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Behavioural models of decision making and implications for green marketing

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Dimensionen eines nachhaltigen Energiekonsums in Wohnge-
bäuden**

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1. Introduction

1. Introduction

Although many consumers are interested in the environment, there is still only a rather small segment of consumers in the marketplace who put their interest into purchasing practice. In other words, even when consumers have a positive attitude towards environmental issues, they are passive in their purchase decisions to a large extent. In literature, this is called the **“attitude-behaviour gap”** or **“value action gap”** which is the recognition of a disparity between stated attitudes and actual behaviour and thus claims that attitudes alone do not only influence consumers decision-making enough to turn into a sustainable consumer purchase (Chatziddakis et al., 2007; Kollmuss and Agyemang, 2002; Maiteny, 2002).

In addition, within literature, a long-standing debate about the commonly cited **“energy efficiency gap”** has been going on, describing the absence of energy efficient investments that appear to be cost-effective on an estimated life-cycle cost basis (Ruderman et al., 1987). Lack of information, imperfect markets, organizational barriers, or limited access to capital are possible explanations amongst others why consumers under-invest in energy efficiency (Levine et al., 1995). Several of these market and nonmarket failures are in direct connection to individual decision making, including e.g. the existence of relatively high “implicit discount rates” of consumers who have to decide between appliances with different costs and energy efficiencies (Hausman, 1979). Literature has discussed implicit discount rates ranging from 25 to over 100 percent (Sanstad et al., 2006; Train, 1985).

Both the attitude-behaviour gap and the energy-efficiency gap can be regarded as non-rational and inconsistent behaviour. Thus, by analyzing how individuals make decisions, human behavior on energy use can be better explained by drawing on behavioural decision models which provide another look on why consumers do not adopt sustainability innovations, despite their positive attitudes towards the environment and the cost efficiency of the investment. Economics has traditionally assumed that decision makers have stable and coherent preferences, which do not depend on the context. However, as humans' cognitive processing capacity is limited (Simon 1955), the rationality assumptions have been empirically shown to be violated in many studies (Slovic and Tversky, 1974). Empirical evidence that consumer decisions were not always made rationally started with the work of Tversky and Kahnemann (1974) who showed that consumers consistently violate axioms of rational choice in particular kind of situations and since then a lot of academic work has been done on finding out how the axioms of rational choice are violated by consumers (Gillingham et al., 2009). It was proved in numerous experiments that individuals make decisions different from standard rationality assumptions held by economists (Goldberg and von Nitzsch, 2001).

1. Introduction

Thus, systematic biases in consumer decision making has attracted interest of academics and especially those in the field of behavioral economics. The behavioral economics literature is influenced by psychology aimed at understanding how a consumer decision takes place (Rabin 1998; Gillingham et al. 2009). The field of behavioural economics intends to integrate a more robust psychological understanding of decision making into microeconomics, which originally assumes rational choice, assuming that consumers have ordered, known, invariant and consistent preferences. Behavioral economists therefore replace the classic microeconomic assumption with bounded rationality or other heuristic decision making methods (McFadden, 1999). Wilson and Dowlatabadi (2007), Shogren and Taylor (2008) and Gillingham et al. (2009) reviewed the topic of behavioural economics specifically in the context of environmental economics. However, these studies reveal that empirical literature in this field is unusually limited but claim that behavioural failures can lead to a situation where investments in energy efficiency are below the optimal level (Gillingham et al. 2009). Thus, behavioral economics can be drawn to explain why energy efficient investments are not taken, although from a rational point of view it would be a smart choice. In other words, behavioural economics endeavours to study the way the world actually is instead of the way it is supposed to be.

The following is a summary of what is known about decision making processes of consumers, which draws mainly on research from the field of behavioural economics.

2. The power of framing

2. The power of framing

The way different elements of a decision, e.g. alternatives, attributes, outcomes, and probabilities (Keeney, 1992) are presented might lead to different decision outcomes. Rational choice, however, would assume that preferences between the different options should stay the same (Tversky and Kahneman 1981). Framing effects are thus often taken as explanations for irrational decisions of consumers.

2.1. The power of loss aversion

If a decision is framed as a choice between losses or between gains, individual preferences are not fixed although the expected value would be identical in both choice contexts, described by prospect theory (Kahneman and Tversky, 1979; Tversky and Kahnemann, 1981). Prospect theory was developed by Daniel Kahneman and Amos Tversky in 1979 and is perceived as a "paradigm challenging the expected utility paradigm" (Levy and Levy 2002). Prospect theory claims that decisions are not dependent on absolute wealth but with respect to a reference point which acts as a standard against which other stimuli are compared. Prospect theory posits that decision makers employ an S-shaped value function. One important concept within prospect theory is "loss aversion". It describes that gains and losses do not have symmetric impacts on decisions, but "the impact of a difference on a dimension is generally greater when the difference is evaluated as a loss than when the same difference is evaluated as a gain" (Tversky and Kahneman 1991, p. 1040). Empirical estimates of Tversky and Kahneman (1991, 1992) have shown that decision-makers weight losses about twice as strongly as gains. In addition, prospect theory posits that the marginal impact of a change in outcome will decrease (or diminish) as we move further away from a reference point ("diminishing sensitivity") (Tversky and Kahneman 1991).

Implications for green marketing could be that loss aversion has a major impact on the way individuals interpret information delivered to them. Thus, when providing information to consumers, energy information can be framed in different ways. Thus, framing the energy costs as loss has a higher impact on consumer choice than framing them as gains. Thaler and Sunstein (2009) mentioned as an example, that using energy conservation methods can be framed in two different ways. On the one hand side, it can be mentioned that by using energy conservation methods, one will be able to save \$350 per year whereas by not using energy conservation methods, one will lose \$350 per year. A study revealed that information campaigns framed in terms of losses are much more successful (Thaler and Sunstein, 2009).

One other concept of loss aversion which has found an important application in prospect theory is the "endowment effect" by Thaler (1980). This effect states that

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people value something much more once they own it so that the maximum amount they are willing to pay in order to acquire a good is less than the value they would demand when selling or giving up an item. This is explained by the fact that we attach emotions about all previous experiences with that product. Knetsch (1989) conducted an experiment where half of the respondents received a candy bar and the other half of the respondents was given a coffee mug. Both items had about the same price value. Then the respondents had the chance to trade the items. Confirming the endowment effect, preferences for the coffee mug over the candy bar ranged from 10 to 89%, depending only on which item was received first.

This insight has important implications for green marketers. Consumers might attach emotional value to their old products which presents a challenge when trying to sell new products to consumers (e.g. replacing old household appliances with more efficient models). Thus, retailers could offer their customers the chance to try out the products before they have to pay the final price, so the benefits of the product can be experienced and establish an emotional attachment to this product (Policies Studies Institute, 2006). Once the consumers have the product in their house, they would not want to give up this new ownership as this would be regarded as a loss.

2.2. The power of defaults

One other framing effect, also showing that individual preferences are not fixed or invariant, is that consumers do mostly not look for and process all relevant information what is available on the market, but rather “anchor” on specific information (Tversky and Kahneman, 1974; Ariely et al., 2003). This is why preferences can be biased towards the initial anchor point, e.g. the status quo or the default option.

The power of defaults is well known for different kind of fields (Goldstein et al., 2008; Polak et al., 2008) and is described as being the option that consumers receive if they do not explicitly ask for another option (Brown and Krishna, 2004). Anderson (2003) and Sunstein and Thaler (2003) have shown that, when applying defaults, consumers tend not to select another alternative (Anderson, 2003; Sunstein and Thaler, 2003). One prominent example is the power of default for organ donations. Countries within the European Union vary enormously regarding the percentage of the population being donors. In Denmark for example, only 4.25% of the population are registered as donors whereas in countries such as Austria, France and Hungary, almost 100% of the entire population are donors (Johnson and Goldstein 2003). The most prevalent difference between these countries is that they apply different default policies. Denmark for instance is an explicit-consent country where people have to register first in order to become a donor. Other countries such as Austria follow a presumed-consent default policy where everybody is an organ donor unless they opt out (Johnson and Goldstein, 2003). John-

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son and Goldstein (2003) have explained the effect of how defaults influence the decision-making process of individuals in different ways. On the one hand side, defaults can be perceived as being recommendations by the government or the manufacturer. On the other hand, making an active decision requires physical effort (Samuelson and Zeckhauser, 1988). In connection to this, one explanation is the existence of human inertia, which has been explained by a number of behavioural economics studies. Thaler and Sunstein (2003) explain this effect as any change from any status quo or present state requires the individual to invest time and effort. Many people are refrained to do that, in particular in case when they tend to procrastinate things. Especially when people have to deal with a complex decision-making process, they shut off and don't make any decision or delay it to a later point in time. This problem of inertia and procrastination is related to the theory of "bounded self-control" (Mullainathan and Thaler, 2000). Bounded self-control describes individuals who have the right intentions or beliefs but prove to be limited in their capacity or lack the willpower to execute their intentions to change the behaviour. Although people would like to change their behaviour or buy a product today, they are too often too busy. Thus, although individuals comprehend the consequences and advantages of a specific behaviour and have the right intentions to change, they lack the energy to implement their intentions. Thus, the existence of inertia also explains the fact that default rules tend to be "sticky" (Thaler and Sunstein, 2003). In a fully rational world, setting the default differently should not have any impact on consumer choice as consumers still could simply go for the option which suits their needs best, independently of the default (Thaler and Sunstein, 2003).

The power of defaults provide an explanation as to why individuals stay with defaults they know, even though there would be alternatives on the market which would meet their preferences even better. That is why Loewenstein and Ubel (2008) argue that "soft" paternalistic interventions are becoming more important as it is more and more recognized that many people are not acting in a way what seems to be best for them. In addition, Thaler and Sunstein (2003) describe with "libertarian paternalism" and Camerer et al. (2003) with the term "asymmetric paternalism" the approach to guide consumer towards choices which meet their preferences without removing the ultimate choice autonomy of the individuals.

Applying this knowledge to energy-related decisions, one prominent example in the field of green electricity has been discussed by Pichert and Katsikopoulos (2008). The authors have showed that many electricity consumers are not switching their electricity provider or electricity mix although they would be willing to pay for a greener electricity mix. The authors mention the example of German electricity providers who made green energy as the default option, resulting in the fact that most customers kept their default green tariff. Thus, consumers usually stick with their default electricity provider or electricity mix.

There are various other domains where the default option is usually not the environmentally-friendly one. When purchasing a plane ticket, for instance, the cus-

2. The power of framing

consumer has to choose to offset his carbon emissions by ticking a box. Setting the default differently could be done by pre-checking the box so that the consumer has to opt-out if he wishes not to buy that option (Allcott and Mullainathan, 2010). Another example would be to set the default temperature setting as programmed by the manufacturer differently. McCalley (2006) investigated whether the default setting leads to significant differences in energy consumption. One experimental group used a washing machine where automatically the washing temperature was set, e.g. to 95° C for a normal wash program. In case those users did want to wash their clothes at a lower temperature, they had to lower the temperature to the desired setting themselves. The other experimental group received a washing machine where the default temperature was set to zero and users had to increase the temperature in case they did not want to wash their clothes with cold water. Setting the default differently led to a significant reduction in energy use by 24% (McCalley, 2006).

Another strategy of setting the default is to apply the strategy of choice editing which defines the pre-selection of products by eliminating inefficient products or environmentally unfriendly products to directly influence consumers' choice by increasing the standard for all (Sustainable consumption roundtable, 2006). Marks&Spencer for instance have decided not to stock non-free range eggs or non-fair-traded coffee.

Thus, not only governments, but also businesses have the power to nudge consumers towards energy-efficient shopping behaviour. Retailers and manufacturers have a big responsibility in making the environmentally friendly consumption easy and inexpensive. Manufacturers can design the products to help consumers use the product in a more sustainable way, such as integrating an economy wash program in washing machines as the default option. Karsten and Reisch (2008) have discussed the legitimacy of choice editing and claim it as a case for "making the sustainable choice the easy choice".

2.3. The power of the decoy effect

A decoy is an alternative that is added to a consideration set so that the relative attractiveness of other alternatives is changed (Huber et al. 1982). As consumers rarely make decisions in absolute terms, but have an "internal value meter that tells us how much things are worth" (Ariely, 2010, p.2), they much more concentrate on the relative advantage of one alternative over the other. Huber et al. (1982) investigated the decoy effect with regards to the choice between restaurant options. During their study, they asked the respondents to choose between two different restaurant options which were characterised by the amount of stars and the driving distance in minutes. The first option was a five-star restaurant which was about 25 minutes away driving, whereas the second option was a three-star restaurant which was only 5 minutes away. Both options were designed to be equally at-

2. The power of framing

tractive to the respondents. However, when a decoy was introduced to the choice set (a four-star restaurant which was 35 minutes away driving) the attractiveness of the five-star restaurant increased significantly. In contrast, when another decoy was introduced, a two-star restaurant which was 15 minute away driving, respondents rather chose the three-star restaurant. Thus, the option which was consistently better than the decoy was always preferred by the respondents (Huber et al. 1982).

Applying this finding in the field of green investment choices, one could think about the following example. If consumers have the choice between a cheap, but inefficient appliance and a more expensive, but very efficient appliance, consumers might have difficulties to choose between these two options because they have to trade-off between two important attributes. If a third option would be introduced, e.g. an efficient but even more expensive product, the comparison with the clearly inferior option (very expensive efficient product) makes the moderate expensive efficient product even better.

2.4. The power of the Pennies-a-day effect

The "pennies-a-day" effect, coined by Gourville (1998), describes a technique of temporally reframing a price. Gourville describes in his studies that by reframing a transaction from an aggregate expense to a series of smaller, daily expenses, prices seem lower and thus more attractive to consumers. As a prominent example in his studies he describes the advertisements of charities, who often ask donors to save a child's life for "only the cost of a cup of coffee a day". Gourville (1998; 1999) discovered that up to a certain level, a pennies-a-day framing can lower the perception of the monetary magnitude on an expense in comparison to an aggregate framing. As an explanation of this effect Gourville assumes that such a framing in pennies-a-day fosters the retrieval of ongoing costs (e.g. cup of coffee a day) and makes the price seem to be trivial. On the other side, a framing of the price as an aggregate cost fosters the retrieval of bigger and infrequent costs (Gourville 1998).

This finding has important implications for framing of costs. In the field of energy efficient household appliances or heating appliances e.g., by showing how much energy is consumed over the lifetime of a product as an aggregate cost, consumers might foster the retrieval of bigger and more infrequent costs. If the costs are shown in a smaller temporal frame (e.g. per year), consumers might compare the prices to smaller, ongoing costs. They might underestimate total expenditure and therefore would see the costs as a less important choice attribute and would be less willing to pay for a product with a lower level of energy consumption.

2. The power of framing

2.5. The power of choice overload

In contrast to popular belief, behavioural economists show that more choice options are not necessarily "better". The "choice overload" hypothesis (Iyengar and Lepper 2000) suggests that too many choice opportunities can lead to information overload and ultimately proves to be demotivating. This can lead to the fact that the individual becomes overwhelmed by all choice options and accepts even more the standard product model ("default"). Schwartz (2004) has called this 'the tyranny (or 'paradox') of choice'. Iyengar et al. (2003) showed that participation in pension plans in the U.S. decline as the number of fund options increases. Benartzi and Thaler (2002) showed that retirement plan participants might have difficulties to deal with many different investment choices.

In the context of newly regulated markets, as this is the case with many utilities markets like electricity, competition increases which lead to the fact that customers can choose their preferred electricity provider and select among a variety of different electricity mixes. Thus, increases in competition lead to a set of choices for many consumers that better matches their preferences. However, most consumers have little knowledge regarding the topic of electricity and as choice increases, this might be overwhelming to them, making the decision-making process more difficult. With a higher number of choices for a decision alternative, sensitivity to regret and opportunity costs for selecting another option increase (Schwartz, 2004). In case choice is particularly excessive, individuals might avoid making a choice altogether and stay with their default electricity provider and product.

3. The power of time inconsistency

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One possible explanation of behavioural economists why individuals do not always make consistently rational choices is time inconsistency. In comparison to time consistency, where present consumption is traded off for future consumption at a constant discount rate (O'Donoghue and Rabin, 1999), there is a lot of empirical and experimental evidence showing that consumers often don't make decisions based on a constant discount rate (Frederick et al., 2002) and that hyperbolic or proportional discount functions represent consumers value costs and benefits over time more accurately (Loewenstein and Prelec, 1992; Harvey, 1994). Hyperbolic discounting describes that individuals are impatient and strive for immediate gratification (Ho et al. 2006). This effect mainly occurs when products are characterised by immediate costs but with delayed benefits, for instance an energy efficient heating system. Time inconsistency implies that people heavily discount future savings which has an important impact on the way in which individuals attach value to the efficiency or lifetime operating costs of products.

Thus, because of time inconsistency, consumers tend to overvalue the present and undervalue the future and often do not take into account the future operating costs during their purchase decisions. This short-term thinking is an important barrier in the field of energy efficiency investments (e.g. energy efficient heating systems or household appliances), as individuals often only see the initial investment costs and not the lifecycle costs when deciding for or against an energy efficient investment. Frederick et al. (2002) give an overview of studies which have investigated individual's preferences regarding different models of energy-consuming products which have to be traded-off between long-term operating costs and the upfront investment costs. Most studies reveal that discount rates exceed market interest rates by far; ranging up to 210 per cent for air conditioners, 138 per cent for freezers and up to 300 per cent for refrigerators (Frederick et al., 2002).

Green marketers must recognize the occurrence of time inconsistency and identify measures to overcome this by highlighting the importance of the future operating costs. One possibility to overcome this barrier would be to show the long-term operating costs of products, rather than just the purchasing price to consumers. Providing estimated monetary operating costs would give the consumer the possibility to see at one glance how much money could be saved over the long-term. The discussion of providing operating and life-cycle costs is not new. Lund (1978) already suggested more than 30 years ago that operating costs and lifecycle costs are possibilities to overcome this barrier (Kaenzig 2009). Kaenzig and Wuestenhagen (2010) claim that providing information about operating costs can take the form of either providing explicit lifecycle cost information (e.g. operating costs in monetary units) or by providing implicit LCC information in form of eco-labels (e.g. the EU energy efficiency label), as a product with a higher efficiency class

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implies directly lower operating costs in the long run (Kaenzig and Wuestenhagen, 2010).

The other possibility to overcome the barrier of time inconsistency is to offer attractive payment schemes or financing mechanisms, e.g. offering consumers the possibility to install energy saving technologies at no upfront costs and spreading repayments over long periods so that these repayments are lower as their predicted energy bill savings (e.g. implementing pilot “Pay-as-you save scheme in the United Kingdom) (Barenergy, 2010).

4. The power of the social environment

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The power of the social environment originates from the fact that consumers are generally heavily influenced by other people. Most consumption choices are influenced by some kind of social influence which will be described in the next sections.

4.1. The power of status and self image

Consumers not only buy products or services to satisfy a functional need, but also to make a statement about oneself. Modern identities are created through the symbolism of consumption (Jackson, 1999). Thus, people do care about what others think about their purchase behaviour. Products symbolize concepts which are used to express one's identity and portray one's status. Veblen (1899) already described goods as proof of social status, which creates respect from other people. Eastman et al. (1999) define status as "the position or rank in a society or group awarded to an individual by others". Since Veblen (1899), economists observed that individuals "do good" because of their aspiration for "social approval". Social approval has been described to motivate to behave "in the right way" (Glazer and Konrad 1996). Despite social approval is not a material good, people behave pro-socially to get an external reward.

These findings hold important implications for green marketing. The fact that individuals contribute more due to reasons of "social approval", it is important that others can observe in which way the person has contributed. Possible strategies range from displaying a leaderboard, or a list of those households who have made major conservation efforts (Houde and Todd, 2010)

4.2. The power of social norms

Social norms are described as the "rules" of how to behave in a particular situation. Bicchieri (2006) describes social norms as "the grammar of society". In the context of environmental behaviour, several studies have shown that information on social norms on electricity and gas consumption was able to result in 20-28% consumption reduction (Nolan et al., 2008, Cialdini, 2003). Cialdini et al. (2008) tested which form of information about reusing towels in hotels had the highest impact. They tried out different messages: "Save the environment", "Preserve resources for the future", "Partner with the hotel to save the environment" and "Join your fellow citizens in helping to save the environment". The last message, which represented a social norm as hotel guests were informed about that other hotel

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guests also reuse their towels, generated recycling activity of about 48 per cent whereas the other messages only produced reuse rates of about 36-38 per cent.

During one other specific study regarding energy consumption of Schultz et al. (2007), 300 households in California were informed about their energy consumption in comparison to the average energy consumption of their neighbours. The households were split in one of four experimental conditions. Those households which had a more than average energy consumption level either received only standard information about their energy consumption compared to their neighbours or received both this information and in addition a sad face was printed on the electricity bill which is an injunctive normative message implying disapproval. Those households, who had a higher than average energy consumption, received either only the standard information or both this information together with a happy face printed on the electricity bill, implying approval. The results showed that those households which consumed more energy than the average reduced their level of energy consumption over the period of study, either by 6 per cent when a sad face was included or by 4.6 per cent when the sad face was not included. Interestingly, those households who had a less than the average energy consumption increased their energy consumption towards the average level by 10 percent when the happy face was not included. Those that had received a happy face in addition to the standard information increased the usage by only 1 percent. This result has important implications: for those households who have a lower than average energy consumption the approval portrayed by a smiley had a high impact in convincing the households to maintain their low consumption and not to adapt to the average energy consumption in their neighbourhood.

Strengthening social norms towards energy-related topics (e.g. through individuals or groups setting positive examples and/or through governments or NGO's providing information focused on the societal or group-level benefits of individual behaviour change) is likely to have a positive effect on the uptake of these behaviours.

5. Conclusions

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Understanding how consumers make decisions is important for marketers concerned with the impact of human investment behaviour in the field of energy. Learning from fields such as behavioural economics and psychology, consumer behaviour in the real world often dramatically differs from that predicted by standard economics. Thus, old assumptions need to be let gone and companies need to become more flexible in identifying creative ways of doing business. An improved understanding of consumer behaviour gives marketers the possibility to be successful in a more and more sustainable world.

Lessons from literature on behavioural economics reveal different insights into an effective green marketing strategy. Examples of anomalous behaviour are numerous, including the status quo bias, loss aversion or time inconsistency, just to name a few. Based on the examples provided in the previous chapter, a key challenge in defining green marketing strategies is dealing with the enormous complexity of consumers' decision behaviour. Understanding consumers' decision making processes better and accepting that consumers often don't behave rationally and occasionally even against their self-interest helps marketers to design marketing campaigns which bring the necessary changes.

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