



Delft University of Technology

Consumers' attitudes towards product care
An exploratory study of motivators, ability factors and triggers

Ackermann, Laura; Mugge, Ruth; Schoormans, Jan

DOI

[10.3233/978-1-61499-820-4-1](https://doi.org/10.3233/978-1-61499-820-4-1)

Publication date

2017

Document Version

Final published version

Published in

Plate Product Lifetimes And The Environment 2017

Citation (APA)

Ackermann, L., Mugge, R., & Schoormans, J. (2017). Consumers' attitudes towards product care: An exploratory study of motivators, ability factors and triggers. In C. Bakker, & R. Mugge (Eds.), *Plate Product Lifetimes And The Environment 2017: Conference Proceedings* (pp. 1-4). (Research in Design Series; Vol. 9). IOS Press. <https://doi.org/10.3233/978-1-61499-820-4-1>

Important note

To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.

Consumers' attitudes towards product care: an exploratory study of motivators, ability factors and triggers

Ackermann L.^(a,b), Mugge R.^(b) and Schoormans J.^(b)

a) DE[RE]ISA, Salzburg University of Applied Sciences, Puch/Salzburg, Austria

b) Department of Product Innovation Management, Delft University of Technology, Delft, The Netherlands

Keywords

Circular economy
Product longevity
Consumer behaviour
Behaviour change

Abstract

To contribute to a more sustainable way of consumption, products should stay usable as long as possible. Therefore, it is necessary to take care of products. Product care should be understood as any action that helps prolonging the lifetime of a product, such as maintenance, repair etc. These product care activities can be conducted by the consumer or by a service. Our interview study helps to understand consumers' current product care behaviour towards products of different categories. Our study is based on Fogg's behaviour model, which states that motivation, ability and triggers have to be present at the same time to lead to certain behaviour. We were able to identify different motivators (e.g. pleasure, price, functionality), ability factors (e.g. tools, time and effort) and triggers (e.g. appearance triggers, social triggers) for product care. Based upon the findings of this study, strategies that enhance product care are suggested and relevant aspects for future research are proposed.

The need for product care in the Circular Economy

One of the basic principles of the Circular Economy (CE) is the aim to keep products in use for a longer period of time. A consequent step to prolong the use of a product is to avoid its replacement. To avoid product replacement, the following design principles have been proposed: design for reliability & robustness, design for upgradeability, design for variability, design for product attachment, and design for repair & maintenance (Van Nes & Cramer, 2005).

Although there is a general interest among consumers in topics such as sustainability and longevity of products, it is still difficult or even impossible for consumers to repair many consumer durables such as a coffeemaker or a laptop, as this is often prevented by means of product design (Bakker et al., 2014). The website *ifixit.com* is based on the belief that "people should be able to use their stuff how they want to, for as long as they possibly can" (Wiens, 2015, p. 124). It offers repair manuals as well as a reparability scorecard to assess the possibility of self-repair for products (Flipsen et al., 2016). Due to the mismatch between consumers' interest and the difficulty to repair and maintain everyday products, we assume that a big potential for designers and companies to shift towards a CE lies in focusing on the design for repair & maintenance principle.

Thus far, the focus of implementing this design principle has been on the product and to change its design in such a way that repair is feasible and easy (e.g. Cooper, 1994; Van

Nes & Cramer, 2005; Vezzoli & Manzini, 2008). However, the design for repair & maintenance principle can only have an impact on the CE when the consumer has the ability and the self-confidence that he/she is able to repair and maintain the product by himself/herself. Even if he/she has gained this self-confidence, the consumer also requires the relevant motivation. One source of motivation is the experience of a strong attachment towards a product (Mugge, 2007; Page, 2014). But in a CE, consumers also need to take care of everyday products with a moderate or low attachment level.

The following study contributes to this field by investigating consumers' perspective on product care. We identify reasons why consumers either do or do not take care of their products. Based on the study's insights on the factors that stimulate or reduce consumers' care activities, companies can adjust their product design, services, and communication in such a way that these care activities are more likely to be executed.

Fogg's behaviour model

In this study, we used the behaviour model by Fogg (2009). This model has been developed to design persuasive technologies. As our aim is to persuade consumers to take care of their products, the transfer to the design of consumer durables seemed appropriate. The model claims that behaviour generally results from the concurrence of three factors: motivation (if people want to do it), ability (if people can do it) and triggers (a stimulus that provokes

them to do it). Only if these three factors occur at the same time, a certain behaviour will take place.

Study on product care behaviour

Method

To identify currently existing motivators, ability factors, and triggers for product care, in-depth interviews were conducted with 15 people at their homes. To cover a broad range of different products that are relevant in people's everyday life, we defined six product categories that were discussed in each interview: 1) household appliances & tools, 2) consumer electronics & communication devices, 3) means of transport, 4) furniture & interior design items, clothes, 5) shoes & fashion accessories, and 6) sport equipment, accessories for hobbies & leisure. For each category, the participant was asked to name a product that he/she takes care of, for example, because he/she devotes effort and/or attention to it, so it remains usable for a longer period of time. Depending on the answer, further questions included the reason and the process of taking care as well as possible problems to do so. Subsequently, we asked participants to specify a product that he/she does not devote effort and/or time to, even if that means that he/she cannot use it for an extensive period of time. Again, reasons and barriers for this behaviour were requested.

Interviews lasted around 25 minutes on average. All 15 interviews were audio recorded. After a verbatim transcription of the interview recordings, a qualitative content analysis was conducted, making use of the software f4/f5 (see www.audiotranskription.de). The coding process started by a full coding of two interviews by the main researcher, which resulted in 97 codes. The three factors of the Fogg behaviour model – motivation, ability, and triggers – served as a basis for this coding, but it became clear that more codes and subcodes would be needed to cover all relevant aspects. Thus, after a discussion among the three members of the research team, more relevant codes were added. This led to a coding scheme of 154 codes, which was then applied to all interview transcripts. During a further coding session, two researchers refined and merged these codes, resulting in (sub)codes related to the three factors from Fogg's behaviour model – motivation, ability, triggers – as well as codes related to product care behaviour in a more general way.

Findings

We gained insights into different care activities, such as careful handling or the usage of adequate accessories for the products. Participants also showed different levels of care intensity, ranging from no care activities at all to regular care activities that are often based on affective reasons.

An analysis based on Fogg's behaviour model allowed us to identify motivators, ability factors, and triggers. These factors determine if consumers take care of their products. As motivators, we identified:

1. *pleasure*: If fun and positive experiences are connected to the product, consumers will more likely take care of it.
2. *aesthetics*: This factor is especially important for very appealing products. As people want these products to stay nice, they will invest time and/or money in their appearance.
3. *functionality*: If a product offers features that are valued by the consumer, he/she will more likely take care of that product.
4. *price*: A high price leads to consumers expecting a high quality of the product. Therefore, they are more willing to take care for expensive products. On the other hand, they will not repair a product if its spare parts or the required service are at a very high price.
5. *intrinsic motivation*: Many participants in our study reported that they are interested in sustainable consumption. They do not want to waste resources and materials, so they have a general motivation to keep products as long as possible.
6. *rebellion against brand policy*: When a company tries to prohibit consumers from repairing their products, for example, by using special joining techniques, this can result in a rebellious reaction from the consumer. He/she is then motivated to avoid the company's repair service and takes care on his/her own.
7. *irreplaceability*: An emotional attachment towards the product often leads to consumers taking care of it.
8. *fit with the participant's identity*: If consumers think that a product represents their values or lifestyle well, they are more willing to take care of that product.
9. *shared ownership*: Sometimes products are owned by several people, especially family members. This often leads to a decreasing feeling of responsibility for this product, resulting in less care activities.

We recognised that the ability to take care of a product depends on the following four factors:

1. *perceived knowledge and skills*: Participants think they do not have the relevant knowledge or skills to take care of their products. This is especially relevant for electronic devices.
2. *time and effort*: Some participants mentioned that they do not have the time to take care of products. Others stated that the required effort is too high.
3. *tools*: A lack of required tools for repair or maintenance also leads to a decreasing ability for product care.

4. *general reparability*: Sometimes participants doubted if the product could be repaired in general.

Relevant triggers – stimuli that provoke a behaviour by enhancing either motivation or ability or by working as a signal – for product care are:

1. *appearance triggers*: When a product does not look nice anymore, consumers are more motivated to take care of it.
2. *time triggers*: After a certain amount of time has passed, consumers' motivation increases. This is especially relevant for regular care activities, such as the annual check of a car.
3. *social triggers*: Other people, such as family members, can increase the motivation to take care of a product, for example, by commenting on the care activities. On the other side, negative comments might decrease the motivation to take care.
4. *previous care experiences*: If previously conducted care activities went well, consumers are more likely to take care again. On the contrary, negative experiences often lead to avoidance of future care activities.
5. *challenge-based approach*: Some participants regard care activities as a personal challenge they want to meet. This leads to an increased level of motivation. These people are also willing to enhance their knowledge and skills to succeed, so this is the only trigger that does not only increase motivation, but also ability.

Implications for designers and future research

Based on our findings, we propose several strategies to enhance consumers' product care activities: First, motivation has to be considered when designing for product care, as people will not change their product care behaviour without being motivated to do so, so there should always be a reason for consumers to take care. There is a big potential for companies regarding the product-related motivators pleasure, functionality, and aesthetics. One promising approach to increase these motivators is the design principle Slow Design. Slow Design encourages the user to spend more time on the meaningful parts of the interaction rather than on the interactions in general and demands a more compelling involvement of the consumer (Fuad-Luke, 2002; Grosse-Hering et al., 2013). Product care could therefore be encouraged in two ways: On the one hand, Slow Design will keep the product usable for a longer period of time and it can contribute to more appealing aesthetics, thereby enhancing consumers' motivation to take care. On the other hand, the underlying activities also lead to a stronger bond between consumer and product, which results in the consumer's wish to extend the product's lifetime. Additionally, our study shows that features, such

as a good service, were mentioned as determinants for the purchase decision. Generally, it is important to explain to the consumer that the product is not only of high quality, but that its lifetime can be extended by the consumer himself/herself easily. This results in the acceptance of a higher price at the time of purchase, which in turn enhances the motivation to take care of the product.

To enhance people's ability to repair a product, free video tutorials or better instructions, which would lead to more advanced skills and knowledge on how to take care of the products could be implemented. Repair & maintenance workshops could also address this problem and additionally solve the problem of missing tools. Companies could also offer accompanying services that help consumers with their problems. These strategies could be intensified by specific design and business model approaches, such as design for disassembly, a service for spare parts (see e.g. Mashhadi et al., 2016) and the usage of standard tools.

The observed gap between attitude – a high interest in sustainability and longevity of products – and action – a general low level of product care – is likely caused by the absence of triggers. In many situations, triggers that provoke immediate care activities are missing. Consequently, even though the participants were motivated and had the ability to carry out the care activities, the absence of a relevant trigger will prevent consumers to conduct product care activities.

Companies can trigger their consumers by either focusing on external or internal triggers. Time triggers range from relatively simple measures, such as a reminder for an annual check-up, to more complex ones, such as a signal that is integrated in the product and attracts attention after a certain time of usage. Appearance triggers can be realised by designing the surface of the product in such a way that it changes over time. Then, a look at the product can trigger the consumer to conduct a product care activity. If a product emanates its care state in some way so that it is also visible for other people, it could work as a social trigger. People may then be encouraged to take care of their product, because of social pressure. By focusing on the experience of the product care activity and turning it into a positive experience and a desirable outcome, it is more likely that people will take care also in the future, as stated by the previous care activities trigger. A challenge-based approach could be realised by an accompanying service, which allows consumers to compete in their care activities, but also on a much more individual level by daring the consumer to take care by a demanding, but at the same time not too difficult care activity.

In future studies, triggers as well as the communication of product care-related features of a product or a service should be further investigated. The decision between taking care of a product in person versus using a service needs more research attention to understand in which

conditions the focus should be on either product features or on a service. As the circular economy is a global approach, the influence of different cultural backgrounds could also be explored.

Conclusion

The aim of our study was to gain an understanding of current product care behaviour and to identify existing motivators, ability factors, and triggers for product care. To be able to design products that can really change consumers' behaviour in terms of product care, we used Fogg's behaviour model. The findings show

that companies can use different strategies to enhance consumers' care behaviour.

As Fogg's model claims that motivation, ability, and triggers have to be present at the same time to provoke a behaviour change, it will be necessary to not only target the product design itself, but also corresponding services, such as tutorials or reminders for an annual check-up. Only by taking consumers' motivation, ability as well as relevant triggers into account, companies can encourage consumers to perform product care activities and thereby extend products' lifetimes.

References

- Bakker, C., Wang, F., Huisman, J. & den Hollander, M. (2014). Products that go round: exploring product life extension through design. *Journal of Cleaner Production* 69, pp. 10-16.
- Cooper, T. (1994). *Beyond recycling: The Longer Life Option*. New Economics Foundation, London.
- Flipsen, B., Bakker, C., van Bohemen, G. (2016). Developing a reparability indicator for electronic products. *Proceedings of the Electronics Goes Green 2016+(EGG)*, pp. 1-9.
- Fogg, B. J. (2009). A behavior model for persuasive design. *Proceedings of the 4th international conference on persuasive technology*. ACM, pp. 40-47.
- Fuad-Luke, A. (2002). 'slow design' – a paradigm shift in design philosophy? *Proceedings of the Design by Development Conference*, Bangalore.
- Grosse-Hering, B., Mason, J., Aliakseyeu, D., Bakker, C. & Desmet, P. (2013). Slow design for meaningful interactions. *Proceedings of the sigchi conference on human factors in computing systems Paris*. ACM, pp. 3431-3440.
- Mashhadi, A. R., Esmaeilian, B., Cade, W., Wiens, K., Behdad, S. (2016). Mining consumer experiences of repairing electronics: product design insights and business lessons learned. *Journal of Cleaner Production* 137, pp. 716-727.
- Mugge, R., 2007. *Product attachment*. Doctoral dissertation, TU Delft, Delft University of Technology.
- Page, T. (2014). Product attachment and replacement: implications for sustainable design. *International Journal of Sustainable Design*, 2 (3), pp. 265–282.
- Van Nes, N. & Cramer, J. (2005). Influencing product lifetime through product design. *Business Strategy and the Environment*, 14 (5), pp. 286–299.
- Vezzoli, C. A., Manzini, E. (2008). *Design for environmental sustainability*. Springer Science & Business Media, London.
- Wiens, K. (2015). The right to repair [soapbox]. *IEEE Consumer Electronics Magazine*, 4 (4), pp. 123-135.