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Toward sustainability through incremental innovation in low cost product: Nespresso case

ROSANA YASUE NARAZAKI
Universidade Nove de Julho
rosana.narazaki@gmail.com

MAURO SILVA RUIZ
UNINOVE – Universidade Nove de Julho
maurosilvaruiz@gmail.com

CLAUDIA TEREZINHA KNIESS
UNINOVE – Universidade Nove de Julho
kniesscl@yahoo.com.br

CRISTIANE DREBES PEDRON
UNINOVE – Universidade Nove de Julho
cdpedron@gmail.com

TOWARD SUSTAINABILITY THROUGH INCREMENTAL INNOVATION IN LOW COST PRODUCT: NESPRESSO CASE

Abstract

With the increase of the population, it is imperative to expand the production of goods and services to meet the individual needs. The aggressive way of production is destroying the natural resources without worrying about its consequence in the human being. In order to contribute to minimize this problem, organizations need to produce innovations, focusing on the economic, social and environmental dimensions. This article presents the Nespresso case study with the objective of understanding its strategy of having an innovative aluminum coffee capsule, within a closed recycling process, attending the purposes of the Triple Bottom Line. Data collection was done through secondary data, video testimonies and public documents. The collected data were analyzed and validated using the Theoretical Framework of Sustainability. With the understanding of this case, it was sought an answer to the following research question: **How can a low-cost incremental innovation contribute to sustainability in a gourmet coffee manufacturer company?** The main finding is that even a low-cost product with incremental innovation, yet designed within the Triple Bottom Line's purpose and in addition, coupled with a value-sharing strategy, is capable of delivering economic, social, and environmental benefits.

Keywords: Sustainable innovation; Nespresso; Aluminum recycle; Triple Bottom Line.

Resumo

Com o aumento da população, é imperativo expandir a produção de bens e serviços para atender as necessidades individuais. O agressivo modo de produção está destruindo os recursos naturais sem se preocupar com suas consequências no ser humano. A fim de contribuir para minimizar este problema, as organizações precisam produzir inovações com foco nas dimensões econômica, social e ambiental. Este artigo apresenta o estudo de caso Nespresso com o objetivo de entender sua estratégia de ter uma cápsula de café de alumínio inovadora, dentro de um processo fechado de reciclagem, atendendo aos propósitos do *Triple Bottom Line*. A coleta de dados foi feita por meio de dados secundários, depoimentos em vídeo e em documentos públicos. Os dados coletados foram analisados e validados utilizando-se o Quadro Teórico de Sustentabilidade. Com a compreensão deste caso, buscou-se uma resposta para a seguinte questão de pesquisa: **como uma inovação incremental de baixo custo pode contribuir para a sustentabilidade em uma empresa fabricante de café gourmet?** A principal descoberta é que mesmo um produto de baixo custo com inovação incremental, concebido dentro do propósito do *Triple Bottom Line*, agregado a uma estratégia de compartilhamento de valor, foi capaz de trazer benefícios econômico, social e ambiental.

Palavras-chave: Inovação sustentável; Nespresso; Reciclagem de alumínio; *Triple Bottom Line*.

1 Introduction

The changes in the industry are primarily made by industry leaders (Kumpe & Bolwijn, 1994). They seek to remain at the top of the market searching a new way to be distinguished, creating an innovation with uniqueness (Kumpe & Bolwijn, 1994). Innovation is not a merely technological issue, it is also a social renew that happens by means of open policy, open communication, supply chain and stakeholder's perception, moving inside and outside changing in organization process. This is the *modus operandi* of the innovative organizations in order to remain innovating (Barbieri, de Vasconcelos, Andreassi, & de Vasconcelos, 2010).

The result of innovation in products usually leads an innovation in process. Organizations develop with process improvement, which is a benefit of innovation. Yet invention takes times and consumes utilities while it is under development. As an invention is an innovation only when it can be commercialized, the Ecological Footprint, the measure of ecological space consumed necessary to product this innovation (Wackernagel & Rees, 1998), becomes very large. Concerned about stakeholder perceptions, organizations raise their level of social and environmental responsibility. This strategy not only makes the organization image better but also converts it in profit (Mosca, Tamborrini, & Casalegno, 2015). Barbieri et al. (2010) corroborate saying that participating in this movement is a competitive factor.

Increasing a competitive value by social and environmental responsibility is a boarder strategy. However, companies are still increasing costs in social and environmental actions without converting into benefits, reducing profit. The real value is not to share the value that has already created as a distribution approach. Instead, it is the expansion of the value to social and environmental dimension, creating a value share (Porter & Kramer, 2011). This is what a sustainable innovative organizations practice, to produce innovation based on sustainable dimensions in their *modus operandi*, obtaining positive results for the organization, society and environment (Barbieri et al., 2010).

Going to this movement, Nespresso, a Nestlé Gourmet Coffee division, launched a coffee innovative aluminum capsule. Making coffee is a secular receipt: pass hot water through a small coffee´s container. Aluminum capsule is still a coffee container but this innovation brought a significant improvement in the characteristic and functionality because costumer can make only one portion of coffee (a cup), reducing waste and the aluminum coffee container is made by a material 100% recyclable that can be passed to this process (use and re-use aluminum container) many time without having too much loss. This is a characteristic of an incremental innovation, a new feature and improvement in the product made by an existing market and technology (Garcia & Calantone, 2002). In 2003, Nespresso also launched the "Recycling at Home" program establishing a cycle that begins and finishes in Nespresso, ensuring an aluminum and coffee recycle (Latéle, 2014).

On the other hand, due to the greatness of the objective, some business man say that economic growth is not possible with sustainability (Barbieri et al., 2010). In this context, this study answers the research question: **How can a low-cost incremental innovation contribute to sustainability in a gourmet coffee manufacturer company?** The objective of this study is to understand Nespresso strategy to have an innovative aluminum coffee capsule, within a closed recycle process, attending the Triple Bottom Line propose.

In the intention to better expose the subject, this article is organized in five sections. First section presents with a short contextualization of Nespresso and the innovation process of the aluminum capsule. The second section deals with the theoretical background describing the fundamental concepts of innovation, sustainability and share value, and also a sustainable innovation by a share value in cup of coffee. In the third section, the adopted methodology was described. Fourth section exposes the case study Nespresso, describing the organization,

analyzing the results and discuss. The last section presents the limits of this research and future studies suggestions.

2 Theoretical background

With the intention to better understanding the case study, this section describes the fundamental concepts of innovation, sustainability and sustainable innovation, in the hereafter subtitles.

2.1 Innovation

With the intention to be distinguished among competitors, organizations have to show differentiation: a competitive advantage. These results come from organization internal core competence by the dynamic capacity which translate knowledge in innovative goods. But commodity goods has elasticity unless customer apprehend sustained differentiated value (Brem, Maier, & Wimschneider, 2016). A good that aggregates value with a significant improvement is called innovation (OECD, 2006).

Not every invention will be an innovation. First, the business plan is constructed in order to know if the invention can be implemented (introduce in the marketplace). The moment the invention reaches the marketplace it is called innovation. Innovation concept has some dimension's classification, according some authors in the literature. For OECD (2006), innovation has four type: product (significant improving in the characteristic or functionality in the product or service), process (modification in how the product or service is produced with a significant improvement in technics, equipment and/or software), marketing (significant improvement in the method in order to give a new position or price for the product) and organizational (a new organizational arrangement). Others authors considered that innovation has to be target in a holistic way, considering improved product (P_1), improve process (P_2), re-define the positioning (P_3) and re-define paradigm (P_4) (Francis & Bessant, 2005).

Product innovation can be classified by the improvement depth that was implemented. An existed product that is significantly improved, simplified or modified, but still uses existing technology to attend the existing market is classified into the category of incremental innovation (Garcia & Calantone, 2002). A product whose improvement are fundamental changes and causes a new product order with revolutionary changes in technology is classified as a radical innovation (Dewar & Dutton, 1986; Garcia & Calantone, 2002).

Innovation in the product can happen by means of change the material, components or other characteristics that improve performance in embedded software, facilities, technical specification or functional characteristics. (OECD, 2006). These improvements arise from the new knowledge, technology or both combination.

Process is also innovative when a production method or new distributions with significantly improvement is implemented. It is made by introducing new techniques, machines and software (OECD, 2006). It is also considered a process innovation whenever the auxiliary support activity is improved (OECD, 2006). It reduces cost and improves quality. Product innovation usually brings process innovation; therefore, top management has to take both in the strategic plan in account.

In order to producing innovation, products need human and nature resource. Nature resource is not unlimited and human being depends on nature to survive but industry nowadays is too aggressive causing environmental damage. In the intention to find a way to match the solution, sustainability concepts are explained in the next subtitle.

2.2 Sustainability and share value

The scenery of the global population growth rate in 1.8% per year (ONU, 2015), it is supposed that industry has to increase the production of goods to satisfy the individuals need. However, world natural resource cannot sustain such demands as it is not unbounded.

The mainly organization´s winning post is profit, but reaching it at any price is not acceptable anymore. Environmentalists argue for a less harmful competition taking in account the human being and the environment (Barbieri et al., 2010). This is a new way of viewing the world in which organizations have to know it´s impact and it´s competences and inabilities (Van Reijsen, Helms, Batenburg, & Foorthuis, 2015). Production is necessary but with less environment impact, with products that supplies individual's necessities but also allow individuals life quality and environment preservation.

Impacts cannot be limited by offsetting the Ecological Footprint or corporate social responsibility actions (Porter & Kramer, 2011). Production must give an environment maintenance so that future generation can use it. This is the pillar for sustainable production, the Triple Bottom Line (Elkington, 1998). In others words, an organization to be sustainable, should work in these three dimensions: social, environmental and economic. The keyword to be succeed in the Triple Bottom Line is sustainable innovation.

To satisfy the three dimensions of the Triple Bottom Line is not so easy. Raising this flag makes brands to be more venerable by customers (that is more connected with environmental issue), by individual (that are sure the organizations respect their stakeholders) and by investors (as the stocks increase value with this actions). It is necessary not only to thinking in new products but also creating news production models that goes beyond the financial returns, aiming social justice and environmental goals. This is the wining of sharing value.

Share value is an economic model that makes company be a partner instead of a provider. The integral profit maximization and the competitive environment put together organizations and community to re-thinking in collaborative way in the intentions to create value. Share value is a win-win model that lead stakeholders works in collaborative mood. Sharing value needs to incorporate it into the culture of the organization, which causes changes in processes and realigns the entire organization budget (Porter & Kramer, 2011).

2.3 Sustainable innovation by a share value in a cup of coffee.

Achieve a competitive advantage through innovation is part of the vanguard companies. It is known that many attempts fail to create viable innovations the one that can be consumed by the market. It is a laudable effort improving the community's quality of life and organizations by innovative products, but there is a price to pay: spent and not returnable or non-regenerable resources linked to the failure of the development of the new products and production demands.

In the intention to be sustainable, organizations produce new products, services and business in the social, economic and environmental dimensions, joining essential characteristics such as innovation and sustainable orientated (Barbieri et al., 2010). In this regard, innovation is the way organization reaches sustainable development.

The new innovation strategy is designed using less energy and resources, promoting productivity gains, better wages for workers and better quality of life for the community. This means that innovative products have been created in the light of sustainable development.

Taking this scenario as a reference, Nespresso, a gourmet coffee factory, turned a cup of coffee the tool for its strategy. The company offers to the market cup of a gourmet coffee that can be prepared by in the customer´s home. Nespresso made this possible, creating a one

dose capsule made by aluminum as an incremental innovation, with a material that can be recycle.

Thinking about to reduce the Ecological Footprint, Nespresso created life cycle of a cup of coffee that begins and ends in the Nespresso itself. In a sustainable way, the organization not only reduced the environmental impact giving solution to the process waste (aluminum and coffee) but also improved social dimension applying share value strategy, inviting providers to redesign the value chain and enabling local cluster development (Porter & Kramer, 2011).

The way to know if this direction is correct, a performance measure has to be tracked. A measure environmental impact tool transforms concern in an environment protection action (Van Bellen, 2004). One of the seminal proposed tool to measure environmental impact is Ecological Footprint. This technic consists in translate consumption and waste in a correspondent productivity area. The more production uses natural resource, the biggest is the Ecological Footprint. As the Earth is finite, his technique shows that our natural resource is limited and just one planet is not enough to satisfy our desire. In a sustainable life standard, our life has to be limited by the natural capital (Van Bellen, 2004). Triple Bottom Line is another measure scale (Elkington, 1998). It is based in a three dimensions' pillar: economic, social and environmental, meaning that a sustainable innovation takes into account improving a better of life quality for human beings, making maintenance of the natural resource in order future generation can continue use it and also returning value for the organization.

3 Methodology

This research is based on a case study, an empiric and deeply investigation in the real context, with multiple source of evidence that highlights major events in the research environment with a holistic view (Yin, 2015). It is a qualitative research of exploratory and descriptive nature, aiming to clarify the concepts based on the theoretical reference. Data was collected and analyzed by public documents (BioCycle, 2016) , reports (Nestlé Nespresso, 2016a, 2016b, 2016d), video (Latéle, 2014) and articles (Brem et al., 2016; Matzler, Bailom, Friedrich von den Eichen, & Kohler, 2013). Multiple evidence source include direct observation and interview (Yin, 2015) but Nespresso´s policy doesn´t allow to interview their employee. The evidence from Nespresso providers, customer and employee was collected by their testimonials registered in the video and public documents. The case study chose is unique by the innovative method applied in coffee market.

Dimensions	**Variables**
Economic	Cost impact studies to support decisions. ROI (return over investment) and cost-benefit trade-off curves.
	Relationship with stakeholders and consumers in the process.
	Continuous search for excellence and better quality.
	Knowledge management network.
Social	Consensus meetings in the process of decision and reflection for learning with experience and errors.
	Values, principles and beliefs shared by the members of the company.
	Disassembly analysis.
	After-sales tracking (reverse logistics policy).
Environmental	Application and reuse of consolidated technologies.
	Reduction of energy and fuel consumption in the project and product life cycle.
	Use of raw material 3Rs (reuse, remanufacturing and recycling), prioritizing abundant and renewable natural resources.

Figure 1: Theoretical Framework of Sustainability
Source: adapted from Martens at al. (2016)

Data analysis was carried out by means of the information obtained empirically with the variables included in the three dimensions, using the Theoretical Framework of Sustainability by Martens at al. (2016) presented in Figure 1. The Theoretical Framework of Sustainability was based on literature review and has three dimensions (economic, social and environmental) and variables to measure each dimension. It was used and validated as a means of application of the sustainability in innovative development project (Martens et al., 2016).

4 Case study

In this article, the Nespresso case study is explored to understand the strategy of innovating, taking care of the dimensions of sustainability. Nespresso case study is presented for analysis of the data and discussion. The data were crossed with the variables belonging to the Theoretical Framework of Sustainability (Martens et al., 2016) with the purpose of analyze the scope of the Triple Bottom Line.

Nespresso, a Nestlé Gourmet Coffee division, has been already studied as a marketing success innovative business model (Matzler et al., 2013) as well as a successful strategy with competitive advantage applied (Brem et al., 2016). The current study has the intention to examine another business view: a sustainable innovation. The case described in this study is in Switzerland.

The point that leverage Nespresso to success was the new product position: a gourmet coffee that individual can prepare at home (Nestlé Nespresso, 2016d). Considering recycling approach as an essential dimension of sustainability, coffee machine and capsule projects were driven by this concept. Beautiful, functional and effective machine was designed with a very innovative capsule made by aluminum, a material 100% recyclable that can be recycled many times without having too much loss. Also, to decrease the environment impact, the product life cycle considered the delimitation of coffee and capsule production. Based on this idea, in 2003, Nespresso launched the "Recycling at Home" program establishing a cycle that begins and finishes in Nespresso, ensuring that aluminum and coffee would be recycled (Latéle, 2014).

First, Nespresso provided used capsule reception. Recycle points are provided in the Nespresso shops, market centers and some containers in the street or in commercial condominium. Besides, Nespresso made a partnership with a local courier that deliver new capsule and at the same time collect the used one for free. In order to maintain the sustainability, an alternative deliver is made by eco-bicycle that not only preserves the air clean but also generate more jobs for bicycle drivers. 70% of this capsule is recycled using currier services in Switzerland (Latéle, 2014). Nespresso designed the logistic chain together with the provider so that both company could get the best arrangement and get the optimum operation (Latéle, 2014). Logistic chain is designed in the Figure 2.

The used aluminum capsules are sent directly from currier to a recycling industry. Nespresso chooses the recycle provider and give them the knowledge about aluminum recycle process. Provider is trained to have a clean and sustainable production line, and gets the information about which machine to use. With these information, recycling industry construct yours own recycling line. In this context, machines separate capsules from packing and in the process ahead, coffee is separated from capsule. At that point, two distinct recycling process occur: coffee and aluminum. Aluminum generates aluminum and is sold by the recycling industry to be transformed in new aluminum products. This process saves 90% of energy, compared with the bauxite extraction and transformation in aluminum. Likewise, local recycling industry makes money as Nespresso pays the service leaving the aluminum to be sold (BioCycle, 2016).

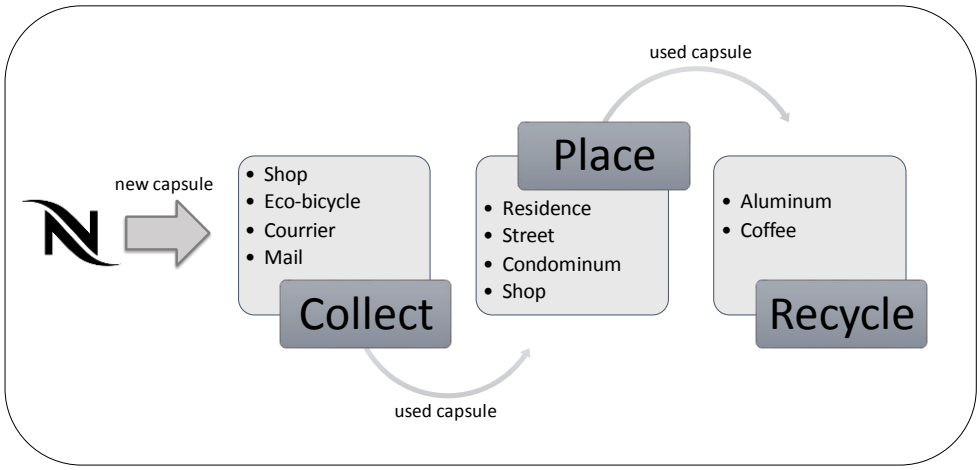

Figure 2: Nespresso deliver logistic chain
Source: authors

The second recycle process is based on coffee. This process brings two different raw materials. The traditional one is to use coffee as an organic fertilizer. The coffee goes to the compost site and stayed four to six months to be degraded and transformed into organic fertilizer. The mainly benefits of this compost is erosion prevention, improving soil microbial activity functioning as a sponge and facilitates the cultivation since the soil become lighter and it doesn´t degrade, meaning that individual should put the organic fertilizer once and plant (Latéle, 2014). The objective is to give the soil what comes from soil, a perfect life cycle.

Another raw material that comes from coffee is bio-charcoal (bio-carbon). This process was originated by Indians from Amazon a hundred years ago, by a pyrolysis process whose coffee grain is burned in high temperature (1300ºC to 1400ºC). It is a clean process cause all energy and gas are re-used in the pyrolysis process itself. The result is a bio-charcoal three to five times more energetic compared with wood, providing different kind of re-use (Latéle, 2014). This way, the bio-charcoal is used in the pyrolysis as a fuel. In this process, the consumption of electric energy by pyrolysis machine use is almost zero. The design is a perfect product life cycle as a recycled product helps to create new recycled one. Recycle life cycle is represented in the Figure 3.

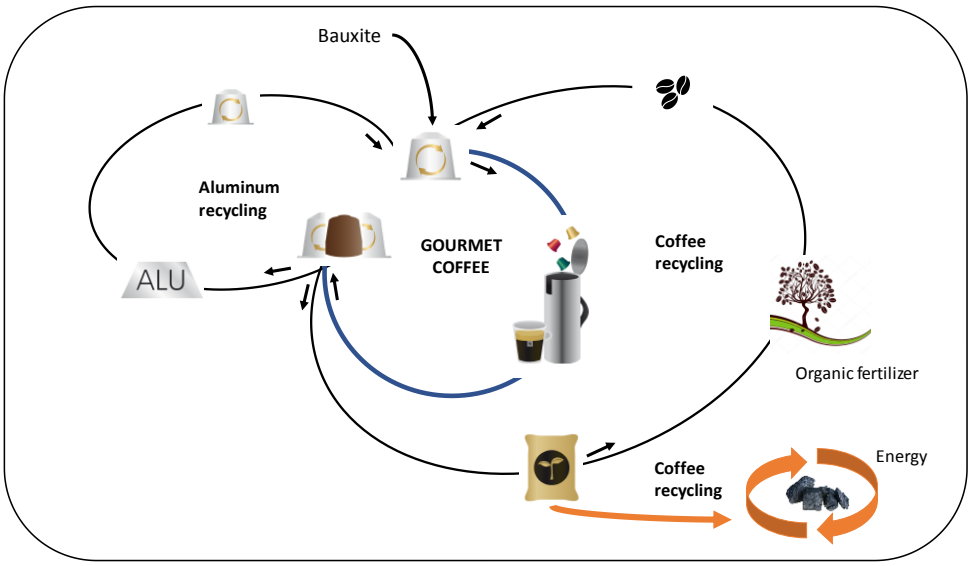

Figure 3: Recycle life cycle
Source: adapted from (Nestlé Nespresso, 2016c)

5 Discussion

Making a coffee is a cooking process that hot water comes through the coffee powder. By using aluminum capsule, the process is the same but instead of making an amount of coffee, with a capsule it can make only one cup of coffee, saving energy, water, sugar and coffee. Rather than using disposable filter and strainer, aluminum capsule is used and recycled. These significant changes in the potential of the product that provided an economy in its consumption with the improvements of the existing product are characteristics of the innovation in products (OECD, 2006). As it was projected with a material with recycled characteristics that exchanges and improves performance, an aluminum capsule is considered as an incremental innovation. Improve product is the first 'P' of innovation target (Francis & Bessant, 2005).

Nespresso created a new relationship with their provider, establishing a new logistic process, an innovative process, needing to interconnect the logistic strategy. So, this case shows innovation in products and process, that is described by OECD (2006). As a strategy, Nespresso shared value with its providers, redesign the logistic chain together, bring new value to all this business actors, the second 'P' of innovation target (Francis & Bessant, 2005).

The enhance of the aluminum capsule provided for Nespresso´s customer a new way to drink a gourmet coffee: in their home. This fact creates added value the product, leveraging to a better marketing positioning, targeting the third 'P' of innovation target (Francis & Bessant, 2005). Being able to have gourmet coffee at home is also an opportunity to offer a gourmet coffee to visits. Nespresso re-defined the paradigm of drink coffee and reach the fourth 'P` of innovation target (Francis & Bessant, 2005).

Nespresso combines the new paradigm with brand association to social and environmental responsibility to create an add value. Analyzing the environmental impact, the creation of a perfect life cycle that what comes from the earth returns to the earth, decreases the Ecological Footprint. The bio-charcoal that is re-used to produce the bio-charcoal itself helps to shorten the environmental impact (Latéle, 2014).

Global Reporting Initiative (GRI) 2016 of Nespresso (Nestlé Nespresso, 2016b) tracks the performance in sustainability and crossing the indicator result of GRI and the dimensions of the Theoretical Framework of Sustainability (Figure 1), it is possible to determine to what extent Nespresso is adherent of sustainability strategy.

The new product positioning was reached by an added value that leverage 85% per capsule gross margin (Brem et al., 2016) raising the Nespresso profit and satisfying the stakeholders. Gross margin received a contribution from the other side, the cost. The productivities processes are more efficient. Compared with 2009, carbon footprint reduction per cup of Nespresso coffee was 19,4%. It is reflected in the indicator of total on site water withdrawal (m_3 per ton or product) that reducer from 19,1 (2010) to 7,6. The total on site energy consumption (gigajoules per ton of product) drops from 4,7 (2010) to 4 and the direct and indirect GHG emissions (kg CO_2 per ton of product reduce from 123 (2010) to 96.

Nespresso maintain in the customers mind all positive point to consume their gourmet brandy coffee. In this intention, a relationship between customer and Nespresso should be permanent. GRI (Nestlé Nespresso, 2016b) indicator gives an evidence that the relationship is increasing as the number of Facebook fans (millions) increase from 0,2 in 2009 to 5,7 in 2016, indicating that relationship actions are increasing the stakeholder interest in the brand. 85% of the customers consider Nespresso coffee as superior quality. It is another Nespresso stakeholder good relationship indicator. Confirming that Nespresso concern about stakeholder's issues, Alexandre Bolya, technical and quality director of Nespresso Switzerland argued "*we pioneered capsule recycling to respond to request from our customers*" (Latéle, 2014).

Attending customers request, Nespresso shows its committed to ensuring sustainability in the future, aiming to achieve 2020 by using 100% sustainable energy coffee, 100% sustainably managed aluminum and 100% carbon efficient operations (Nestlé Nespresso, 2016a).

Social dimension is not so easy to measure but the Nespresso case gives an evidence that persons involved in this life cycle is improving. Taking into account only Nespresso organization, number of its employees increased from 330 in 2015 to 12000 in 2015 (Nestlé Nespresso, 2016a). The number of farmers enrolled with a quality program that enhance coffee production and farmer´s life quality grows from 1500 in 2005 to 71216 in 2016. Women empowerment is a concern and it is taken into account and they are acquiring their position showed by the rate of agronomist involved in the Nespresso program that growed from 0% in 2005 to 30% in 2016 (Nestlé Nespresso, 2016b).

New jobs posts using eco-bike and local businesses to deliver new and used coffee capsule is confirmed by Gérard Valéri, director of Ecomotrice Genéve SA, a Nespresso delivery partner that said in a video interview "…*we have already created jobs and we are hoping to create even more jobs in the future*". In another part of the interview, Gérard Valéri said that Nespresso business model providing partners to "*make money*". Jobs creation that was possible by the possibility to make money is an evidence that there is a social improvement of their life (Latéle, 2014).

Values, principles and beliefs shared is evidenced in the testimonial of Dieter Bambauer, director of Postlogistics Swiss Post that said "*interviews and numerous discussions with Nespresso clearly show that sustainable development and environmental responsibility play a major role within the company*" (Latéle, 2014). From this testimony, we can infer that there is a dialogue between Nespresso and its suppliers and a clear intention to disseminate the values of sustainability and environmental responsibility with its partners.

The maintenance of a close relationship with its partners demonstrates Nespresso's concern to follow the reverse logistics process, guaranteeing the control of the process and the final satisfactory result.

Re-using the aluminum, organic fertilizer and biocarbon is the goal of the recycling process. Aluminum can be used as a raw material for aluminum products and even for a new aluminum Nespresso capsule, a perfect life cycle because the industrial product is used as a raw material for new production, needing less product from nature. Organic fertilizer is used to recompose the soil, returning to the soil what was taken from it. This is another perfect life cycle as it is taken natural material to meet population needs and the natural material returns to nature after used. Biocarbon, a charcoal that is more energetic than wood, saves woods and it is used to produce the biocarbon itself, a perfect life cycle cause the process consume much less energy, as corroborated by Marc-Etienne Favre, director of La Coulette Composting, Nespresso partner for coffee recycle: "…*we don´t want too much energy in our machine. The machine consumes almost no energy, a very small amount of electricity. The only energy consumed by the system is the energy produced by the gas from the waste. The heat generated by the gas combustion allows us to create the pyrolysis process. It´s a really a perfect cycle at the machine level: as we enter the waste, it is heated by the energy from that very waste*" (Latéle, 2014).

The results of the data analysis is been presented and crossed with the Theoretical Framework of Sustainability (Martens et al., 2016). For each dimension variables, it was set an evidence to confirm the adherence to The Triple Bottom Line. The Nespresso case presented adhesions in all dimensions, being in compliance with the Triple Bottom Line. The Nespresso Triple Bottom Line analysis is depicted in the Figure 4.

Dimensions	Variables	Adherence
Economic	Cost impact studies to support decisions. ROI and cost-benefit trade-off curves.	Adherent. 85% per capsule gross margin.
	Relationship with stakeholders and consumers in the process.	Adherent. Facebook fans (million) increase from 02 (2009) to 5,7 (2016)
	Continuous search for excellence and better quality.	Adherent. 2020 goal: 100% sustainable energy coffee, 100% sustainably managed aluminum and 100% carbon efficient operations
Social	Knowledge management network.	Adherent. Provider, consumer and Government in the receiving training and information about the Nespresso strategy, recycle program and recycle product application.
	Consensus meetings in the process of decision and reflection for learning with experience and errors.	Adherent. Made by knowledge network together with partners.
	Values, principles and beliefs shared by the members of the company.	Adherent. Not by company members but also by providers' members and customer.
Environmental	Disassembly analysis.	Adherent. By recycling the capsule process.
	After-sales tracking (reverse logistics policy).	Adherent. Bringing back the used aluminum capsule and involvement with partners.
	Application and reuse of consolidated technologies.	Adherent. Aluminum recycling process, coffee composting, Amazon Indians' biocarbon process (pyrolysis)
	Reduction of energy and fuel consumption in the project and product life cycle.	Adherent. Site water withdrawal (m^3 per ton or product) that reducer from 19,1 (2010) to 7,6. Site energy consumption (gigajoules per ton of product) drops from 4,7 (2010) to 4. Indirect GHG emissions (kg CO_2 per ton of product reduce from 123 (2010) to 96.
	Use of raw material 3Rs (reuse, remanufacturing and recycling), prioritizing abundant and renewable natural resources.	Adherent. Aluminum for capsule, organic fertilizer to soil, biocarbon to pyrolysis process

Figure 4: Triple bottom line analysis.
Source: authors.

These results show that Nespresso's sustainability actions have had effects, with benefits reverted for the company itself, with increasing profit margin, lower production costs and the reinforcement of a good and impressive image of the brand (business value). The strategy of serving the Triple Bottom Line has improved the quality of life and business of the commercial partners and the communities that surround them, since the environment has been preserved (sustainability). Inferred by the Nespresso case study, the company is a sustainable innovative organization because all its operation is planned to manage resources, considering the dimensions of sustainability. Thus, sustainable innovation has brought positive benefits by bringing value to the company's business.

6 Final remarks

This paper analyzed the Nespresso case in the intention to answer the research question:

How can a low-cost incremental innovation contribute to sustainability in a gourmet coffee manufacturer company? Nespresso exchanged the raw material of a low-cost product, the coffee capsule. This innovation provides Nespresso to create a perfect product life cycle where product is produced and re-used or returned to the nature. Bearing in mind the Triple Bottom Line's purpose in carrying out the coffee capsule innovation project, it was possible to design a production that brought financial benefits to the company and social and environmental benefits that could be distributed to employees, partners and the community. Blended with a strategy of share value, Nespresso leverages the sustainable impact covering Triple Bottom Line dimension.

The scope of this study was limited to a case study in Switzerland, focusing in the coffee capsule innovation and on recycling the aluminum and coffee. Interview is not allowed by the Nespresso policy and for that reason, this study was based on public available secondary data, done in the same way as others authors of Nespresso articles (Brem et al., 2016; Matzler et al., 2013). Although there was this limitation, the presentation of this study becomes relevant because the case had not been analyzed in the light of sustainable innovation and the natural resource should be preserved for the use of the future generation. This approach serves as inspiration for the practical application of the Triple Bottom Line strategy in organizations, recycling and educating the individual to work and live consciously with the intention of reducing the Ecological Footprint.

A national agenda should be set up motivating organizations to innovate with new material of low environmental impact, with recycle and with educating individual to work and live with ecological conscious in the intention of reduce the Ecological Footprint. Also, this new way of making business bring more value, that can be share among providers, giving them an opportunity to improve their business and the lifetime of their worker's.

Future studies are suggested by investigating the same organization in other country in the intention to validate this model cause part of the strategy is made together with local provider. Also, supply chain in a different country may lead Nespresso to make different arrangement. A second research direction may involve the coffee grain provider (farmers) to Nespresso. Create shared value is a commitment in Nespresso and farmers may increasing value in this chain.

Nespresso showed how to be the top of the competition, respecting social and environmental dimension, creating and sharing value, decreasing cost and leveraging the profit by been a sustainable innovative organization. The sustainable innovation, even in a low-cost product like a capsule of coffee, has brought value to the organization's business, been this a lesson learned to be shared and to be practiced in all business segment.

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