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EURAM Doctoral Colloquium

4a – Research proposal

Business for Society

“Understanding of consumers’ behaviours towards ecodesigned products and services”¹

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Abstract

This document provides an overview of a thesis aiming to understand consumers' behaviours towards ecodesigned products and services. After relevance and contribution of the thesis are discussed, a short literature review is performed. Contributions of scientific community about notions of consumer, sustainable development, strong sustainability and ecodesign as well as their interrelationships are exposed to better understand consumer's implications in sustainable development and ecodesign approaches. Then, the qualitative methodology followed in the early stages of the thesis, consisting in group meetings for an exploratory study; as well as the methodology planned for experts' interviews, participatory observation and individual and group interviews are addressed. Finally, a model details expected empirical results of the research.

Key words: sustainable development, strong sustainability, consumer's behaviour, ecodesign, qualitative methodology.

Introduction

The proposed research is part of an interdisciplinary project carried out by three universities and funded by the National Agency of Research in France. This project, named Design technology for strong sustainability, or D-TechnoSS, aims to develop a new methodology of Design for Sustainability integrating human aspects, meaning consumers' behaviours. Thus, both engineering sciences and social sciences will be considered, each discipline giving rise to a thesis. D-TechnoSS falls in a strong sustainability paradigm, considering that planetary boundaries should not be exceeded (Rockström and al., 2009), and that financial or technological capital cannot substitute natural capital (Boutaud & Gondran, 2018). As all the project members are French institutions, France will be the main studied area, but a comparative study implying a study in another country is not excluded.

The thesis in social sciences aspires to better understand consumers' behaviours, particularly to avoid possible rebound effects resulting from a misuse or excessive use of an ecodesigned product or service. Indeed, an innovation supposed to reduce energy or raw material consumption (and therefore environmental impact), can, by being used massively, increase production (and therefore environmental impact) (Prieto & Slim, 2018). Collaborative design or co-construction approaches with users could help prevent rebound effects, however, these methods remain marginal in ecodesign processes. A framework providing keys to better understand consumers' behaviours could facilitate this involvement of the user in the design phase. This is the reason why a thesis is conducted with the following research question: What are the (un)conscious factors that govern consumers' behaviours towards ecodesigned products and services?

Nevertheless, if adoption of ecodesign practices is not accompanied by stabilization or reduction of production or consumption, environmental benefits achieved will be insufficient and planetary boundaries set by Rockström and al. (2009) would end up being reached. As a result, to respect planetary boundaries implies to fall within a strong sustainability paradigm. This is why this paradigm was chosen to conduct this research.

The thesis proposal is detailed in five chapters. First, its relevance and contributions are shown before a short literature review highlights scientific and operational obstacles by discussing relationships between consumers, sustainability and ecodesign. Then, the used and planned qualitative methodology is presented. In a fourth chapter, expected empirical findings are set

out through a model. Finally, some issues that could be discussed with experienced scholars of EURAM Doctoral Colloquium conclude this proposal.

1) Relevance and contribution of the thesis

As relevance and contribution are intrinsically related, this section will address both from societal, theoretical and practical perspectives. The place of the thesis in interdisciplinary research is also discussed.

On a societal dimension, it can be assessed that human activities have increasing impact on nature (Crutzen, 2002) and despite growing awareness (Boutaud & Gondran, 2018) and international mobilization (Boutaud & Gondran, 2020), the world's ecological footprint still exceeds ecological capacities. This statement enlightens two key elements of this research. On the first hand, it underlines the need for paradigm change that cannot occur without a consciousness change, meaning individual change, which reveals the importance to understand conscious and unconscious factors that drive consumers' behaviours. On the other hand, it shows the relevance of considering a strong sustainability approach as it implies to respect nature's regenerative capacity.

Theoretically, the thesis aspires to provide a deep understanding of individuals' behaviours regarding sustainability, and particularly ecodesign. Traditionally associated with energy issues, rebound effects apply to a growing number of innovations. For example, they can be observed in emerging consumption practices like sharing economy (Prieto & Slim, 2018). As these consequences are relatively recent and not well understood, the thesis' results could considerably contribute to knowledge in this field of study.

This thesis also has practical implications. In the context of ecological crisis, some companies involve in actions to reduce their environmental impact; ecodesign is one of them but, as explain above, it has limits like rebound effects. By providing knowledge about consumers' behaviours and their drivers to ecodesigners, the thesis could improve behaviours integration in ecodesign approaches. Beyond companies, a deep understanding of individual behaviours can reveal general tendencies that could also be useful for policymakers.

Finally, the thesis will contribute to interdisciplinary research by bridging the gap between social sciences and engineering sciences through sustainability, and more precisely between management and design. Indeed, as thesis are nodal elements of D-TechnoSS project, close collaboration will take place between the two PhD students. From a methodological point of view, it is too early to talk about relevance and contribution as chosen methods are not yet definitive.

2) Key literature

In this chapter, a short literature review divided in three sections is performed. The first one explains the choice to consider strong sustainability rather than a more consensual concept like sustainable development. The second one deals more precisely with consumers and their expectations and behaviours related to sustainability. The last one makes the connection between consumers and ecodesign, particularly throughout the involvement of consumers in ecodesign approaches.

From sustainable development to strong sustainability

The urgent need for action regarding sustainability has been established by numerous actors and institutions both at the scientific and political level (cf. Intergovernmental Panel on Climate Change's special report, 2018² and World Commission on Environment and Development's Brundtland report, 1987³) and gave rise to sustainable development. The most accepted definition of sustainable development is the one of the Brundtland report, first text to mention the term: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). The concept lies on three pillars: environmental protection, social equity and economic prosperity (Pallemaerts, 2011). Although sustainable development has become popularized since Earth Summit in Rio in 1992 (Latouche, 2003), as shown by a growing scientific literature, it is questioned, mostly because of its economic component. Indeed, numerous authors point out the incompatibility of continued economic growth and respect of

² Intergovernmental Panel on Climate Change. (2018). *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.* <https://www.ipcc.ch/sr15/>

³ World Commission on Environment and Development. (1987). *Our common future.*

planetary boundaries (Latouche, 2003; Bourg, 2019). In the French-speaking world, debates about the appropriate translation of the “sustainable” part of “sustainable development” are added to these critics, six words were thus alternately used as a translation (Latouche, 2003). While many authors, as Minton and al. (2018), consider “sustainability” as synonym of “sustainable development”, the French terminological issue led some researchers to favour “sustainability” rather than “sustainable development”.

For Latouche (2003), sustainability occurs when human activities respect the regeneration capacity of the biosphere. This idea echoes the ecological footprint accounting system which “endeavours to represent the quantity of ecosystem regenerative capacity which has to be mobilize to provide the econosphere with the resources it needs and assimilate the waste it produces” (translation from Boutaud & Gondran, 2018, p.42). Indeed, using data to calculate the supply and the demand of ecological services, the biocapacity of nature (supply) and the ecological footprint (demand) can be determined; if the latter exceed the former, humanity lives on credit; however, if the latter respect the former, it is a sustainable situation. The research works of Rockström and al. (2009) then Stephen and al. (2015) also assess human environmental impact thanks to several variables having each a limit; the respect of these limits defines what they call “a safe operating space for Humanity”.

Two ways to interpret these limits correspond to two visions of sustainability: although weak sustainability assumes that different forms of capital (natural, financial or technological) are substitutable and thus that natural capital can be replaced by technological or financial capital when it is bequeath to future generations, strong sustainability postulates the non-substitutability of capital and the importance to respect the regenerative capacity of nature (Boutaud & Gondran, 2018).

According to Boisvert, the notion of strong sustainability takes root in economics during the 90’s and is so far wide and imprecise; it would apply to the thought of a wide range of authors with more or less pronounced radicality, because it would postulate a partial (and not absent) substitutability of capital (Boisvert, Carnoye & Petitimberty, 2019). The thesis will not fall into this last meaning assigned by Boisvert but will consider the strong sustainability implying non-substitutability as defined by Boutaud and Gondran (2018).

For Prieto and Slim (2010), strong sustainability approach can be related to some extent to degrowth, nevertheless, they estimate that degrowth, in contrast to strong sustainability, is subject to a radicality that hinders its appropriation by political authorities.

Responsible consumers

Although consumers constitute a wide and imprecise range of individuals, their definition reach a relative consensus to the extent that it can “be used without contradiction by a multitude of agents positioning from a particular point of view non-exclusive from others points of view” (translation from Pinto, 1990, p.196). Indeed, if the term “consumers” refers to a range of individuals proceeding to an act of purchase, including all social, professional, demographic or geographic categories, it encompasses almost the entire population. To reconcile definitions set out by economic sciences and human and social sciences, Pinto (1990) considers the consumer both as an economic agent and a social actor; he performs acts that can be studied in a range of consumption practices, while being an individual provided with socio-demographic characteristics likely to have consciousness and mobilize. In this way, consumer as a social actor, also called political consumer by Nyström and Vendramin (2015), would hold a counter-power allowing himself to put companies under pressure and influence their practices.

Consumers’ behaviours vary according to individual and contextual factors, including attitude towards ecological information: reactance, indifference and environmental concern lead to diverging behaviours (Jaoued-Abassi & Gonzalez, 2017). Several authors mention the high demand from consumers about the responsible nature of products (Pense-Lheritier, 2013) and their growing sensitivity to sustainable development (Puaut, 2008). The attention being given by consumers to ecological and/or ethical character of products, services and companies no longer seems to demonstrate. However, Couveinhes (2008) and Lavorata (2014), although recognizing the strong interest of consumers for environment, report the absence of sustainable development as a purchase criterion, which means its subordination to other criteria like cost, quality or location. This finding could seem paradoxical to the extent that it could be expected that a consumer having environmental considerations would be willing to pay more or to make concessions for a product or service corresponding to his values. The theory of cognitive dissonance (Festinger, 1957) and neutralization theory (Sykes & Matza, 1957) contribute to explain this phenomenon of discrepancy between attitude and behaviour.

However, new consumption patterns that have developed in the past few years can associate responsible consumption and reduced cost. It is the case of sharing economy, defined as “all practices and economic models based on the networking of resources, aimed at exchanging and sharing goods, services [...] and technical infrastructure between individuals and to limit intermediaries between producers and consumers” (translation from Prieto & Slim, 2018, p.9).

Individuals appeal more and more to renting, second-hand purchase or carpooling and lead citizen initiatives like wardrobe sales or Repair Café. The sharing economy thus allows a better use of material goods, an increase in the duration of use, a relocation of exchanges and a reduction of waste production (Prieto & Slim, 2018).

When perception of ecological products by consumers is considered, it can be found that consumers estimate that an ecological product is environmentally friendly, natural and sustainable; furthermore, the readiness of consumers to protect the environment as well as health and quality encourage buying these products; conversely, high cost and mistrust of the product could discourage the act of purchase (Dekhili, Tagbata, & Achabou, 2013). Thus, environmental issues seem to be more considerate than social and human issues by consumers regarding ecological products.

Ecodesign and consumers

Consequence of growing environmental concerns, ecodesign emerged in the 90's (Boks & McAlloone, 2009) as a possible lever to integrate sustainable development in companies and particularly to reduce their environmental impact (Berneman, Lanoie, Plouffe & Vernier, 2013; Zwolinski, 2013). Berneman and al. (2013) define ecodesign as “a mode of product design that integrate environmental factors throughout its whole life cycle” (translation, p.76).

But, as it will be shown, scientific community did not agree on the meaning to be assigned to the concept. Ecodesign has multiple definitions varying on three aspects. First, although numerous authors see ecodesign as a wish to reduce environmental impacts (Puaut, 2008; Ceschin & Gaziulusoy, 2016), others see also an attempt to reduce social or human impacts (Caillol, 2008; Rochambeau, Veronese & Roché, 2008). To designate the consideration of social criteria, in addition to environmental criteria, the term “eco-socio-design” is sometimes used and Brodhag (2014) even incorporate economic and political considerations to ecodesign. A second aspect of ecodesign which is debated concerns the scale on which the approach focuses on: most of the authors (Caillol, 2008; Ceschin & Gaziulusoy, 2016) assign the ecodesign process to a product, whereas others expand it to a product-service system (Brodhag, 2014; Zwolinski, 2013) or apply it to the scale of a sector (Rochambeau & al., 2008; Bertoluci & Trystram, 2013), an area (Farreny & al., 2011) or a system (Cluzel, Yannou, Leroy & Millet, 2012).

Finally, some authors see ecodesign as an improvement of an existing product (Caillol, 2008), whereas others also see it as an innovation tool to design a new product (Puaut, 2008; Brodhag, 2014).

Despite this diversity, most of the definitions mention the reduction of environmental impacts of a product, as the one proposed by Berneman and al. This statement resonates with consumers' perception to the extent that environmental issues seem to be more considered than social and human issues regarding ecodesigned or ecological products. This distinction between environmental and human aspects echoes to anthropocentric paradigm considering human being as separated of nature (David, 2012). This majority definitions correspond to the term "ecological product" or "eco-product" that Elloumi Ayedi and Kammoun (2019) define as "a product which, compared to other conventional products of similar use, generate reduced impact on natural and human environment throughout its existence" (p.90).

It is certainly the difficulty to circumscribe ecodesign which explain a limited repository on the subject. Indeed, if ISO 14062 provides guidelines, there is no reliable label or certification that recognizes ecodesigned products or services. The use of the word "ecodesign" not being subject to controls, ecodesign-washing practices emerge (Bellini, 2021, october). Despite the differences existing about the definition of ecodesign, authors seem nevertheless to agree on two aspects. On the first hand, they consider the whole life cycle in the approach and, consequently, the life cycle analysis (LCA) is considered as the reference tool for ecodesign; LCA is defined as "a tool that assesses the environmental impact and resource use throughout a product life cycle" (Shi & Li, 2019, p.329). On the other hand, the authors agree on the willingness displayed by the initiator of the ecodesign process to contribute to the reduction of societal problems, whether they are environmental and/or social.

For other authors, ecodesign is simply not or no longer enough to solve current environmental issues, either because it is not accompanied by a modification of consumption patterns (Zwolinski, 2013) or because its potential for environmental improvement was exploited in its infancy to eliminate products' inefficiencies and that still possible improvements would generate only marginal environmental benefits associated with excessive costs (Ryan, 2003).

Given the variety of meanings attributing to ecodesign and criticism about it, this research will consider ecodesign with a broad perspective, including traditional ecodesign as described by most authors, but also alternative design methods aiming to improve societal externalities, like lowtech or frugal innovation.

Consumer was integrated in approaches like user-centred design and design for sustainable behaviour, both approaches aiming at limited environmental impacts during the using phase of a product (Boks & McAloone, 2009; Ceschin & Gaziulusoy, 2016). Nevertheless, user participation to design process, through collaborative or participative design methods used in ergonomics (Barcellini, Van Belleghem & Daniellou, 2013), mobility (Laousse & Hooge, 2018) and health (Grosjean, Bonneville & Redpath, 2019) seems relatively undeveloped so far. Beyond design phase, using phase plays a crucial role to limit a product's environmental impacts. Indeed, just like the company which proposes the product, consumer plays a role in his behaviour when using it (Puaut, 2008; Bertoluci & Trystram, 2013). Thus, as highlighted by Berneman and al. (2013), "some products require [...] a behaviour change from purchasers" (p.81). In this regard, the development of returnable containers can be mentioned: for this solution to be effective, it is essential that consumers develop the habit of returning reusable containers to store rather than throw them in the trash. These are conducive behaviours to a limitation of environmental impacts; however, some consumers' behaviours, whether they are conscious or not, may be harmful to the environment, going as far as generating greater impacts than a non-ecodesigned product. This phenomenon, as mentioned earlier, is named "rebound effects". Over the long term, ecological impact of rebound effects can be significant (Debreff, 2016). To give examples of rebound effects, those generated by sharing economy and mentioned earlier can be described, they are divided in three categories. The first one is from a buyer or lessee perspective and consists in the purchase of more products due to reduced cost of each; the second one adopts the seller or lessor perspective and consists in the purchase of new products resulting from the sale or donation of second-hand products; the third perspective is related to travels generated by sharing economy that can create new environmental impacts (Prieto & Slim, 2018).

3) Methodological approach

This research falls in a comprehensive paradigm and aspires to have a deep understanding of consumer's behaviour; in this regard, a qualitative approach is adopted. In this chapter, the methodology already applied to the beginning of the research and the one to come for next steps are detailed.

Used methods

An exploratory study was the first step to acquire general knowledge about consumers' perceptions, attitudes and behaviours regarding ecodesign and eco-responsible consumption. Group meetings with students was the method used for this study. Three meetings were led with 3 to 10 participants each and about 15 questions were addressed. For comparison purposes, two segments of the population were interrogated: students in marketing, who did not have (precise) knowledge on sustainability issues, and students in environment and sustainable development, who are particularly aware of these issues. The two meetings with marketing students were performed on site at university and were part of their curriculum (and therefore mandatory), while the meeting with environment students had to be done on-line on a voluntary basis. These elements constitute limits to comparison. Thanks to meetings records, transcriptions of discussions were done and then allowed to get a first set of results.

Planned methods

A deeper analysis of the exploratory study still has to be done; Nvivo is the tool which will be used to that end.

Then, to determine more precisely the object of study and research questions, as segments of the population to study, products and services categories to consider and relevance of a country comparison, as well as get first feedback on methodology, interviews will be done with experts from research and business. Specialists in responsible consumption, ecodesign in the broad sense and from sectors not yet determined will be contacted, two experts for each category will be interviewed up to a maximum of 10 experts. These interviews will address approximately 10 questions and will last around 45min; they will probably be done on-line and then transcribed and analysed with Nvivo.

Once these preliminaries studies will be performed and research questions specified, the study allowing to answer these questions, the one which will contribute the most to the thesis, will begin. For the moment, only the planned methodology could be described, as it still needs to be validated. Interviews will be conducted to collect data on individuals' social context, education, knowledge on sustainability, perceptions of ecodesign, etc. At the same time, to deeply understand consumers' behaviours towards ecodesigned products and services, it appears crucial to study individuals in their ecological context, meaning in their daily life. This is the reason why a participatory observation will complement interviews. Indeed, interviews only

would allow to grasp declared and not actual behaviours. As, on the first hand, participatory observation will not necessarily reveal expectations and motivations of individuals and, on the other hand, interviews may highlight attitudes rather than behaviours, it seems relevant to use a data triangulation process by combining both interviews and participatory observation.

Concretely, it is envisaged that researcher performs one-week immersion periods in several households and participates to key moments of interactions with products, like shopping, daily commute or meal preparation. To study both individuals having knowledge on sustainability and individuals who have not, it is planned to be in immersion a week in households which are strongly involved in sustainable behaviours (and who have an ecological habitat) and to invite some of their relatives they consider not having specific knowledge on sustainability (family, friends, neighbours...) for the weekend. During these immersion periods, individual and group interviews with the whole family, with each of its member and with their relatives will be conducted to know more about social context, individuals' values, perceptions, motivations, etc. and to understand dynamics and influences that operate between individuals.

For now, analysis methodology is still to determine, whether it is for participatory observation or interviews. At the end of the study, to ensure that researcher interpretations are consistent with participants' reality, these latter will be invited to read the study's results and give their opinion.

4) Expected empirical findings

Through literature and researcher's personal experience and intuitions, a range of factors influencing consumer's behaviour was set and then divided in four categories. The first category is relative to the social context in which an individual evolves throughout his life, it implies factors like norms, national culture, education, etc. The second category refers to the consumer's profile, meaning his socio-economic characteristics, knowledge, beliefs, values, etc. Third, the product's or company's profile deals about product's or service's and company's characteristics. And the last category is about the consumption context, meaning the time t when the consumer interacts with the product or service, whether it is during the purchasing phase or the using phase for instance, this category includes factors like available information or time, location and human environment. To illustrate these expected empirical findings, the following model was elaborated.

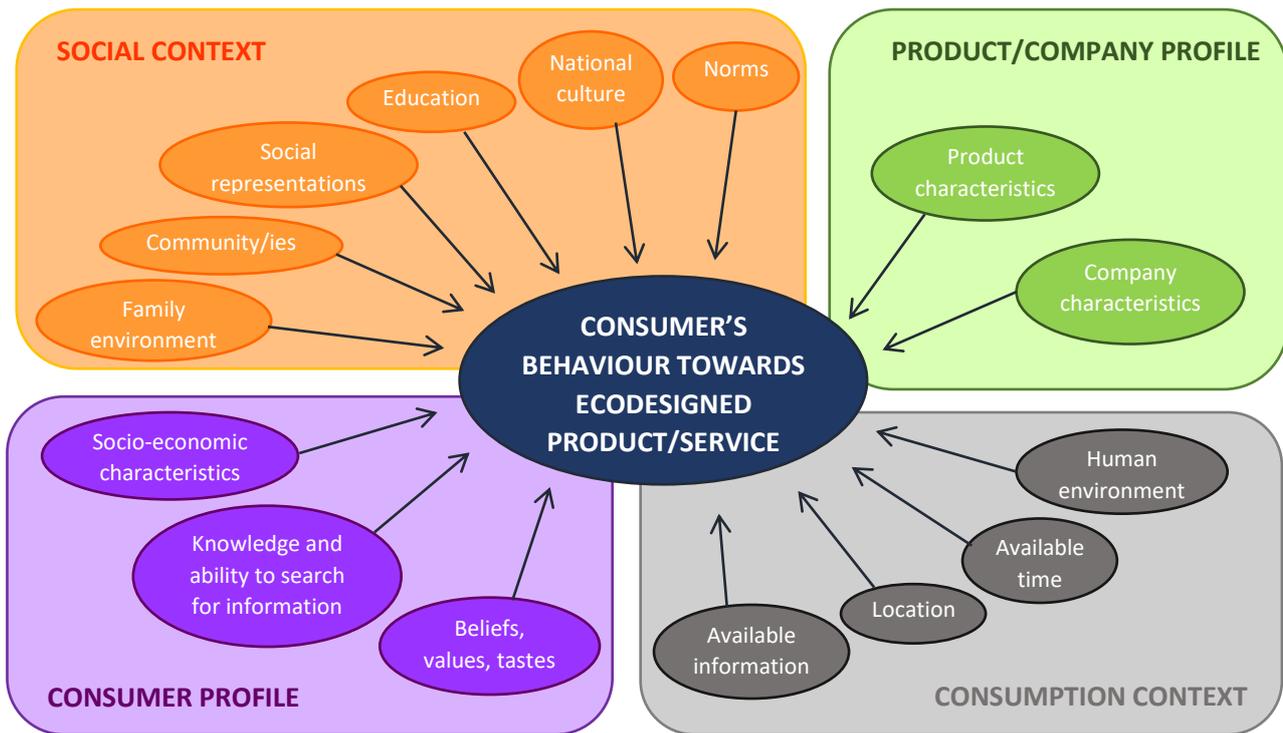


Figure 1 – Expected factors influencing consumers’ behaviours.

Throughout the research, the model will evolve, some factors could be added while others will be removed. Furthermore, the researcher will be careful not to bias her observation and interpretations by being influenced or constrained by the model.

5) Outstanding issues

The thesis is in progress and several questions remain, on which it would be appreciated to benefit from expert advice. First, discussions to refine the research question could be addressed and particularly to determine which products and/or services categories as well as which population segments to consider. Similarly, relevance to lead a comparative study between countries can be discussed.

Feedback about methodology is also highly desirable, to assess relevance of the methodology proposed, to refine it or to explore other possibilities. On this matter, the researcher would like to express an interest in innovative methods.

Finally, exchanges could be made on the expected results model, possibly to discuss other variables than are not mentioned, to discuss the four chosen categories, etc. All other relevant advice that are not mentioned here would also be highly appreciated.

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