Product-Service System Design of Personalized Portable Air Purifier

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Abstract

The air pollution by the fine dust has become seriously worse recently. It has been continuously reported that air pollutants such as the fine dust and the ultra-fine dust are one of the main cause of angina pectoris, stroke and chronic obstructive pulmonary disease. Therefore wearing a fine dust mask outside become common more and more for health. However, since most of this kind of masks can filter the air pollutants only when inhaling in a very small area and can never influence air condition in a space, it cannot be a fundamental solution. In addition, it does not indicate the safety grade at all so users do not trust its function and effect.

The purpose of this study is to suggest a personalized air purifier instead of the mask which is able to protect users actively against the fine dust and the ultra-fine dust through integrated design approach of products and services considering customers' experience. A Product-Service System (PSS) approach is applied as a perspective to solve the problems of existing the fine dust mask which were mentioned above. An air purifier system is designed through empirical research for reframing product and service role to minimize gap between the expectation and experience of customer.

In order to overcome the inconvenience of carrying the air purifier and improve its usability, this study suggests other usages of air purifiers and develops a new design concept by integrating a headphone. As a patent on a headphone type air purifier which can prevent inflow of the fine dust without wearing the mask by specifying a design concept which the researchers of this paper developed was accepted in 1st April 2019, it seems that a certain degree of its suitability and necessity is admitted.

The headphone-typed air purifier is generally used to listen to the music but it can be functioned as the air purifier to prevent the fine dust without wearing a mask while listening to the music. Additionally, it is designed to measure the minute change of fine dust level as the user's movement because this design concept concerns about providing a personalized air purifier which purify the air properly by setting the fine dust warning according to personalized preference.

Although deeper study based on the suggested design concept and other empirical approaches need to be accomplished, this study can be thought as a new PSS Design Development Case of application to emotional customer expectation and experience modeling. Therefore, this study can be considered as a new approach that integrated service design of the portable air purifier.

Keywords: *Integrated Service Design, Customer Experience, Expectation, Portable, Air Purifier Design*

References

[1] [1] Atkinson & Birch, 1970. The Dynamics of Action. John Wiley & Sons, p.11

[2] [2] Eok Kim, Ki-Young Nam and Kyung-Won Chung, 2014. Criteria for Customer Activity-Driven PSS Design. In: 19th DMI Academic Design Management Conference, p.2102

[3] [3] Eok Kim, Kun-Pyo LEE and Ki-Young Nam, 2016. Activity-Driven PSS Design Method based on Emotional Customer Activity Modeling Integrating Expectation and Experience Factors. In: International Journal of Affective Engineering Vol.15 No.3 pp.265-277

[4] [4] Park, Y., Geum, Y., & Lee, H., 2010. Toward Integration of Products and Services: Taxonomy and Typology. In: Journal of Engineering and Technology Management 29(4), pp.528-545

Biography

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