Design Research for Integrated User Experience of SmartTV

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論　文　内　容　の　要　旨

This research aimed to develop a smartTV interface. SmartTV is a fusion of traditional TV and digital technology, and it became the basis for qualitative change as well as a quantitative change of contents that can be enjoyed on TV. As a result, people's content acceptance behavior changed. Now that users can use not only video content but also various applications on TV, they are entering an environment where it is possible to continue the experience of using TV while going through multiple platforms. In this research, it is believed that research is necessary to create a convenient environment for users under the premise that sustainable development for smartTV is possible, and for this purpose, it is indispensable to develop an interface that connects technology and people thinking. Therefore, by looking at the existing research on TV, it was analyzed the aspect that TV as media changed and the manner in which contents were accepted change.

15 models out of smart televisions were selected, which were developed into various forms, and case analysis was conducted. Cases were analyzed based on the characteristics and composition of content, the information design method, and interface, the method of manipulating them and the market strategy. It was found that each manufacturer had various strategies, and it was not possible to find a common interface grammar. This was a counterbalance that the expected role for smartTV was not completely defined for the user.

Also, it was devised how actual users were using smart TVs. Due to the diversity of users, the whole users were divided and defined into six segments and were recruited belonged to each segment. After that, observation survey and usability test based on task were conducted. As a result, it was found that many users still maintained the conventional TV watching habits, and it was also discovered that the awareness of the function of smart television was very low and did not have any special expectation.

As a result, it was concluded that the mental model for smartTV has not yet been defined for the user, and comfortable and convenient interface development was indispensable for that purpose.

Based on the contents of the research, six strategies for interface design was derived. First, the information of the mixed contents of the video and the application is equalized to avoid the users' cognitive overload. Second, the TV interface adopts the four-way

information structure, which is a universal spatial perception system of humankind. Third, the characteristics of the TV operated by the remote controller are mapped on the interface, so that the information structure and the operation method of the remote controller coincide with each other. Fourth, in terms of manipulating, traditional methods have to be kept, at the same time, new technology has to be introduced to cope with future development. Fifth, customization corresponding to various user and usage context is enabled. Sixth, there has to be a solution for the increase of contents in the future.

According to these strategies, an on-screen menu that is extended in four directions is mapped to the four directional buttons of the remote controller, thereby a new interface that can be easily recognized and manipulated. The prototype for the interface and the remote controller was used to evaluate the usability for the experts. As a result, there were positive opinions about easy recognition and easy learning. In the future, it is required to respond to the increasing amount of content actively, and it is suggested that clear design guideline for controlling the quality of design is required due to characteristics of the open platform.

Previous studies related to smartTV have mostly focused on changes in the characteristics of TV as a media, but also on the macro perspective on the acceptable behavior of viewers. Although the overall need for interfaces is recognized, research on the development of interfaces that are practically usable has been inadequate. This study has significance in suggesting interfaces that can be used as well as information systems.