



Product Lifetime Extension Case Study: Geração Ecotrônicos

Company name: Geração Ecotrônicos ([website](#))

Sector of activity: Electronics' Recycling, Recovery and Reconditioning

Implementation area: Local operation (headquartered in São Paulo, Brazil)

Business strategy for product lifetime extension: Repair, Recovery and Reconditioning

Repair

According to *Cambridge's Dictionary*, to repair a product means "to put something that is damaged, broken, or not working correctly, back into good condition or make it work again".

Recovery

According to the British Standards Institution's BS 8887-2:2009, introduced in the *Remanufacturing Market Study*, recovery is "the operation by which a product or its components are put back into use for the same purpose at end of life".

Reconditioning

According to the *Triple Win Report* (The Economic, Social and Environmental Case for Remanufacturing) reconditioning means "the potential adjustment to components bringing an item back to working order, though not necessarily to an 'as new' state".

Context

Geração Ecotrônicos was founded in June 2016 by a group of young people who attended a technical training offered by the Osasco City Hall, a county located within the São Paulo Metropolitan Region, in Brazil.

The main objective of the training was to capacitate teenagers and young adults in vulnerable situations for the job market, while also training them in waste management. This is because picking and recycling waste is one of the activities many people resort to when formal jobs are unavailable to them, which justifies the importance of technical schooling.

Initially, the focus of the training was centered on basic electronics, capacitating students in the assembly and disassembly of computers. As a pilot, to assess the degree of interest of young people in such trainings, a first class was formed in 2012 and brought positive results. Due to the increasing enrollment in the following years, the course was expanded and included new approaches and techniques, such as repair and reconditioning, in order to develop more profitable skills, and provide students with more opportunities in the job market.

This new perspective of what could be done with electronic waste led a group of students to look for ways to put in practice their new skills, in an economically sustainable manner. They had the idea to build a cooperative focused on repair, recondition and recovery of electronic products.

The local government offered financial and technical resources to help structure the cooperative's operations and the legal proceedings. This aid has diminished over time, but Geração Ecotrônicos still receives sporadic support, since the administrative specificities of establishing and operating a cooperative in Brazil are complex, requiring several documents and certificates at the time of opening and also periodic accounting. This complexity is seen as a barrier to cooperatives and other small business to operate in Brazil.

Operations

Geração Ecotrônicos is mainly focused on avoiding the accumulation of electronic waste in landfills and dumps



Figure 1. Geração Ecotrônicos' process of de-personalising

in the city of São Paulo, seeking ways to replace the disposal of materials that may still be useful, transforming them into raw material for manufacturing new products.

In order to achieve this objective, their activities consist mainly of the dismantlement and de-personalising – removal of the remaining information on devices, such as user's data – of the electronics received, from either companies or single users. The product is then evaluated according to established criteria to determine if it's possible to re-sell it with minimal repairs, whether it should be dismantled, so that the parts in good condition can be reused for the repair of other products, or if it should be de-personalising and sent for recycling (Figure 1).

Therefore, Ecotrônicos works basically with three processes:

1. **Recovery**, in case the product received has potential for resale. Defective parts are replaced and the new product returned to the market.
2. **Repair** is geared towards individuals that actively seek Ecotrônicos' services in search of relatively simple fixes for their personal electronics. The repairs are made according to the consumer's need, and there's a three month warranty on any repair made by the cooperative.
3. The process of **de-personalising** of the equipment is still the largest generator of income and volume of work for the cooperative. Here, electronics are received in large quantities from companies, and each kind of material contained in the products is separated to be sold to companies that recycle these materials.

The reason why de-personalising is still the most relevant activity for the organization might be related to the fact that the cooperative started with this intent, and this is what they were initially trained to do.

There is also another possible explanation for the major relevance of de-personalising in Ecotrônicos' business: many companies, mainly multinationals, recycle their product components due to the Brazilian legislation of reverse logistics that obliges them to do so.

The main source of profit for the cooperative comes from the sale of the materials obtained from the de-personalising to large industries, which gather components purchased from several cooperatives and export them to Europe, where the recycling and use of this material is possible.

The maintenance of household and personal appliances is the second largest source of income for the cooperative, since the amount charged for this type of service is well below the price of a new product, making it advantageous for the consumer. On the other hand, there are cases where the repair may not be financially feasible, especially when it involves the purchase of new parts for repair. This reinforces the idea that there is a structural difficulty in encouraging the extension of the useful life of some products.

In these cases, the cooperative opts to advise the users to exchange for a new product and takes the item that would be discarded for its de-personalising and use of components.



Barriers

One of Ecotrônicos' main challenges is the fact that the companies that approach the cooperative spontaneously, with large quantities of products (such keyboards, monitors, CPUs, etc.) generate a demand bigger than Ecotrônicos' capacity to repair them, and also bigger than the demand for the products that have undergone these transformations, which are usually outdated in market terms.

The cooperative is still very small and has issues with marketing their services. There's a very limited clientele for their repair services, reached in large part through "word of mouth" promotion by the members of the cooperative.

The demand for repairs is not regular. When the need arises, the owner of the product can choose to take it to the cooperative or request the pick-up service offered by the cooperative. However, this option has an additional charge by the services, since the transport is provided by an outsourced company.

In addition, the cooperative relies mostly on communication through social networks, considered as their major way of spreading their work. They also count on events, such as fairs, and receive many requests to give lectures and interviews to various media outlets. Even so, access to the consumer market is still a challenge.

Currently Geração Ecotrônicos do not have any partnership besides the support offered by the Municipality of Osasco, but are close to cooperatives of other segments like cardboard, aluminum and plastic. This relationship showed them that the difficulties are the same for all cooperatives, regardless of their sector of activity, since they do not receive enough incentives to boost their activities.

Another relevant barrier lies in adjusting the documentation that allows the cooperative to perform its activities, which requires constant renewal and licensing, a costly process involving a number of professionals such as lawyers, administrators and accountants.

Results and next steps

With the de-personalising of products received, an average of 1 ton of materials per month is obtained. As for the number of appliances repaired through maintenance services, it is not possible to define an average value per month, since the demand is very irregular.

Despite the difficulties, Ecotrônicos has obtained good results during its time of operation. However, some actions are being discussed in order to increase the visibility of the cooperative by large companies, which could expand their business and, consequently, their income. In addition, they intend to expand the number of clients, also promoting their services to people outside their current range.

How to get involved?

Everyone can contribute to a more efficient waste management infrastructure. Consumers have a double role, both when deciding what to consume, looking for more durable products depending on their design and raw materials, but also when choosing products from companies that address key issues of the value chain, passing through raw material extraction and labor relationship, and that allow an adequate end-of-life management of the product, ideally extending its life or reinserting it into the chain.

The Long View Report

This case study is related to *The Long View Report* in four main aspects:

- Individual Producer Responsibility, due to the Brazilian legislation of reverse logistics that obliges companies to recycle their components.



- Alternative business models, stimulating the sale of refurbished products in face of the lack of consumer acceptance of this type of product.
- Improvement of waste treatment infrastructure, avoiding the accumulation of waste in landfills and dumps and replacing the disposal of materials that may still be useful.
- Recognition of the full potential of the informal sector, by including low-income youngsters in the market, due to the lack of formal jobs because of their education level.



Closed Loop perspective: enable manufacturers to retain full responsibility over their products in order to extend product lifetime

Individual Producer Responsibility

Individual Producer Responsibility (IPR) can be considered for selected product categories. It is recommended to evaluate the Japanese IPR regulation for air conditioners, TVs, refrigerators and washing machines, and to explore if a translation to other countries' contexts is feasible.

Alternative business models

Stimulating the acceptance of alternative business models (the shift from 'owning' to 'using' products) in the Business-to-Consumer market, includes addressing privacy and other liability issues pro-actively



Product lifetime extension in developing economies

Improvement of waste treatment infrastructure

In many economies a formal, environmentally sound and safe waste management system is needed. In order to make such a system function properly, public education on how and where to dispose products is required.

Recognition of the full potential of the informal sector

Informal economic sectors that revolve around trading, repairing and regaining materials from redundant products currently lack access to investment capital and information to make repairs energy efficient, safe and environmentally sound. It is recommended to recognize these professions and offer them social rights, official status, and training.