 ou with further questions about the

Whether anything surprised you?

Whether this process has impacted the way in which you would like to purchase your food?

Whether this process has left you with further questions about the nature of food production?

Your responses