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Sustainable Consumption: Green Consumer Behaviour when Purchasing Products

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ABSTRACT

The 'attitude–behaviour gap' or 'values–action gap' is where 30% of consumers report that they are very concerned about environmental issues but they are struggling to translate this into purchases. For example, the market share for ethical foods remains at 5 per cent of sales. This paper investigates the purchasing process for green consumers in relation to consumer technology products in the UK. Data were collected from 81 self-declared green consumers through in depth interviews on recent purchases of technology products. A green consumer purchasing model and success criteria for closing the gap between green consumers' values and their behaviour are developed. The paper concludes that incentives and single issue labels (like the current energy rating label) would help consumers concentrate their limited efforts. More fundamentally, 'being green' needs time and space in people's lives that is not available in increasingly busy lifestyles. Implications for policy and business are proposed. Copyright © 2009 John Wiley & Sons, Ltd and ERP Environment.

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Introduction

EVERY TIME SOMEONE MAKES A DECISION ABOUT WHETHER (OR NOT) TO PURCHASE A PRODUCT OR SERVICE THERE IS the potential for that decision to contribute to a more or less sustainable pattern of consumption. Each purchase has ethical, resource, waste and community impact implications. When individuals consider the adoption of sustainable lifestyles, they engage with an increasingly complex decision-making process. These everyday decisions on practical environmental or ethical solutions often result in trade-offs between conflicting issues and result in a 'motivational and practical complexity of green consumption' (Moisander, 2007, p. 404).

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The aim of this paper is to attempt to discover the micro-purchase decision process of green consumers.[1] This will be done through interviews of self-declared green consumers from Yorkshire in the UK. The product focus is consumer technology products including

- cars,
- white goods (major household electrical appliances such as fridges and washing machines),
- brown goods (household electrical entertainment appliances such as televisions and CD players),
- small household appliances (such as electric kettles and bread makers),
- computers and
- green electricity tariffs.

We wanted to investigate how green consumers decided which technology product to purchase and what factors influenced this purchase decision process. Why is this of interest? First, there has been a growing interest in informing consumers about the environmental aspects to take into account when buying products. In the UK, this has been from the pressure groups, e.g. Friends for the Earth, consumer groups, e.g. National Consumer Council, government, e.g. Carbon Trust, and even business, e.g. the Co-operative Bank. This was given a political boost by the publication of the Stern Review on the Economics of Climate Change (Stern, 2006). The interest lies with how consumers that are most likely to react to this information, namely green consumers, put the information into action when purchasing products.

We refer readers to the work of Jackson (2005), who provides a comprehensive review of the literature on consumer behaviour and behavioural change. He concludes on the evidence base for different models of change and recommendations to policy-makers to encouraging more sustainable lifestyles. Faiers *et al*. (2007) have also produced a useful categorization and review of consumer behaviour theories that relate to the critical internal and external factors influencing consumer choice in respect of energy use. The categories are

(1) consumer choice;
(2) needs, values and attitudes;
(3) learning;
(4) social learning;
(5) buying process;
(6) categorization of consumers and
(7) product attributes and categorization.

The data collected in the research for this paper focus on the fifth point, which is the buying process of green consumers relating to consumer technology products. The ethical issues surrounding consumer technology products could be categorized into three general areas. The first is the use and disposal of the product such as energy consumption levels and recyclability. The second is the production and transport of the product, including the heavy metals used, which are often toxic, non-recycled or recyclable materials, and conditions under which the products are made, including poor worker rights. The final area is the general corporate responsibility activities of the retailing and manufacturing companies as well as any suppliers, owners or subsidiaries of these companies. The latter may include any other products, services or investments in 'unethical activities' such as the manufacturing of armaments. This is not generally discussed in the academic literature for electronics products but the UK Ethical Consumer Magazine does rate products on these issues.

Background

This section aims to provide a summary of key literature relating to the micro purchasing processes of green consumers. Dobson (2007) argues that behaviour change towards sustainable development that is driven

[1] The work presented here draws on several areas of literature, which use different terms to describe consumers engaged in sustainable consumption behaviours. In this report, the term 'green' consumer is used, which we consider to have the same broad meanings as 'environmental', 'ethical' and 'sustainable' consumers, who prefer products or services that do least damage to the environment as well as those that support forms of social justice. 'Grey' consumer is used for consumers who generally do not have green values or lifestyles.

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by environmental citizenship considerations is more likely to last than behaviour driven by financial incentives. He states that attitudes work at a deeper level than behaviour, but that behaviour change is what most environmental policy is aimed at, especially the UK government's sustainable development strategy, detailing fiscal incentives. Environmental citizenship works at a deeper level by asking people to reflect on the attitudes that inform their behaviour. Evidence from Sheth *et al*. (1991) supports this assertion by concluding that, for grey consumers, consumption values explain consumer choice behaviour (i.e. why consumers choose to buy or not buy a particular product or service). These values attach to criteria in decision making. Criteria retain various consumption values, such as functional, emotional, cognitive, social and conditional values. For example, sales techniques, and brand criteria are closely related to the emotional value (Sheth *et al*., 1991).

However, it is important to mention the so called 'attitude–behaviour gap' or 'values–action gap'. For example, 30% of UK consumers report that they are very concerned about environmental issues (Defra, 2006), but they struggle to translate this concern into green purchases. Evidence of this gap is illustrated by Hughner *et al*. (2007), who show that, despite generally favourable attitudes that consumers hold for organic food (between 46 and 67% of the population), actual purchase behaviour forms only 4–10% of different product ranges. Further evidence shows that the market share for ethical foods has remained at 5 per cent of total food sales for the last 3 years (Co-operative Bank, 2007).

Analysing why green values have a weaker influence on the decision making process when actually purchasing a product is vital in understanding and changing consumer behaviour towards sustainable consumption. According to Biel and Dahlstrand (2005), Sener and Hazer (2008) and Wheale and Hinton (2007), this could be down to

- brand strength,
- culture,
- demographic characteristics,
- finance,
- habit,
- lack of information,
- lifestyles,
- personalities or
- trading off between different ethical factors.

Chatzidakis *et al*. (2007) argue that consumers use neutralization techniques to justify pursuing their more selfish goals instead of purchasing fair trade products in the UK. Biel and Dahlstrand (2005) show (see Table 1) that this may also be due to the relative cognitive effort required in buying a product based on values. The context of the purchase is important, including demographic, social, political, economic and psychological factors as well as temporal and ideological structuring of domestic practices (Hand *et al*., 2007). In addition, Williams and Dair (2007) argue that without changes to the built environment some sustainable behaviour cannot take place.

Peattie (1999) suggests that the clearest way to understand green consumerism is by viewing each individual's consumption behaviour as a series of purchase decisions. These decisions may be inter-related and underpinned by common values or they may be unconnected and situational. Looking at sustainable consumption in this way leads to a micro focus on individual purchases, an approach we have followed with our research. This perspective has served to highlight the nature of compromises reached in real decision processes. In this way individuals or families build up portfolios of purchase (or non-purchase) decisions (Peattie, 1999), which may or may not be

Demand of mental resources	No decision made in the situation; memory-based choices	A decision is made in the situation; motivated choices
Low	Habit	Need guided
High	Implementation intention	Value guided

Table 1. Different kinds of choice processes in everyday purchase situations (Biel and Dahlstrand, 2005, p. 44)

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linked or underpinned by a belief set. It is at this level of analysis that we see the ability to take forward the debate on sustainable consumption and the problems and issues it raises for real consumers.

Barr and Gilg (2006) found from their survey of sustainable household activities in Devon, UK, that green purchasing behaviour was the least popular activity alongside activities such as recycling and habitual household activities. However, their data show that, not surprisingly, green consumers do consider environmental factors when purchasing products (a weekly activity), but engaged more frequently in activities such as switching off lights and recycling paper (daily activities).

Another questionnaire survey in the UK by Wheale and Hinton (2007) suggested that amongst the population of green consumers there is a hierarchy of importance of ethical drivers in the purchase decision-making process. The environment was rated as the most important ethical driver during purchasing decisions, followed by human rights then animal rights/welfare issues. The findings revealed that some product groups are more strongly linked to ethical issues (and bundles of issues) than others, with 'food goods' being most strongly linked and 'brown goods' being least strongly linked (Wheale and Hinton, 2007).

Academic research into the buying process of green or sustainable products has increased over the last few years. Harrison *et al.* (2005) have produced a typology of ethical consumer practices (see Table 2) according to how the consumer is relating to, or trying to influence, the product or seller. This is useful for analysing ethical consumer purchases.

There are product sector specific examples of research on green buying process, such as food and household products (Vantomme *et al.*, 2005) and clothes (Shaw *et al.*, 2006). On the other hand, much brand boycotting research focuses on discourse (e.g. consumer ideology, globalization, consumer culture) around green consumers' boycotting rather than how boycotting influences actual purchasing choices (e.g. Thompson and Arsel, 2004; Kozinet and Handelman, 2004).

Studies tackling technology-based products, for example washing machines, cars and fridge freezers, have been rare in relation to green consumers' purchase decisions. Technology-based product purchasing involves a number of aspects that distinguish it from low involvement product purchasing (i.e. product purchasing that involves little risk, such as cleaning products or coffee). De Pelsmacker *et al.* (2005) identify reasons for less green consumption, such as lack of availability of green products, disbelief of green claims and lack of information. The conflicting and complex nature of environmental information can also be overwhelming for consumers (Moisander, 2007). In addition, Sriram and Forman (1993) showed that consumers place less value on products' environmental performance in the case of purchasing high involvement products than in the case of frequently purchased products. However, retailers can help by narrowing or promoting brands by limiting customers' choices on the shelves (Quelch and Harding, 1996), but often this means not including green products. Where they are available, the Swiss study by Sammer and Wüstenhagen (2006) shows that consumers presented with the EC Energy label were willing to pay more for 'A' rated washing machines. To motivate the consumer, Sutcliffe *et al.* (2008) has shown how tools such as eco-footprinting analysis for individuals can result in reductions to their environmental impact.

	Product-oriented purchasing	Company-oriented purchasing
Boycotts	e.g. aerosols and peat	e.g. Nestlé and Shell
Positive buying	e.g. Fairtrade mark and Blue Angel eco-label	e.g. Body Shop 'against animal testing'
Fully screened (comparative ethical ratings across whole product area)	e.g. *Green Consumer Guide* and *Which?*	e.g. *Ethical Consumer* magazine
Relationship purchasing (consumers seek to educate sellers about their ethical needs)	e.g. community supported agriculture	e.g. individual consumer building relationships with shopkeepers
Anti-consumerism or sustainable consumerism	e.g. avoiding unsustainable products such as cars	e.g. Adbusters

Table 2. Typology of ethical consumer practices (Harrison *et al.*, 2005, p. 3)

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This is a direct result of understanding the size of their ecological footprint and the resultant environmental unsustainability of their lifestyles. How they do this when purchasing products is the focus of this paper.

Methodology

In this section we briefly explain the research methods used in the data collection. The authors employed in-depth interviews for data collection to explore consumers' actual purchasing behaviour and reasoning for this behaviour. We believe that this was a better method of data collection than questionnaires, which tend to collect data on consumers' behavioural aims rather than actual behaviour. Between April 2004 and April 2005 we completed a programme of 81 semi-structured interviews focused mainly in the Yorkshire region in the UK with self-selecting green consumers. This number of interviews enabled us to achieve theoretical saturation in our target group (Gummesson, 1991). Our recruitment strategy was to encompass a range of green consumers from different age ranges, genders and socio-economic groups.

The interviewees were recruited through several means including the following.

- Members of organic box schemes.
- Posters and leaflets in wholefood, fairtrade, organic and charity shops.
- Members of the Friends of the Earth group.
- An advert in the newsletter of the UK Quakers sustainability self-help group.
- Posters, leaflets and emails to Buddhist centres in the UK.
- News item in the *Ethical Consumer* magazine.
- News item in the *Pure* magazine.

This variety of sources was used in order to make sure that interviewees reflected as many different aspects of sustainable consumption. Further interviewees were recruited using the snowballing technique from initial contacts. Although we deliberately approached green consumers, we did not make our interest in environmental purchase criteria explicit prior to the final part of the interview.

The interviews were designed in three parts. In the first phase, in line with critical incident techniques (Easterby-Smith *et al.*, 2002), interviewees were asked to supply some examples of recent purchases (or non-purchases) of generally one-off expensive large technology-based products. We focused on products where consumers would be more likely to remember their purchase decision-making process, because the products were expensive and rarely purchased, rather than habitual everyday purchases, such as food. Products discussed included a wide range of white goods (cookers, fridges, freezers, dishwashers, washing machines etc) and brown goods (televisions, stereos, computers etc) as well as cars, low energy light bulbs and green energy tariffs. In the second phase of the interview, participants were asked to describe in detail their purchase decisions for two or three of the items that they had identified in phase one. We asked them to tell us about their purchase processes from the first inclination to research or purchase, through to reflections on their post-purchase experiences, including disposal where applicable. We also encouraged them to talk about the lifestyle contexts of their purchases (such as moving house, having children or a busy job) in order to understand their reasons for beginning the purchase process. In the final phase of the interview, we asked participants to tell us about their other purchase habits, including their routines for purchasing food and household products. In this section, we explicitly instigated discussion about green and ethical purchase criteria if these had not come up in the course of the interview. In both of the latter phases we used laddering techniques in order to aid the elicitation of the necessary level of detail (Reynolds and Gutman, 1988).

In order to capture both the reasoning and sequence of the decision-making processes and the information flows that support them, we originally planned to use cognitive mapping to record, manage and analyse the interview data using 'Decision Explorer' software (McDonald *et al.*, 2004). After examining the maps both visually and through the software's analytical functions we realized that, although the mapping process did capture the 'flow' of the decision making process, and was good at depicting the influence of different information sources, much of the sense of context for this process was lost. We therefore conducted additional analysis of the interview data. This was conducted in accordance with the framework developed by Miles and Huberman (1994), which comprises

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three components: data reduction, data display and drawing conclusions. Accordingly, the analysis involved the selection of underlying factors through manual highlighting, and broad categories were manually narrowed down to more focused concepts, as will be shown in the next section.

Results and Analysis

This section reports on the analysis of 81 green consumers' decision-making processes when buying a technology-based product. The most common green criteria that our interviewees mentioned when they were deciding which consumer electronics products to purchase were mainly what could be classified as

(1) product environmental performance (energy efficiency, durability, water consumption, LPG conversion, fuel type, fuel consumption and energy ratings);
(2) product manufacturing (recycled material content, chemical content and repairability) and
(3) second hand availability.

The situational context for each interviewee's purchase is important and was made up of any number of inter-dependent factors, which included time of purchase, experience of using or buying other (similar or different) products or services, lifestyle, life stage, living arrangements and work patterns. The problem here is that we could only record factors that the interviewee was conscious of and not the influences that consumers are unaware of, as discussed by Hand *et al.* (2007). Contextual factors are important but we focused on how the green consumer made conscious purchase decisions. The most common situational context for the purchase of white goods mentioned by our interviewees was moving house. This affected decision-making processes in terms of limiting research time and deciding on the most important green issues for that product, causing concern for many interviewees, for example

> Definitely a kind of trade off with wanting to shop as ethically as possible and the time factor as well and how much you look into it. In retrospect, I probably would look much more at what the company gets involved in now but at the time we had just moved house and had no resources. . . . if you are rushed into doing something you can only do as much as is easily available.

> I think again it is a balance of how much time you have got to put into all of this. It is a very time consuming exercise and there are other things in one's life that you want to do. You don't particularly want to spend another two weeks researching on a company and at the end of the day we needed a cooker and I was happy I think with the amount of work we had done up to then and had to draw the line somewhere.

This lack of time influenced interviewees' to exclude criteria that are more time consuming to research, such as the details of a company's corporate social responsibility programme. This supported by the work of Biel and Dahlstrand (2005). Lack of time for research, decision-making and the purchase was the first of five main barriers for our interviewees for purchasing greener products.

The second barrier was the price of a product, which is well known and specifically supports the findings of Sriram and Forman (1993); for example,

> If I could have had both ovens as energy rating 'A' I would have preferred that but given that I had a budget . . .

> [*Ethical Consumer Magazine*] said that the stereo systems which are best are the expensive ones which you buy as bits and fix together, and I didn't have eight hundred pounds.

Hence price often reduced the influence of interviewees' green values in their decision making process. This was certainly the case for expensive low energy large kitchen electronic products, lower carbon dioxide emitting cars and products made in the UK under better working conditions than in developing countries.

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For our green consumers the third major barrier was the lack of available information on the environmental and social performance of products and manufacturers, as opposed to lack of time to find the information in the first barrier. For example, these interviewees pointed out the lack of information available on companies' CSR programmes:

> …certainly with washing machines there was talk about the energy efficiency which is quite good…you don't have anything about their policies or the company.

> They are having to make their environmental policies available etc and that is really what you have to rely on. …the environmental one tend to be quite vague. I would say it is quite difficult to find.

This lack of information was most prevalent for computers, televisions, DVD players and hi-fis, which supports work by Biel and Dahlstrand (2005), De Pelsmacker *et al*. (2005) and Wheale and Hinton (2007). In some cases, the lack of information as well as more green alternatives made the interviewee discard green criteria.

Fourth, our green consumers found that the cognitive effort in researching, decision-making and searching for the products was great, which supports findings by Biel and Dahlstrand (2005); for example,

> …it is always an effort researching things and finding out each time…you kind of have to start the whole process over again and it kind of complicates it

> It is hard work being green. It is hard work being socially aware. It is hard work making the right decisions. It is hard work making decisions so there does have to be a compromise.

This was a barrier for several reasons. The first was that (as previously discussed), large household appliances were often bought at the stressful event of moving house where there was not the luxury of time to think through the green issues. Second, the nature of the large technology-based product purchase (i.e. rare and relatively expensive purchase) makes it more cognitive than habitual. Consumers needed new conscious searches for appropriate information, such as the product's environmental impacts and the company's corporate social responsibility (CSR) performance. This could support the conclusions by Sriram and Forman (1993) that consumers place less value on products' environmental performance in the case of purchasing high involvement products than in the case of frequently purchased products. However, facilitators can (as discussed below) override this assertion. In addition, learning about a new product's environmental and social impacts means dealing with often complex and perplexing information, which supports Moisander's (2007) conclusions.

The final barrier is the prioritizing of non-green criteria, which is supported by the work of Sheth *et al*. (1991). The inclusion of non-green criteria, habits and desires in their decision making included specification, recognized brand and specific brand, size, price (including discount), information source (*Which*, previous experience), reliability, type (e.g. sports car), model, appearance, design, colour, age, mileage, sales technique, service history, retailer choice and free and timely delivery. Not surprisingly these non-green criteria, habits and desires reduced the influence of many of our interviewees' green criteria in their decision making process; for example,

> He is a trustworthy local person who has a good reputation and so I trusted him and we bought a fridge off him when we first moved to our house and we didn't have too much money and it worked fantastically well and so when we wanted a bigger fridge and a freezer we went back to him and…it was a great incentive… that he would take our old one off our hands and resell it and give us a brand new one. Well a second hand reconditioned new one and that's ideal for me.

> There are brands that you know that are good but they also tend to be the ones that have concentrated on energy efficiency so that was ok but I think I probably wouldn't have bought certain brands if I didn't … feel that they were tried and trusted traditional brands.

Interviewees knew the environmental impacts of the products they were purchasing but a few found that the eco-efficiency consumer approach was not far reaching enough. These few tried to avoid electronics products because

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the environmental and social problems were so great. Many were also anti-multinational brands and companies and tried to buy from local or small retailers and companies; for example,

> You can't say 'oh I will buy this video recorder because it's less harmful to the environment than that one'. They're not built; they are equally harmful so it makes very little difference. I mean they are all made, they've all got integrated circuits in them which were washed with nasty chemicals and they are all made out of plastics that will never rot, so its not that one has an advantage over the other so even if you're aware of green issues it doesn't come into the equation, they are all very similar.

> I tend to shop or get products that aren't produced by multinationals for example but that is very difficult with electrical products so where that was concerned the actual company was not so much of an issue it was more the energy side. We bought our products very locally even though they travelled a long way to get there physically we didn't have to travel a long way to get it.

These purchasing practices show evidence of the classifications by Harrison *et al.* (2005) of boycotts or anti-consumerism.

However, there were three factors that facilitated green criteria in the product purchase decision. The first method interviewees used to reduce cognitive effort, especially under time pressure, was to trust certain information sources, labels or organizations providing a shortcut to choosing a greener product, which supports the work of Sammer and Wüstenhagen (2006); for example,

> It was actually in the Comet store. I wanted to get the washing machine into the house quickly and when I went along they had the washing machines on display and they actually had this sticker rating which was based on water consumption and electricity consumption . . . it was quite helpful yes.

> It was promoted through Greenpeace and so I trust them so I decided to change just on that basis and I wanted a more ethical alternative to anything I will take it.

This leads to the second facilitation factor of availability of green products and usually in mainstream retailers. This may be a particular factor for technology products, which are one-off expensive purchases with which the consumer does not want to take high levels of risk.

The third facilitator of guilt was an overriding theme for our green consumers that seemed to motivate them in maintaining green criteria. They felt guilt for having other (non-green) priorities, not prioritizing green criteria, not being able to purchase the greenest product, not researching enough, not knowing about certain issues at the time of purchase that they discovered afterwards and overall for purchasing and using these products in the first place. For example,

> Well I am ashamed, . . . I bought a Creda . . . that didn't rate highest in Ethical Consumers' environmental list but the Consumer Association recommended it for various reasons in terms of efficiency . . . and also one needed the right size and the right thing for one's domestic requirements and so I'm afraid that pushed me into a decision into buying Creda rather than something that would have been environmentally kinder so I feel a bit guilty about that.

> It seems to bother me less if I'm shopping in somewhere that's kind of a bit better because it's run by a bloke, his brother and his cousin, rather than somewhere like Tesco's where I have this slight sense of 'I shouldn't be doing this' because they're an evil corporation. I think probably what I'm doing is assuaging my guilt about the fact that I'm a consumer in the West and I consume however many times more than is my share of the whole world.

In summary, the key themes from this analysis are barriers of lack of time for research, high prices, lack of information, the cognitive effort needed for each purchase and strong non-green criteria. Green consumers found green

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labels, specialist information, availability of green products in mainstream retails and guilt as facilitators of green criteria in their purchases.

Discussion and Conclusions

The aim of this paper was to research the micro purchase process of green consumers. Data were collected through in depth interviews of self-declared green consumers from Yorkshire in the UK, focused on recent historical purchases of consumer technology products. In this final section we shall develop a green consumer purchasing model and discuss practical implications, limitations and future research.

From the results discussed in the previous section, we have developed a tentative green consumer purchase model illustrated in Figure 1. It summarizes each micro purchase process for a green consumer of consumer technology product in the UK. It consists of five elements. The socio-economic, infrastructure and cultural context of the purchase is important (Hand *et al.*, 2007), but was not explored by this study due to limited time and resources. However, our results show that each individual purchase was framed by situational factors such as moving house, and retailers with green product range within travelling distance. This caused barriers, as discussed below.

The first element of our circular movement of individual green consumer's purchase processes is her or his green values. Like the context, this frames the purchase in terms of the motivation to pursue green criteria. It is influenced by the consumer's knowledge of the relevant issues as well as how previous purchase experience influenced the consumer.

The second element is choosing the green criteria for that individual purchase. There are usually only a handful (such as in the case of a washing machine a high energy efficiency rating). Once the consumer has decided to investigate the product in question, primary and secondary green criteria are formed from research into the ethics of a product and manufacturer, talking to friends and family or browsing on the internet or in retailers. At the risk of sounding too precise, in most cases, we cannot find a clear correlation between green values (Point 1 in Figure 1) and green criteria (Point 2 in Figure 1) for technology products. This confirms the opinion of Sriram and Forman (1993) and Peattie's (1999) notion of a context dependent portfolio of (possibly inconsistent) purchases. In other words, regardless of green values, the majority of our interviewees (green consumers) in general only adopted product environmental performance as a green criterion, reflecting the findings of Wheale and Hinton (2007). Only a very few used sustainability portfolios (i.e. green product plus green manufacturer plus green retailer) for their choice of technology-based products. We consider that there may be only a very small minority of consumers who have very strong sustainable lifestyles, such as high level voluntary simplifiers (McDonald

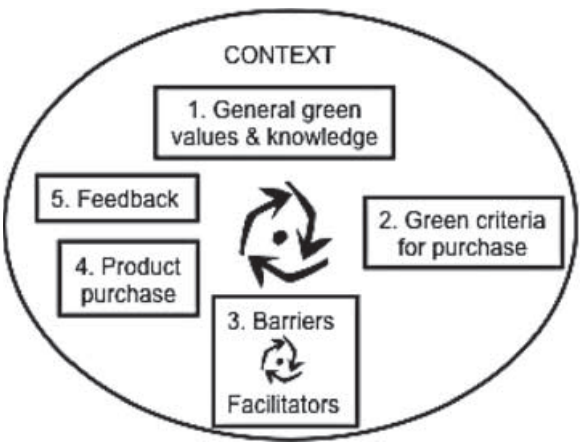

Figure 1. Green consumer purchasing model

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et al., 2006), who apply the criteria and processes that they have developed for their everyday shopping to the purchase of technology-based products.

Primary green criteria are usually unmovable during the purchase process but secondary green criteria are discarded if there are strong barriers (Element 3 in Figure 1) to green criteria influencing the purchase (as discussed in the results). These barriers may partially explain the attitude–behaviour gap.

Alongside the barriers are factors that facilitate the consumer's green criteria influencing the purchase decision. These act as affirmation factors to green criteria. The green consumer is influenced by both barriers and facilitating factors during the whole purchase process. This interplay could be investigated further.

Finally, the purchase made by the green consumer (using the factors discussed) is different each time. The purchase experience and knowledge gained from each purchase process (as well as the guilt from not purchasing the greenest product) are fed back into the consumer's general green values and knowledge, which influences the next purchase.

With knowledge of the general purchasing process of green consumers, the key factors that will help green consumers purchase a more ethical technology product are

(1) the consumer's green value is strong;
(2) the consumer has purchase experience;
(3) the consumer has plenty of time for research and decision-making;
(4) s/he has good knowledge of the relevant environmental issues;
(5) green products are reasonably available and
(6) the consumer can afford and is prepared for the financial costs.

If any one of these criteria is a weak or negative influence, then this may water down the influence of the green criteria on the final purchase. Hence, it can be concluded that government, company and NGO policies need to strengthen these success factors for green consumers to close the attitude–behaviour gap. There are also good recommendations for companies wanting to market their product's environmental attributes in the work of Ottman *et al.* (2006), which we support. It should be noted that this conclusion is limited to geographical, product range and consumer type studied. General conclusions for green consumers across the UK and other countries need to be verified through further research. In addition, we can only make conclusions for green consumers and not for grey consumers, who will not have the green motivations in general and need to be studied to learn lessons for behaviour change towards sustainable development.

For the first success factor, we agree with Dobson's (2007) assertion that, for long lasting and large behaviour changes, environmental values need to be developed through education before anything else in the model can work. This should also include developing research, information interpretation and decision making skills. The strength of green value needs to be measured to ascertain the success of different levels of value on influencing behaviour. This in retrospect is a weakness of this project's methodology in not collecting this data and only relying on self-declared green consumers as interviewees.

Success Factor 4 depends on the availability of specialist information sources and green labels (for a further discussion of this see Oates *et al.*, 2008) and a matter of education (formal and informal) as for Factor 1 above. We would endorse the recommendation by Ottman *et al.* (2006) to educate consumers on environmental product claims and marketing. Sutcliffe *et al.* (2008) have shown how tools such as eco-footprinting analysis for individuals can be a success, but we would also suggest that government provide a clearer and stronger regulation of such claims to prevent a greenwash, especially on climate change. Our results show that the EU Energy Label on white goods was widely used as a key short cut in decision making, which supports the study by Sammer and Wüstenhagen (2006). We suggest that single issue green labels for the most significant environmental aspect for that product need to be developed for different product types. This is in order to focus purchasing behaviour on reducing the most important environmental impacts.

For retailers, our results imply that green consumers will purchase green products if they are available in a range (not just as a one off product) helping with Success Factor 5. Quelch and Harding (1996) have shown that retailers already act as a filter of products, but if retailers filter for green products our results show that consumers are more likely to trust and purchase green products available in large retailers. It is difficult to develop recommendations for Success Factors 2, 3 and 5, but some may follow from policies for the other success factors.

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Finally, from our study even our self-declared green consumers are not equipped or motivated enough to make decisions on which issue is the most significant for each purchase and alter their purchase accordingly. In addition, they do not have the time for research, information interpretation and product search required for green purchasing. Therfore, we worry that any government policy that solely relies on green consumers (never mind grey consumers) as agents of change for consumer products is misguided. Our results show that green consumers can use their buying power to make a difference, but at a high cost in terms of effort and time, which is a significant barrier. These consumers need help from government in the form of incentives and single issue labels to show them where they should be concentrating their limited efforts. More fundamentally, 'being green' needs time and space in peoples' lives that is not available in increasingly busy lifestyles. Therefore, there need to be coherent sustainable production and consumption policies across government departments, not just 'green advice' to consumers.

Future research could use social experiments to test out different information sources (e.g. from self-help books) and motivational methods (e.g. community groups) or policy scenarios in a range of different socio-economic and geographical locations to tease out the influence of context on decision making and the success or otherwise of different approaches. Other research could analyse more fully the conflicts between different ethical values and how they are reconciled. There is still a lot of research to done to understand and help behaviour change towards sustainability.

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