The future of secondary packaging in e-commerce

A forecasting method to aid in designing solutions for future challenges

by T.G.J. Goudsblom \\ University of Twente // Industrial Design Engineering \\ August 2020

This Bachelor Assignment was commissioned by the Chair of Product-Market Relations at the faculty of Engineering Technology at the University of Twente. With the undeniable growth of e-commerce and the sizable negative environmental impact created by secondary packaging in this field, the client wants to explore the future of secondary packaging for e-commerce. As designers have to think more about the social consequences of their work and how design-decisions they take today will unfold in the future, it is relevant to do this exploration. This leads up to the following main research question: 'how can a forecasting method be (re)developed to aid the design of secondary packaging solutions in e-commerce for future challenges?'

The literature research executed was focussed on two fields: forecasting and secondary packaging for e-commerce. The practice of forecasting helps to explore what could happen in the future and identify new opportunities and challenges. Different forecasting methods are available, of which Envisioning methods and Qualitative techniques are most often used for designerly purposes. These forecasting methods are applied in the preliminary phase of the design process. Within the literature on secondary packaging for e-commerce there is a high focus on the following packaging functions: protect product, communication / inform or carry information, provide consumer and logistic convenience and contain products. When e-commerce is compared to Brick & Mortar, a change in the role of packaging can be seen. Secondary packaging is needed as primary packaging is most often not designed for its purpose in e-commerce and to handle the exposures of the packaging journey.

Through the reviewed literature and research on criteria for design methods, the requirements for the forecasting method to be designed have been set. The requirements focus on three aspects: usability, knowledge and communication.

The forecasting method that has been designed for this thesis is named the Bullet Train Model. The method facilitates exploring the future and use the insights obtained to aid or prepare the design of secondary packaging solutions in e-commerce for future challenges. To explain the use of the method, the Bullet Train Model Canvas has been designed in addition to the model, which describes in detail the forecasting process. The use of the method has been shown in a design iteration.

To test the method, a user test has been conducted where participants executed the Bullet Train Model by following a small assignment. The results have been used to improve and assess the method.

In conclusion, the Bullet Train Model can be used as a structural approach for forecasting to aid in designing secondary packaging solutions in e-commerce for tomorrow's challenges. Nevertheless, to fully integrate the method into secondary packaging for e-commerce specifically, more research is required. However, the method does propose applications beyond this field.

For further development, it is recommended to in-depth test and validate the method designed through running case studies at organizations closely involved with secondary packaging for e-commerce. Next to this, more (literature) research and conducting interviews with experts in the fields of forecasting and secondary packaging for e-commerce is recommended. To broaden the research, it should be investigated how the research can be implemented in fields outside of packaging for e-commerce and within design research. To reduce the biases of the method and increase the quality of the trend analysis, it is recommended to research how artificial-intelligence, machine learning and systematic technological assessment can be incorporated into the method.