THE DESIGN AND EVALUATION OF USER-INTERFACE PROTOTYPES FOR A NEXT-GENERATION DISHWASHER MOBILE APPLICATION

ANALYZING THE ABILITY OF DISHWASHER MANUFACTURERS TO UNDERSTAND AND ACCOMMODATE CONSUMER PERSPECTIVES

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SOCIOTECHNICAL SYNTHESIS

Dishwashers have become an integral part of most American households and with the advent of technology, there is an opportunity to integrate smart features such as Wi-Fi connectivity, new user interfaces, and autonomous operation. The technical project aims to provide research on how the smart technologies may change the paradigm in which users interact with their dishwashers and present an initial mobile prototype based on collected data to improve the dishwasher experience. There are two primary phases for the technical project: phase 1 is discovery and research and phase 2 is concept development. Similarly, the science, technology, and society (STS) topic highlights the capabilities and analyzes the failures of major dishwasher companies to accommodate consumer necessities. The technical and STS topics are tightly coupled because the STS research provides critical information about consumer demands and the challenges that manufacturers face when addressing these requests; this information will support the design of the next-generation dishwasher in the technical project.

Smart technologies have been rapidly emerging and pervading throughout a multitude of industries such as the connected home device industry, and increasingly, the household appliance industry. For phase 1, the research included gathering information about user experiences through 31 semi-structured interviews, seven daily-use diary studies, and 164 questionnaires. For phase 2, prototype designs were developed in Figma, a web-based wireframing tool, based on the findings from phase one, and this prototype was evaluated with ten potential users.

The results thus far have shown that users are frustrated with the lack of transparency and understanding of all the functions available with their dishwasher, but have positively responded to using a mobile application to improve their understanding of their dishwasher. Overall, the

results suggest that smart technologies have the potential to revolutionize the dishwasher experience; however, an effective user interface is critical towards that goal.

The initial STS research question focused on investigating the transformation of functionality from the first dishwasher developed to modern dishwashers. Throughout the research process, there appeared to be an increasing number of modern dishwasher capabilities, but a minimal shift in user behavior to use these new functions. This observation prompted a shift in the focus of the STS topic to examine consumer perceptions of dishwashers and the ability of dishwasher manufacturers to understand consumers. A Social Construction of Technology (SCOT) approach is used to analyze the patterns of consumer expectations and obtain a comprehensive understanding of the connections between the relevant social groups that interact with the dishwasher production and design process. The interaction between manufacturers and consumers was identified through various resources such as reviewing previous research studies, information from top-rated dishwasher companies, and consumer consumption statistics from United States governmental organizations.

Various consumer opinion and usage studies revealed that there is a drastic divergence between current consumer demands and dishwasher functionalities. An investigation of multiple aspects of the consumer market is necessary for the dishwasher industry to be a successful competitor within the expanding market of smart technology, but there needs to be a focus addressing the misconceptions that consumers uphold about the dishwasher appliance. Monitoring online reviews will provide manufacturers with a better understanding of the consumer's technological perspective and enhancing technological transparency can gradually decrease the usage disparity between consumers and dishwashers.

Smart technologies, like sensors, Wi-Fi connectivity, and autonomous features, can change the paradigm in which users interact with dishwashers. To ensure the longevity of the dishwasher industry they must provide the features and experience that address current problems in the dishwashing process. By determining how to persuade consumers to adopt more efficient behaviors, the dishwasher industry may experience higher rates of consumer satisfaction and an increase in market sales.

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