

Identifying barriers and prioritizing solutions - crucial to establish a take back system

Critical resources run out as a result of escalating consumption of electronics. Over 50 million tonnes of e-waste have been generated globally, containing material with an annual value of at least \$62.5 billion. The potential for companies to contribute to a circular economy by taking back products for recycling is, therefore, substantial both from an economic and environmental perspective. This study investigates barriers and solutions for an electronics manufacturer to establish a take back system for recycling in the US.

To prevent resources from running out, electronics manufacturers should close their supply chain loop. However, there are several barriers electronics manufacturers need to overcome to establish a take back system for recycling. In this study we have identified these barriers and divided them into four clusters: *Corporate strategy, Finance, The electronics manufacturer and upstream supply chain, and Downstream supply chain.* The downstream supply chain involves both channel partners and end customers, crucial for a successful take back system. These parts are often missing in academic literature.

The organizational linear mindset was identified to be an overarching barrier, spanning over all four clusters. The global challenge of moving from a linear to a circular economy runs through the veins of our society and all organizations, making it particularly tough to overcome, and is, therefore, highly important to address. Within the clusters, the main barriers found were:

- Current linear sales model
- Short-term profitability requirements
- Limited reverse logistics organization
- Stakeholders' risk aversion towards new initiatives

Additionally, related barriers to these four main barriers were identified.

Considering that around 20 barriers were found, the necessity of allocating resources to prioritized solutions, with the greatest impact, are inevitable. To overcome these barriers, we

have, therefore, developed a tool, the Solution Evaluation Matrix (see Figure 1), to use for this prioritization. By evaluating the solutions according to execution capacity and the solution's impact on the implementation of the take back system, the solutions can be placed in the matrix, and prioritized accordingly.

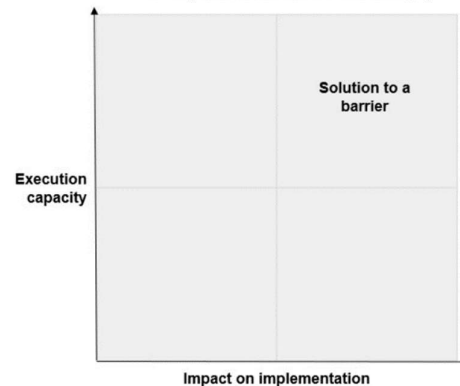


Figure 1. The Solution Evaluation Matrix.

How long our resources will last, depends on how fast we transition to a circular economy. We all need to take responsibility. The electronics manufacturers can contribute by implementing a take back system. By raising awareness on the positive impact of a take back system in the entire supply chain, the linear mindset will start shifting from linear to circular one. This study shows how important it is for the electronics manufacturer to define the purpose of their take back system for successful implementation. This is the first step of the roadmap, where the case company is recommended some steps, embarking their journey towards a take back system for recycling in the US.

A take-back system for recycling should be seen as a first step towards a circular economy, where the next step is to start reusing products. An electronics manufacturer can, by identifying their barriers, prioritizing solutions, and following the recommended roadmap, contribute to a more sustainable society, and thus also strengthen their own brand.

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