

Product lifetime, Right to Repair, and Repair Cafes

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Abstract: Achieving a more circular production and consumption pattern will require consumers to make proactive choices regarding practices such as repair and product life extension. However, galvanizing such choices and practices may not be left alone up to consumers because their behaviors are driven not only by internal factors (e.g., attitude and motivation), but also by external (e.g., economic, social, and political) factors. Having a clear understanding of these factors in play will help to set expectations for behavioral change from consumers' side and to plan behavioral interventions that are effective in terms of the expected results, efficient in terms of the cost of implementation, and feasible in terms of social and political acceptance. This paper explores these behavioral and non-behavioral elements affecting the decision to participate in circular practices. It takes the repair case of electrical and electronic products at public repair events to document factors governing the facilitation of repair practices. A questionnaire survey was conducted among nearly a thousand volunteer repairers with experience in repairing two product groups: small electrical appliances (e.g., vacuum cleaner, mixer, and coffee maker) and small electronic equipment (e.g., smartphone, laptop, and tablet).

Introduction

Product lifetime extension through repair and reuse of electrical and electronic products (e-products) can yield environmental savings in terms of the embodied energy and critical material resources (Parajuly et al., 2020). Although a preferred end-of-life option, repair practice for household appliances have been in decline due to contributing factors such as lowering cost of new products, shortening product lifespan, increasing complexity of product design, unavailability of spare parts, and growing labor costs in industrialized countries. However, the interest in repair is growing with the increasing environmental awareness - indeed, several grassroots movements and organizations for the repair and upcycling of everyday consumer products have been reported in recent years (Bridgens et al., 2018; Ghisellini and Ulgiati, 2020).

In between these two conflicting trends (disappearing repair practices but increasing public repair initiatives), this paper investigates people's behaviors in the context of promoting repair of e-products. Past research has shown that repairing household appliances may not always be economically significant, but it may be beneficial in environmental and social terms

(Bovea et al., 2017). Moreover, it is not always the case that the repair is driven by the knowledge and purpose of environmental benefits of product lifetime extension. Altruistic motivations beyond monetary terms also come into play when people are engaging in repair activities. A survey of Repair Cafés reported that the many volunteers are motivated by the ability to provide a valuable service to their communities and to meet people in the local community (Keiller and Charter, 2014).

To this end, this paper builds a comprehensive overview of technological, economic, social, and behavioral drivers and barriers behind people's participation in repair activities. The goal is to identify improvement potential in terms of interventions to facilitate repair of e-products. To achieve this goal, we study repair behaviors using pro-environmental behavioral theories and link behavioral elements with non-behavioral factors (the techno-economic aspects and intervention strategies). This allows us to understand the interconnectedness between various factors governing product repair practices – a useful insight for supporting better intervention strategies for behavioral change.

Method

Consumer behaviors are a part of the broader consumption and production system and are thus also influenced by several non-behavioral factors. Therefore, behavioral change should not be an isolated mission focusing on socio-psychometric and personality traits of individual consumers, but also consider the surrounding technological and economic aspects influencing consumer behaviors (e.g., products, business models) as well as policy and regulatory provisions that have overarching influence over both the consumer behaviors and techno-economic settings. An online survey was administered among repairers through national and international volunteer repair networks in order to study the three aspects (behavioral constructs, techno-economic settings, and intervention strategies) of repair behaviors for e-products.

The questionnaire survey was designed to cover two product groups: small electrical appliances including vacuum cleaners, mixers, coffee maker, etc. and small electronic equipment including mobile phone, tablet, laptop, etc. At the beginning of the online survey, the respondents were prompted with a visual aid to select one of the two product groups with which they have more experience. Both selections led to the same equations with the only difference being the name of product groups. The survey consisted of 37 questions (or statements) grouped under the above-mentioned three (behavioral, techno-economic, and intervention) aspects.

Results and Discussion

A total of 920 responses were collected from volunteer repairers across 14 countries with the majority of them coming from Europe. Only 6.3% of the respondents were female, which suggests a male-dominant repair sector for e-products. More than half of them (54%) reported to be 70 years or older, with only 6% of respondents coming from the 20 to 40 age group. This indicates the popularity of repair volunteerism among senior-group populations. In terms of experience, which may be connected with the age of the volunteers, 22% of people who took the survey have participated in more than 50 public repair events whereas 29% in 10 events or less; the remainder of the respondents were in between these two groups.

Repair behavior and motivation

In most responses, a strong positive personal and social attitude towards product repair was reported. The survey results suggest that while motivation to participate in repair is driven by personal values and environmental beliefs as well as individuals' attitude towards product repair, the ability to repair products also played an important role. It was observed, as expected, that volunteer repairers are better positioned in terms of expertise needed to repair their products. The current low participation of everyday consumers in repair activities may, in part, be attributed to their lack of expertise and confidence to repair.

Techno-economic aspects

From the techno-economic perspective, access to repair services, economic benefits, and the ease of product repair stand out as the key enablers for product lifetime extension. Small electronic equipment were reported to be more difficult to repair than electrical appliances because of the specialized skill set required as well as lower product reparability.

Intervention strategies

Economic incentives, regulatory requirements, and public awareness were confirmed as the key intervention strategies in the survey. Most respondents claimed that they volunteer to repair products regardless of economic benefits. However, some indicated that they would engage more if there were economic incentives to participate in repair events. Policy interventions such as repair standards and tax increases drew mixed opinions about their effectiveness, although longer warranty periods were perceived to be more effective in terms of promoting repair practices. Interestingly, it was observed that fewer respondents were familiar with the UN Sustainable Development Goals than the benefits of products' lifetime extension through repair or the concept of circular economy. These results suggest that grassroots actions at local levels do not necessarily require global knowledge and they may not be driven by higher-level goals.

Conclusions

An important lesson to be drawn here is that trying to involve everyday consumers in repairing their electronics may not always be the most effective strategy, as there are a

majority of people who are not able to do so despite their willingness. Public engagement may not be driven only by pushing moral values and environmental awareness without addressing the techno-economic barriers. New policy initiatives can look for ways to a) minimize physical and psychological barriers for consumers and b) capitalize on the growing public enthusiasm for grassroots initiatives around product repair. This also indicates a substantial potential for innovative and local business solutions around product repair and lifetime extension. Such potential may be realized, e.g., through official recognition and promotion of commercial as well as non-profit repair initiatives and skillset they can offer.

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