



Integrating Recycling Program into Modern OPM for the Consumer Electronic Industry

APS 1028

**Operations and Production Management
for Manufacturing and Services**

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Executive Summary

For the past several decades, the smartphone market has emerged from a niche to a very large and highly competitive \$522 billion market. Many manufacturers are trying to increase their share releasing new phones every year and expand the product range. Consequently, the customer is forced to upgrade devices more frequently to use the latest technologies and, software and apps.

Annually manufacturers ship almost 1.5 billion new devices. Each of them contains many complex components such as camera modules, battery, screen, motherboard, enclosure, packaging and others. In addition, producing these components requires a lot of material and energy recourses. For example, speakers and oscillation motors require magnets and coils. Magnets are made from rare earth metals. Based on its name, these elements require more resources to extract from ore. Hence it affects the environment and society. Moreover, customer's climate change awareness changes their needs to choose sustainable and eco-friendly products more than ever. In addition, governments push stricter ecological rules and guidelines as well.

In light of these challenges, Apple manages to innovate the e-waste recycling and reuse by drastically rethinking the recycling process and take risky initiatives. Setting up the disassembly lines, designing the recycled alloys and close work with suppliers are only a few of them.

In this paper, we describe the Apple's vision and approach in e-waste recycling and discuss how other electronics manufacturers can learn from it to improve their sustainability and recycling practices and why it is important in the long term.