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Sustainability and Immateriality - Motivations of users/consumers as drivers of sustainability

Julio Cesar Rivera-Pedroza [a] | **Beatríz Eugenia Rivera-Pedroza** [b]

[a] Universidad de Deusto / Deustuko Unibertsitatea, Bizkaia: Bilbao, Spain.
[b] Universidad Cooperativa de Colombia, Valle del Cauca: Cali, Colombia.
* Corresponding authors: j.rivera@deusto.es | juceriv@hotmail.com

ABSTRACT

At present, it is necessary to analyse how users/consumers perceive sustainability, in order to determine the characteristics, aspects, attributes, etc. that, according to their criteria, must have sustainable products, services and product-service systems (hereinafter SPS). The purpose of this study is to analyse, from the point of view of some experts, whether the proposed motivations of users/consumers are related to sustainability; since it is considered that the study of collective actions from the emotions can become a conscious motivating motor that would have the purpose of transforming a reality, in this case, the relation between users/consumers and sustainability. The analysis is the result of previous research (Rivera et al, 2015; Rivera & Hernándis, 2016; and Rivera-Pedroza ,2017), to investigate how diverse motivations and aspirations, which are not only basic needs, could be related to sustainability. The research is carried out based on an instrument which contains eleven drivers linked to motivations (needs, emotions, values) belonging to an immaterial context of sustainability in products/services. The analysis of these motivations, within the current context, provides value in the analysis of the behaviours of people involved in the environmental social movements within the emerging design and sustainability scenarios.

Keywords: Motivations, Immaterial, Drivers, Design, Sustainability

INTRODUCTION

Some products - material elements - can instantly provoke emotions, even without any direct physical contact with them. This assertion is based on previous studies by authors such as Belk (1987); Schultz, Kleine, & Kernan (1989); Kleine & Baker; (2004); Mugge, Schoormans & Schifferstein (2007), Baudrillard (2009), Woodham (2010) and Chapman (2009), who, among others, provide a basis from which ideas can be drawn about emotions and their relation to products; recognizing in some cases -from the social logic of consumption-, the satisfaction of needs based on the acquisition of signs rather than objects (Rivera-Pedroza, 2017, p. 64). In addition, research developed by Chapman (2009), based on the behaviour of a sample of users of electronic products, indicates that, "users feel a strong emotional

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connection with the product, due to the service it provides, the information it contains, and the meaning it conveys" (p. 33).

Products that people feel attached to are generally considered special and meaningful to the owner. This point of view, analysed from sustainability, can be favourable since it prolongs the useful or affective life of products, taking into account that they are physical objects. But possibly from other areas such as psychology and sociology, it should be analysed to what extent attachment to *"material things"*; would be detrimental or not for people. As Thorpe (2010) puts it, at the basic level, psychological research on consumption asks: "Can things make us happy? It is clear that there is an important role for material goods in modern life, but recent research indicates that increased levels of material wealth do not lead to a directly proportional increase in happiness and may eventually become detrimental to psychological and even physical health (Rivera J. C., Hernandis, Cordeiro, & Miranda, 2015, p. 615).

Wigum (2004), based on the nine fundamental human needs proposed by Max-Neef (1992), states that these can be divided into *materials* (subsistence and protection) and *non-materials* (affection, understanding, participation, leisure, creation, identity and freedom), and that at least in part, they can be satisfied by both material and non-material satisfiers.

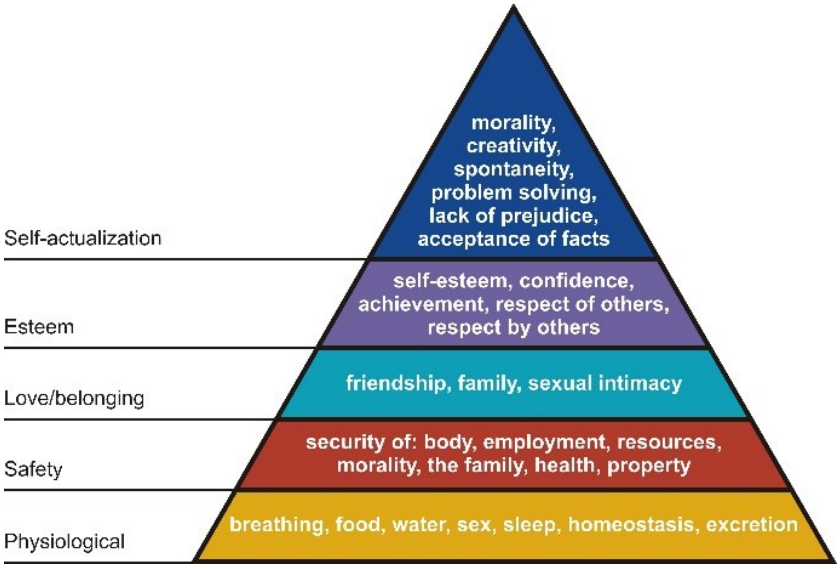

Fig. 1. Maslow Pyramid - hierarchy of needs. Adapted from Bartiaux et al (2011).

On the other hand, Maslow's classification of needs (1943) has been taken as a reference, deriving that a large part of the components of the *immaterial context* that relate to sustainability would be at the top of the hierarchy of needs. Rivera et al (2015) highlight, “these needs for recognition, belonging and self-realization, may be related to emotional,

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affective, spiritual aspects and values belonging to the *immaterial dimension*, in search of sustainability…" (p. 617).

From sociology, Hochschild (1990) asserts that emotions are not only biological impulses but are part of a conscious structure of the individual, which converts emotions into action and cognition; they also fulfil a signal function, i. e. they are in charge of giving references to agents -that intervene in a determined context- in everyday situations. According to Hochschild (1983), emotions inform about possible relations between self and context; they are knowledge-oriented. Therefore emotions, according to their perspective, build bridges between the different dimensions of reality and the social actor himself; namely, they are not only drivers of action, but they also integrate the processes of knowledge: of the subject itself, of reality and the relations between both. Along the same lines, Flam (2006), in his text *Emotions and Social Movements*, analyses the relation between dominant social emotions and movements in a given context. These emotions that move between the rules of feeling and the elaboration of the emotion pass through the sensitive self and realize the constant tension between the regulated emotion and the emotion that moves towards transformation.

From design, the emotional dimension of Desmet & Hekkert (2007) and its concept of *experience of the product*; is interpret by Rivera et al (2015), based on all possible emotional experiences involved in product-human interaction, they affirm that product-human interaction refers not only to instrumental interaction but also to non-instrumental interaction, and even non-physical interaction (p. 618). In the same vein, Nagamachi (1995) from the '90s indicated that consumers are more sophisticated and demanding in the choice, and want the products to adjust to their feelings of design, functionality, and price. This was observed in Japan since 2007 with the *KANSEI Value* (2007), based on the needs and recommendations of users/consumers to develop products or services that arouse emotions, empathy or sympathetic resonance. In this sense, it is important to consider the "demand for satisfaction"; of Vezzoli & Manzini (2008), understand by Rivera et al (2015) and based on new product-service systems with different - and more sustainable - ways of obtaining results, which could become socially appreciated and at the same time radically favourable for the environment (p. 618).

Several studies investigating on carried needs ((Maslow, 1943), (Max-Neef, Elizalde, & Hopenhayn, 1993), (Jackson & Marks, 1999), emotions (Hochschild, 1983), (Flam, 2006), (Bericat, 2012), (Poma & Gravante, 2016), (D'Oliveira-Martin, 2018) and the user-product connection (Desmet & Hekkert, 2007), (Mugge, Schoormans, & Schifferstein, 2007), (Vezzoli

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& Manzini, 2008); Rivera-Pedroza (2017) pointed out about, if it is possible to highlight needs, values and emotional aspects of users/consumers, which are not fully identified, and which can be drivers of action and at the same time of the logic related to sustainability from an *immaterial context*. Based on the above, the research aims, from a systemic approach, to identify and assess the relation between sustainability and emotional aspects, needs, values and desires that products and services can generate in users/consumers, as conscious drivers for collective actions focused on transforming the current reality in favour of sustainability (p. 286). In the same direction, it is esteem that the study of collective actions by social movements, can be important political actors whose condition is to promote social change since according to Poma (2016), the study of social movements from the emotions could contribute to the understanding of social phenomena.

1. METHODOLOGY

As mentioned above, and given the nature of the phenomenon analysed, the study could be addressed from a mixed methodology amidst quantitative and qualitative approaches; where, the ***quantitative approach*** defines the phenomenon for a posterior understanding of the resulting symbolic components, through a ***qualitative approach*** with instruments developed for this purpose. Since this is an evolving study, the analysis initially focuses on the quantitative part, for which it has been necessary to generate an instrument to capture the expert's opinion on the subject. This ***quantitative approach*** to research is argued with the consolidation and application of the data collection instrument to forty-seven experts (n=47) in design and sustainability from nineteen countries. Those who have been consulted for their opinion, in this case, on motivations that from the immateriality are related to sustainability. For this purpose, results in the following hypothesis:

It is feasible to identify motivations (needs, emotions, values) of users/consumers, belonging to the immaterial dimension, which in turn are in tune with dynamics drivers of an emerging vision of sustainability in products and services.

As aforementioned, sustainable design may be evolving into another dimension, in which a series of motivations bring with them an alternative vision that passes through dynamic drivers of sustainability in products and services. Based on this emerging dimension of sustainability, this study analyses *sustainability drivers*, to identify whether it is necessary to generate a cultural shift of users/consumers towards products and services, as well as an approach towards alternative ways in which needs can be satisfied in terms of sustainability.

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The study focusses on "Sustainability and immateriality" drivers. For the analysis, eleven items referring to motivations have been considered, understood as needs, emotions, and values that form part of an immaterial context of sustainability in products/services (Table 1).

Table 1. Drivers of sustainability and immateriality (Rivera-Pedroza, 2017).

Variable	Drivers - Motivations for sustainability
1	Attachment
2	Wonder
3	Involvement
4	Satisfaction
5	Well-being
6	Fulfilment *(spiritual and cultural)*
7	Pleasure *(enjoyment)*
8	Happiness
9	Freedom *(of choice and action)*
10	Desire *(wish)*
11	Comfort

The rating scale used is a Likert type with 4 items, being 1 "unimportant" and 4 "very important". Each expert analyses the connection among motivational drivers (needs, emotions, values) with sustainability; in terms of the acquisition, use, and maintenance of products and services, all analysed, from an immateriality perspective.

1.1. Analysis of drivers of sustainability based on motivations

For evaluation of the internal consistency of the approach, the calculation of the Cronbach Alpha Coefficient (α) has been carried out to estimate the reliability of the scale. The result of the analysis has been optimal, with a value α= 0.877. Moreover, the values of the column "Alpha if the element is suppressed" (according to IBM SPSS V24 software) were analysed, noticing that the maximum to which it could rise, if the item V1 (attachment) were suppressed, would be at a value α = 0.883, deciding not to exclude the mentioned item.

1.1.1 Sustainability and Immateriality Assessment: Drivers

Table 2 in substance considers the values of Arithmetic Mean ($\overline{X}$), Standard Deviation (S.D.) and Pearson's Variation Coefficient (V.C.) of the sustainability drivers, to identify the most representative elements.

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Table 2. Drivers of sustainability and immateriality: Mean, S.D. and V.C. (Rivera-Pedroza, 2017).

Drivers - Motivations for sustainability	N	$\overline{X}$	S.D.	V.C.
V5 Well-being	46	3,43	0,78	22,7
V4 Satisfaction	46	3,39	0,80	23,7
V3 Involvement	46	3,24	0,77	23,6
V11 Comfort	45	3,13	0,79	25,1
V6 Fulfilment *(spiritual and cultural)*	46	3,13	0,98	31,3
V9 Freedom *(of choice and action)*	46	3,07	0,88	28,7
V1 Attachment	46	3,00	1,01	33,7
V8 Happiness	46	2,98	0,83	27,9
V7 Pleasure *(enjoyment)*	46	2,98	0,77	26,0
V10 Desire *(wish)*	46	2,63	0,95	36,2
V2 Wonder	45	2,49	0,89	36,0

According to the foregoing, and as a result of the assessments made by the experts, the Means ($\overline{X}$) were initially analysed, which have values that vary between 2,49 and 3,43; of which items V5, V4, and V3 stand out for being in the "very high" category and item V2 for being in the "low" category of the scale established for the analysis of Means (Rivera-Pedroza, 2017, page 133), while the rest of the items are in the "high" category. Solid evidence was found that states that the greatest correlations are items with average values greater than 3,20, from which it concluded that the *drivers* based on the most representative motivations for sustainability in products/services are:

1. *V5 Well-being (3,43)*
2. *V4 Satisfaction (3,39)*
3. *V3 Participation (3,24)*

Items with average values greater than 3,00 should also be highlighted, arranged according to their predominance as follows:

4. *V11 Comfort (3,13)*
5. *V6 Fulfilment (spiritual and cultural) (3,13)*
6. *V9 Freedom (of choice and action) (3,07)*
7. *V1 Attachment (3,00)*

The order of importance, resulting from the high value assigned by the experts, indicates that the items *Well-being*, *Satisfaction*, and *Participation* are the most relevant *drivers* of sustainability. It is highlighted that in these items, the values of the S. D. (0,78, 0,80 and 0,77 respectively) are high, although the values of the V. C. are also high. (22,7%, 23,7% and 23,6% respectively) do not exceed 25%, which indicates that the values are not so dispersed,

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and their concentration does not move far away from the Mean with a little considerable deviation. Something similar has happened with the following four items, *Comfort*, *Plenitude*, *Freedom* and *Attachment* which; although with lower mean values, their S. D. (0,79, 0,98, 0,88 and 1. 01 respectively) and V. C. values (25. 1%, 31. 3%, 28. 7% and 33. 7% respectively), do not indicate a high dispersion or a considerable deviation.

1.1.2 Frequency Analysis - Sustainability and immateriality: Drivers

In addition to the analysis of the means, the frequencies resulting from the expert assessments are evaluated, considering only the "very important" (V=4) and "important" (V=3) categories, corresponding to the last two gradients of the Likert scale used. As an outcome of the analysis, Figure 2 and Table 3 presents, in order of importance, the drivers of sustainability based on motivations that are part of the *immaterial dimension*.

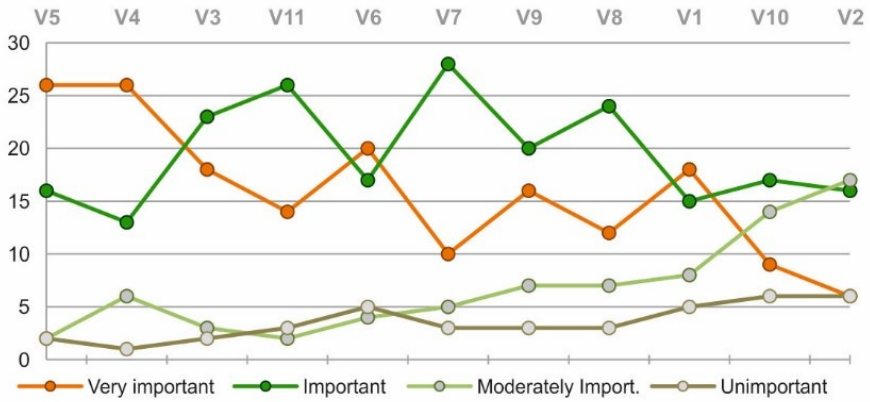

Fig.2. Frequency chart of drivers of sustainability and immateriality.

Table 3. Drivers of sustainability and immateriality: Frequencies (Rivera-Pedroza, 2017).

	V5	V4	V3	V11	V6	V7	V9	V8	V1	V10	V2
Very important	26	26	18	14	20	10	16	12	18	9	6
Important	16	13	23	26	17	28	20	24	15	17	16
Moderately important	2	6	3	2	4	5	7	7	8	14	17
Unimportant	2	1	2	3	5	3	3	3	5	6	6
Total	46	46	46	45	46	46	46	46	46	46	45

As above, is noted that there is no tendency towards assessments in the “very important” category, with the “important” category taking its place, as the most valued; and therefore, there are fewer items with representative values within the scale. As detailed below, the distribution of the five items is presented, according to their relevance in the valuations of the category "very important" (V=4) these are:

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1. *V5 Well-being*
2. *V4 Satisfaction*
3. *V6 Fulfilment (spiritual and cultural)*
4. *V3 Participation*
5. *V1 Attachment*

It is fundamental to point out that the previous items indicated as *drivers* are those that, apparently, could be related to sustainability, or at least that is what is perceived after the valuation of the sample; however, it should also be noted that this scale presents some lost values in the instrument, in addition to the lower percentage of the upper limit valuation gradient.

Nevertheless, is observed that these better-weighted *drivers*, as considered by experts, could be fundamental in the search for that fourth component or pillar for sustainability -discussed in recent years-, in addition to the *environmental*, *economic* and *social*; whereby, the focus on sustainability is changed, and the satisfaction of needs is achieved by alternative means, be they *material* or *immaterial*.

2. RESULTS

The following is the analysis and discussion of the results, based on the findings of the interaction with experts through the questionnaire, which supports the conceptual proposal and the hypothesis put forward in the research.

Previously, in the theoretical analysis, a possible evolution of sustainable design towards an *immaterial dimension* has been assessed, in which *drivers* related to *dynamics* generating an alternative vision of sustainability in products and services were identified. Experts have valued these *drivers*, and the results found are then interpreted to analyse their relation with sustainability.

As stated above, the *drivers* identified for this component are related to motivations (needs, emotions and values) that are part of an *immaterial context* of sustainability in products/services; which have been analysed, as shown in Figure 3 below, based on the Mean ($\overline{X}$) and Frequencies in the "very important" valuation (V=4).

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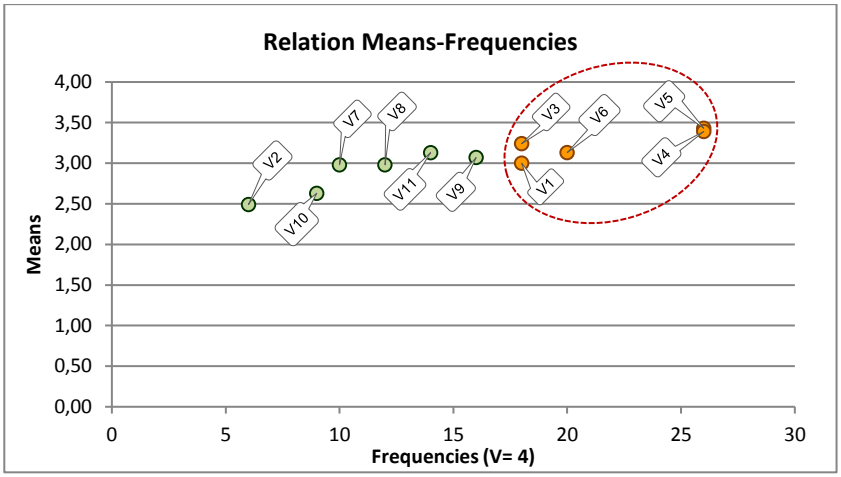

Fig. 3. Drivers of sustainability and immateriality: Relation between means and frequencies (Rivera-Pedroza, 2017).

As a consequence of the above correlation between the values of Means and Frequencies (V=4), below are indicated the drivers - based on motivations (needs, emotions and values) - with higher positive estimates, which can influence products and services for their sustainability:

1. *V5 Well-being*
2. *V4 Satisfaction*
3. *V6 Fulfilment (spiritual and cultural)*
4. *V3 Participation*
5. *V1 Attachment*

As regards the *drivers*, the fact stands out that the most representative for the sample are related to the notion of "quality of life"; in this respect, and according to Ramírez-Triana (2013), this concept estimates the general well-being of individuals and societies. It is used in areas such as sociology, political science, health science and development studies, and is measured by indicators generated by the United Nations Development Program (1999) from the Human Development Index (HDI). Consequently, it is observed that *well-being*, which is the most esteemed *driver*, is concerned with this concept per se, but in addition to that, and based on its significance, *satisfaction*, *fulfilment*, *participation*, and *attachment* are analysed to confirm or reject the research approaches.

The concept of quality of life, seen from the drivers identified, can be complex and controversial. That is why it is necessary to indicate and articulate that the idea is based on social construction, developed since the beginning of the first industrial revolution and consolidated in a particular cultural and economic context, located mainly in North America

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and Europe. For example, the focus on the idea of human well-being from design practices has, according to Ramírez-Triana (2013), led to positive developments in the relationship between design as an object/action, from Arts and Crafts with its philosophy, to ergonomics and sustainability. However, it is pointed out that the number of objects generated from the design to drive quality of life, has originated, in addition to the banalization of design, mass production and consumerism that has resulted in environmental degradation. Besides, Walker (2000) states that this emphasis on the pursuit of well-being and pleasure through objects and their acquisition is also closely associated with the spiral of consumerism, waste production and environmental degradation. In the same vein, Vezzoli & Manzini (2008) warn that the vision of well-being based on the product under the equation *"well-being = more products"*; is intrinsically environmental and socially unsustainable.

From the perspective of consumption, coincidences of this unsustainability have been found in approaches of Kasser (2003) and Thorpe (2010), in the sense that increases in material wealth do not lead to corresponding increases in happiness and, finally Thorpe (2010) point out, "could become detrimental to psychological and even physical health; which suggests, that continuous increases in consumption, are not a good indicator of increases in well-being…" (p. 8).

The idea of the quality of life analysed is more recent and is radically disconnected from the past socio-cultural and technological framework. It coincides with the approaches of Vezzoli & Manzini (2008), who affirm that there is a new idea about quality of life, related to the evolution of the contemporary economy towards an economy based on service and knowledge, which is summarized in slogans *"from material to immaterial possessions"* and *"from possession to accesses"*. With this perspective, the focus shifts from the possession of material benefits to available access to a range of services, experiences and immaterial benefits.

Considering the previous scenario, it is clear that the drivers identified, in addition to belonging to a subjective state of the proposed *immaterial context*; they are not characteristics of products and services, but simply generated through the correlation of these with the user or consumer. For example, if the vision of Vezzoli & Manzini (2008) is considered, about *well-being* based on access, one could transform the equation: *"more products = more well-being"* into another formula based on relations and intangible goods: *"more information + more services + more experiences = more well-being"*, in order to convert the consumption system to a more natural and, therefore, more sustainable state. In fact, Rivera-Pedroza (2017) had analysed some authors such as "Stahel (1997), Brezet et al

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(2001), Mont & Emtairah (2006), Manzini & Vezzoli (2002), Manzini & Jégou (2003) Guillen-Royo (2010); Li et al (2010), Beuren et al (2013) and Kestemont & Kerkhove (2010)…" (p. 201), have developed notions of *well-being*, *satisfaction* and *fulfilment* in service-based economies, in which they envision several inherently light and favourably developed services, which can correspond to quality of life principles, through product systems that are actually economically and ecologically sustainable. Likewise, from the design of experiences Gonzalez (2013), suggests a relation of balance that allows an emotional bond (*attachment*), no longer to tangible goods, such as products and objects, but to the brand in order to perceive it better and achieve a greater degree of *satisfaction* and *fulfilment*, through **co-creation** and **co-participation** in the configuration of the experience.

The consistency of the foregoing reasoning confirms the research approaches intended to affirm that these identified drivers can add value to sustainability, from immateriality, in a renewed concept of quality of life. In this context, it is suggested that, from the design and systemic point of view, products, services and PSS should be rethought, as well as the way to access them, by means of a renewed focus on quality of life that considers *well-being*, *plenitude*, *participation*, *attachment* and *satisfaction* of the real needs and desires of users/consumers, as alternative limits of the system, oriented to generate new opportunities for sustainability from immateriality.

3. CONCLUSION

The results of the analysis confirm a possible evolution of sustainable design towards an *immaterial dimension*, where *drivers* identified, which can add value to sustainability from immateriality. In this regard, and through a systemic perspective, an approach has been proposed that considers these *drivers* related to a renewed concept of quality of life (*well-being, Fulfilment, participation, attachment* and *satisfaction*); as well as emerging sustainable *dynamics* related to *material content*, *functional integration* and *emotional link* to products and services. The definition of these *motivations* validates what was suggested in the hypothesis, at the same time that they propose a cultural transformation in users/consumers that changes the focus in products, services and PSS -as well as the way to access them-, where, besides diminishing the amount of material content, "alternative ways are devised" to satisfy needs. Based on the above, is asserted that users/consumers as a collective, from a renewed concept of quality of life, can develop *feelings* and *actions* that regulate and encourage decisions, through collective actions and environmental social movements whose purpose is the integration of *sustainable dynamics* in society.

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