

Kansei Engineering and Self Determination Theory (SDT) for Sustainable Service Design: An Empirical Study on Coworking Space

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Abstract

This study introduces more updated Kansei Engineering (KE) framework and application taken into account more sustainable service design which is co-working space. The update of KE brings along the Self Determination Theory (SDT) in investigating Kansei (emotional needs) and service attributes as it promotes more individual-based approach in terms of customer basic psychological needs. More individual-based psychological needs refer to more emotional satisfaction. An application framework followed by an illustrative case study in coworking space setting and discussion is provided. Practical implication is attached as well.

Keywords

Kansei Engineering, Self Determination Theory, coworking space, service quality

1. Introduction

1.1 Background and Motivation

Kansei Engineering as a prominent methodology for translating customer emotions and feelings (known as Kansei) into service attributes has been criticized due to its validity. One of most prominent concerns was that whether Kansei words and service attributes have been truly representative. Kansei words have been questioned whether they were really more individualistic as they were emotion-based stuffs. Not only the Kansei words, the service attributes have been contributed as well, since they had correlated each other.

More individualistic and emotionally services may refer to Self Determination Theory (SDT) (Deci & Ryan, 1985). This theory allows individual to make choices and manage their preferences. Self-determination gives individual flexibility to control his or her choices of life setting. People will feel more comfortable and motivated once they know what they do will have significant impact.

According to recent study by Hartono (2020), KE study should cover sustainable service design and development. The finding provides practical guideline for service company in continuously carrying out service improvement considering innovative ideas, capacity constraint and emotional satisfaction. It is hoped that less contradictory and less experienced-based solution dependency are expected. Also, taking into account more complex service settings in the future, culture-based and more understandable human basic psychological needs are needed. More complex and labor-intensive service setting are expected for future study. Other than that, more sustainable service in terms of cost-efficient and productive activities are promoted.

Hence, this study took coworking space service setting as a case study. It is a new business trend which helps a need of a flexible office with comfort. Coworking spaces offer social interaction which is networking opportunities, and human-to-human interaction in place of the isolation of working strictly from home. They promote flexibility in terms of working time (e.g., we want to work during the night tomorrow, given that we are working during the day for

today). During this pandemic since 2020 until now, many people do working from home. However, sometimes it creates a sense of isolation. Coworking spaces offer an alternative of feeling of connection or social life. Surely, for now strict health protocol should be implemented.

1.2 Objectives

This study complements the previous study by Hartono (2020) by offering an applicative framework of KE incorporating Self Determination Theory (SDT) implemented in coworking space services as a new trend for a shared space creating a sense of community. Though coworking spaces are less expensive and promoting use flexibility in term of daily or hourly use, comfort and emotional satisfaction should be promoted as well.

2. Brief Literature Review

2.1. Kansei and Kansei Engineering in services

Kansei is the core essence for service design and development in the Kansei Engineering (KE) methodology. Kansei can be derived from the emotional and latent needs of customer, sometimes it refers to the unspoken needs of customer. The challenge for Kansei is that difficulty to address and interpret valid and reliable emotional needs of customer and to provide truthful Kansei. It has been refined by Hartono (2020) by proposing “the true meaning of Kansei”. However, different service setting and context may contribute to the debate of the appropriate and representative of Kansei. More complete review on Kansei and recent study of Kansei Engineering in services are available in Hartono & Tan (2011) and Hartono (2020).

In KE methodology for service design and development, Kansei is positioned as a function of perceived service quality. Following the first and remarkable KE framework and study for physical product design and development (Nagamachi, 1995; Schütte et al., 2004), the KE methodology has been developed, modified, and refined for service design taking into account the current issues of the dynamics of emotional needs, methods, and trends such as fuzziness, sustainability, robustness, and less-experienced idea dependency (see Hartono & Tan, 2011; Hartono et al., 2017; Hartono, 2020).

Regarding the prospective future research on Kansei, a study by Coronado et al. (2020) has provided new concept and methodology of KE. It is found that KE is appropriate paradigm for the robot design and development. This KE methodology has a potential to explore, identify and structure the design of social and service robots taken into account customer needs and desires.

Apart from that, by considering social aspect and more individualistic-based design for service, KE is suitable methodology to be adopted as it is dealing with human emotion. Moreover, more individual design living in a social world boosted by more flexible life is a new trend. It seems that humans need a balance between individual and social satisfaction.

2.2. Self Determination Theory (SDT)

In the SDT, people need to experience three dimensions namely autonomy, relatedness, and competence (ARC) in order to obtain psychological growth (Deci & Ryan, 1985). Autonomy discusses that people have their own control to behaviours and goals in their life, and it leads to self-determined. Competence describes the condition when people take actions related to their goals once they are surely having the sufficient skills. Relatedness is referred to a sense of belonging and engagement with others.

Study by Teixeira et al. (2012) provides the evidence of how the physical activity and strength are fostered by the understanding of internal value of SDT. Once individuals know what they want to do and execute it, then it will boost their motivation and lead to physical strength and satisfaction.

Regarding the Kansei Engineering (KE) methodology, the SDT concept through the fulfilment of ARC dimensions identification of customer Kansei at the early stage of is proposed to make the current KE methodology become more “down-to-earth”. It is adjusted to be more individual and social conscious at the same time. It tries to cover possible manifestation of human needs in today’s trend and flexible service activity setting.

3. Methods and Applicative Framework of KE-SDT in Coworking Space Services

Referring to the research gap and potential of KE application in services, this application framework of Kansei Engineering with Self Determination Theory (SDT) is proposed, as shown in Figure 1. The main contribution is that the second step after the choice of service domain, namely, identification of attributes and needs based on more individual preferences. Here, the SDT is inserted to promote more basic psychological needs of human or customer, which is to cover both more individual and social attributes in service design. More specifically, coworking space services is chosen as it promotes both social and individual psychology need and satisfaction.

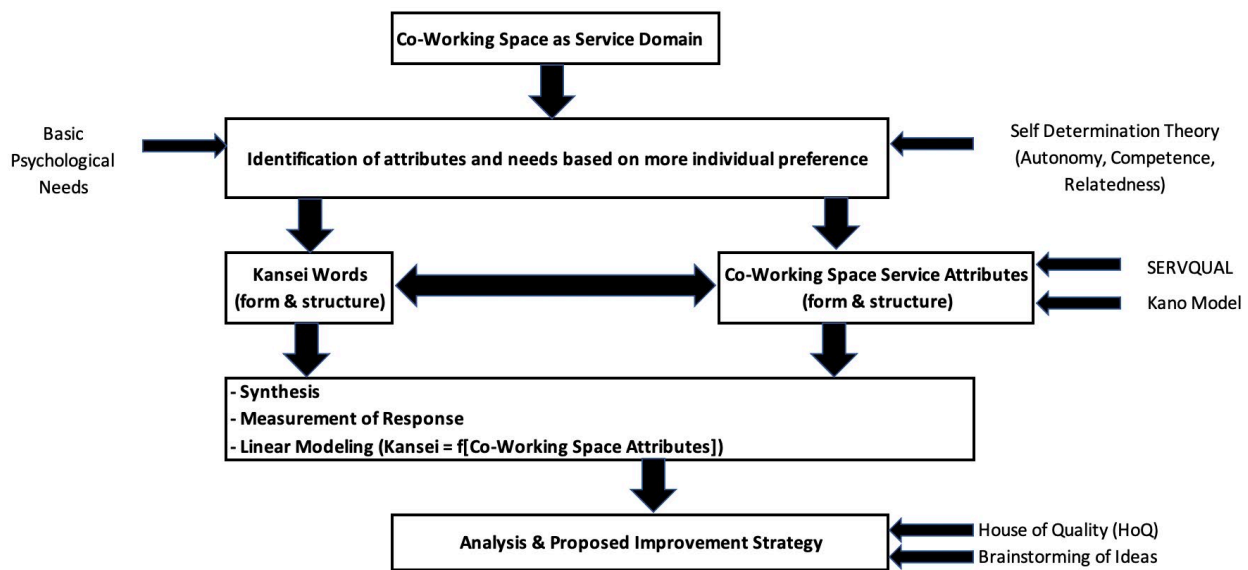


Figure 1. Application Framework of Kansei Engineering – SDT for Coworking Space Services

Afterwards, the general steps of KE methodology for service design and development will follow, i.e., form and structure of both affective/Kansei words and coworking space service attributes, measurement of Kansei and coworking space service response, and linear modelling. Analysis and proposed improvement strategy will wrap up the complete methodology. Details of step by step general KE methodology are provided in Hartono & Tan (2011), Hartono et al. (2017), and Hartono (2020).

4. Results and Discussion

A preliminary empirical study involving 40 respondents has been conducted. It took a case study at a popular coworking space office and service in Indonesia. First step, through purposive sampling using online survey, the basic psychological needs of the customers were exploited and identified. It was found and finalized 19 coworking space service attributes, and refined to be 12 attributes after Kano’s categorization filtering process. The Kano’s categorization focussed on both attractive [A] and one-dimensional [O] performance. Kano’s attractive [A] is something not expected by the customer, but if it is fulfilled then the customer will be delighted. It refers to the unspoken needs of customer. Kano’s one-dimensional [O] is linearly-correlated level of fulfilment and satisfaction. It means that more fulfilment of capacity for the attributes will increase the satisfaction level.

Apart from service attributes, the Kansei words identified and refined were 8 units, i.e., comfortable, interesting, clean, flexible, bright, satisfied, caring, and affordable. The final service attributes with A and O Kano category and low satisfaction score which had significant correlation with Kansei are provided in Table 1.

Table 1. Total Weight of Critical Coworking Space Attributes

Coworking service attributes	Satisf. Score	Kano Category & Weight		Kansei words & Score	Total Weight*
T1. The room is clean	0.95	O	2	-	1.9
T2. The toilet is clean	2.54	O	2	Clean (4.20)	21.336
T3. The lighting is sufficient	1.37	O	2	Bright (4.15)	11.371
T4. The temperature is comfortable	1.16	O	2	-	2.32
T5. The interior design is interesting	1.24	A	4	-	4.96
T6. Food station is available	1.00	A	4	-	4.00
R8. The price for food is affordable	0.83	O	2	-	1.66
R10. Refreshment facility is available	1.04	A	4	Comfortable (4.35), Interesting (4.2)	35.568
R11. The internet access is reliable	2.42	O	2	Satisfied (4.08)	19.747
R12. Ease of collaboration among communities	0.67	A	4	Flexible (4.15)	11.122
RS14. The receptionist is proactive	0.99	O	2	Caring (3.95)	7.821
RS15. The information is up to date	0.86	A	4	-	3.44

Note: * = |satisf score| x Kano weight x number of Kansei related x average of Kansei score

Through the Pareto law, there were 6 service attributes chosen as priority for improvement. They were attributes with code R10, T2, R11, T3, R12, and RS14. It seems that the most critical coworking service attribute was R10 (the refreshment facility is available). The refreshment facility here was to provide vending machine containing snacks, drinks, utensils, and other refreshing amenities. Surely, in coworking space, people need to enjoy their individual needs (e.g., eating, drinking, working with their laptop and earphone) and also networking for social life; the provision of refreshment facility is a must to support this lifestyle. They feel like staying at their office with full of customization.

5. Conclusion and Further Research

This study is just a preliminary study, providing a refinement of KE methodology by introducing Self Determination Theory (SDT) approach in better understanding what basic psychological needs of human related to Kansei/emotional needs. Coworking space service was chosen as an empirical study as it was quite related to both individual and social life, which is stressed by SDT. This study was very limited in terms of low sample size, thus the generalisation of proposed framework was challenging. It needs more comprehensive data sample and diverse service settings or domains for future KE-SDT-based studies.

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References

- Coronado, E., Venture, G., and Yamanobe, N., Applying Kansei/Affective Engineering Methodologies in the Design of Social and Service Robots: A Systematic Review, *International Journal of Social Robotics*, 2020
- Deci, E., and Ryan, R.M., *Intrinsic Motivation and Self-Determination in Human Behaviour*, 1st Edition, Springer, US, 1985
- Hartono, M. and Tan, K.C., How the Kano model contributes to Kansei engineering in services, *Ergonomics*, vol. 54 no. 11, pp. 987–1004, 2011
- Hartono, M., Santoso, A., and Prayogo, D.N., How Kansei Engineering, Kano and QFD can improve logistics services, *International Journal of Technology*, vol. 8, no. 6, pp. 1070–1081, 2017

Hartono, M., The modified Kansei Engineering-based application for sustainable service design, *International Journal of Industrial Ergonomics*, vol. 79, 2020

Schütte, S., Eklund, J., Axelsson, J.R.C., and Nagamachi, M., Concepts, methods, and tools in Kansei engineering, *Theoretical Issues of Ergonomics Science*, vol. 5, pp. 214–232, 2004

Teixeira, P.J., Carraca, E.V., Markland, D., Silva, M.N., and Ryan, R.M., Exercise, physical activity, and self-determination theory: A systematic review, *International Journal of Behavioral Nutrition and Physical Activity*, vol. 9, no. 78, 2012

Biography

Markus Hartono is a fulltime staff and Associate Professor at the Department of Industrial Engineering, University of Surabaya. He's got his Ph.D. majoring Industrial & Systems Engineering from National University of Singapore in year 2012. His main research interests are in anthropometry, Kansei Engineering, and service design and innovation. He received many awards and recognitions in national and international levels such as NUS Graduate Research Scholarships 2008, Best Paper Award of Quality in Research (QiR) 2015 & 2017, Outstanding Lecturer Award 2015, Gold Medal for Best Presenter International Mechanical and Industrial Engineering Conference 2018 (IMIEC 2018). He served as a member of Technical Committee in Affective Design – International Ergonomics Association (IEA).