The Sustainability of the Apple iPhone

In many industries, products are not made with sustainability in mind. Technology is one of these industries. Each year 20 to 50 million metric tons of technology waste, also called e-waste, is discarded. This waste is then incinerated or left in landfills, which leads to aerial and soil pollution from the various chemicals found in these devices. Phones are one item of technology that could be recycled to salvage some of the metals inside of it. Americans throw away $60 million in gold and silver each year due to the disposal of their phones. One of the most popular phones is the Apple iPhone. In 2014 alone, 43 percent of all phones in use in the United States were iPhones. Due to this high usage, iPhones are produce at a high volume in Apple factories throughout Asia. This raises many questions about the production of the iPhone, such as the sustainability of the iPhone through the seven phases of the engineering design process.

The first part of the engineering design process is research and product development. This is a crucial part in the engineering design process, one where a lot of time and many resources can be wasted. For the developers of the Apple iPhone, this process means creating the next generation of iPhone for the public to desire. This includes all possible upgrades to a device, such as new cameras, increased battery life, increased storage, and more. Apple, like most companies, spends a large amount of money trying to create the best new pieces of technology to keep their customers happy. This has called for a large investment in their research and design budget. Over the past year, Apple has increased its investment in research and product development from $3.4 billion to $4.5 billion. The reason for this increase was to increase personnel and expand research techniques. It is unclear what exactly occurs in Apple’s research and design process, but with a $4.5 billion budget, it is hard to imagine Apple is running a sustainable process.

After researching and developing the new iPhone, Apple has to market the product to the millions of Americans who are looking to buy a new phone. Apple markets their products in many ways. From the television commercials, to the Apple stickers/logo on all of their stores and products, to the newspaper adds, Apple markets their products in numerous ways. They spent close to $1 billion on marketing last year alone. Their exact marketing techniques are not made available to the public, however, judging by how little they spend on marketing to how many iPhones they sell a year, their marketing tactics have to be close to sustainable. They do not seem to leave a large carbon footprint, as a lot of the marketing is self-branding through the customers. Apple is doing a great job with sustainability in this department because their
product is able to sell itself. The popularity is has garnered markets itself, which is a good thing overall, but not all phones and technology companies can say that.

The next step in the engineering design process is probably the most crucial in a product’s sustainability. Manufacturing an iPhone has many steps besides just putting the pieces together. First, all of the components of the iPhones need to be made, which requires extensive mining of the Earth for various materials and rare earth metals. On top of this, these resources need to be transported to factories where they can be made into the components that make up the iPhone. There are no concrete numbers on the damage done to the Earth through this process, but these are rather extensive processes, and there are definitely ways they could be run more smoothly. However, Apple has started to use a rare earth mineral mining company that has very eco friendly techniques. Another positive note, the company is also located right outside of Las Vegas, Nevada. The problem is, Apple then has to ship these materials to China, where there factories are, which negates the positives associated with the eco friendly mining techniques. Unfortunately, Apple also uses some Chinese mining companies which have awful track records with being environmentally friendly. The processes that go into actually assembling the iPhone are not actually that environmentally damaging, because many of these are performed, or at least moderated by humans. However, the conditions that iPhones are assembled in are not necessarily moral, but that is not a sustainability issue. There are many places where Apple can work to improve their manufacturing sustainability, but for the time being, they are moving in the correct direction.

Packaging is another key part in the sustainability of a product. For most technology products, there can be a lot of wasted materials and resources. Apple does a good job in minimizing the environmental effect of their packaging. The packaging of the iPhone from year to year is familiar to ensure consumers recognize what they are buying. Apple has built a cult-like following and designs their phone packaging around keeping those consumers happy. Their specific packaging also includes accessories that help consumers use the iPhone to its full potential. The specifics items that are added within the packaging are a charger and ear pods. Their style takes a minimalistic approach by using very few materials. The box size fits the profile of the phone’s size and creates less waste. The materials themselves are eco-friendly as well and can be recycled. Both the amount and type of materials used, makes Apple’s packaging style sustainable.

As mentioned in the previous paragraphs, Apple assembles their phones in China. This leads to a serious cost of transportation to the United States when they want to sell their product. This has a huge strain on the environment because of the methods they use to transport their products, none of which are very eco-friendly. The process of shipping large quantities of materials across the Pacific Ocean is also very costly to Apple as a company. There is not an easy way to work towards sustainability with respect to transporting product to the United States, short of having an Apple factory on each continent to minimize the effects of shipping on the environment. Overall, Apple does what it can to minimize the effect their shipping has on the environment, but they can do more to create a much more sustainable product.
The next step in the sustainability of the engineering design process is the consumer use of the phone. This also seems to be the place where Apple fails in sustainability the most. When a phone is purchased, it is usually sold with a two year contract to the phone company you bought the service from. With this in mind, Apple and other phone companies, only make phones that last for this two year contract so when a contract is up, the customer is forced to buy a new phone because their old phone can’t handle working. This practice would be alright if phones were easily recyclable, unfortunately they are not. Apple has developed a recycling system to assist in this process, but over, they are failing in the sustainability of this product. Building a product to only last two years when it should be built to last a much longer time period is failing both the consumer, and more importantly the earth. Until the concept of two year contracts go by the wayside, things will never change in this respect to the iPhone. They will always only be made to last two years so the newest model has to be bought so Apple can keep turning a profit.

The final disposition stage is where the disposal of the product takes place. This is the main stage of the process that affects the environment. Guiyu China is an area of the world where many spent phones are sent at the end of their lives. Due to the large amounts of phones they receive, circuit boards are burned over coals for lead, and the waste of this process runs into the groundwater. This dangerous disposal has made Guiyu home to many cancer-causing dioxins. The Apple iPhone has took a more sustainable approach by not using some of the most dangerous chemicals in their phones. A specific chemical that the iPhone is missing is brominated fire retardant. In addition to their material choice Apple also has a recycling program. The Apple recycle program promises customers an eco-friendly option to dispose of their spent phones. The program uses the old recycled parts as pieces for refurbished iPhones, which takes advantage of reusable technology. This program that Apple provides allows the iPhone to be disposed of in a more sustainable way.

Apple is taking many strides in creating a sustainable cell phone. They have started using more eco-friendly mining companies, limited their packaging footprint, and began a recycling program to allow people to recycle their phones at no cost. These are all great steps in the move to sustainability. However, the Apple iPhone is not a sustainable product because of its design. A product as resource intensive as the iPhone should be built to last much longer than two years. Unfortunately, this does not fit into the business model of Apple as a company. As the webpage dedicated to their recycling program states “It’s a beautiful time for an upgrade.” Until this mentality is lost, and older model phones are acceptable to use, Apple will not be able to have a sustainable iPhone. Unfortunately, in the end, profit margins are more important that the Earth.

Works Cited:


