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Consumption of Innovation

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INTRODUCTION

Innovations diffuse when numerous individual decisions are made to adopt them, and appreciating why consumers make their choices is therefore essential to understanding how innovations become widely used and successful. Diffusion results from aggregate adoption behaviours, which in turn depend on consumption decisions. To understand diffusion – and thereby the level of success of innovation – we have to understand consumption. This has broad implications for the management of innovation.

Consumers are increasingly involved, and demanding to be engaged, in the process of creating innovation (von Hippel 2005), and lifestyle choices on issues such as sustainability and wellbeing are becoming more important. Concerns for a sustainable lifestyle, for example, influence the choice of a hybrid car (Heffner et al 2007) and protectiveness towards future generations associated with using renewable energy can affect the adoption of energy-efficiency and ‘green’ technologies, such as solar water heating and compact fluorescent lamps (Caird and Roy 2008). It is therefore crucial for innovation management to recognize the nature and significance of the act of consumption.

This chapter begins by illustrating the interrelationships between innovation and consumption by using an example of an entrepreneur in the Industrial Revolution whose products leveraged and contributed to the broad social, economic and cultural changes of the period during which the phenomenon of mass consumption emerged. It then offers a literature review that argues that studies of the adoption of innovation, a field of study that draws on economics and the applied sciences of design, can be valuably supplemented by research into the consumption of innovation, a field of study that draws on sociology, anthropology and social psychology. We then offer two contemporary cases - the Toyota Prius and green tariff electricity - to illustrate the multiplicity of factors affecting, and the constraints on, the consumption of innovations. We then draw the lessons of better understanding consumption for the management of innovation.

CONSUMPTION AND INNOVATION – LESSONS FROM THE PAST

We begin our examination of the importance of consumption for innovation management by using an example of a renowned innovator and the way his innovations contributed and responded to changing patterns of consumption. The period is the industrial revolution, when consumption and lifestyle patterns changed dramatically as industrial wages were paid and new industries and businesses created novel sources of wealth. The population of England doubled in the eighteenth century and the new

manufacturing towns that emerged during this period of the industrial revolution brought significant expansion in purchasing power.

As a result the nation witnessed a 'consumer explosion' (McCracken 1990). There were '...new developments in the frequency with which goods were bought, the influences brought to bear on the consumer, the numbers of people engaged as active consumers, and the tastes, preferences, social projects, and cultural co-ordinates according to which consumption took place' (McCracken 1990: 16). Berg (2005) refers to the reconfiguration of consumption in the eighteenth century from needs to desires. She argues, for example, how increased desire for porcelain amongst the middle ranks and for fine earthenware amongst the labouring poor, small artisans and tradespeople reflected the growing taste for luxury. Uglow (2002: xvii) writes about how during this period the country was 'rethinking the whole relationship of "luxury" to culture'. These changed tastes resulted from exposure to luxury goods derived from increasing international trade, and growing appreciation of the 'sociabilities of commerce and shopping' beyond merchants and young ladies (Berg 2004, 2005: 36). Agnew (1993: 25) has people at the time describing the pattern of consumption as 'manic and addictive'.

The size and sophistication of the consumer market developed throughout the 18th century. Stylish table accessories, for example, were in huge demand in the burgeoning industrial cities and increasingly wealthy colonies. Tea drinking, and more fashionable coffee and hot chocolate, was becoming a national characteristic (McKendrick 1960). Hundreds of coffee shops opened in London during the eighteenth century.

McCracken (1990: 17) locates this consumption in the 'viciously hierarchical nature of eighteenth century England (where) goods had suddenly become tokens in the status game'. Fashion had its role to play. Koehn (2001: 25) refers to the strong thirst for novelty at the time: 'In furniture, pottery, fabrics, and millinery, consumers insisted on new fashions'. Robinson (1987: 108) argues 'fashion helped both strengthen the hierarchical system of status and at the same time to persuade members of the middling classes and even of the lower orders that they could at least to some extent imitate their betters'.

The consumption of luxury stimulated a 'significant source of innovation in technologies, products, marketing strategies, and commercial and financial institutions' (Berg 2004: 92). In the case of pottery, for example:

'Fine earthenware was developed for tableware, and here new qualities of taste and aesthetics, manners, and eating cultures could be combined with technology and industrial development. The result was the huge opportunities offered by a new commodity...' (Berg 2005: 130).

Into this context, and very much contributing to it, was the great entrepreneur and successful industrialist, Josiah Wedgwood (Dodgson 2011). His many product, process and organizational innovations were informed by his reading of cultural changes, and complemented by success at insinuating his goods into the upper classes and his

mastery of the 'trickle down' into the lower classes. This strategy has been argued to be part of a radical change in the definition of status and the use of goods to express status (McCracken 1990). Wedgwood aimed at what he called the 'Middling Class' – the new and aspiring market of consumers 'who wanted to enjoy wares with a flavour of metropolitan styles but who could not aspire to buy China' (Young 1995: 10).

Wedgwood assiduously sought patronage from politicians and aristocracy: what he called his 'lines, channels and connections' (McKendrick 1960: 418). Clients included King George III and Queen Charlotte, and Catherine the Great of Russia. 'A thousand parcels, containing £20,000 worth of pottery, were dispatched to the minor nobility of Europe in an attempt to imitate the strategy of starting at the top of the social pyramid and proceeding downwards'. (Tames 2001: 22). His products excited the increasing middle class as they differentiated them from the coarser earthenware used by the lower classes and displayed some features of the fine porcelain used by the upper class. When his relentless pursuit of the acclaim of the aristocracy was near completion, he began on the minor nobility.

The consumption of Wedgwood's goods by the aristocracy was immensely valuable. 'They praised his ware, they advertised it, they bought it, and they took their friends to buy it... In the small, interconnected, gossip-ridden world of the English aristocracy in the eighteenth century, such introductions were vital, for even a very few sales could have an important effect' (McKendrick 1960: 414-415). His 'appeals are to price, quality and fashion, to self-interest and self-esteem (Robinson 1987: 105).

For Wedgwood therefore, his many innovations in the pottery he produced and the way in which they were manufactured and marketed, occurred within the context of massive changes in patterns of consumption. Their success depended on using his deep appreciation of the nature of the social and cultural changes occurring at the time and using them for commercial advantage.

THE LITERATURE ON INNOVATION ADOPTION AND CONSUMPTION – THE CASE FOR THEIR SYNTHESIS

In the classical economics literature, consumption is seen as ‘exchange value’ (purchase and re-sale prices) and ‘use value’ (utility, or satisfaction of needs and wants) (du Guy et al. 1997). In this perspective of consumption there is no space for human agency (ibid.). However, consumption is not a mere appendage of economic production, but an important social issue (Featherstone 1991). Alan Warde (2005: 137) defines consumption as ‘a process whereby agents engage in appropriation and appreciation ... over which the agent has some degree of discretion’. This definition presents a view that the consumer is not passive, but active, and that consumption cannot be reduced to economic value. Consumption has symbolic significance.

Current empirical consumer marketing studies mainly look at quantitative differences between consumer groups through examining behavioural constructs (e.g. novelty-seeking, risk-taking), time and money spent on a particular activity, and demographic

and geographical attributes. The results of focusing on such quantitative differences are non-contextual and 'static' pictures of consumers and do not really explain 'how' consumers form their opinions about certain products and services (Holt 1997; Ozaki and Dodgson 2010). The depth to which adoption is embedded in social practices, and its cultural dimension, need to be understood. Although qualitative and interpretive marketing research does exist (e.g. Alvesson 1994; Belk 1995; Thompson 1997), it does not focus on innovation adoption. The objective of innovation management is for innovations to be consumed and eventually diffused, their providers therefore need to uncover 'why' people prefer and want certain things. 'Who wants what' is not enough. Thus, looking at consumption through the qualitative lens complements quantitative consumer adoption research and adds to the insights provided by the marketing approaches describe by Prabhu in Chapter x.

Rindova and Petkova (2007) identify a gap between the 'intended value' of an innovation, expected by its producers and reflective of the ambitions of their designers and engineers, and 'perceived value', expected by consumers. As long as this gap exists it restricts innovation diffusion, and to create a bridge it is necessary to understand how consumers perceive a particular innovation and what motivates them to adopt it.

Effective innovators convince consumers that a specific object possesses not only useful functions, but also a certain cultural meaning that consumers can identify with and quality that they value. The role of designers therefore is to inform consumers of the

qualities intended of the object. For that, innovators need to understand how consumers see their innovative product or service and what meaning they attach to it.

An example is the Sony robot, AIBO (Rindova and Petkova 2007), introduced to the Japanese market in 1999. When Sony launched it on the American market, reaction was lukewarm. Sony changed its outer form from a dog to a human shape in order to shift consumer opinions, hoping that this new shape would induce a perception that this product was a companion, not a toy. This created new perceived value and the AIBO started to sell (ibid.). Another illustration is the Sony Walkman (du Guy et al. 1997). The Sony Walkman was originally created for urban youths listening to their music. It had two headphone jack sockets for listening with friends simultaneously, because solitarily listening to music in public places was seen to be impolite. However, many more people bought a Walkman, ranging in age from 18 to 60, particularly those engaging in outdoor activities such as jogging and bike riding; and people listened to the music individually. The way people used the Walkman was more personal than shared. The Sony Walkman II had a new design with only one headphone jack socket. The image of outdoor activities was also incorporated into the product's advertising. The Sony Walkman II was a great success because the ways it was consumed was well understood by designers, who acted as intermediaries between production and consumption (ibid.).

Understanding consumption therefore needs to draw on quantitative and qualitative analysis, the economic and functional intent of their producers, and their perceived

value by consumers. This need to refer broadly for explanations why innovations diffuse is further explored in the following review of literature on adoption and consumption.

Adoption

The classic study of innovation diffusion remains Everett Rogers' *Diffusion of Innovations* (2003), first published in 1962, who states on the first page of the book: 'getting a new idea adopted, even though it has obvious advantages, is often very difficult. Many innovations require a lengthy period, often of many years, from the time they become available to the time they are widely adopted'. Decisions on whether or not to take up an innovation are not instantaneous, but a process that occurs over time, consisting of a series of different actions. As a result, Rogers argues that diffusion research should focus more on the consumer of innovations and that the degree to which people adopt new ideas (i.e. overt behavioural change, or action, rather than cognitive change, or intent) should become the main dependent variable in diffusion research.

Rogers identifies five sequential stages in innovation adoption. An individual: (1) gains knowledge of an innovation (the knowledge stage), (2) forms an attitude towards it (the persuasion stage), (3) decides to adopt or reject it (the decision stage), (4) implements it (the implementation stage) and (5) confirms the decision (the confirmation stage). A range of prior conditions bring consumers into the process in the first place, including their previous experiences, existing needs and problems, norms of their social systems (e.g. their social groups) and general 'innovativeness'.

Innovation adoption is therefore strongly bounded by the social context in which it occurs. For Rogers, the innovation-decision is a social and psychological process as much as an economic one. Indeed, this is widely understood in the innovation adoption literature. One of the best-known case studies of the diffusion of innovation, for example, Morison's (2004, first published in 1966) study of gunfire at sea shows that despite obvious intrinsic benefits, much depends upon the social context in which innovations are introduced and attitudes towards their source.

Others argue social influences, such as network effects (Bikhchandani et al. 1992), herd behaviour (Banerjee 1992) and social interaction and learning (Bandura 1986), play a significant role in accelerating adoption. According to Rogers (2003), once 10 to 20 per cent of the population adopt an innovation, there is relatively rapid adoption by the remaining population, forming an S-shaped curve.ⁱ This resonates with other similar models in innovation studies, such as Foster (1986), and Abernathy and Utterback (1978), but Rogers places particular emphasis on the importance of the social network of the potential adopter, and the influence of opinion leaders and peer groups.

It is in Rogers' persuasion stage where a general attitude towards and perception of the innovation develops. An individual becomes more psychologically involved with it and actively seeks, interprets, and assesses the credibility of information about the innovation. The most important factors at this stage are perceptions of the innovation's characteristics or attributes. He argues that most of the variance in adoption rate is

explained by five perceived attributes: relative advantage (e.g. economy and status), compatibility (e.g. values, norms and practices), complexity (difficulty in understanding and use), trialability (the degree to which an innovation can be experimented with) and observability (the degree to which effects of adoption is visible). Rogers regards the first two attributes as the most important.

It is the perception of these attributes that affects individuals' decision whether or not to adopt an innovation. Ostlund (1974) showed in his study of innovation attributes that perceptual variables (consumer perceptions of products) are better predictors of adoption than adopters' personal characteristics and demographics. In addition, given that innovations can involve an element of uncertainty, Ostlund, and other researchers, have added perceived risk to Roger's five innovation attributes as an expected probability of economic or social loss resulting from innovation (Labay and Kinnear 1981; Ostlund 1974). Lunsford and Burnett's (1992) study of barriers to innovation adoption for the elderly, for example, identifies that it is perceived relative advantage, product usage (complexity), compatibility with values and risk together that influence their adoption decisions. This shows that an analysis of innovation attributes provides more depth to understanding than that provided by demographic and psychographic analysis alone.

Another widely used approach to innovation adoption, the Technology Acceptance Model (TAM), focuses on the utility and usability aspects of innovations to explain how consumers choose to adopt a particular technology. TAM argues the most important

factors influencing decisions on if and how to use technology are: perceived usefulness and perceived ease of use (Bagozzi et al. 1992; Davis et al. 1989). These factors are defined as the degree to which a person believes that using a particular technology would 'enhance his or her performance' and 'be free from effort' (Davis 1989: 320). TAM's emphasis on utility and usability corresponds to the relative advantage (usefulness) and complexity (ease of use) attributes of Rogers' framework. Venkatesh and Davis (2000) later developed the Technology Acceptance Model 2 (TAM2), which incorporates social influences, such as subjective norms. According to TAM2, an individual's innovation adoption can be predicted by (a) their belief about the consequence of adopting a new technology and (b) how they think other people would think of them if they adopt.

TAM is an adaptation of intention models from social psychology that study the processes by which consumers' beliefs form attitudes towards certain behaviour ('intention to behave') and then lead to the performance of the behaviour (Davis et al. 1989), specifically of Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA). TRA assumes that human behaviour is *rationally* selected by practitioners and that decisions are made *intentionally* based on a particular goal.

This focus on the influence of social environments, usefulness and usability is in line with Rogers' framework, and particularly the effect of social networks, compatibility with norms, and relative advantage and complexity of the innovation. TAM and TAM2 present a rational relationship between consumers' perception of an innovation and

their adoption decision, highlighting the process in which evaluation of information about an innovation forms attitudes towards the innovation and leads to an adoption decision.

However, these rational and cognitive approaches provide rather limited perspectives for understanding consumer adoption behaviour, compared to Rogers' framework. This is because the adoption and diffusion of innovation is a social process (Rogers 2003) and, beyond cognitive assessment and rational choice, there are non-rational influences and cultural issues that impinge on consumers' adoption behaviour (see Faiers et al. 2007). Indeed, potential adopters react to innovation in many different ways, and a consumer's decision to adopt is informed by a wide range of personal and social factors. In his theory of interpersonal behaviour, Triandis (1977), like TAM and TRA, considers both the effect of attitudes and social norms to be the antecedents to intentions to behave, but he also includes the influence of 'affect', such as unconscious, intrinsic responses to a particular behaviour and role of habits, as mediators of actual behaviour. Similarly, Fitzmaurice (2005) argues that people's purchasing behaviour can be hedonistic, self-expressive and identity-congruent, and that these elements should be incorporated into TRA. The explanation of why some people choose an iPod over their technically equivalent and cheaper competitors, for example, lies mainly in affective aspects of the product.

To understand human conduct holistically, more dynamic, contextual and emotive pictures of behaviour need to be considered in understanding consumer adoption

behaviour. We need to go beyond the remit of the rational and cognitive approach when exploring what an innovation means to the consumer in their everyday contexts and how this motivates adoption. Of these approaches to innovation adoption, we find Rogers' (2003) framework is more comprehensive and suitable for understanding where consumers' evaluations of innovations come from and how motivations to adopt innovations are formed. And yet, although Rogers' theory does touch upon issues such as values, practices and status, these are, nevertheless, better explained in the sociological, anthropological and social-psychological approaches in consumption studies. To complement Rogers' diffusion theory, we now turn our attention to the consumption of innovation literature.

Consumption

Contemporary society is a consumer society, defined by *Blackwell's Dictionary of Twenty-Century Social Thought* (1993) as a society organised around the consumption, rather than the production, of goods and services. That is not to underestimate the social significance of production, but simply to highlight that members of consumer society treat high levels of consumption as symbolic of social success and personal happiness and hence choose consuming as their overriding life goal (Campbell 1995: 100).

There are different views on symbolic meaning of consumption. One view of symbolic meaning sees it as a reflection and expression of existing social orders (e.g. class and wealth) (Bourdieu 1984). Another suggests contemporary consumers have 'choice'.

Consumerism in this sense represents the idea that our identity is not defined by our past or inheritance. Consumption is an identity-building exercise (Lash and Urry 1984), so consumers can go beyond where they come from, and their gender, age and ethnicity. It is 'achieved' identity, not 'ascribed' identity (Dittmar 1992). Thus, consumption brings not only economic 'exchange value' and 'utility value', but also 'sign value' that represents symbolic meanings. Consumption distinguishes and communicates values, identities and memberships (Slater 1997). Hirschman (1982) shows that symbolism can be a source for the generation of innovations and that a certain symbolic innovation (e.g. styles of clothing) can be adopted when consumers find the innovation is compatible with their self-identity and image. An innovation generated primarily through symbolic changes communicates a different social meaning than it did previously.

Dittmer (1992) claims consumption is about 'reflexivity': we, contemporary consumers, choose, construct, display and maintain who we are and who we like to be seen as. In the age of consumer society, identities are negotiated through consumption (Slater 1997): we define ourselves by what we consume. We may want to keep up with Joneses, or we may want to remain different from the Joneses. It is up to us.

Consumed objects communicate meanings attached both inwardly and outwardly. Inward communication carries personal meanings that do not have to be conveyed to others. Outward communication, on the other hand, communicates with others. Such outward meanings include 'conspicuous consumption' to show off one's wealth and

status (Veblen 1899) as a display of status symbols (e.g. a Rolex watch) and advocate a particular belief or a social movement (e.g. environmentally sustainable household products). Timmor and Katz-Navon's (2008) study of how people adopt new products shows that their need for assimilation and differentiation depends on the degree of the need for being distinct from others (or similar to a social group) and on the perceived group size. The reason why one acquires an iPod, for example, when s/he already has an alternative device can be differentiation or membership. Outward meanings can also reproduce and represent social relationships, social bonds and moral obligations (e.g. gift exchange; Mauss 1990): people relate to each other through goods they acquired or were given, and thus goods are considered to constitute social processes (Miller 1987). Consumption is therefore where we try to achieve our goals and desired images, such as wealth, healthy eating, environmentalism and sound relationships.

Seen this way, it is clear that meaning is both inscribed and attached. In the case of healthy eating or environmentalism, products are already inscribed with particular meaning and consumers subscribe to it. However, there are cases where meaning is attached by consumers during the process of products being consumed. Blackberry's message ('Sent from my BlackBerry ®'), for example, was considered to originally show a status of the owner as it was uncommon and was used only by business people. But now, many more people have Blackberrys and such messages are being replaced by notes such as 'excuse any typos' which can be interpreted that the owner is concerned about you but is so busy that they cannot respond properly. As Baudrillard (1988) puts it, meaning does not necessarily reside in an object, but in how the object is used. So, by

understanding how an object is consumed and what meaning is attached to it, a firm can bring the consumer goods and a representation of cultural meaning together, the cultural meaning that reflects what consumers value, as in the case of the Sony Walkman. Designing products with meaning is important for innovation managers; and for that, understanding consumers and consumption is vital.

Among the concepts consumption studies offer that are useful for innovation management is the 'trickle-down effect' (Simmel 1904). This is downward diffusion created by a subordinate social group that hunts upper-class status makers. As we saw earlier, Wedgwood's strategy to seek to insinuate his goods into the upper-class lifestyles and thereafter trickle-down to lower classes is a good illustration (McCracken 1987). A contemporary interpretation of the trickle-down effect shows that there is an upward and sideways movement, as well as a downward movement. Here, people use consumption for differentiation, as well as imitation, expressing not only status and power, but also other identity elements. This perspective helps us understand social contexts of innovation diffusion (e.g. symbolic meaning, purpose, nature of difference, etc.) (Slater 1997).

Similarly, the 'Diderot effect' is a cultural phenomenon that innovative organizations can exploit. It is a force that encourages a person to maintain a cultural consistency in his/her possessions (McCracken 1988). The story goes as follows. Editor of the French encyclopaedia, Denis Diderot, receives a scarlet dressing gown from a friend as a gift. Well pleased, Diderot displaces his old, comfortable gown with this new arrival.

Wearing the elegant gown, he looks around in his study, which is filled with bric-a-brac, and decides that his desk is not good enough. He then replaces the tapestry on the wall as it looks a little ragged, and this process continues. In the end, he misses his old gown and the harmony that the study and its contents created. He concludes that it was the work of the scarlet gown (ibid. pp.119). The entry of a new object, whose cultural significance is inconsistent with that of the whole of the current possessions, introduces the entirely new set of consumer goods. Consumer goods are linked by 'unity'. Apple's 'i' series is a good example. An individual adopts a new thing, such as an iPod, which encourages them to maintain a 'cultural consistency' in their complement of goods, such as a MacBook, an iPhone and an iPad.

Perspectives in consumption studies not only apply to innovation in products, but also to innovation in services. Consuming services, such as going to the theatre or taking a holiday cruise, has meaning. Undertaking these activities can reflect the actor's personal identity for self-expression ('I support the arts'), social identity to seek reassurance from peers concerning the actor's identity ('I am part of this community'), rituals that respect social organisation ('I don't like this playwright, but I'd better go as it shows I care about our group's support for new works'), and pleasure-seeking as a form of imaginative hedonism ('it was heavenly') (e.g. Campbell 1995; Holt 1995). Thus, consumers seek and attach meaning to services, and service innovators can benefit from understanding that meaning.

In summary, the purchase of new goods and services is considered to represent both personal and social meanings, because aspiring consumers 'adopt a learning mode towards consumption and the cultivation of a lifestyle' (Featherstone 1991: 19). As Lash and Urry (1994: 57) put it, 'inasmuch as consumption has taken on heightened significance in contemporary identity-building, choice here should not be understood in a simply utilitarian sense'. The consumption of a hybrid car, for example, is not only about reducing petrol usage, but also is about self-expression of being part of a green community (Kahn 2007; Ozaki and Sevastyanova 2011). Understanding meaning attached to consumed objects and activities will help innovators to increase their customers' perceived value. This is shown in the following case on the multiplicity of contributors to decisions to consume. This is followed by a case illustrating the difficulties involved in engaging consumers in innovative services.

THE CASE OF THE TOYOTA PRIUS

Examining the reasons why consumers buy hybrid cars, such as the Toyota Prius, reveals a complexity of factors. We report here on a study examining the reasons why consumers bought Prius cars (Ozaki and Sevastyanova 2011). Financial concerns – initial and subsequent running costs - were found to be centrally important, with issues of fuel economy and reduced road taxes being especially valued by consumers. Affectional factors, such as size, comfort, quietness and ease of use, add to the practical, rational and utilitarian dimensions of consumption decisions. The reputation of the

company for reliability, and consumer's past experience of driving Toyota cars or a hybrid car (e.g. through a test drive – trialability in Rogers' sense – or previously driven cars), are influential. As Rogers (2003) puts it, knowledge about an innovation can provide the motivation to learn more about and ultimately to adopt it.

Also rated highly by purchasers are the car's perceived environmental benefits (e.g. 'driving a hybrid car will reduce carbon emissions') and compatibility with environmental values/beliefs (e.g. 'driving a hybrid car means doing the right thing'). These also reflect personal and social expressions through consumption. Expressing personal identity and a stylish, fashionable self-image are highly significant, with hybrid car ownership reflecting them through green values. People's identities are reflected in their consumption (Lash and Urry 1994), which also constructs their desired image, in this case, being 'different' and 'trendy'. Personal interest in technology is also highly relevant. Some people are intrinsically attracted to technology and have a positive attitude towards technical novelty, such as a combination of electricity and petrol engine in hybrid cars. Current Prius owners are, therefore, early adopters according to Rogers' (2003) categorisation because they are able to deal with remote ideas, such as the environment, and are also favourable towards science and technology and open to new ideas.

The expressive aspect of consumption assists compliance with social norms. People keen to comply with the norms of their groups need to perceive an innovation as consistent with these norms and its adoption as adherence to them. Compliance with

social norms, expressed in such statements as ‘socially desirable behaviour’, ‘being considerate to others’, ‘sharing common values’ and ‘being socially responsible’, were found to be important. This points to the significant role of social norms and pressure in the adoption of sustainable behaviour.

Innovation management benefits from systematic examination of the multi-dimensionality in consumers’ hybrid car purchase motivations as it highlights the range of important elements in adoption decision-making and points to ways to increase adoption rates. Ownership of a hybrid car is a signal of financially motivated consumption, but purchasers’ preferences also emphasise practical, expressive and experiential aspects and social pressures.

THE CASE OF GREEN ELECTRICITY TARIFFS

Green electricity, generated from renewable sources such as wind, solar and biomass, is an environmental innovation that has not to-date been widely adopted by consumers. Signing up to a green electricity tariff can help domestic consumers reduce their carbon emissions, but less than one per cent of UK households have done so (Graham 2007). Green electricity requires little or no behavioural change for householders to integrate it into their everyday practises. This ‘easy-to-adopt’ service innovation might be expected to demonstrate a smooth translation of consumer values into the adoption of innovation. But consumer behaviours in energy use are not as ‘green’ as might be

expected (Ozaki 2011). Many explanations have been suggested as to why environmentally-friendly products diffuse slowly into markets (e.g. Fraj-Andrés and Martínez-Salinas 2007; Rehfeld et al. 2007). Green alternatives might be considered as being too expensive, not offering the same functionality as existing products, or they might require consumers to deal with unacceptable inconveniences.

We report here on a study of the adoption of green tariffs amongst a sample of staff at Imperial College London (Ozaki 2011). The sample had a strong bias towards green consumers, and many respondents were actively engaged in environmentally friendly activities, such as recycling, and had memberships of, and made donations to, green movements. Despite the group's 'green' bias, there was great hesitation amongst them about adopting a green electricity tariff, and even those with high adoption intentions were indecisive. Positive attitudes towards pro-environmental behaviours do not necessarily translate into the performance of the behaviours. People are capable of being contradictory or hypocritical.

Switching to a green tariff can be seen as an inconvenience. It requires not only time to fill in a form, but also to contact the supplier, change payment settings and other actions. Most people are busy in their daily lives, and this is not an attractive proposition. Costs are also a problem. Even a slight increase in cost is unappealing when energy prices are rapidly rising and affecting every household. Thus, cost and (in)convenience of signing up significantly affect the adoption of green tariffs. This problem is compounded when consumers do not have sufficient and accurate

information and are uncertain about the quality of green electricity (e.g. 'is it really generated from renewable sources?' and 'is it reliable?'). The nature of the contract and costs can also cause some anxiety, which in turn leads to rejection. Perceived relative advantage (Rogers 2003) and risk (Ostlund 1974) clearly play an important role in this case.

LESSONS FROM THE CASES

The cases provide a number of lessons for innovation management by revealing the factors that encourage and constrain the consumption of innovative products and services. The case of hybrid vehicles shows the importance of financial benefits and effective communications with the public. Such communications construct a discourse that purchasing a particular innovation is not out of the ordinary and inform consumers not only about functional, but also aesthetic, practical and experiential aspects of innovations. The case of green electricity poses the challenge of how to fill the gap between intentions and actual behaviour, and this requires deep appreciation of why people consume innovations. What pushes people from 'intention to adopt' to 'actual adoption' is a combination of: a sense of control over costs and associated inconveniences; perceived personal benefits compatible with people's values and identity; strong social influences and normative beliefs; and good information that helps mitigate perceived risk/uncertainty. For innovation managers to understand the drivers of and barriers to the uptake of innovations, it is helpful to combine adoption and

consumption perspectives so as to fully appreciate the following range of influential factors.

Costs and financial benefits: The studies identify the value of financial incentives for consumers to overcome their resistance to the cost and inconveniences of switching products and services, even when consumers are knowledgeable and receptive to the innovations. In the example of green tariffs innovators have to recognise the scale of the deleterious consequences of the cost premium. Energy bills are already expensive and even environmentally aware people are not keen to pay extra. The switch over procedure was also a barrier, especially when switching from one supplier to another, and minimizing such costs affects consumption. In the case of hybrid cars, we saw the benefit of accentuating of reduced congestion and parking charges, and the availability of any subsidies.

Personal benefits: The cases show the value of the perceived benefits from adoption having personal relevance. In the case of environmental technology, for example, emotional appeals encourage potential adopters to take action. Concerns for one's children's future can trigger emotional reactions and thus change perceptions and attitudes. Environmental issues may be seen as abstract and not immediate, and the reaction of many people to them may be less acute than their responses to personal benefits and social norms, which offer more concrete indications of what is accepted and expected. Compatibility relates with personal identity (e.g. 'I am green and act pro-

environmentally') and with social norms to social identity (e.g. 'I am part of the group that is concerned about the environment').

Social influences: The cases show green values and awareness on their own do not seem to convince people to adopt a green tariff, or drive a hybrid car, so strong messages from producers, suppliers and policy-makers that our behaviours can make a difference is needed. On the social level, a guarantee of social benefits, such as a promise that electricity suppliers will make a donation to an environmental charity when customers adopt a certain innovative technology or service, may incentivise potential consumers. Consumer education fosters public recognition of the positive consequences of adopting innovations and creates shared societal norms among consumers.

Information provision: Potential adopters need accurate information to evaluate and make a decision about the value, risks and uncertainties of innovation. We saw how green electricity information is fragmented and inaccurate. It is still at an early stage of the diffusion process and information about it has to be provided with clarity and consistency to consumers. Consumers become confused about innovation when there is not enough information or it contains different and inaccurate messages. Precise information, for example, about how the electricity is generated, and how the premium prices consumers pay is used, allows potential adopters to compare suppliers, choose one that suits them, and encourage them to sign up. More user-friendly websites from innovators, and reports from consumer organisations, could especially help consumers with high adoption intentions to decide. In the case of environmental technology

stakeholders can learn from the example of eco-labelling. Eco-labelling was originally developed by NGOs and the European Union now legislates for its use. Labels are not only a message about a product or a service, but also validate claims about sustainability standards verified by a formally recognised and accredited independent third party (de Boer 2003). Eco-labelling encourages companies that want to differentiate themselves based on their sustainable product attributes and helps consumers identify more environmentally-friendly products/services and suppliers (Gunne and Anders 2007; Sammer and Wüstenhagen 2006). Standardised information would help consumers with high adoption intentions consider green electricity and build their trust in green electricity suppliers.

The Prius case identifies the range of information that is useful for consumers. It encompasses aesthetic, experiential and practical values associated with the technology, as well as the role of trial/past experience in purchasing decisions, which highlights the importance of information on what these innovations offer. This knowledge would help people overcome fears or doubts about their technical performance and practical aspects, and create demand. This suggests that there should be more communication regarding innovation and its potential 'value added'. More affective and practical information would increase consumers' positive perceptions of new technologies.

CONCLUSIONS

Consumers' decisions on whether or not to adopt an innovation are affected by much more than instrumental evaluations of utility and technical qualities. Consumers make decisions to adopt innovations for a variety of reasons that can be socially influenced or personal. Today's consumption decisions are becoming ever more complex (see Gabriel and Lang 1995; Kotler and Caslioni, 2009), making innovation management increasingly challenging.

Understanding how innovations are consumed is therefore vital for innovation management. Marketing research can usefully distinguish differences between groups in their personal and demographic characteristics in relation to the adoption of innovations. However, successful adoption and diffusion depends on the fit between consumer contexts and motivations and innovations, and there is a need for innovation management research to study the way these underlying factors affect innovation adoption decisions. The perspectives of innovation consumption studies offer a broader contextual and emotive picture of consumers that includes not only demographic and personality traits affecting customer requirements, which is the focus of marketing research, but also the dynamic contexts where consumers form their opinions and their underlying values govern their actions. The ways motivations are formed, and the meaning ascribed to consumption, need to be incorporated into our understanding of innovation adoption. By combining two traditions – innovation adoption and consumption studies – existing understanding by managers of the demand side in innovation is broadened. Innovation diffusion is the poor relative in innovation studies, with substantially greater focus on the creation of innovation, rather than its patterns of use (Ozaki and Dodgson, 2010). Given the increasing interest in 'market facing'

innovation, it becomes essential to move beyond superficial understanding of what people consume to deep appreciation of why they consume.

As a result, there remain many interesting innovation management research questions to explore in the relationships between the adoption and consumption of innovation. Two will be proposed here. First, there would be value in greater understanding of the priority of motivations in innovation adoption and consumption. The consumption literature shows us, for example, how norms and the influence of social networks (e.g. pressure from peer groups or opinion leaders) can play a big part in the decision to adopt an innovation. The questions are whether, how and when these social dimensions assume greater significance compared to factors such as cost and utility. The key to understanding the process of innovation adoption involves exploring more completely the combinations of and relationships between emotive and instrumental motivations.

Second, in a similar vein, Rogers' theory argues relative advantage and observability confers social status. Consumption studies provide deep insights into the status-conferring nature of innovation, such as the way the expression of self plays an important part in the process by which meaning is attached to objects and consumption activities. Some innovation can help a person believe that they achieve a higher status in society. By exploring the process of gaining such meaning from both adoption and consumption perspectives, the way consumers come to adopt an innovation will be better contextualized and this will help theoretical understanding and practically improve innovators capacity to market and position their products and services better.

Consideration of consumption perspectives also needs to be extended to business-to-business transactions. The normative implications for the management of innovation are clear. The most important decision made during the innovation process is that made by the consumer. Markets are created, profits produced and innovative firms survive and grow, only when individuals and organisations decide to adopt innovations. Firms that wish to improve their innovation performance have to address the 'supply-side' inputs to their innovation processes, such as market and technological knowledge, product development and R&D investments. But it is also essential for them to understand the 'demand-side' consumption of innovation and how adopters influence the innovation process. The identification of determinants of consumer adoption behaviours allows firms to measure and forecast the economic effects of innovations, which then helps them to improve positioning of their innovations. Understanding the distinctive characteristics and motivations of consumers helps to explain why one product gets chosen over another one that has the same price, function and utility. This requires study of the *meaning* that is attached to the product and the *context* in which the adoption decision was made. Few of today's organizations can prosper without understanding the motivations and actions of consumers towards their innovative products and services.

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ⁱ Unlike Rogers' (2003) argument of smooth and continuous increase, Moore (1998) discusses the difficulty in 'crossing the chasm', the transition from early adopters' adoption to early majority's adoption, which would push up the S curve.