The Development of a Cartridge for a Reusable Deodorant Appliance (Public Summary)

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An increase in the importance of personal hygiene and a growing preference for (sustainable) chemical-free products cause a growing global market share of organic deodorants. Most conventional deodorant sprays contain propellants and solvents that do not fit the picture of this increasing wish for chemical-free deodorants. Pump sprays that do not need the propellants have a wet and unpleasant feeling. A partner of the client of this thesis developed a nozzle that can create a spray that does not feel wet, without using any propellants or alcohol. Together with the client of this thesis, they are developing a reusable appliance that can spray deodorant through this nozzle without using propellants or alcohol. This will allow both companies to profit from the growing market share of organic deodorants and make the deodorant market more sustainable.

This thesis focusses on the part where the user can put in new deodorant in the reusable device. It aims to answer the question: How can a cartridge for a reusable deodorant appliance be designed?

The design research starts with a preliminary phase in which the user, the market, system architecture and the requirements of the to be designed product are defined. These form the basis of the design phase that follows. To add structure to this creative phase, the requirements set at the end of the preliminary phase are translated into functions that the product should feature to meet the requirements. When the complexity of the internal functions of the product became clear, it was decided to focus on the internal requirements. The internal requirements were worked out into a *functional model* that represents the functional characteristics of the product. The goal of this *functional model* was to validate the first *proof of principle* of the thesis. After the *functional model* succeeded to verify the first *proof of principle*, the external functions worked out during the early stages of the design phase could be consulted again to validate the second *proof of principle*. The *functional prototype* in this thesis does not only represents the functional characteristics of the product but also aims to look and feel like the real product. This *functional prototype* concluded the design phase by validating the second *proof of principle* of the thesis.

Although the goal of this thesis is to design a 'deodorant package' during the preliminary phase, 'deodorant users' cannot be considered as the users for this new deodorant package. Although the desire for an environmentally friendly deodorant is a typical phenomenon for a product that is in the 'awareness phase', introducing a novel product to the market places it in the first 'performance phase'. This phase has different users that can be called 'innovators' (Eger et al., 2013). *"Innovators have ample financial means, do not mind living with uncertainties, do not mind not having the guarantee of a good performance of their innovation and are on the lookout for novel, cutting-edge challenges."* (Eger et al., 2013). These innovators can be considered as the users for the product that this is developed in this thesis.

After a product is introduced to the market, it will go through following phases. This thesis proofs this on the basis of a real-life example of the Dolce Gusto coffee machine. This example can serve as a ‘roadmap’ for the future developments of the to be designed product.

The recommendation for the client is to design for ‘innovators’ that aspire to novel products that they ‘like to have’. The real life example of the Dolce Gusto machine can serve as a roadmap for the design of a successful and established cartridge-based system.

References:

Eger, A., Bonnema, M., Lutters, E., & van der Voort, M. (2013). *Product Design*. Eleven International Publishing.