

ECOPRENEURS AND THE ENTREPRENEURIAL LIFE CYCLE STAGES: A MULTICASE STUDY IN ENVIRONMENTAL BUSINESSES FROM CURITIBA

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1. INTRODUCTION

The concept of sustainable development published in the ‘Our Common Future’ (WCED, 1987) report, has consolidated itself as a political, economic and social landmark (Ayuso & Navarrete-Báez, 2017), mainly because it encourages changes in society in order to maintain the needs of future generations. Organizations began to reflect on the environmental and social impacts they caused, and to review their methods and production techniques, in order to minimize these damages.

The adoption of environmental and social practices by organizations, encouraged the opportunity for sustainable business (Boszczowski & Teixeira, 2012). With the intensification of the search for solutions to these problems, new ventures began to emerge, stimulated by entrepreneurial action directed towards environmental and social practices, or even to both combined (Cohen & Winn, 2007; Schaltegger & Wagner, 2011).

Ecopreneurship comes about in this scenario, concerning for the minimization of environmental degradation and considering the use of natural resources in product manufacturing and in the services provided by enterprises. Innovative alternatives (Dean & McMullen, 2007) allow the destruction of traditional methods of production, and contribute to new techniques, structures and patterns of consumption that might correspond to the needs and environmental demands (Schaltegger, 2002).

Market failures with environmental focus can become a motivating factor for this type of entrepreneurship, by enabling business opportunities that generate economic and ecological benefits (Thompson, Kiefer & York, 2011). So, the entrepreneurship, recognized as a driver of economies, a stimulator of competition between markets and of jobs’ creation (Schramm, 2010), begin to simulate the entrepreneurs as agents of change, while approaching environmental issues.

Thus, identifying the possibilities resulted from the environment, as well as market failures (Dean & McMullen, 2007) may enable the environmental entrepreneurs – or ‘ecopreneurs’ – to strengthen and establish their businesses. In order to do so, the entrepreneurs go through stages of the entrepreneurial life cycle, in which they have to adapt, in order to develop and get properly settled in the market.

Considering the context and reality of entrepreneurs in Brazil, therefore, this study proposes to analyze the adaptation of ecopreneur in each stage of the entrepreneurial life cycle. To do so, a case study with four ecopreneurs was held.

Since ecopreneurship is still considered an emergent theme (Hall, Daneke & Lenox, 2010; Thompsom et al., 2011), studies are demanded in order to generate new discussions and deepen the understanding of the construct. Furthermore, the forms of adaptation identified in the results of this study, can stimulate researchers when it comes to the investigation of the entrepreneurial life cycle in other contexts, or even suggest other research gaps. On the other hand, the practical contributions regard showing ecopreneurs the paths they can take in each stage of the life cycle and the possible adaptations needed in each of the stages of the life cycle.

2. LITERATURE REVIEW

2.1 Ecopreneurship

The entrepreneurship traditionally understood and regarding issues related to the generation of wealth and economic development (Easterly, 2002), has been the subject of discussions related to changes and opportunities arising from the market that direct new types of entrepreneurship (Cohen & Winn, 2007). Affirming that "the environment undoubtedly influences entrepreneurship" (Bull & Willard, 1993, p.191), it is possible to point out that new opportunities are sought by entrepreneurs with the purpose to solve a problem or meet a need, in addition to causing changes in the business systems and developing new ideas (Shaper, 2002). It can be inferred that this phenomenon will also relate to the social context in which it is inserted, so as to respond to the pressures of society and the economic changes that have occurred.

Analyzing the environmental movements that arose from the decade of 1960, it is perceived that discussions were triggered in the economy and in the business environment (Cropper & Oates, 1992), in order to reduce issues related primarily to environmental degradation and to the use of natural resources. Subsequent discussions and the establishment of the concept of sustainable development have intensified these discussions regarding impacts cause by enterprises (Du Pisane, 2006; Sachs, 2007). Such concerns, at the same time that may represent limitations to certain corporate actions, can provide new business opportunities, as well as generate innovative alternatives (Dean & McMullen, 2007). Thus, environmental and social issues can lead to sustainable business opportunities (Boszczowski & Teixeira, 2012), as well as may have its practices encouraged and/or incorporated by means of entrepreneurial action (Cohen & Winn, 2007).

The interest in a sustainable business framework and the search for environmentally responsible business practices (Shaper, 2002) in order to provide solutions to environmental problems, stood out as growing conditions in the field of enterprises from the decade of 1990 (Dixon & Clifford, 2007). Moreover, with the intensification of the concerns for environmental degradation and for the use of natural resources (Cohen & Winn, 2007; Dean & McMullen), business and enterprises focused on the environmental dimension were encouraged (Gast, Gundolf & Cesinger, 2017). A type of entrepreneurship emerged to bring environmental issues to the company's strategies, being named 'ecopreneurship' (Pastakia, 1998; Schaltegger, 2002), environmental entrepreneurship (Thompson et al., 2011; York & Venkataraman, 2010), green entrepreneurship (Berle, 1991) or environmental business (Holt, 2011).

To address the entrepreneurship as a means of solving environmental degradation, York and Venkataraman (2010, p.460) theorize that "the more uncertain and intractable the environmental problem we face, the greater likelihood that entrepreneurs can make a contribution to resolving it". For the authors, environmental problems can be mitigated or even solved based on ventures that intend to create environmentally sustainable products and services.

It is also noteworthy that the environmental entrepreneurs are oriented to develop practices that seek both economic and environmental growth, also comprising ethical and social issues. Ethical issues and concerns for future generations, can also be motivating factors of environmental entrepreneurship once they help boost, by means of new technologies, environmental values' creation (Anderson & Leal, 2001).

By contemplating these actions in their ventures' strategic plans, it is possible that entrepreneurs pay more attention to the use of natural resources and that they tend to seek efficient means of managing them, since the human well-being may be affected as a result of

any irresponsible resources' usage. This issue can also be evidenced by understanding the concept of ecological sustainable entrepreneurship, which is seen as "the process of identifying, evaluating and seizing entrepreneurial opportunities that minimize the venture's impact on the natural environment and therefore create benefits for society as a whole and for local communities" (Gast et al., 2017, p.46). Anyhow, it should be noted that entrepreneurship may represent a step forward in the direction of environmental objectives, at the same time that it can contribute to the improvement of social conditions, without forgetting economic growth (Hall et al., 2010).

In spite of the arguments mentioned above, it is possible that ecopreneurship awakens doubts concerning the pursuit of environmental solutions to market failures or even to opportunities that arise from the environment. This can be verified in a study held by Thompson et al. (2011) in which, when examining concepts and elements of literature that differentiate three types of entrepreneurship, key questions that may be essential to understand the emergence and establishment of environmental entrepreneurship are highlighted. The questions cover the environmental opportunities, and why they stand before some individuals; it involves the role of these entrepreneurs to cope with environmental degradation, as well as if this type of entrepreneurship contributes to reduce this degradation; another questioning aims at understanding the process involved in this type of entrepreneurship, as well as its methods of opportunity identification and exploitation; it also seeks to understand the consequences for the environment and for society, when the environment is included in entrepreneurship, as an element in the market process.

Thus, the entrepreneurial life cycle presents as a relevant means to better understand these questionings, since it comprises opportunity identification (and why some individuals are more capable of identifying opportunities than others), as well as the role green enterprises play in environmental impacts (from the outcomes of the green ventures and values generated in the exploitation phase), and the need of an intermediate phase (exploration) between the identification of the opportunity and its exploitation.

2.2 The phases of the entrepreneurial life cycle

In this subsection, the phases of the entrepreneurial life cycle are presented in detail. Opportunity identification, exploration and exploitation are the main phases involved from the idea of a product/service until its exploitation. During these phases, it is common that entrepreneurs demand a significant amount of time to adapt their initial ideas to the real demands of the market, in order to make their product/service commercially viable. Therefore, the importance of better understanding what is comprised in each phase of the entrepreneurial life cycle becomes evident.

2.2.1 Opportunity identification

Returning to the concept of sustainable entrepreneurship used in this work, i.e., that "sustainable entrepreneurship involves the identification, exploration and exploitation of new businesses that are, in economic development, the solution of an environmental or social problem" (Boszczowski & Teixeira, 2012, p.143), the phases of the entrepreneurial life cycle can be observed in this concept. They are: opportunity identification, opportunity exploration and opportunity exploitation.

Being the ecopreneurship a subset of sustainable entrepreneurship, we can infer that these phases can be applied to it as well, since the life cycle of these environmental business involves the identification, exploration and exploitation of opportunities, that produce both economic and ecological benefits to society.

Some elements that promote the identification of opportunities, the first phase of the entrepreneurial life cycle, are: changes in economic, political, social, technological and demographic variables, possessing of prior information, as well as cognitive properties that allow the entrepreneur to evaluate the information possessed (Shane & Venkataranam, 2000), changes in the information that the company has regarding available resources (Companys & McMullen, 2007), new discoveries (Kirzner, 1973), new creations (Schumpeter, 1982), access to information that other competitors do not hold - being them technical or related to potential consumers and market in which entrepreneurs may want to enter (Baron & Shane, 2007; Shepherd & DeTienne, 2005); previous learning, life experiences, social relations established by the entrepreneur, education and motivation (Costa, Machado & Vieira, 2007).

Additionally to what these authors highlight, Shane (2000) points out that the entrepreneur must possess not only knowledge of the market, of its demands or of existing needs, but also of the means that should be used to meet them.

Thus, it is observed that 'market failures', which consist of potential sources of opportunity identification (Dean & McMullen, 2007), can be more easily identified by some individuals than by others. This occurs because some individuals are more likely to pay attention to these potential sources of opportunities, having what can be called 'an enterprise alert' level that is higher than that of other individuals. This alert is promoted by the combination of personality traits, prior knowledge, experiences and participation in social networks that facilitate access and knowledge regarding the market that these individuals wish to penetrate, as well as the techniques and knowledge necessary to start the business they desire (Ardichvili, Cardozo & Ray, 2003).

2.2.2 Opportunity exploration

Even if the opportunity is identified, some time may elapse between this phase and the exploitation of the opportunity itself. This is so because, for the opportunity identified to be feasible, i.e., in order that the product or service the entrepreneur wants offer is effectively inserted in the market, adjustments in the product/services must be made, in order to increase its commercial viability. Such a gap of time between the moment of the identification of the opportunity and its exploitation consists in the phase of the entrepreneurial life cycle that is called 'opportunity exploration'.

This phase exists, because products and services identified as potential market opportunities may take time to be developed and deemed suitable to be inserted in the market (Degen, 1989), in such a way that they are commercially viable and 'ready' to be marketed.

For the author, products that are associated to technological and social developments, for example, often require this period of time between the identification of the opportunity and product/service's placing on the market. This intermediate period can comprise even decades.

Once that "the recognition of opportunity involves the recognition that ideas are not only new and potentially useful, but also have the potential to generate economic value" (Baron & Shane, 2007, p.61), planning and exploring the alternative ways to create such value must be also considered in the entrepreneur's actions.

However, developing the opportunity identified to make it commercially viable is not a simple task, once it may require previous knowledge to facilitate the adaptation of products or services to the market. Yet, beyond the technical knowledge, previous experiences with business management are important to assure that this adaptation will result in the success of the viability of the product or service identified as a market opportunity (Shane, 2003).

2.2.3 Opportunity exploitation

After identified and explored, environmental entrepreneurial opportunities should be exploited in order to create environmental value from the outcomes of the green business in question. To do so, “the opportunity exploitation process involves the development and enactment of strategic plans.” (Hmieleski & Baron, 2008, p.286).

However, these plans should be aligned to new legislation and changes in the market, so that the entrepreneurial opportunity comprises these demands and modifications, even after the venture is created.

Thus, opportunity exploitation can be considered a dynamic and continuous process, since it consists of adjusting the venture’s strategic plans to the needs of the market and to the current legislation at the same time that they contribute to value creation from the outcomes of the enterprise (Costa et al., 2007). When it comes to environmental enterprises, these outcomes consist of solutions towards an environmental problem identified as an entrepreneurial opportunity that can generate not only economic but also ‘green’ value (Thompson et al., 2011).

3. METHODOLOGICAL PROCEDURES

Based on a qualitative approach (Merriam, 2009), this study seeks to understand how individuals must adapt, during the stages of the entrepreneurial life cycle, from their participants’ interpretation of reality. Moreover, this article has a descriptive nature, once the researchers did not interfere on the facts, as they only registered, analyzed, classified and interpreted them (Raupp & Beuren, 2003).

The intention of this study is to, by means of a multiple case study, since this strategy show itself adequate to explore complex relationships approaching the phenomenon investigated (the adaptations of entrepreneurs during the entrepreneurial life cycle stages), from the interpretation of the participants of the research (Yin, 2015). The use of this research strategy is justified because, although the literature has several studies in this area (Hall et al., 2010; Thompson et al., 2011), it is still possible that factors and questions regarding ecopreneurship and ecopreneurs’ actions are deepened (Gast et al., 2017).

The criteria used to select the entrepreneurs that participated in this research were the following: (i) entrepreneurs of small enterprises; (ii) entrepreneurs that have gone through all three phases of the entrepreneurial life cycle and (iii) entrepreneurs aiming towards generating not only economic values, but also green ones, as outcomes of their ventures.

Thus, four ‘green’ enterprises in Brazil were selected by theoretical sampling (Eisenhardt, 1989), considering its characteristics in relation to the values they believe in and seek to disseminate, products and/or services that they develop, as well as to processes and production methods and management they use. Two of the enterprises are established in the manufacturing and marketing of products of sustainable clothing, and the remaining two, offer sustainable and eco-efficient services.

The data collection was performed through documental analysis, from information available in institutional websites of the enterprises selected and from semi-structured interviews with one of the owners of each enterprise selected for this study. Two interviews were made with each entrepreneur (totalizing eight interviews). The interviews were held from October 2017 to January 2018. After the data collection, we sought to analyze them through the content analysis technique, as proposed by Bardin (2010).

All categories were defined *à priori*, consisting of each stage of the entrepreneurial life cycle, that is, opportunity identification, opportunity exploration and opportunity exploitation.

The data triangulation contributed to assure the internal construct’s validity as well as the study’s reliability, since multiple sources of data were used. The external validity of study

was based in the replication logic, since it is expected that the results obtained in the study are coherent to similar studies held, regarding the phenomenon here studied.

4. CASES' PRESENTATION AND ANALYSIS

4.1 Presentation of the ecopreneurs and their ventures

In order to preserve the identity of the ecopreneurs and of the ventures analyzed in this study, we chose to use codes A, B, C and D for each venture and ecopreneur. Thus, the ecopreneurs here studied as well as their enterprises, are presented next:

Entrepreneur A: the entrepreneur is the only owner of the company she created in 2014 and is located in the south region of Brazil. The entrepreneur's age ranges between 26 to 35 years old, and she has graduated in 'Design' and in 'Fashion and Design'. Her enterprise's main products are clothing pieces made by the upcycling technique, which corresponds to a technique in which clothing leftovers are used to create new clothing pieces, and consequently, reduce the amount of clothing with no usage discarded in the environment. Sporadically, when the volume of demand gets higher than the usual, the owner hires two more individuals to help her produce her clothing pieces. The idea of the creation of Enterprise A came about when the entrepreneur got to know the upcycling technique and that it was not widely used in Brazil. This was an opportunity identified by the ecopreneur, since it involved an issue that was becoming a market tendency in the fashion line: sustainability and material reuse.

Entrepreneur B: the entrepreneur is one of two owners of Enterprise B, created in 2016 and located in the southeast of Brazil. The entrepreneur's age ranges between 26 to 35 years as well and he graduated in Information System. The main service provided by Enterprise B consists of collecting and disposal of electronic garbage. Entrepreneur B created this company because he identified that there was no one providing this kind of service in his region. The ecopreneur observed that there was a huge amount of electronic garbage, however there were no enterprises that provided services regarding its correct disposal. The environmental impacts of the enterprise are positive, since the services provided contribute to the correct disposal of electronic material.

Entrepreneur C: the entrepreneur is one of the three owners of Enterprise C, which was created in 2012, and is located in the south of Brazil. The entrepreneur's age ranges between 26 to 35 years as well and she graduated in Design. The enterprise's main products are shoes made from raw material (leather and fabric) that are no longer used by inactive industries or individuals who want to donate these raw materials. The enterprise was created because one of the owner's father had previously worked as a shoemaker and the ecopreneurs learned all about the industrial process of shoemaking from him. Thus, combined with the know-how they developed by learning from one of the owner's father, the will to own an enterprise that comprised sustainable practices were motivating elements for the start of the venture. The impacts on the environment promoted by the outcomes of Enterprise B are positive, since material that would be disposed are reused to make new products.

Entrepreneur D: the entrepreneur is one of the two owners of Enterprise D, which was created in 2011, and is located in the southeast of Brazil. The entrepreneur's age ranges between 36 to 45 years old, and he is graduated in Publicity and has an MBA in business management. The enterprise's main service is a sustainable industrialized construction system (Light Framing). Thus, the industry in which Enterprise D is inserted is the one regarding sustainable architectural projects. The venture came about with the idea of using the lean construction system. The environmental impact of the outcomes of the enterprise are positive, once the construction system is based in the generation of smaller amounts of residuum (from 2 to 3% of all material used) and less water consumption.

4.2 Analysis of the entrepreneurial life cycle phases

4.2.1 Opportunity identification stage

From Entrepreneur A's interview, it can be observed that she identified a market opportunity by using a not so frequently used method in Brazil, the upcycling technique. The entrepreneur came to know the technique by herself, looking it up in more detail from internet websites. The upcycling technique consisted of a 'technical' knowledge' that other competitors from Brazil didn't have. Also, the ecopreneur pointed out that the ones who were succeeding in the fashion industry were the ones who were working with sustainability.

However, in order to make this identified opportunity become a reality, Entrepreneur A had to adapt, through searching on the internet for foreign enterprises that used the technique, in order to deepen her knowledge about upcycling, once the method was still not widely spread and used in Brazil.

Also, from Entrepreneur C's interview, it can be noted that the 'technical knowledge' she and her co-workers obtained was the key element to contribute to the identification of the opportunity to create a new venture. The ecopreneur and the other owners got to learn from her colleague's father, who had previously worked as a shoemaker and who taught the ecopreneurs all he knew about the industrial process of shoe making. This helped them develop the know-how they needed to start their venture.

However, Entrepreneur C and her co-workers had to adapt themselves to conciliate their college schedules with the development of the new venture. Thus, the interviewee pointed out that they used their spare time from college to learn, from one of the co-workers' father, all about the process of making shoes.

When it comes do the data collected from Entrepreneur B, it can be observed that the main source of opportunity identification, from the entrepreneur's perspective, was a market failure, combined with his previous experience working as an employee of a private company that was making him unsatisfied.

The venture aims at collecting electronic garbage, right? And it came about because I was a manager at 'AlgarSegurança' (company in Brazil) and we always had the need to dispose electronic equipment. And I didn't know what to do with those (equipments) (ENTREPRENEUR B, 2018).

The experience as an employee at this private company contributed for the ecopreneur to identify a need in the market for correct disposal of electronic material, thus, consisting of a market failure.

Besides market failures identified by Entrepreneur B (Dean & McMullen, 2007) and his previous managerial experience in a private company (Ardichvili et al., 2003), it can be observed another element that contributed for the ecopreneur to identify this opportunity: he had access to relevant information regarding a potential market for the correct disposal of electronic garbage. The interviewee points out that he had access to this information by searching on the internet for companies that provided these kind of services. By doing so, Entrepreneur B got to be more familiar to the service regarding collecting and disposal of electronic material.

Regarding Entrepreneur D, he also identified a market opportunity in a service that was not offered in his region, until then. The ecopreneur noted that the service of civil construction that used the Light Framing method was common in countries from Europe, the United States and Japan, but was not used in Brazil. This system consists in an industrialized constructive system that generates less waste than the traditional construction systems. Thus, Entrepreneur D identified in the use of this system, a market opportunity not yet exploited in Brazil, causing him to be the pioneer in using the system in the country.

Consequently, the knowledge of the existence of a 'trend of the market' toward sustainability, as well as the technical knowledge about the Light Framing system consisted of key elements for the identification of the use of this industrialized constructive system as a market opportunity.

However, Entrepreneur D had to adapt to the new service that he wanted to offer, since he had no in-depth technical knowledge about the system.

At the start, I didn't understand much about the Light Framing system (...) as time went by, I started to develop some technical abilities, acquiring knowledge (...) Nowadays it is possible to say that we are one of the main companies of the state and that our company is recognized at a national level, for its pioneering (ENTREPRENEUR D, 2018).

To deepen his knowledge and abilities regarding the system, Entrepreneur D also got in touch with some other entrepreneurs who were more familiar with the system, in order to better develop his know-how about the Light Framing method.

Thus, empirical data from Entrepreneur D, as does the empirical data from both Entrepreneur A and C, corroborate Casson (2005), Costa et al., (2007); Sheperd and Detinne (2005), Baron and Shane, (2007) who point out that access to both technical and market tendencies' information consist of an element that contributes to entrepreneurial opportunity identification.

Still, from the data collected and analyzed, it can be noted that all entrepreneurs had to adapt – even though in different ways –, during this phase of the entrepreneurial life cycle, in order to succeed in their new ventures.

Moreover, from the lines of interviewees A, B and D, it can be observed that all of them all more likely to pay attention to these potential sources of opportunity, owning a higher 'business alert' level than others, agreeing with Ardichvili et al. (2003).

This occurred because, like entrepreneurs A, B and D, other individuals (such as college colleagues from Entrepreneur A, other employees of the company in which Entrepreneur B worked) could also have identified the market opportunities Ecopreneurs A identified (such as the tendency to use sustainable products, in the case of Entrepreneur A) and these other individuals could also have identified the lack of companies that dispose electronic material or use the Light Framing system (in the case of Entrepreneurs B and D, respectively). However, only these entrepreneurs envisioned these opportunities as potential for the creation of new businesses, mainly due to their personality traits (Entrepreneur A possesses values directed to the reuse of materials) and prior knowledge (Entrepreneur A knew about the upcycling technique, Entrepreneur B had knowledge of the lack of existence of companies that disposed electronic material in his area, and Entrepreneur D had knowledge of the sustainable construction system used in other countries).

Such empirical data corroborate Ardichvili et al. (2003), who point out that these elements (personality traits and technical or market-tendencies' knowledge) are boosters of opportunity identification for new ventures.

4.2.2 Opportunity exploration stage

Even after identifying the opportunity to use the upcycling technique in clothing products, Entrepreneur A had a concern in testing the market before properly commercializing her products. This trial period consisted of the opportunity exploration stage of the entrepreneurial life cycle. Thus, before creating a venture of her own, to commercialize her own brand, Entrepreneur A accepted a proposal made by a college friend of hers suggesting that she could commercialize her products in his own second-hand store. In order to adapt to the situation, during this trial period, the ecopreneur had to use residuum and clothing pieces

that had some quality issues, provided by her colleague, so that she could transform these pieces in new ones, through the upcycling technique. Since in this trial period, the entrepreneur still didn't have her own material to be reused nor her own resources to develop her products, the best option to test the potential market for her products was this (use her colleague's resources and his store to commercialize her clothing pieces).

The ecopreneur pointed out that there was a positive feedback regarding the demand and consumer acceptance of the products she commercialized in her friend's second-hand store, which compelled her to create her own store and brand.

However, Entrepreneur A mentioned that she didn't have enough raw material to develop her products, so she had to adapt, searching for this material in the 'tissue bank' of Curitiba (city in the south of Brazil, in which the company is located) as an alternative source of fabrics, so that she would assure her production wouldn't stop due to lack of material.

The ecopreneur got to know the bank of tissues of Curitiba on the internet and there she found fabrics with prints that interested her, which made her become the largest consumer of 'bank' and eventually she found in it, a constant and reliable source of raw material to produce her clothing pieces.

Regarding Entrepreneur B, the main actions related to this stage of entrepreneurial the life cycle regards the ecopreneur's learning. The entrepreneur used to be a manager of a department in the company in which he had previously worked, which helped him develop management knowledge. This agrees with Shane (2003), who says that previous experiences in business management can contribute to this adaptation to result in the success of the viability of the product or service identified as a market opportunity. In addition, Entrepreneur B went to an association of amateur entrepreneurs seeking to enhance his knowledge about entrepreneurship. This training has allowed the entrepreneur to assess the viability of the business he wanted to create, as well as to prepare himself to manage it.

Entrepreneur C also had to go through an intermediate phase before properly exploiting the opportunity identified. The ecopreneur and her co-workers learned the industrial process of shoe-making for about a year, with the help of the co-worker's father. Also, similarly to what Entrepreneur A did, Entrepreneur C and her colleagues wanted to test the market in order to see if the shoes they wanted to commercialize had market potential. To do so, they would sell one pair of shoes to a friend and use the profit to produce more shoes. Then they would make another pair and sell it to another friend. This was how Entrepreneur C and her co-workers tested the market to see if there would be demand for the products they were making.

Similar to what happened to Entrepreneur A's market testing, the feedback regarding the demand and consumer acceptance towards the products Entrepreneur C offered was positive. This was the spark to make them decide to properly start their own brand.

However, Entrepreneur C points out that they had to adapt themselves to the financial restrictions they had, in order to find a place to produce and sell their products as well as to find constant sources of the raw material they needed to produce the shoes. As stated by Entrepreneur C:

During the first two years, we stayed in a place that our co-worker's father built, next to his house. We set up our 'industry' there. (ENTREPRENEUR C, 2018).

For about a year we worked like this and we create our first shoe collection, buying raw material, developing the shoes, and all of a sudden we began to get raw material for free. Everyone (who knew we need the material) would come to us and say "hey, I have this kind of cloth at home". We met a girl whose father had a stew and many leather cloth leftovers [...] We took these leftovers and started to use them in our products. This was how the idea came about, as a possibility to save money buying

cheaper raw material (leftovers) that would go to waste (ENTREPRENEUR C, 2018).

Thus, Entrepreneur C and his colleagues began to see in leftovers, a possible source of raw material to manufacture their products. So, according to Entrepreneur C, they began to seek raw material in disabled factories that no longer used the fabric leftovers they possessed and also they received donations of fabrics from people who were familiar with their work. Thus, it should be noted that this period was important for the entrepreneurs to identify possible sources of raw material that they could use in the shoe-manufacturing process.

The main actions undertaken by Entrepreneur D at this stage concern the identification of how they could implement the idea identified in the previous stage, as well as the identification and adherence of potential consumers. To do so, the ecopreneur made a client prospecting, to check if they would have consumers for their services and what were their demands. Also, he made visits to architecture offices, to advertise their services and become known in the region. These actions were held during nine months (from January 2012 to October 2012), before the proper exploitation of the identified opportunity.

Once Entrepreneur D had had previous experiences with entrepreneurship and business management, agreeing with Shane (2003), such experiences were evidenced as important to adapt the services provided by Enterprise D to the real needs of its clients, helping the service provided become commercially viable.

Thus, from the data collected, it can be observed that this trial period was necessary for the entrepreneurs to identify the market potential of the upcycling-made products (when it comes to Entrepreneur A), to help the entrepreneur be able to create and manage his new enterprise by learning how to lead a new business (in case of Entrepreneur B), for the entrepreneurs to learn the industrial process and to test the market (in case of Entrepreneur C), to find constant sources of raw material (in case of both Entrepreneur A and C) and prospecting for consumers (in case of Entrepreneur D). Such empirical data corroborate Degen (1989), once this phase took time to be developed, for all entrepreneurs here analyzed. The upcycling-made products were commercialized in the second-hand store for two years (from 2012 to 2014) before they were considered viable to be included in the market. Enterprise B was only created after the entrepreneur took entrepreneurship courses to enhance his knowledge regarding new venture's creation and managerial practices, Entrepreneur C and her colleagues improved their knowledge about the industrial process for about a year and used a temporary place to produce the shoes; and Entrepreneur D took around nine months from the identification of the opportunity to its exploitation.

Thus, it can be seen that this intermediate phase was important to assure that the products were commercially viable and ready to be inserted in the market, as well as, agreeing with what Baron and Shane (2007) point out, that they had potential of economic value generation.

4.2.3 Opportunity exploitation stage

After exploring the opportunity, the next stage of the entrepreneurial life cycle consists of the opportunity exploitation.

During this stage, the entrepreneurs must adjust the venture's strategic plans to the needs of the market and to the current legislation at the same time that the products commercialized contribute to value creation from the outcomes of the enterprise (Costa et al., 2007).

The main strategic actions of Entrepreneur A consisted of making a business plan that would comprise, among other elements of the venture, the dissemination of its brand and product. In spite of having participated in a project called 'Projeto Bom Negócio Paraná', in

which she a course was taught on business plans' development, the entrepreneur realized that she would have to adapt the plan proposed by the trainers of the course for her own reality, since her production (unique and exclusive clothing pieces) was different from the production process approached in the course (serial production). So, entrepreneur A states: *"Then I decided to not follow that plan and to do my own (...), comprising unique and exclusive parts"* (ENTREPRENEUR A, 2018).

Thus, the entrepreneur adapted the strategic actions related to her potential consumers and to her production process, publicizing, on the internet, the brand and the sustainable production process they use to produce their clothing lines. This form of dissemination is differentiated, once it isn't made that way by direct competitors of the entrepreneur, also located in small stores. So, the entrepreneur believes that such actions contribute to creating sustainable value to the product she offers, and not only for the creation of purely economic value.

Since these actions were adapted to the needs of the potential consumers of the clothing lines produced by the entrepreneur, as well as contributed for the outcomes of the venture to create value (sustainable value is created once the fabric used to produce the clothing items is reused and economic value is generated from the sales), these evidences are aligned with Costa et al. (2007).

In the case of Entrepreneur B, the main strategic actions developed and implemented are related to the marketing of the service offered, to the development of logistics activities needed for handling and storage of the products collected and to the development of partnerships with the recyclers in the area in which the enterprise is located.

The main difficulty highlighted by the Entrepreneur B concerns the awareness of the potential consumers, when it comes to the proper disposal of electronic waste. Once this audience had no awareness of the proper disposal of these materials, the entrepreneur had to 'adjust' this public, helping them develop awareness, in order to be able to collect the electronic waste and later on, to discard it correctly.

First, I detected a public, that consisted of companies of maintenance, information technology, electronics, cell phones. And i began to knock on doors and search for contacts that I already had and contacts from friends and acquaintances. So, [...] we kept on, bringing material to potential consumers, explaining our work [...] (ENTREPRENEUR B, 2018).

From the lines of Entrepreneur B, it should be noted that this action, related to the commercial part, was necessary to ensure that targeted consumers were set to use the services offered by Enterprise B. So, the entrepreneur has had to adapt to the reality of the region in which he found himself, since in other regions and countries, this awareness may not show as needed. Such action agrees with Costa et al. (2007), who claim that opportunity exploitation consists of a dynamic and continuous process, since it regards adjusting the venture's strategic plans to the real needs of the market.

In addition to the awareness' development, another adaptation of Entrepreneur B is related to logistics' activities. Currently, in the area in which the venture is located, there is no proper disposal for the collected materials. Thus, the allocation of those, is made outside of the state, which means that the logistical planning carried out by the ecopreneur becomes complex, since it deals with such peculiarities

Still, the development of partnerships consisted in another strategic action of Entrepreneur B, once he joined in associations of entrepreneurs, with the intention to join the recyclers of cooperatives in the area, in order to work together.

In the case of Entrepreneur C, the main strategic actions of ecopreneurs were related to (i) the development of a business plan, (ii) developing a design plan, (iii) implementation of product development plan and (iv) the development of a communication plan.

The entrepreneur also mentions that, to be able to do all this planning, prior knowledge acquired in college was essential.

The development of the design plan demanded some adjustments regarding the initial one. Entrepreneur C and the other co-owners of the venture decided to provide some destination to their own leftovers, originated from the process of shoe-making. They decided to add accessories and purses to their portfolio, in order to reuse the leftover leather from the shoe making process, that would go to waste otherwise.

When it comes to the communication plan, to disclose the brand, Entrepreneur C mentions that they participated in events (for 2 years) every weekend, fairs, fashion weeks, in order to build a network of consumers. Such actions were essential for the dissemination of the brand in a cheap way, once the entrepreneurs had no financial resources for major disclosures and also due to the fact the main consumers of the shoes commercialized in Enterprise C were in these events. This helped ensure that both the brand became known as the sustainable production process used for the manufacturing of footwear sold by the entrepreneurs.

It is noteworthy that Entrepreneur C partners with Entrepreneur A, by providing leftovers from the shoe making process and they also get together from time to time, to discuss and share new ideas regarding their portfolio and production process. Both entrepreneurs (A and C) also donate fabric and leather leftovers to other ecopreneurs, who use these raw materials in their production system.

Regarding Entrepreneur D, it is possible to observe that, during the exploitation phase, the main action that he had to perform was working with a management process to keep the operation sustainable. In addition, the ecopreneur also deals with issues related to the transport of construction materials, since he does not have a specific location to store all materials that will be used in the constructions, and this ends up causing his transport system to be very costly and that takes a lot of time to be held. Also, Entrepreneur D seeks to work with an efficient system and use this feature as a differential to convince his potential customers to acquire his services, and not the competitors'. This demanded an adaptation from the ecopreneur, to the characteristics of the consumer market, which consists of a market that does not yet have the culture to see the long-term benefits of services, but only appreciates lower prices. Thus, the entrepreneur, facing the need to convince his potential consumers regarding the advantages of the services he provided, had to include such actions in his strategic and dissemination plan.

From the interviewees' lines, it is possible to observe that, even though of different natures, the empirical evidence provided by all interviewees corroborate Hmieleski and Baron (2008), once they illustrate the opportunity exploitation phase as comprising activities towards the execution of strategic actions and plans.

Even though in different ways, all entrepreneurs here analyzed had to adapt to their realities and social contexts, whether through the adaptation of their business plan, in order to contemplate the nature of their production process (Entrepreneur A), or through the adaptation of their own potential consumers, in order to align the service offered to the consumers' actual demand (Entrepreneur B), or through the dissemination of products aimed at meeting specific needs of the consumers (Entrepreneur C), or even through the need to convince the potential consumers, on account of their cultural aspects (Entrepreneur D).

A summary of the adaptations the Entrepreneurs had to go through during each stage of the entrepreneurial life cycle is presented in Frame 1.

Frame 1: Adaptations undertaken by each ecopreneur in each stage of the entrepreneurial life cycle.

Entrepreneur/ Life cycle stage	Opportunity Identification	Opportunity Exploration	Opportunity Exploitation
Entrepreneur A	Search, on the internet, for entrepreneurs that used the upcycling technique, in order to deepen her knowledge about the method, once it was still not widely spread in Brazil	Use of her colleague's second-hand store - temporarily - to commercialize her clothing pieces and use of residuum and leftovers from his store to produce the clothing pieces.	Adapt the business plan to the nature of her own production process / Move to a new installation (more accessible to their potential consumers)
Entrepreneur B	Search, on the internet, for entrepreneurs that used the initiative of collecting and disposal of electronic material, to learn more about the service	Search for courses to deepen his knowledge regarding managerial practices and entrepreneurship, in order to evaluate the viability of the enterprise he wanted to create	Adapt to the consumers' awareness, once consumers from the region in which the industry is located, are not aware of the correct disposal of electronic material
Entrepreneur C	Learn the process of shoe-marking and conciliate college schedules with the development of the new venture	Adapt their sources of raw material and installations to their financial situation, by using leather and fabric leftovers and by using se the co-workers' father storage as a place to commercialize their products	Add new products to their portfolio, in order to reuse the leftovers of the shoe-making process to produce and commercialize purses and, accessories made from these leftovers / Move to a new installation (more accessible to their potential consumers)
Entrepreneur D	Learn more about the Light Framing system, in order to develop technical abilities and to deepen his knowledge regarding the system he wanted to provide to his costumers	Adapt the services provided to the real needs of the market, through client prospecting.	Adapt to the characteristics of his consumers, who consist of individuals that are used to observe prices and not long-term benefits of the products or services.

Source: Elaborated by the authors (2018).

From Frame 1, it can be noted that during the opportunity identification stage, all entrepreneurs, despite their business contexts, had to improve their knowledge regarding the type of business they lead. This is so, due to the fact that, since during this stage all entrepreneurs are aiming at filling a market gap. Thus, there is not much knowledge regarding the 'new' opportunity, making it necessary to deepen the knowledge and skills demanded by the opportunity. At the second stage (opportunity exploration), each entrepreneur has to improve their weak points. At the opportunity exploitation stage, all entrepreneurs had to adapt their original business and strategic plans to the specific needs of their potential consumers. Thus, the 'opportunity identification' stage and the 'opportunity exploitation' stage were common to all entrepreneurs here analyzed, despite their business contexts. On the other hand, the actions and adaptations demanded at the second stage (opportunity exploration) were different to each entrepreneur, since they had to improve their specific weaknesses in order to develop and exploit their ventures so that products and services they would offer would be attractive to the needs of their potential consumers.

5. CONCLUSIONS

To analyze the adaptation of the ecopreneur in the entrepreneurial life cycle stages, a case study with four ecopreneurs from Brazil was held. The results indicate insights related to relevant adaptations to each of the stages of the entrepreneurial life cycle, in accordance with the cases investigated:

(i) Stage 1 - Opportunity Identification Stage – Deepening the knowledge of the new service or product provided: This adaptation arises from market opportunities, and the main insight from this stage's adaptations regards that the adaptations of all ecopreneurs here studied are related to the search for knowledge and skills, regardless of their industry sector; Thus, to identify the opportunity, the entrepreneur must adapt and, as emphasized by Costa et al. (2007), use his education and motivation to perfect the idea and then exploit it.

(ii) Stage 2 - Opportunity exploration – Production adaptation: These adaptations are based on the analysis of the actual needs of the market and available resources, as well as the evaluation of the viability of the enterprise. The adjustments were similar for entrepreneurs in the field of fashion and different to the other ecopreneurs analyzed; During this stage each entrepreneur aimed at developing their weak points, being them: resource's limitations, learning improvement, financial restrictions and getting to know his potential clients (Entrepreneur A, B, C and D, respectively). At this stage, the ecopreneurs seek to improve their weak points, in order to, as pointed by Degen (1989), make the products and services developed commercially viable and 'ready' to be marketed.

(iii) Stage 3 - Opportunity exploitation - Adaptation concerning market improvements: In order to create both environmental and economic value, this adaptation arises from the identification of needs and profiles of potential consumers. It also involves the adjustment of the business plan to the observed reality, or even changes in the portfolio of products resulting from new opportunities. In this case, despite some entrepreneurs had to adapt also in other aspects, all of them presented adaptations related to the actual demands of their consumers (through the installation of their stores in locations that are more accessible to their clients or through the alignment of supply and demand). As Hmieleski and Baron (2008) and Costa et al. (2007) claim, this phase aims at developing and adapting the strategic plans of the enterprise, to the demands and requirements of the market.

Thus, in the cases here analyzed, it was possible to note that during the identification and the exploitation phases, the adaptations of the entrepreneurs were very similar, since the former regards deepening the knowledge of the industry the entrepreneurs are aiming at, and the latter regards adjusting the business plans and strategic actions to potential consumers' actual needs. In the exploration stage, however, each of them aimed at improving their specific weak points.

In this scenario, it is recommended that future research focuses on evaluating if these evidences are also found in other businesses, or if these evidences are related to the cluster of the products or services provided by the ventures.

The main contribution of this study lies in these evidences, related to what kinds of adaptations are needed in each stage of the entrepreneurial life cycle and whether they differ, depending of the context in which they are analyzed, or not. In a practical way, this study can provide information to ecopreneurs, improving their knowledge regarding the paths they can undertake in the life cycle, highlighting forms of adaptation that may be needed in each of the cycle's stages.

Even though this study achieved its purpose, a limitation regarding the number of cases analyzed can be pointed out. Since only four entrepreneurs were studied, it does not allow generalization of the results obtained (Yin, 2014). Thus, for future research, we suggest that more entrepreneurs are analyzed, in order to obtain results that can be generalized. Also,

we suggest that other research strategies are used, different than that of case studies, to evaluate if the results obtained from other strategy means are more or less adequate to study the phenomenon here analyzed. Also, since the results indicated adaptation similarities in two of the stages, concerning enterprises of the fashion industry, we suggest that future research is held aiming at studying clusters of enterprises, in order to validate the results and verify if enterprises from similar clusters have the same needs of adaptations, at each stage of the entrepreneurial life cycle.

It is expected that this study contributed to the literature regarding the entrepreneurs and the stages of the entrepreneurial life cycle, as well as to ecopreneurs, more specifically, by providing them empirical data regarding possible adaptations they may face during each stage of the entrepreneurial life cycle.

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