How to connect the present to the future for design?

Comparative study of design method and forecasting method

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Abstract: Future is known as the projection of present. Design is a tool for shaping the future and consequently result of the design activity is for future prospective. As a result of design activity, there are many future scenarios, products and services. Currently, most of design methods are dealing with the future as a projection of the present. Namely the existing current design methods are studying current users in various ways and projecting the future based on current users' needs. Designers predict future needs based on current context when they are creating future products or services. In other words, the current design process is not capable of connecting the present to the future suitability.

The aim of this study is to connect the gap between the present and future by forecasting the future through a scientific and objective way; not just by predicting what might happen in the future.

For that purpose, existing methods in the design field were reviewed in order to forecast the future as a lead user approach, empathic design method and generative techniques. Forecasting method-scenario, Delphi technique, trend extrapolation and so on- in futurology also reviewed. As a first step, analysis was conducted by three perspectives; (1) key concept of methods (2) source of information and (3) pros. and cons. of method. Second, frameworks were clarified as the condition for the future design; what we should know in order to design future objects.

As a result of this study, suitable approaches for the future design field were defined through analyzing methods within the framework to see how it was compatible with the features of the design can be expected.

Key words: ***Future, Design Method, Forecasting Method***

1. Background and approach

Design activity is shaping the future (Buijs, Roozenburg and Eekels,2003). However, design methods that are currently used do not cover future-contexts (Gabrielli and Zoels, 2003 / Leonard and Rayport,1997 / Sleewijk, Stappers, Lugt and Sanders, 2005). And the success of design results for future things depends on the design teams capability. (Antti Salovaara, 2005). These factors increase the risk of business and opportunity costs (Choi,

2004). In other words, to reduce the risk and opportunity cost of the company, it is necessary to identify suitable approaches for the future.

Futurology is an exemplary discipline for forecasting the future and to make a systematic approach. The main purpose of future methodology is to systematically explore, create, and test both possible and desirable futures to improve decisions. This research will explore the possibilities of design whether it could cover the future realm by comparing futurology and design methods.

2. Review of design methods

The user centered design map drawn by Steen(2007) focuses on future situations. From this map, methods focused on future situation- lead user approach, empathic design, and co-design(generative techniques) were selected.

Lead User Approach (Eric von Hippel, 2005 / Patricia Seybold, 2006) defines that the users who lead the trend are currently experiencing the tomorrow's needs and that the concept can be developed by these users.

This approach targeted for trend conscious users can quickly respond to the market. However, it is not yet clear whether lead users can represent and speak for the majority of people who will actually use the goods and services that are being designed and developed.

Empathic Design (Dorothy and Jeffrey, 1997) is a set of techniques, which can identify needs that customers themselves may not recognize. The foundation of Empathic Design is observation. This method gets insight from watching people using products and services in both their natural environment and context. However it is hard to say that it can cover the future realm

Generative Techniques (Sanders, 1992) is an idea that the user can cover the dream arena through tacit knowledge and latent needs. Making something based on People's Creativity can get design inspirations by generating their Tacit knowledge and Latent needs.

This method can apply many user demands (request, opinion) by their active participation. But even though these tactic knowledge and latent needs are from the users dream there are still possibilities that their needs can be changed due to present and future environmental changes because users are influenced by the environment (Faiola and Matei , 2002).

3. Review of forecasting methods

EU report (Popper, 2007) is used for selecting foresight methods. In this report, frequency of use is investigated. Genius forecasting, scenario, futures wheel, simulation techniques, future history, trend extrapolation, decision tree, system analysis and Delphi technique are the methods reviewed in the report. In this paper, major methods - Scenario, Delphi technique and trend extrapolation- are described.

Scenario refers to a wide range of approaches involving the construction and use of scenarios – more or less systematic and internally consistent visions of plausible future states of affairs. This method has advantages since it is focusing on socio-cultural factor changes and it could suggest an alternative future. It can also help the organization to rapidly adapt to the environment when external environmental changes made. However, due to

the lack of concreteness, decision making and practicing can be difficult. Also continuously emphasizing on the desirable image of the future could overlook feasible future society scenarios.

The Delphi technique is a systematic, interactive forecasting method, which relies on a panel of independent experts.

This method can approach problems objectively, which require decision making and also statistically show reliable contents that is hard to calculate. However, the excessive use of time, exclusion of the minorities opinion and unifying the opinions from the multilevel process can decline the creative ideas.

Trend Extrapolation is among the longest-established tools of forecasting. The method provides a rough idea of how past and present developments may look in the future – assuming, to some extent, that the future is a kind of continuation of the past. This method is based on a series of data, which can easily analyze the meaning of future development trend and conditions. However, the accuracy of the prediction can drop as the prediction time gets longer.

After reviewing these methods some categories are found. First type is the creation of future context such as simulation techniques. Researchers make certain situations and user simulate it. From these simulations, future needs are extracted. Second type is the study of past cases- future history, trend extrapolation, and scenario. Good examples of innovation or need can be an innovation factor and its trend is can be applied to new design. Third type is the transition of current needs to future needs by some framework or methods such as the decision tree or system analysis. Forth type is checking the user's preference of future situations.

4. Conclusion

Figure 1 shows the area of future design type. Reviewed design methods can cover new category product development or product innovation based on current context or needs. However the area of high uncertainty is not covered. On the other hand, forecasting methods focused on high level of socio-cultural factors are expert driven. And these methods can image the possible future in the high uncertainty area. Four types of approach for the high uncertainty area are creation of future context, study of past cases, transition of current needs to future needs and check user's preference of future situation.

Figure 1. Area of design types

Because design methods can not cover the future context, first type-creation of future context- is the most suitable approach. By creating future context, researchers can observe the users in future context and get insights.

5. Limitation and future work

All reviewed design methods in this paper are in the user-centered design field. So these methods are focused on the user. However, other methods such as identifying opportunities from technology or social trend should be reviewed further. Furthermore the concept of future-oriented design is not clear. Therefore future-oriented design should be defined including its attribute and related factors in the further study.

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