

Assessing the Social Sustainability of Frugal Products

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Abstract

Frugal innovations are products, services, processes and business models that target underserved customers of low-mid market segments. Frugal Innovation may be seen as a new way of doing business by conceiving products and services respecting the balance between the triple bottom line pillars: Economic, Environmental and Social. Despite the fact that Frugal Innovation's concept and boundaries often differ when taken from different perspectives, nobody argues against the statement "do more with less", which suggests not only the market volume that Frugal Innovation aims to supply, but also the concerns on minimizing the use of resources. Since its first use in 2010, several authors from different fields have studied Frugal Innovation; however its link with Social Sustainability is still not clear in the literature. Therefore, this work intends to cope with it by presenting the Framework for Frugal Innovations' Social Assessment (FISA). The framework was built with four types of information - which resulted by the application of a multi-methodological strategy: (1) frugal characteristics, (2) Social Value and Social Impact concepts, (3) the most significant stakeholders for Frugal Innovation, (4) the most relevant social areas to assess Frugal Innovation. By applying this framework, the social-related impacts and values are identified and measured and, as a result, the user gets information that supports the decision-making process, as FISA allows to assess the product or service stakeholder-by-stakeholder, in certain social area.

Keywords: Frugal Innovation; Social Sustainability; Sustainability Assessment; Social Assessment; Stakeholders; Framework

1. Introduction

Frugal Innovation appears as a response to the challenges the three major market trends represent: global competition, natural resources scarcity, and increasing population growth rate. By competing globally, companies find new opportunities in the emerging markets (Roland Berger, 2014; McKinsey GI, 2013). The scarcity of resources enhanced the strong of sustainability practices and studies as people recognized the importance of seeking a balance between economic, environmental and social activities.

In 2010, the expression "Frugal Innovation" was used by Adrian Wooldridge, to refer a brand new innovation encapsulating changes in all areas of the business model: product or service design, marketing and supplier's selection to name a few (Basu et al., 2013; Radjou and Prabhu, 2015). It has been defined by Rocca's (2016) as: "Frugal innovations are products, services, processes and business models that target underserved customers of low-mid market segments with high-quality solutions at affordable prices. They are developed in a sustainable and cost-effective manner that

minimises the use of [human] resources, materials and capital in the entire value chain, while enhancing social value.” In this sense, Frugal Innovation requires the integration of a set of constraints related to Social Sustainability, which plays a significant role in its implementation, as frugal solutions intend to deliver a maximized social value. Frugal Innovation requires a deep knowledge of the market, its opportunities and threats, which is only achieved with a narrow relationship with the stakeholders. On the one hand, Frugal Innovation implies a set of changes within the organizations, and there is still scepticism about it, especially when proposing a link with Social Sustainability (Khan, 2016). On the other hand, social aspects are generally seen as subjective, and difficult to identify, quantify and measure (Azapagic and Perdan, 2000). Therefore, an analysis of Frugal Innovation from a Social Sustainability point of view is needed.

It was then necessary to translate Social Sustainability into Social Impact and Social Value since literature suggests them to provide an integrative approach to Social Sustainability assessment. As Social Sustainability intends the fulfilment of society and people’s needs, social impacts are defined as “the consequences of positive or negative pressures induced by social interactions on social endpoints” (UNEP, 2009, p. 43). Regarding Social Value, there is no consensus about its concept in literature as many fields of study define it: marketing, social entrepreneurship, sociology, among others. However, it is possible to notice some trends on the references to the concept. Social Value is certainly something established by the society (as end-user community) and founded upon the contextualisation of that community. Social Value is seen from the user point of view, and

companies must take it into consideration after ascertaining it by participatory techniques with the stakeholders (Yang, 2014; Phills et al, 2008; Mulgan, 2010). Regarding their assessment, there are several tools which contribute to bound the scope of each concept. On the one hand, Social Impact Assessment (SIA) and Social Life Cycle Assessment (SCLA)’s social themes and endpoints suggest the areas of social assessment. On the other hand, the stakeholders preferences and perception are given by Social Value assessment - whose tools are: cost-benefit or cost-effectiveness analysis, stated or revealed preferences, SROI, Public Value or Value-added assessment, among others.

Therewith, key questions are still to be answered: (1) How both Social Impact and Social Value concepts can be integrated and applied to Frugal Innovation Social Sustainability assessment?; (2) What are the metrics to assess each of them?. In this sense, this work intends to answer these questions, while suggesting an innovative framework of frugal innovations’ social assessment (FISA).

2. Research Methodology

The research agenda followed four steps – whose methodologies are described below in this section (Figure 1).

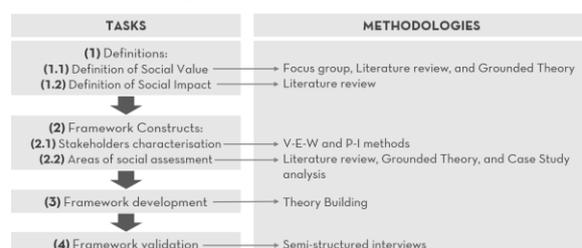


Figure 1 – Tasks and methodologies.

The first step consists of conceptualising the main concepts: Social Value and Social Impact. In the second step, the two elements that will frame FISA are studied. The third step deals

with the theory building, as the framework is developed and the indicators established. The fourth step is related to validation of the framework: it was conducted through semi-structured interviews to a list of people from different fields.

Literature review and Grounded theory

An exhaustive and comprehensive literature was conducted in the two main fields of this work: Frugal Innovation and Social Sustainability. The main objective of this method are to contextualise and to familiarise with the literature in the work's field, get to know about which are the theories and concepts used, and also about the theoretical debates, methodological debates and the questions to be answered (Flick, 2009, p. 48 and 49). Literature Review and Grounded Theory also allowed the identification of the most relevant assessment areas of frugal innovations by identifying and correlating social themes and stakeholders; and alongside with Focus Groups, these two methods allowed the establishment of the definition and comparison of Social Value and Social Impact which were the basis for the further work.

Case study analysis

With the objective of identifying the social areas which would frame FISA, a case study analysis was performed complementarily to the former two methods as it was important to also consider what companies and organizations are implementing and following in practice.

V-E-W method

As the narrow relationship with stakeholders is necessary in Frugal Innovation, the characterisation of these groups was a key step and required the application of the Value-Expertise-Willingness (V-E-W) method (adapted

from BSR, 2011). It encompasses four phases (1. identify, 2. analyse, 3. map, and 4. prioritize) with the objective of identify those most relevant stakeholders for Frugal Innovation by prioritizing them in terms of their:

- Value, which is decomposed into the Influence a stakeholder has towards the frugal performance of the company or the frugality of a product, and then into his Necessity of Involvement into the Frugal Innovation process of implementation development, or improvement,
- Expertise, whose subcategories are Contribution and Legitimacy. Both intend to reflect the skills and knowledge a stakeholder has which serve as input to the company's frugal performance or frugality of the product or service, and the meaning and legitimacy of a stakeholder's claim to engage with the Frugal Innovation implementation, development, or improvement within the company.
- and Willingness (to engage) translates the predisposition a stakeholder has to participate with the Frugal Innovation implementation, development, or improvement.

Complementarily to V-E-W method, it was conducted the Power-Interest (P-I) method (Ackerman and Eden, 2011) whose objective was to identify valuable synergies among stakeholders within Frugal Innovation.

Theory building

According to Corley and Gioia (2011), theory building exists to bring novelty by working the existing theory in a practice-oriented way. The authors claim that two aspects are crucial while building theory: utility and originality. Additionally to these two, there is also what Corley and Gioia (2011) call the "maintenance role" which is the ability of looking to what exists and giving it new approaches and new applications.

In this work, the maintenance role appears as the basis of the research strategy is the joint study of the two main fields: Frugal Innovation and Social Sustainability. The practical relevance is noticed by the general objective of this work: to provide practitioners (i.e. Frugal Innovation stakeholders) an integrative framework to assess the Social Sustainability of frugal solutions. By using it, practitioners would see their decision making process supported throughout the value chain (from design to end-customer communication) towards all of their stakeholders. The target of this work is not only those implementing or willing to develop Frugal Innovation in practice, but also the academic and scientific community since this is an exploratory and primordial study. Thus, academics may find here a basis for future work within the Social Sustainability and Frugal Innovation areas.

In fact, as the former methods established of the framework constructs, Theory Building allowed the final result development.

Semi-structured interviews

Interviews were conducted to perform the framework validation. The author opted by semi-structured interviews as the analysis of the fourteen collected testimonies benefits from “the consistent use of an interview guide” (Flick, 2009, p. 172) which, as result, increases the easiness to compare and gather data. Flick (2009) still mention how to prepare, perform and analyse these interviews. In semi-structured interviews “more or less open-ended questions are brought to the interview situation in the form of an interview guide” (Flick, 2009, p. 94). Therewith, and using the semi-structured interviewees to validate the framework, the intermediate goals of conducting them were: (1) the validation of the first framework

construct: the more significant stakeholders for Frugal Innovation; (2) the validation of the second framework construct: the more relevant areas of social assessment for Frugal Innovation; (3) the validation of each Social Value and/or Social Impact indicator; (4) the validation of the framework as a whole. The set of interviewees is intended to be multidisciplinary and comprehensive in terms of specific contributions to the work’s final result – the framework itself. Thus, out of the fourteen people interviewed, one may find Frugal Innovation researchers, private equity funds managers, social entrepreneurs, social innovation consultants, social strategy managers, social economy project managers, management consulting associates, amongst others.

3. Framework for Frugal Innovations’ Social Assessment

The target result of this work is the Frugal Innovation’s integration with Social Sustainability. This combination is done in two different ways, on the one hand, how to assure the link between the two concepts and, on the other hand, how to assess it in the long haul along the value chain until the end of the product or service life cycle.

FISA is then a tool to help decision makers in the assessment of social sustainability of frugal innovations. Using FISA, the decision-maker can assess the product or service considering a holistic perspective that covers the different stakeholders, in certain social area. The indicators proposed in the matrix assess the different stakeholders regarding different social end-points and corresponding mid-points. Each indicator is related to a frugal characteristic, assessing it.

To build FISA, four types of information were necessary: (1) the stakeholder characterisation from the Frugal Innovation point of view, (2) the areas of social assessment more relevant for frugal innovations, (3) the definitions of Social Value and Social Impact, and (4) the frugal innovations' characteristics. These constructs were studied and conceptualized, and its findings are summarized below.

3.1 Framework constructs

Stakeholder characterisation

Through the application of the V-E-W Method, the stakeholders were mapped and prioritized. The results are organized into two groups - which then structure Level 1 and Level 2 of assessment in FISA, respectively:

- The first one - which includes the concerned stakeholders: Local community; Consumers, users, customer: and Neighbouring communities – has the higher priority and relevance for Frugal Innovation. These concerned stakeholders are the ones in FISA's assessment level 1, as Figure 2 shows.
- The second group includes: Top management employees; Employees; Shareholders/ investors; Suppliers; Distributors; Post-sales technicians; Society at large; Governments and regulators; NGOs; and Competitors. Consequently, FISA's second level of assessment is framed by this group of stakeholders (Figure 3).

Areas of Social Assessment

According to the methodology applied, out of GRI 4.0 social endpoints the most relevant social areas are: Society and Product Responsibility. These are relevant since they are the ones in which Frugal Innovation brings novelty comparing with other types of innovation. In this sense, FISA includes only these two areas, as for the other two (Labour

Practices and Decent Work, and Human Rights) there exist tools and indicators proposed in literature – such as SCLA, OECD guidelines, amongst others. The endpoints are subdivided into midpoints, according to what literature review already mentioned in chapter 2. Therewith, FISA's indicators are connected to one or more midpoints within a midpoint.

Definitions of Social Value and Social Impact

The conceptualization of Social Value and Social Impact frames Social Sustainability in the context of the present work:

- Social Value is the perception that the concerned stakeholders have about the products influence in their individual and collective wellbeing.
- Social Impact is how the company activities, or the product itself, change or influence each stakeholder in a period of time.

FISA's indicators refer to each of the concepts, or to both of them when their intersection remains over each of them individually.

Frugal characteristics

FISA includes information on frugal characteristics as they are requirements of such solutions. Frugal innovations are functional since they should be designed to be practical and useful. In this sense, the simplicity is crucial in meeting core social needs. The robustness of a product is noticed by its lasting materials and maintenance-friendly components. Frugal Innovation requires easiness-to-use and fault-resistance, which contribute to the product user-friendliness. "Growing" refers to the volume of people and the target mass markets Frugal Innovation intends to serve. Alongside with it, the characteristic timely-to-market was here included as velocity and flexibility are requirements in approaching the market with an innovation. Frugal innovations are still meant to

be affordable - as they should have cheap price, and low costs of operation and maintenance along all the product life cycle -, and local – as frugal operations should always prefer local collaborations to better fit in a budget. In addition, Frugal Innovation is economically and environmentally sustainable in all activities, operations, practices, including material and supplier selection, and product treatment at the end of its life.

Therewith it was possible to build the framework as it is presented in Figure 2 and Figure 3, as FISA has two levels of assessment, representing the stakeholders' priority - therefore two tables are presented.

3.2 FISA's indicators

Using FISA, the decision-maker can assess the product or service stakeholder-by-stakeholder (columns), in a social area (row). As FISA is organized into two assessment levels, the user shall dedicate more resources (workmen, time, money) to the stakeholders in Level 1, but without great prejudice to the ones in Level 2, as all of them shall see dedicated attention and resources to each. For each intersection stakeholder-area (column-row) there are indicators measuring the frugal innovation's Social Sustainability (colour), which is decomposed by Social Value (BLUE), Social Impact (ORANGE), or both of them (GREEN). Each indicator also refers to one or more frugal characteristics (symbols): functional (STAR), robust (TRIANGLE), growing/ timely-to-market (RECTANGLE), affordable (CIRCLE), local (PENTAGON), and sustainable (CROSS). There are 23 indicators in level 1, and 27 in level 2 whose description may be consulted in the main document.

3.3 Framework use considerations and limitations

By using FISA, a company benefits from a large number of aspects.

1. The decision-maker can assess the product or service considering a holistic perspective that covers the different stakeholders, in certain social area.
2. FISA's users benefit from a clearer and easier way of getting informed about the Frugal Innovation implementation and development requirements.
3. It allows its users to identify who are the main stakeholders and so - by having two levels of assessment -, companies can better manage the resources they dedicate to each stakeholder.
4. Regarding the areas it encompasses, FISA allows the assessment in the two main end-points of Social Sustainability: Society and Product Responsibility.
5. The information FISA's indicators give enriches the design process of a new frugal solution, or provides content to consistent improvements of an existing solution. The product design and development phases are complex as many requirements and constraints are at stake. FISA is also a supporting tool at these times as it includes information about the realisation of frugal characteristics in each stakeholder. This can facilitate both design and development phases which typically take a very long time.
6. As reflected in FISA's indicators, a company largely benefits from partnerships with its stakeholders. By them, accessing and gathering information can be easily done. As studied, Power-Interest method's results show some interactions which benefit Frugal Innovation

implementation and development, that can be useful to be promoted by the company.

7. FISA is easily used alongside with other tools that analyse other Frugal Innovation dimensions, just as environmental assessment models or logistics and operations model.

8. FISA's use enlightens some market approaches necessary to adequately implement and develop Frugal Innovation: a deep knowledge about the market environment (political, social and economic contextualisation, amongst others)

9. With regard to the business model, the indicators still provide hints for human resource management and also for procurement department as local resources are preferred over relocated ones.

FISA's users should take into consideration that its indicators are prone to be customized to a specific product or service. Regarding the required information, and despite its indicators being suggested as easy-to-measure, FISA's use could require efforts to get information which is not typically monitored. In fact, the quantity of available information and also its quality, will obviously influence the accuracy of the FISA's general output. Moreover, FISA's output comes in the global report of all indicators for all stakeholders in both areas of assessment. In this sense, the use of an individual indicator alone, can mean a poorer analysis and it can induce less accurate results. Therewith, FISA's indicators are made to be used altogether in a generic approach to the overall social propose of frugal innovations. As Frugal Innovation assumes a socially responsible company, FISA is not entirely complete since it only includes two out of the four social areas GRI 4.0 uses. That is to say that, for the remaining two (Labour Practices and Decent Work, and Human Rights)

companies should use tools available such as GRI 4.0 guidelines, SLCA, and OECD guidelines for multinational enterprises.

4. Validation

The framework validation was conducted through semi-structured interviews whose intermediate goals were: (1) the validation of the first framework construct: the most significant stakeholders for Frugal Innovation; (2) the validation of each indicator; (3) the validation of the framework as a whole. To this end, the interview guide was drawn up with two main parts. Firstly, the work's scope presentation (1. Frugal Innovation; 2. FISA; 3. Social Value and Social Impact concepts; 4. Areas of social assessment) and then the discussion itself (5. Stakeholders characterisation; 6. Indicators; and the framework as a whole).

The group of fourteen interviewees is a multidisciplinary group. Since the design of the validation method – according to the methodology described, the group was intend to comprehend different expertise, so, it was important to include: social entrepreneurs, social sustainability consultants, social innovation researchers, Frugal Innovation researchers, funding entities, project managers in developing countries (Burkina Faso, São Tomé and Príncipe, Mozambique, Brazil, Angola, Nicaragua), and project managers in developed countries (Portugal and Germany). All the interviewees noticed the relevancy and pertinence of FISA: not only as encapsulating valuable information to aware companies of the importance of social sustainability and presenting Frugal Innovation as one of the more complete ways of putting it into practice, but also as being a tool that can easily be make available for companies by the way it is organized and presented.

Framework FISA - Frugal Innovations' Social Assessment			
Level 1			
	LOCAL COMMUNITY	CONSUMERS, USERS, CUSTOMERS	NEIGHBOURING COMMUNITIES
SOCIETY	Market share (1) ★■ Price per average income (2 and 3) ● Site-specific studies (1, 5 and 6) ♣	Product lifetime (1 and 3) + Direct impact on users (2) ★■♣+ Feedback contacts (5) ★■♣	Contracts with neighbouring suppliers (1) ■■+ Impact on the delocalisation of neighbouring people (1) ■■+ Involvement of neighbouring people (5) ★■■+
	Value chain entities audited (4) + Local partnerships (1, 2 and 3) ●♣+		
PRODUCT RESPONSIBILITY	Covered needs ratio (1) ♣+ Substitute products ratio (2) ★ Price comparison (2) ● Initiatives to raise awareness (2) ■■ Local maintenance technicians (2) ▲ Financial purchasing alternatives (2) ●	Product lifetime (1 and 2) ▲ Educational actions (1 and 2) ■ Product adoption curve (2) ■■ Distribution channels (2) ■■ User per product (2) ●	
	Environmental impact (2) +		

Legend:

Colours:
Blue = Social Value Indicator;
Orange = Social Impact Indicator;
Green = Social Value and Social Impact Indicator

Symbols:
Functional = ★
Robust = ▲
User-friendly = ■
Growing/Timely-to-Market = ■■
Affordable = ●
Local = ♣
Sustainable = +

Society midpoints:
(1) Business Impacts, Community Involvement and Welfare;
(2) Community Funding and Support;
(3) Fair Business Operations;
(4) Corruption in Business;
(5) Stakeholder Participation;
(6) Innovation and Competitiveness

Product Responsibility midpoints:
(1) Consumer Health and Safety;
(2) Product Management and Consumer Satisfaction

Figure 2 – Framework for Frugal Innovations' Social Assessment (FISA): Level 1.

Framework FISA - Frugal Innovations' Social Assessment										
Level 2										
	TOP MANAGEMENT EMPLOYEES	EMPLOYEES	SHAREHOLDERS/ INVESTORS	SUPPLIERS	DISTRIBUTORS	POST-SALES TECHNICIANS	SOCIETY AT LARGE	GOVERNMENTS AND REGULATORS	NGOs	COMPETITORS
SOCIETY	R&D expense (6) ■■ Local employees (1 and 2) ♣ Participation in local volunteering programs (2) ♣ Individual hours of volunteering (2) ♣ Impact of volunteering programs (2) ♣	Variation of employees (1, 2 and 3) ■■+ Local employees (1 and 2) ♣ Participation in local volunteering programs (2) ♣ Individual hours of volunteering (2) ♣ Impact of volunteering programs (2) ♣		Contracts with local suppliers (1 and 2) ♣ Equality in suppliers selection (3 and 4) ■■+	Contracts with local distributors (1 and 2) ♣ Feedback contacts (5) ★■ +	Contracts with local people (1 and 2) ♣ Feedback contacts (5) ★▲■ ■	Impact on production capacity (1) ★■ Indirect impact (1) ★ Impact of initiatives beyond business area (1 and 2) ■■♣	Social and political participation and integration (1, 2, 3, 4 and 5) ■■♣	Support local NGOs (1 and 2) ♣+	Job shift from an industry or company to another (1) + Number of substitute products (1 and 2) ■■
	Value chain entities audited (4) + Local partnerships (1, 2 and 3) ●♣+									
PRODUCT RESPONSIBILITY	Feedback management system quality (2) ■■♣ Changes and improvements embodied (1 and 2) ★■♣		Future markets (2) ■■ Customer retention rate (2) ★▲■●		Educational actions (1 and 2) ■ Distributors per targeted people (2) ■■♣ Distributors per targeted area (2) ■■♣	Educational actions (1 and 2) ■ Technicians per sold product (1) ▲■		Social and political participation and integration (1 and 2) ■■♣ Timely-to-market (1 and 2) ■■ Compliance with regulation (1 and 2) ■■	Joint specific studies (1 and 2) ★●♣	Substitute products ratio (2) ★▲■●♣+ Price comparison (2) ■■●
	Environmental impact (2) +									

Figure 3 – Framework for Frugal Innovations' Social Assessment (FISA): Level 2

In interview G the grounded theory results were discussed, as two assessment areas were discarded. Despite understanding the logic and even these results, interviewee G highlighted the importance of presenting or suggesting the assessment methods of Labour Practices and Decent Work, and Human Rights alongside with FISA, as ones complete the other and companies should be aware of the wholeness of the social assessment.

Due to the importance of taking social assessment as a not entirely objective task, interviewee L suggested to add a stakeholder interaction exercise (as a validation of what FISA informs the decision-maker) at the end of FISA assessment through indicators, as a compliment to it.

This validation allowed to guarantee the practical and theoretical relevancy and pertinence of the work, as interviewees had different backgrounds and past experiences in academic or business fields. Through it, FISA's stakeholders in assessment level 1 were validated according to the frequency of mentions and the overall understanding that Frugal Innovation responds to a large amount of new buyers requests, so that there is urgency in contextualizing the solution and the business model according to the customers.

5. Conclusions and Future Work

Frugal Innovation itself represents many challenges. One of the more severe and less studied is its integration with Social Sustainability in two distinct ways: on the one hand, how to assure the link between the two concepts and, on the other hand, how to assess it in the long haul, along the value chain until the end of the product or service's life cycle. In fact,

despite the attention scholars are dedicating to Social Sustainability in the recent years, literature still lacks an approach of Frugal Innovation from this perspective.

Therewith, FISA is a tool to help decision makers in the assessment of social sustainability of frugal innovations. Using it, the decision-maker can assess the product or service considering a holistic perspective that covers the different stakeholders, in certain social area. Therewith, FISA helps companies in dealing with the social challenges Frugal Innovation brings and in evaluating its social value and social impacts. Beyond providing indicators that quantify company's action, FISA still encapsulates evidences of how approaching the targeted markets, as well as other valuable managerial implications for the frugal process and success.

FISA's validation was conducted through semi-structured interviews. Fourteen interviewees contributed with their experience and expertise in several fields: entrepreneurship, social entrepreneurship, social innovation, frugal innovation, funding, amongst others. Their contribution enriched FISA by confirming the results, but also by identifying room for future works.

Four main areas for future research are suggested. First, as FISA is generic to all industries in all countries, it could serve as basis for specification to a certain company operating in a specific sector of a certain country. This could support companies in better understanding Frugal Innovation's opportunities, requirements, and challenges. Secondly, FISA

should be integrated with other models that address Frugal Innovation as a whole, just as business model, product design and development, supply chain and logistics, and environmental sustainability. It would support companies in creating roadmaps of implementation, which could be eased by a computer-based decision support tool. Third, it would be enlightening to study the more efficient mechanisms of value chain monitoring with special focus on accessing to the information needed to use FISA, as well as the more appropriate participatory methods to get information out of more relevant stakeholders. Fourth, FISA could be extended if the two remain social endpoints (Labour practices and decent work, and Human rights) would be included, as they are necessary requirement for the implementation of Frugal Innovation. As literature already suggested tools to assess those areas, FISA is susceptible to be easily incorporated by them.

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