

What Uncertainty? Further insight into why consumers might be distrustful of product service systems

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Structured Abstract:

This paper takes the move from a paper by Rexfelt and Hiort af Ornäs (2009) published in the *Journal of Manufacturing technology Management*, which dealt with consumer acceptance of product service systems (PSS). This topic is important as it is a sustainable business model. It is proposed that the uncertainty consumers have towards the suitability of PSS to their needs can be further explored using existing management tools such as SERVQUAL, a tool to measure customer satisfaction and perceived quality. Consumers are favourable to PSS provisions in principle; however they have concerns on whether this type of provision will live to their expectation. These concerns are that the PSS might not perform satisfactorily in terms of its *Assurance, Reliability, Responsiveness, Empathy* and *Tangible components*. The attractive aspect of PSS to consumers is as a “bundle” of products and services where the product can be replaced to accommodate consumers’ needs. Business managers and policy makers will need to devise communications to reassure consumers that PSS provision meets the requirements set out by the SERVQUAL scale. The study is based on a research project funded by the *British Academy*.

Keywords: Product service system; SERVQUAL; Consumer Acceptance, Reliability, Responsiveness, Assurance; Marketing of PSS

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1. Introduction

This paper builds on an article by Rexfelt and Hiort af Ornäs (2009) published in the *Journal of Manufacturing Technology Management*, which dealt with consumer acceptance of *product service systems* (PSS). The topic is very important from the point of view of the sustainability of the global economy. The large scale diffusion of PSS has been advocated by experts and by UNEP (2005) because of its environmental benefits and the potential to reduce the impact of economic activities (Hawken et al., 1999; Mont, 2001; Manzini and Vezzoli, 2002; Porritt 2007; Jackson, 2009). A PSS is defined as a

“System of products, services, supporting networks and infrastructure that is designed to be: competitive, satisfy customer needs and have a lower environmental impact than traditional business models” (Mont, 2001:239).

This definition takes into account those characteristics of PSS which support the dematerialization of the economy, and hence offer environmental benefits. PSS can be product oriented, characterized by ownership of products with additional services provided; use oriented, where a service provider provides a function whilst retaining ownership of products; and result oriented, where products are replaced by services (Cook, 2004). Tukker and Tischner (2006) emphasize the final functionality of PSS *instead of the product fulfilling this functionality* (italics by the author), provided with low impact on the environment. The objective of a PSS is to deliver the function the customer is interested in, so that the product is merely a support for the provision of a service (Vargo and Lusch, 2004).

Examples of PSS exist in business markets, where *Xerox* leases print machines, recovering and remanufacturing waste consumables and the machines themselves; and *Rolls Royce* “loans” aircraft engines integrated with a service bundle that include maintenance and repair, invoicing customers for mileage flown and power delivered (Shelton 2009). PSS has also been tested in consumer markets, which are slower to accept this model, e.g. car-sharing services (or car clubs), such as *City Car Club* and *Streetcar*, which had more than 112,000 subscribers in 2010 (Harmer and Cairns 2010). Telecommunications providers were also early adopters of PSS. Mobile phones are seldom purchased, rather they are supplied as part of an integrated PSS.

PSS is seen as a business model which has potential to dematerialize the economy, and therefore reduce its environmental impacts. Considerable research has been done on the design criteria for PSS and also the expected constraints to the diffusion of such a business model across the economy. The importance of Rexfelt and Hiort af Ornäs' (2009) paper is that it deals with consumers' acceptance of types of provision based on PSS. A radical innovation such as a PSS cannot be successful if it does not meet market demand.

This paper builds on the conclusions of Rexfelt and Hiort af Ornäs (2009) and extends their theory by characterizing the uncertainty of expectations which could drive consumers away from PSS provision proposing the use of customer satisfaction parameters. The aims of this research was to investigate on to what extent consumer acceptance of PSS represents a barrier to its large scale adoption and on what the consumers' attitudes to PSS provision are, and what were their specific concerns.

This research is of interest to academics and practitioners engaged in the design and implementation of PSS provision. The project was funded by the *British Academy*.

2. What makes PSS important?

Eco-efficient PSS is proposed by some as complementary to radically new technology underpinning "green products" as a solution to the environmental impact of economic activities. One of the crucial advantages of PSS compared to innovative green technology is that it is a speedier route to market for sustainable solutions (Manzini and Vezzoli, 2002). PSS facilitates "take back" schemes, enabling suppliers to manage the responsibility of products during and at the end of their life cycle (Mont, 2001). This, for example, favours compliance with regulation such as the EU *Waste Electric and Electronic Equipment (WEEE)* Directive. PSS also supports education towards more sustainable use (Lee *et al.*, 2007); it leads to improvement in product design (Manzini and Vezzoli, 2002) with longer life cycles (Mont, 2001); it supports closed loop industrial systems and can create new market opportunities (*Ibid.*); and it encourages communication between supplier and customers, leading to improved learning relationships (*Ibid.*). PSS' key benefits, in summary, are commercial as well as environmental, resulting in *decommodification of businesses' offering, customer retention and market share protection* (Mont, 2001; Kimita *et al.*, 2009). A further advantage of PSS is that it provides a "pay per use" model (Manzini and Vezzoli, 2002).

There are potential drawbacks to the adoption of the PSS concept. For consumers, the “rebound effect” could result in too much of a product or a careless consumption, since it does not belong to them (Manzini and Vezzoli, 2002) and this could nullify environmental advantages. Multiple uses do not necessarily make a product more sustainable (Mont, 2001). The increased accessibility outlined by Manzini and Vezzoli (2002) means that more people would be able to drive e.g. large cars, or to afford more airline travel.

Moreover, a PSS needs to be of a special type to achieve environmental benefits, specifically designed to be sustainable and eco-efficient (Ibid.), and include environmental tools as an essential element of the product development life cycle (Lee *et al.*, 2007). This at times presents difficulties (Mont, 2001; Manzini and Vezzoli, 2002).

Several likely barriers to the adoption of PSS have been listed. The reduction of product proliferation enabled by PSS could result in a fall in industrial production with economic repercussions (Mont, 2001). Companies may oppose end of life responsibility (Ibid.); and there is a paucity of successful business cases (Mont, 2001; Mont and Lindhqvist, 2003). The consumers’ point of view needs to be analyzed and considered.

3. Consumer acceptance of PSS

Limited research has been conducted on consumers’ receptiveness and acceptance, and possibly inertia to change to new modes of consumption such as PSS (Rexfelt and Hiort af Ornäs, 2009), except for membership of car clubs in the UK (Le Vine *et al.* 2009). This is a niche application, attracting a small number of consumers, 120,000 against a UK market of 26 million vehicles. Consumers might reject this provision, as they might not be enthusiastic about ownerless consumption (Mont, 2001). Product ownership is a way to project an image of oneself as well as satisfying a need for a product’s function (Solomon *et al.*, 2007). Large-scale adoption of PSS may require education by marketers and policy interventions (Mont and Lindhqvist, 2003; Mont *et al.*, 2006).

Consumers are suspicious of “packages” with a service component as they might think that they are an excuse to charge more money (Rexfelt and Hiort af Ornäs 2009) and tend to prefer tangible products (Fortin and Greenlee, 1998). In comparing a product for purchase to a PSS, consumers may even be influenced by a cost threshold effect between the initial purchase of a product and recurring costs, as more expensive products are likely to be more successful when offered as part of a PSS (Mont, 2002; Rexfelt and Hiort af Ornäs, 2009). In practice the equipment to be bought would need to exceed a cost threshold for consumers to pay a monthly

charge rather than to pay for it upfront. They might find it difficult to accept PSS as a mode of consumption, because of the insecurity of what they are getting, and the uncertainty that the provision will deliver according to their needs (Rexfelt and Hiort af Ornäs, 2009).

This insecurity is also to do with consumers' "mental accounting" of how much they eventually will spend on the provision (Fortin and Greenlee, 1998). Consumers seem to find it difficult to evaluate the costs of a given product for the duration of its life cycle (Ibid.) and decide which type of provision is the most advantageous between buying and renting, as they use different criteria to compare prices of products and services (Ibid.). The costs incurred during the life cycle of some products is often far higher than the initial investment (Woodward, 1997).

Consumers might respond to PSS offers in different ways (Rexfelt and Hiort af Ornäs, 2009), so they could be segmented according to their propensity to adopt PSS.

They may have concerns over recurring, long term costs as well as the commitment involved with these, and the lack of control. PSS can free consumers from some commitments, such as car maintenance and MOT, but might generate some new responsibilities, like liabilities for product damage. The authors suggests that the "uncertainty" Rexfelt and Hiort af Ornäs (2009) propose needs to be further explored and explained. This paper attempts to address this issue.

The research, funded by *The British Academy*, investigated consumer acceptance of a PSS based on nursery equipment, products used by women and young families before and after childbirth, as well as car clubs.

4. Notes on methodology

The study utilized qualitative research amongst two types of respondents:

- Businesses that can be classified as eco-efficient PSS providers;
- Consumers.

The providers of PSS were administered structured in-depth interviews, and the respondents were the Director of Policy at *Car Plus*, a trade association representing car clubs, and a Director of *Streetcar*, the largest car club company. Car clubs may be considered a type of eco-efficient PSS.

Consumers were involved in four focus groups (the participants were twenty in total). The questioning route used in the focus groups after a pilot focused the attention of the participants on two types of eco-efficient PSS provision, one represented by car-sharing services, such as

those provided by *City Car Club* and *Street Car*; the other was an hypothetical provision of a bundle of nursery equipment and services, such as baby prams, baby car seats, travel cots and similar. The proposition of this “hypothetical” provision was inspired by a study conducted in Sweden by Mont *et al.* (2006). The Car Club concept was associated to the former PSS for comparison and to help respondents to understand the concept.

The focus groups were facilitated by the Author, with help from a Research Assistant. A questioning route led the participants through a series of issues, i.e. their feelings about the sharing of products, what products would be more suitable for sharing, and in contrast what ownership of these products represented for them. Their opinion on what products should be included in a nursery equipment PSS and their expectation of such a provision. A short introduction was given on sustainable consumption, however this was generic as care was taken not to introduce bias. Through these issues concerned with consumption modes the Author aimed at eliciting a spontaneous emergence of themes.

The nursery equipment PSS was presented as a loosely defined scheme. This was done because a position was sought from the respondents on how such a provision should be designed and what products and services should be included.

The reason for the adoption of qualitative methods is that the lack of current knowledge on consumer attitudes to eco-efficient PSS creates a need for an “information rich” output. Qualitative methods such as focus groups and in-depth interviews produce information-rich output (Bell, 2010; Malhotra, 2007; Silverman, 2010). This is particularly important in our case where the objectives include not only the appreciation of the opinions of customers, but also their attitudes, and to some extent emotional content such as the supposed pride of ownership hypothesized by Mont (2001) and Mont and Lindqvist (2003) and the lack of confidence in the reliability of supply identified by Rexfelt and Hiort af Ornäs (2009). Qualitative methodologies, such as the ones suggested, enable researchers to identify common themes in interview outputs and generate theories and explanations (Bell, 2010; Malhotra, 2007; Silverman, 2010).

The methodology selected has limitations, due to the lack of representativeness of the methods adopted; another important limitation is the difficulty of explaining the concept of eco-efficient PSS to consumers. This makes it arduous to survey consumers on this type of provision. This was addressed by using examples of products to lease and rent as a “proxy” to PSS. To some extent, some of the concerns the respondents expressed can be affected by this vagueness. In

spite of these limitations, the output is valuable because it suggests important directions for future research.

5. Findings and Discussion

5.1. General positive attitude to PSS

In principle most of the participants to the focus groups seemed favourable to the PSS concept of a lease or rent of nursery equipment, and to car clubs. Respondents recognized the benefits of PSS for both product categories, and mentioned associated benefits such as possible savings by being able to use products such as prams on lease, as these products are only used for a short period of time, and being able to pay only for the usage they make of the product would lead to financial savings. The idea of keeping a product for the time necessary and to pay in proportion to this time was viewed positively by some of the respondents. Some of the products are also bulky, and retaining possession means that space in the home is sacrificed.

“If you buy a £400, £500 (pram) it might last you for 10 years or 5 years and if you’ve had two children and you don’t need it anymore, it clutters your flat and the money is wasted.” (John, has two girls)

With cars, there is a similar problem, as a car is only used by consumers for a few hours in a day. In both cases, there is a problem of idle capacity and waste of space. Another advantage which is specific to nursery equipment is the fact that babies grow fast. In some cases, a product is bought that quickly becomes obsolete, and the purchase of an upgraded product becomes necessary. The result of this is waste. Respondents did not seem to be concerned by the generation of waste “per se”, only by the impact on their life.

Consumers expressed interest in a “seamless” provision, where a product is provided at the right time, to then be “upgraded” to a more suitable product when needed. The benefits include waste reduction and financial savings, as consumers would not be forced to purchase more versions of expensive products such as prams during a child’s early life. A baby pram can later be replaced by a stroller for example.

Other specific benefits consumers expect to arise from PSS include financial savings,

“The main reason people join (a car club) is to save money” (Director, Carplus).

This could support Manzini and Vezzoli’s (2002) suggested benefit that consumers would only pay for what they need, as they would not pay a large fee upfront, and keep the product only for

the time needed. A pram for example would be used for about one year, and purchasing it is more costly in relation to the time of use. This is also the case for car clubs, a financial incentive is one of the main reasons for subscribing to one.

“(My daughter) is not going to be using the old stroller anymore and you think all this money is just a waste, we’re not planning on having any more kids so it’s just going to be there, so if there was a way that we could have rented I would have gone for that” (Maria, 1 daughter).

Another benefit is the reduction of the burden of retaining the product during its life cycle. From maintenance to space forfeited, PSS also offers the benefit of reducing liabilities such as taxation and maintenance costs.

Space also leads to idle capacity, i.e. what consumers refer to when they mention that their car is used for one hour a day and sits the other 23 hours on a drive. This means that consumers understand that this represents waste, and that reduction of waste is a benefit to them – as they have paid for that product.

Respondents seemed therefore to recognize the desirability of this mode of consumption, and to be open to the idea. One aspect is the *responsibility of ownership*; the fact that once a consumer buys a product, she is responsible for keeping it in good working condition, for example making sure that a car is regularly serviced and has a valid MOT. A potential benefit of PSS is the deferral of that responsibility.

5.2. Consumer concerns

In spite of this general “openness” to the concept, however, respondents expressed concerns. The findings suggest that the uncertainty consumers seem to feel in terms of expectations of performance from PSS provision suggested by Rexfelt and Hiort af Ornäs (2009) can be broken down in several dimensions of performance and customer satisfaction. Some of the evidence suggests that the themes that emerged can be grouped in categories which are consistent with the factors of *SERVQUAL*, a service quality measurement model first proposed by Parasuraman *et al.* (1991). This tool uses five variables to measure customer satisfaction, *Assurance, Responsiveness, Reliability, Empathy and Tangible Elements*. *SERVQUAL* has stood the test of time and is still considered a valid descriptor of service quality (Carrillat *et al.*, 2007).

Most respondents seemed concerned with hygiene, health and safety features of the provision, which is to be expected because the products discussed included nursery equipment such as

prams, car seats, and even more “personal” products such as milk expressing equipment. This can be supported by the statement below,

“You want everything to be new, clean or from someone very close to you because your level of paranoia about anything that is dirty or unclean or has been somewhere that you can't control is very offensive almost, you are so engaged with providing the best for your child” (Debra, 1 daughter).

This can be seen as a concern with the quality of the provision, and it could be grouped in the Assurance factor of SERVQUAL, concerned as this is with fitness for purpose and the dependability of this quality.

The Assurance construct is also connected with the information supplied with a product or in the course of provision of a service, and respondents mentioned service encounters where this information was not satisfactory.

The evidence seems to suggest that consumers need a big leap of trust to believe that a leased product in this category has not been abused. On the other hand, if the product is being passed down from a family member, then consumers seem to be able to cope with “sharing” this equipment,

“If it came from a family member like I said a sister or someone really close to me, it wouldn't bother me” (Victoria, no children).

A lot has to do with information. If consumers are reassured that the essential criteria are met, then they might accept PSS on this basis.

“How is it done? Is it going to be sterilized? Where are you going to be picking it up? I wouldn't mind sharing those things, but based on certain criteria being met. If those criteria are met then I'm perfectly fine with that” (Ron, 3 children)

The concern with the health and safety elements connected with leasing or renting equipment which might have been used by others means that prams for example need to have been refurbished so that they are safe; car seats need to be assured not to have been in a car accident. These criteria also apply to cars. Consumers are concerned that vehicles are delivered without having been cleaned and in bad condition, as after all this is beyond their control. These are all attitudes that seem to consist with Assurance. All this suggests the need for designing take back and reconditioning processes to assure health and safety.

Another concern of the respondents was with being able to be confident that a product would be available and accessible when needed. Car Clubs' managers for example suggested that consumers have low expectations initially that the car will be available at the required time,

“the new customer thinks that the biggest problem will be that the car won't be there when they want it, because you know, they've given up a car, they've joined the car club and they think, 'gosh the very time I need it I might not be able to get it” (Director, Carplus).

Respondents confirmed the manager's suspicion that they are not familiar with the sophisticated booking systems (cars can be booked using a smart phone). The reliability of the service – that the car is available at the time of the booking – is a major concern for the customers. In our focus groups this was felt very strongly because of the special characteristics of the respondents, who having small children, had to drive them around and so depended on car availability,

“I'm a bit wary about the confidence part, 'cause obviously it's going to be on a short term basis and it might not be convenient; when you need the car, it might not be there” (John, 2 girls).

All these concerns could be grouped together within a general concern for the Reliability of the provision, and as it was mentioned above this is another of SERVQUAL's parameters.

An additional SERVQUAL parameter that could be included is *Responsiveness*. This is to do with how prompt the response of service delivery is to a request, such as a booking or a complaint. It has to do with confidence about “when” rather than “whether” the service will be performed at the time required. Respondents feared that once a car had been booked, there would be a wait for the car to be delivered due to a lack of availability, as supported by the statement below,

“But it really comes down to convenience and availability, if you want a car you want it now, you don't want to say “well, OK, I'll wait for an hour” if you've got to do your shopping and that's the time you've...” (Ron, 3 children)

Some of the respondents' concerns were connected with the relationship with the supplier, for example how helpful the client service team are. There appears to be a low level of expectation due to past experience of renting. For example, the service personnel of suppliers of temporary

products (used for travel cots for rent) seemed to be very unhelpful when advice was requested. Respondents desire a personal touch,

“If I could find someone I could talk to and they knew what we were talking about and it could provide the service...” (Fiona, 2 children);

These concerns could be associated with consumer expectations of performance in *Empathy*, another parameter of the SERVQUAL scale.

Emotional Aspects of ownership

As discussed in the introduction, another aspect of the likely acceptance of PSS by consumers is concerned with the emotional value which these give to possession. Product ownership is a way of self expression (Mont, 2001; Solomon et al., 2007). Our respondents showed an even stronger emotional involvement, because of the nature of these products. Consumers were concerned not only about whether the products were hygienic and in good condition, they also wanted them to be “shiny and new” because they want the best for their baby. As far as cars are concerned, consumers feel possessive of them. Finally, respondents saw the renting or leasing of such products associated with a social “stigma”, a solution for poorer consumers.

5.3. Additional services as part of the “bundle”

The focus groups explored the types of services consumers would expect to complement the rental of a nursery product or car. In both cases, warranty was a prominent item, which is connected with the “assurance” construct; connected to this was an uncertainty on responsibilities arising from renting the product, for example, whether any penalties would be in place if the product got damaged, and insurance would need to cover this.

“So you probably have insurance that you have to pay for separately just to make sure that those things are covered, and God forbid there is an accident.” (Ron, 3 children)

Maintenance was another factor, so that the product would be kept in good running condition. Consumers would expect a product that broke down to be promptly replaced, for example in the case of car sharing. This expectation could be connected with Assurance.

Another important component of the “bundle” is *product upgrade*. Respondents expressed interest for a solution where a pram or buggy could be returned and replaced by another more suitable product as the child grows,

“...Car seat’s a brilliant one because you use a certain one from age X to Y and then you swap out and use a different one. If you had a service where they reminded you when (the) baby was coming up to say, nine months and actually prompted a swap and it’s just seamless...” (Ron, 3 children).

As far as cars are concerned, a respondent who had experienced the service of car sharing company Streetcar was very pleased with the *navigation service*, and that consumer will expect that service as part of the deal.

Delivery would be another very important element, simply because in the case of car sharing for example, the driver would have to get to the car he or she had just booked, not being able to drive from in front of their home like a conventional car ownership. The picture that seems to emerge is one of a need to investigate specific aspects of service that can be included in a PSS such as the one described in this project.

5.4. Factors to gain consumers’ acceptance of a PSS

Trust is an essential element to get consumer acceptance of PSS. In designing the PSS the marketers would need to build in elements that persuade consumers, for example, of the hygienic conditions of the product,

“I suppose it’d be quite nice, you know when you go to a hotel and the glasses are in a plastic cover... It’d be like that, if you got your highchair in a plastic cover...” (Alethea, 2 children)

The way consumers interact with a supplier by replacing a product for a more suitable one – for example a different car seat when the child outgrew it – presents an opportunity for value co-creation, when consumers have an input in the way their needs are satisfied. This cannot be met by a conventional consumption mode based on straight purchase.

The “credence” effect

In order to create trust, when the PSS category concerned is connected with health provision such as nursery equipment, it would be helpful if a PSS is introduced by individuals with specialist qualifications, e.g. health advisers and other professionals, which are trusted because of their specialist role often in the context of a health provider,

“I think personally I would feel a lot better if say for example the service was affiliated to a nursery and I could actually look at the thing, examine it, before I actually take it away” (Sara, 1 boy and pregnant),

As also substantiated by the following citation,

“I actually went and saw a private midwife and she actually could do the concierge service of actually trying to source certain things...she came up with some good advice for me, so there’s lots of other services who (they) might want to tag in...” (Marion, 1 girl and pregnant).

Brands seem to play a role in engendering consumer trust. As part of the PSS the customer might be interested in specifying a brand,

“And also it would be useful to know what the brand is. Brands are trusted” (Cynthia, 2 boys)

And a specialist brand name seems to be able to add credibility to a PSS based on rental or lease of nursery equipment,

“In shopping malls Mothercare, you could rent it, but you could have on the big shopping centres this is the rental area, it’s affiliated to, or what’s the other big brand for children?” (Marion, 1 girl and pregnant)

“Mamas and Papas, Babies R Us, Toys R Us...” (Alethea, 2 children).

The importance of brand names is also substantiated by the following statement,

“if you know that it’s coming from one of the reputable brands, you know that this is a proper company that is not going to want anything to go wrong because it’s going to jeopardize their company so therefore they’re going to give you a quality product that is health and safety checked and everything else” (John, 2 girls).

All this suggests that brand names have a role in establishing trust in a PSS provision. It can be suggested that perhaps brand effects can mitigate the uncertainty consumers express around PSS performance as identified by Rexfelt and Hiort af Ornäs (2009). Marketing would therefore have a clear role in designing brand messages to address the issues raised.

How high do environmental concerns rank?

In the focus groups, the environmental implications of their consumption habits seemed to have low priority for the respondents. In fact in the opinion of a Director of a car club,

“...the third reason (for selecting car clubs) is environmental, you couldn’t make a successful car club on environmental reasons but people feel more responsible environmentally so it adds to that...” (Director, Carplus).

This would support the case for educating consumers on the impact of their consumption behaviour on the environment.

Life Cycle Costs – thresholds effects

Consumers seem to be affected by a cost threshold between initial purchase cost and costs incurred during the life cycle. In practice, they seemed more favourable to commit to long term, regular payments for a PSS when the cost of the product was higher. This is in line with the claim that higher priced products are more likely to succeed as a PSS supported by Mont (2002) and Rexfelt and Hiort af Ornäs (2009).

Some respondents suggest that PSS in this case would be competing against the second hand market,

“...we’re on our second child and suddenly new is not the word we use for their stuff, it’s second-hand or it’s from friends, so it doesn’t bother me to use something that someone else has used as long as it’s in a good condition, but to pay to rent, I just wouldn’t, I couldn’t see it being cheap enough for me to think it would be worth doing” (Fiona, 2 children).

This is interesting considering Mont’s et al. (2006) observation that the nursery equipment market is for the 75% 2nd hand. This cost threshold would determine consumers’ propensity to enter an arrangement involving monthly payments rather than a one off payment. In practice the equipment would need to be expensive for consumers to choose to pay a monthly charge rather than to buy it and pay for it upfront. This suggests, however, that consumers are not factoring in the value of additional service components as suggested by Fortin and Greenlee (1998).

6. Implications and recommendations

The interviews with business managers and the consumers’ focus groups both suggest that consumers are susceptible to the idea of PSS provision, as they favour in principle the financial savings, lowered commitment and responsibility, and also reduction of waste – be it of time, space or other resources.

Consumers are particularly interested in the suggestion of a “bundle” of products and services including information, warranties, insurance, delivery and product maintenance.

In practice, however, when questioned on their propensity to adopt this mode of consumption, consumers have important concerns with the possibility that PSS satisfy their needs:

- There is the issue of cost threshold, where consumers seem to compare the purchase cost of a given product and the on-going expenditure of a PSS. In this, consumers do not seem able to account for add on services provided by the supplier, nor they can estimate costs of products over their life cycle;
- The insecurity of satisfactory performance of PSS suggested by Rexfelt and Hiort af Ornäs (2009) emerges from this study as having a more complex structure: it is reasonable to expect that consumers will judge a PSS performance in terms of customer satisfaction criteria, and SERVQUAL, an accepted customer satisfaction measurement scale, seems to encompass the parameters of service the consumers expect. A PSS needs to deliver in terms of *Assurance* of fitness and quality, *Reliability* and *Responsiveness of Service*, *Empathy* and quality of *Tangible Elements*;
- The findings partly confirm concerns by Mont (2001), Mont and Lindquist (2003) and Rexfelt and Hiort af Ornäs (2009) on the emotional side of ownership; in particular, consumers seem to desire new, own equipment for their children, especially the first born. This is even complicated by suggestions that they believe a PSS might present a stigma, i.e. can be seen as intended for consumers unable to afford to purchase products. This could potentially be a constraint to the adoption of PSS, in this product category, by consumers.

In the two product categories examined, cars and nursery equipment, the above concerns might be a formidable barrier to the large scale diffusion of PSS in consumer markets, and it is symptomatic that car clubs are still a very small market compared to the overall car market. In order to promote the diffusion of PSS as a mode of consumption, policy makers and marketers would need to address these issues.

In designing PSS in any product category, designers, environmental experts and marketers will need to work together in order to build into the PSS service elements the consumers desire, the correct features and relationship management practices as well as brand values. Design and environmental performance elements should be complemented by service performance parameters. SERVQUAL or other service measurement scales can be adopted for this purpose. These findings have important implications for the communications which marketing practitioners could implement to support the adoption of PSS:

- Communication strategies to position PSS and the associated modes of consumption of sharing, renting and leasing products as “top end” consumer behaviours, e.g. establishing “exclusive” clubs. These communication strategies could associate a PSS e.g. to inspirational reference groups and opinion leaders. This would address the possibility that consumers attribute a social stigma to a PSS. These communications should also stress that the tangible element (product) component of the PSS is NOT a second hand product, it is a reutilized product which goes through a rigorous process of reconditioning for use by the next users;
- Educate consumers on life cycle costs of products;
- Adopt sophisticated relationship marketing strategies, supported by bespoke information and communication technologies (ICT) to manage two way communications between consumers and providers, and resource availability to maximize responsiveness and reliability, as well as adapt the PSS to consumer needs in real time;
- Design effective procedures to take back and remanufacture the products where appropriate, including cleaning and, where appropriate, sterilization, safety checks, etc. and reuse and recycle any component where appropriate;
- Design tangible elements with materials that maximize “waste valorization” (reuse, recycling and remanufacturing opportunities), as well as limit the use of toxic materials as much as possible.

An important role would have to be played by policy makers to support the diffusion of this business model, and this could include:

- Policy instruments to discourage ownership in favour of PSS;
- Knowledge transfer and exchange activities to equip providers to adopt and manage this business model;
- Public communications campaign to promote the desirability of the model.

7. Directions for further research

Many questions remain unanswered, and those below are proposed directions:

- Replication of the qualitative study in other geographical areas or countries, to evaluate the input of cultural factors on consumer’s emotional intelligence;
- Quantitative research on consumers’ attitudes to confirm the qualitative findings of this study;

- Running of a “pilot” scheme of nursery products PSS based on a defined specification;
- Investigation into the attitude of companies and their skills, competencies and shortcomings in adopting the PSS model.

8. References

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