Green Disposal and Sharing: Providing Sustainable Options

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1. Abstract:

This report looks into the product obsolescence challenge created by excessive consumerism and overconsumption. It then analyzes and provides solution of mitigating the challenge through an application focused on 3-R model which are Reuse, Refurbish and Recycle, in addition to sharing products. Then it focuses on the development of the solution and the validation of its prototype. Finally, it looks into the impact of the product obsolescence and the mitigation of the application on the three aspects of sustainability; environmental, economic and social.

2. Challenge:

Excessive Consumerism and overconsumption happen when people don't stop at seeking their needs, but extended to going after items that they do not need, but feel they would increase their intrinsic value. As sterns puts it, "*Consumerism describes a society in which many people formulate their goals in life partly through acquiring goods that they clearly do not need for subsistence or for traditional display.*" (Stearns, P. N., 2006, p. vi), it is a culture that grows into a society and changes its goals and expectations. Excessive consumerism exists on many planes, ranging from foods to materialism and luxury items. One of the most prominent and unsustainable aspects of excessive consumerism concerns technology. Consumerism has become synonymous with technological advances, as new gadgets and technologies have become very desirable and sought-after, and one of the greatest driving forces behind this effect is *planned obsolescence*.

Planned Obsolescence is the practice of designing a product to become obsolete, whether by being outdated, irreparable, or undesirable, after a certain amount of time (Waldman, 1996). This practice is followed by businesses in order to maximize profits by constantly founding incentives for the consumer to buy the newest product. This could lead to many sustainability challenges: *Economically*; it finically drains consumers (Bulow, 1986). S*ocially*; it spreads the culture of consumerism and prioritizes not getting "left behind", which drives the consumer to spend on items they don't need. E*nvironmentally,* it is the main source of e-waste, which pollutes the environment with the hazardous material that is discarded whenever a new product replaces another one that is eventually incorrectly disposed of. We plan to utilize the 3 R's model (reuse, refurbish, recycle), along with aspects of sharing cities, to provide sustainable countermeasures to product obsolescence and the ever-growing consumerist habits.

3. Solution:

In order to solve the challenge of product obsolesce from affecting the sustainability aspects we've analyzed the environmental, economic and social factors of planned obsolescence. After our extensive research, we decided to introduce an application for green disposal and sharing option in order to provide green and sustainable options to the consumer. The platform focuses on all the three aspects of sustainability and emphasizes the 3 R model of green proposal which are Reuse, Refurbish and finally Recycle. In addition to the 3 R model, the application also adopts resource sharing strategy which provides the users an opportunity to share products instead of buying individually.

The application focuses on reusing products by providing the consumers with an option to trade, sell or buy used products. In order to do so, the application divides the users by a seller and multiple buyer for each products in which the seller can sell a used product at any price or give it away for free. The buyer searches for a used product through search feature provided and look for category of the product. After the buyer finds the product, he/she reviews the used products, price and look for the contact information provided by the seller. For convenience of the buyer, 3rd party location map is incorporated with the application to pinpoint sellers' locations. After the buyer reviews the used products and contact the seller, if any purchase is made the application changes the availability of the product to "sold" and clears it out of the search filter. This process helps consumer finds used products, contact the seller and buy it conveniently. Reusing products help users satisfy their needs with used

products rather than buying a new one resulting in decrease of environmental impact (Jackson, 2002).

The application also emphasizes on the refurbish aspect of products which are damaged or outdated. Refurbishing used products will help users repair their products and enhance it as well in regards to capacity or performance. Refurbishing will have two entities as well where one is the user themselves and the other is the user who repair and refurbish products. As a result of including refurbishing to users, consumers are not limited to fix their products only to the manufactures but to multiple retailer. This increases the chances of getting products fixed as well as provides flexibility and cost-effective refurbishment. Through this application, the users can find nearest places to get their products refurbished after filtering it from the search filter.

The final aspect of the R model is recycling which focuses into the transforming the cradle-grave approach to cradle-cradle approach. After a product is used and its need is satisfied, instead of throwing it out, the user gets a chance to dispose it on recycle points where it can be used as raw materials for producing the products again. In the application, when the user selects the category of the product he/she is disposing, it takes them to the nearest disposal centers where they can dispose the products to earn points or get a discount on buying a new product. As claimed by Murugesan (2008), recycling resulting in less E-waste and more economic value of any institutions in longer run.

In addition to the R model, we also integrated the strategy to share products with others. So, in this process rather than buying expensive or large products individually, users can share the resources with others at low rate making it sustainable (Agyeman et al, 2013). This includes car, printers, washing machine, drill machine etc. In the application, the sharing feature divides the users to two categories, one who all are sharing a product and the other one is about who all seeks that product. When a person searches for a product he finds the people who advertised for the same product nearby. If the user likes the price and requirements, they can share the products easily which results in increase of sharing culture and lessens overconsumption and consumerism.

4. Validation:

The application is being designed into different stages and being prototyped after receiving meaningful feedback from the users. We user-tested the application to 12 students from different majors, both local and international, in addition we also validated the concept and design with 2 faculties from Information Systems.

Every single person who we user-tested have found that the importance of a platform to identify green alternatives for used products as really high. Out of these 12 students, about 84% of the users have found the application to be really engaging and claimed that the application was really interactive to them. About 9 of the students have also found the application to be really convenient and easy to use. Most of them claims the application has clean flow through the process which makes it easier for first-time user. Finally, when asked about if they're going to use the application in real life to dispose and share used products, all of them agreed to use it which shows a 100% success rate on using the application in EC.

The initial version of the application had merged options for sharing and reusing together while another merged option for repairing and disposal. However, due to scalability and convenience issues, we later changed it into individual options for each disposal. Users have also found the application to lack communication between buyers and sellers. Therefore, a chat feature was integrated with the application in order to make the communication between the users convenient. Few of the users also had issues with the built-in navigation with the system, therefore we modified it with implementing a 3rd party navigation application instead.

5. Impact:

Planned obsolescence has grave environmental consequences. In 2009, Joseph Guiltinan cited sources that indicate that over 100 million cellphones and 300 million personal computers were being discarded every year, and that only 0.1% of the TV sets were being refurbished and the rest was being thrown out. All resulting in tremendous environmental damage from lead, mercury, and toxic glass (Boland, 2001; Slade, 2006). As the user testing shows the high success in use of the application, therefore the number of phones and computers discarded can be reduced at a great extent. Besides people, the harmful affect of the waste also impacts other beings and the environments (Robinson B.H., 2009, p.183).

Besides environmental consequences, there are several economic consequences of planned obsolescence as well. In this regard, King et al (2006) claims that not recycling the produced products is contributing to increase of scarcity of raw materials which will result in increase of the price and less profit in long run. In addition, as the use of waste-sink capacity is getting filled at a great rate, there will be unavailability of countries to dispose the waste later on resulting in huge economic loss of the manufacturers (Clapp, 2002). The application provides a sustainable product development life cycle which Guiltinan (2009) claims to have significant opportunity to be an effective contribution in sustainable economic growth.

Consumerism shapes the societal norms and people's goals and expectations affecting the way people live and use resources. Consumerism doesn't just result in change in way of life but also contributes to social barriers and accessibility of products from different social classes (Crozier, 1997). However, the application can reduce the barriers in accessibility of resources by sharing and reusing the products. Currently, only 34.3% of the people in the world has access to computers and internet, making about 4.5 billions of people without any computers (Freire, 2007). If the application is used to share computers in places with low computer and internet penetration, then it can result in more people getting important information.

The application aims not just to provide users with green options to dispose the used product and solve the challenges that overconsumption is rising, it also focuses on enhancing the sharing culture. Sharing resources will help users have more access to resources with less price and fewer social barriers.

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