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Optimizing the Adoption Process in Public Animal Shelters through Service Design Thinking

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Optimizing the Adoption Process in Public Animal Shelters through Service Design Thinking

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Abstract: This study employs holistic service design thinking to analyze and optimize the existing services of a public animal shelter and improves adoption experiences at the animal shelter using co-creation workshops. The proposed service design will provide adopters with proper assistance while reducing the burden on staff members. The finding of this study including three aspects: first, this study presents critical aspects when optimizing services in public adoption agencies through the case. Second, in service cases with complex stakeholders, co-creation workshops help effectively combine the needs and perspectives of all parties. Finally, service design testing integrated with stakeholders' opinions helped enhance the recognition of the design concept and the probability of implementation. The findings can help increase the efficiency of communication between animal shelters and the public and further enhance the shelter's reputation and adoption rate. Furthermore, it will increase our understanding of service design.

Keywords: service design; co-creation; public animal shelter; adoption process

1. Introduction

In 2015, Taiwan became the second country in Asia to implement the “no-kill” policy, thus establishing an important milestone in stray animal protection (CoA, 2017). However, the current number of stray dogs in Taiwan is approximately 147,000, whereas the maximum capacity of the public shelters is about 7,000 stray animals (CoA, 2018). These conditions put immense pressure on an already burdened staff. For example, the researchers worked with a shelter in which each staff member not only had to care for an average of 20 dogs but also were tasked with adoption-related administrative work. Stray animal education for adopters can be time-consuming and difficult to achieve even with the help of volunteers. As a result, in the studied animal shelter, 47% of adopters returned their pets and the adoption rate seemed to stagnate.

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Therefore, this study aims to conduct an in-depth analysis to determine the difficulties and key touch points of the adoption process for stray animals and accordingly, improve the process using service design thinking. The proposed service design will provide adopters with proper assistance while reducing the burden on staff members. The findings can help increase the efficiency of communication between animal shelters and the public and further enhance the shelter's reputation and adoption rate. Importantly, it will help optimize the adoption process to ensure that stray animals find a permanent home and are not re-abandoned.

1.1 Research Objectives

This research focuses on optimizing the adoption experience and process through service design with three main objectives. First is to provide useful adoption assistance and improve the adoption rate at the animal shelter. Second is to establish an effective matching mechanism and convey full information to the adopter to reduce the possibility of animal re-abandonment. Finally, it aims to re-aggregate the staffs' adoption goals to ensure consistent services, optimize the staff's workflow, and enhance the animal shelter's reputation and adopters' overall adoption experience.

These objectives can be narrowed down to the following:

1. Use a service design process to explore adopter's pain points and needs in the adoption process;
2. Explore how to use the co-creation workshop to integrate staff experience to create a conceptual design;
3. Discuss the role of service design thinking in improving adoption experiences.

2. Background

2.1 Service design

Service design is a cross-disciplinary approach that combines methods and tools from various areas (Stickdorn & Schneider, 2011). Moritz (2005) defines service design as an emerging academic field with holistic, multidisciplinary, and integrative characteristics and illustrates the five principles of a service: user-centered, co-creative, sequencing, evidencing and holistic. Similarly, Martin and Horne (1993) interpret service design as a process beginning with conceptualization and ending in realization. A service design must reflect a user's opinion, provide a unique service, integrate expertise from various disciplines, be interactive, and keep improving.

Mager and Sung (2011) suggest that service design not only creates comprehensive customer experiences but also results in efficient and effective services from an organizational perspective. In addition to customers, service experiences include service providers and any relevant stakeholder in the experience network (Helkkula, 2011).

In sum, service experiences are created through interactions among multiple participants (i.e., individuals and organizations) and direct/indirect activities involving the participants are the main platform for experience co-creation (Helkkula et al., 2012). A service journey has numerous stakeholders and it is necessary to integrate the benefits and needs of all parties to create a comprehensive service concept through value co-creation. This case study focuses on co-creation by stakeholders and its key role in service design.

2.2 Kano model

Parasuraman, Zeithaml, and Berry's (1988) service quality scale (SERVQUAL) is widely used to measure service quality. Fick and Ritchie (1991), however, indicate that SERVQUAL does not apply to service experiences including overall factors. The relationship between the performance of quality attributes and customer satisfaction is not necessarily linear, that is, the impact on satisfaction varies by quality attribute (Anderson & Sullivan, 1993).

The quality attributes of a product or service are determined by customers. Thus, Kano, Seraku, Takahashi, & Tsuji (1984) propose a model that uses positive and negative questions and compare the responses to classify quality attributes (Matzler & Hinterhuber, 1998; Schvaneveldt, Enkawa, & Miyakawa, 1991). The two-dimensional quality model serves as a reference for decision-making regarding resource investment. Figure 1 shows the five quality attributes of the Kano model with coordinates.

The Kano model (Kano et al., 1984) can be used to effectively evaluate existing or newly developed products because it elucidates customers' needs and expectations. In addition, it provides critical inputs when assigning weight to factors during the development stage. Therefore, this study employs Kano's model to conduct a preliminary analysis on the service concepts.

Figure 1 Kano two-dimensional quality model.

3. Method

Drawing on the British Design Council's (2005) double-diamond design process, this study integrates the design of pre-, core-, and post-service encounters and defines the service design process as three main phases. Figure 2 illustrates the overall implementation.

1. **Discovery and definition:** This phase involves the organization of the initial adoption process to gain an in-depth understanding of the difficulties faced in the animal shelter and of adopters' needs through observation, interviews, and contextual Inquiry. Then, the issues are analyzed and integrated and the insights are summarized from a service design perspective.
2. **Development and delivery loop:** Using insights from the previous phase, the designers propose an initial design concept and create a prototype film. The prototype film is introduced in the co-creation workshop for a new round of collaborative design with the animal shelter staff. The iterative concept is then integrated and designed on the basis of workshop insights from different stakeholders.
3. **Design concept testing:** The new service design concept is tested using the Kano model and as per the staff and adopters' preferences and opinions regarding feasibility. Finally, the implementation order for the new service concepts is proposed.

Figure 2 Research method and process.

4. Case of Animal Adoption

This section comprehensively discusses the three phases of service optimization for the adoption process at the animal shelter and highlights the insights.

4.1 Discovery and Definition

This phase involves identifying the difficulties faced by service providers and the needs of service recipients during the adoption process. More specifically, first-hand observations of adopters' behavioral patterns and the adoption process as well as in-depth interviews with the staff and those with prior adoption experience in the animal shelter are performed. The findings help understand a visitor or adopter's motivation, the environment of the animal shelter, and staff–visitor interactions. The improvements in and optimization of key touch points is the basis for design and development.

OBSERVATIONS

Observations of stray animals' selection and interactions with adopters were conducted for 2–4 hours for a period of one month. During the observation, preliminary interviews with the research subjects helped integrate visitors' motivation and experiences in the study and deepen the understanding of the adoption process.

The adoption journey at the animal shelter can be divided into eight steps: visitors enter the animal shelter, visitors are guided to visit by staff, visitors select an animal, adopters have a Q&A session with a shelter staff, adopters interact with the animal, both parties complete the adoption procedure, animals are handed over to their adopters, adopters leave the shelter with their animal. These eight stages are the moment of truth (MOT) between service recipients and service providers for tangible or intangible interactions.

IN-DEPTH INTERVIEW

Prior to conducting the interviews, a stakeholder analysis is performed to understand the organizational structure of the animal shelter and select the appropriate respondents. Service recipients include those with a successful or failed adoption experience and other shelter visitors. A total of eight service recipient respondents participated in the interview. Service providers are management staff, vets, team members for dog or cat containment, and administrative and control team members.

The interview content was integrated and interpreted using the work activity affinity diagram (WAAD) (Beyer and Holtzbla, 1998) and summarized into three major findings, which are applied as a basis for future design.

INSIGHTS

The field observations and in-depth interviews with service recipients and providers indicate that the problems can be divided into information asymmetry, poor navigation instruction, information gap, unsynchronized information, and lack of consistency and efficiency in personnel (Table 1).

Table 1 Research insights through observations and interviews.

Problem	Definition	Respondent type	Findings
Information asymmetry	Information and service quality offered by animal shelter is insufficient	Recipient	Map positioning is not accurate and thus, shelter is difficult to locate
			Adopters expect to select animals as per their age and characteristics
			Shelter does not offer adoption tools (e.g., leash and cage) in settlement stage and thus, adopters may be disappointed at the end of the adoption process
			Animal shelter does not provide relevant information about stray animals
			Often the animal shelter is closed and their working hours are not clearly communicated to visitors
		Provider	Animal shelter does not have diagnosis instruments and thus, adopters only know limited information, e.g., an animal's age range Adopters have to arrange for adoption tools
Poor navigation instruction	Navigation and visual identification systems in the area of animal shelter are incoherent	Recipient	First-time visitors often cannot find the relevant doghouse or cattery because of the shelter's semi-open area and lack of proper navigation information; some even enter restricted areas
			Staff do not have labels or uniforms and thus, adopters are unsure of whom to consult
			Shelter does not offer guidance to first-time adopters who tend to be unsure of how to interact with stray animals
Information gap	Information provided by animal shelter and service quality are unsatisfactory	Recipient	Adopters find it difficult to obtain precise information because of the complex and diverse information on the bulletin board Animal information card is limited to medical treatment and does not offer other care information for adopters
		Provider	Adoption documents are too many and lengthy

Unsynchronized Information	Changes in stray animal information are not simultaneously updated online and offline	Provider	Cage numbers and diagnosis information are manually adjusted, which can easily cause information synchronization errors and delays in online updates
Lack of consistency and efficiency in personnel	Lack of corresponding adoption service target	Provider	Staff cannot provide consistent services because of different personalities
	Complex adoption procedure leading to low efficiency		Feelings of futility can reduce staff's willingness to publicize
			Adoption matters are left unattended when there are many visitors
			Staff need to explain adoption matters repeatedly

4.2 Development and Delivery Loop

The five-level problem definition is used as a reference to design the adoption service process through co-creation. This subsection presents concept generation, co-creation, and iteration.

SERVICE DESIGN, VERSION 1: *TAKE ME!*

Pain points faced by adopters at different stages include the environment, information, personnel, processes, and hardware equipment at the animal shelter. This study explores three design concepts:

- Information integration (e.g., visit specifications and adoption process flow);
- Navigation system design (e.g., route planning);
- Matching system (e.g., animal information card and design for adoption matching questionnaire).

Accordingly, this study proposes an innovative adoption service concept, *TAKE ME!*, which aims to guide and assist adopters throughout the adoption process. Adopters will be offered a step-by-step approach to finding a suitable animal for adoption. The concept includes 11 scenarios (Figure 3).

Figure 3 Storyboard of service design, version 1: TAKE ME!

This service design version focuses on meeting the primary needs of adopters and addressing related pain points. The concept was proposed to the animal shelter for evaluation and possible implementation. However, certain difficulties were identified in the actual implementation. For example, the matching questionnaire does not accurately reflect the characteristics of dogs with an unstable personality. Thus, it was necessary to further integrate adopters' needs and staff experiences to optimize the concept.

The next stage of concept development involves service providers (e.g., staff) in the co-creation process. This concept not only addresses customers' needs but also ensures that the organization can efficiently and effectively execute the concept. Thus, the iteration phase introduced *TAKE ME!* as a stimulus in two co-creation workshops that accounts for the characteristics of the animal shelter staff.

CO-CREATION WORKSHOP

In the co-creation workshop, the staff were asked to collaboratively redefine the core values of the animal shelter on the basis of the previous *TAKE ME!* concept. The objective is to define experience goals (during and after adoption) in advance to create the route and visual identification design. The workshop is customized to the context of the animal shelter. The workshop accounts for the staff's goals to ensure the creation of a consistent service experience. This serves as an alternative vocalization channel and an opportunity to improve the workflow.

Following are details of the two workshops conducted during the co-creation phase:

1. Adoption process and navigation design using previous concept as stimulus: In the first workshop, the staff and designers re-planned the route and position of the navigation visual design by organizing the adoption process. This ensured that the previous design concept accounted for cost and utility as well as more favorable implementation conditions (Figure 4).

Figure 4 Co-creation workshops to determine new adoption process and navigation design.

2. Experience goals definition: In the second workshop, the staff collaborated to identify the different ways to organize the adoption process and then, develop experience goals using the consistent benefits benchmark (Figure 5).

Figure 5 Co-creation for experience goals for adoption process.

The co-creation workshops highlight the following experience goals for the proposed adoption process:

1. Before adoption: *Explore carefully*. The adopter should explore all aspects prior to adoption (e.g., tolerance level of animal) and develop a complete

understanding of how to care for the animal.

2. During adoption: *Real experiences*. During the adoption process at the shelter, adopters must explore the animal's characteristics (e.g., a dog's bark or an animal's smell) to gain a sense of their post-adoption experiences.
3. After adoption: *Convenient consultation*. Post-adoption, adopters are likely to face problems related to the animal's health and care. Access to convenient consultation can ensure that the problems are resolved and reduce the probability of adopters abandoning the animal.

SERVICE DESIGN, VERSION 2: *CON+*

Based on the experience goals identified during the co-creation workshops, a new version of the service design concept was proposed. *CON+* focuses on the animal shelter and extends to three key stakeholders:

- Stray animals: The animals must be treated equally and have the right to be loved
- Adopters: Irrespective of whether visitors adopt an animal, their experience at the animal shelter must deepen their understanding of the animals and how to care for them
- Animal shelter staff: The staff's work responsibilities must be integrated with the mission of caring for a life

The revised version of the service design concept, *CON+*, proposes nine functions during the adoption process on the basis of the identified experience goals (Figure 6).

Figure 6 Scenarios of service design, version 2: CON+.

In sum, this study conducted two workshops involving service providers to co-create a service design for the adoption process. Service providers at various designations were invited to provide their input on the user-centric service design concept, *TAKE ME!*, and accordingly, propose a new version, *CON+*. The co-creation workshops not only bridged the gap between the service design concept and actual implementation, but also facilitated innovative thinking in a public institution that significantly influenced the design process.

4.3 Design Testing and Findings

This concept-testing phase entails a stakeholder analysis and the submission of the concept to a service design competition. The outcomes are discussed in the following sections.

STAKEHOLDER ANALYSIS

The stakeholder analysis applies the Kano model to test the nine adoption services in *CON+* on the service recipients and providers. The service recipients rank the services according to their subjective preferences and service providers rank the feasibility of implementation on the basis of their existing resources.

- Service recipients: The questionnaire is divided into two parts with a total of 31 questions. It includes the Kano two-dimensional quality assessment of the CON+ and a survey focused on adoption and feeding experiences. Service recipients are asked to select the top-three services as per their subjective preference. The questionnaires are distributed on various stray animal community platforms. A total of 127 valid questionnaires are obtained.
- Service providers: Service providers were asked to fill out the questionnaire after the researcher explained the concepts to them. The questionnaire included the Kano two-dimensional quality assessment of CON+ and a survey on basic staff characteristics. The questionnaire asked service providers to rank the feasibility of service implementation on the basis of their practical experience and existing resources.

Finally, the results from the three tests were integrated and compared to determine the appropriate implementation approach.

SERVICE DESIGN COMPETITION

The final service design concept was submitted to a 2018 design competition hosted by SDN (Service Design Network). The concept was awarded the *Best Student Project* and was vetted by international service design organizations.

SUMMARY AND DIRECTION FOR IMPLEMENTATION

The Kano model results reveal that service providers rate *Traffic Assistant* and *Continuous Communication* as one-dimensional quality services and consider all other service concepts to be attractive quality services. Notably, the absence of these attractive quality services does not affect overall customer satisfaction. Therefore, it is important to first optimize one-dimensional quality services that could increase satisfaction, including *Self-Introduction*, *Self-Reliant FAQs*, *Legal Family*, *Pro-Match*, and *Ice Breakers*. Optimizing the one-dimensional quality services increases satisfaction levels of not only service providers but also service recipients. Service recipients rank the attractive quality services of *Entrance Information Board* and *Will You Still Love Me?* the lowest for optimization.

On the basis of their subjective preferences, service recipients ranked *Legal Family* (28.3%) the highest, followed by *Ice-Breakers* (22.8%) and *Self-Introduction* (18.9%). Among these services, *Legal Family*, *Ice-Breakers*, and *Self-Introduction* recommend actual contact with stray animals and are all one-dimensional quality services under the Kano model, thus reiterating the importance of the services.

In terms of feasibility, service providers ranked *Self-Introduction* and *Self-Reliant FAQs* the highest, followed by *Entrance Information Board*, *Legal Family* and *Continuous Communication*, *Pro-Match*, *Traffic Assistant*, *Will You Still Love Me?*, and *Ice-Breakers*. Table 2 summarizes the results of the stakeholder analysis.

Table 2 Summary of stakeholder analysis.

Implementation order based on Kano model	Respondent type	Kano quality categories	Feasibility ranking
Self-Introduction*	Recipient	One-dimensional	1
Self-Reliance FAQs			1
Legal Family*			4
Pro-Match			6
Ice-Breaker*			9
Continuous Communication	Provider	One-dimensional	4
Traffic Assistant			7
Entrance Information Board	Recipient and Provider	Attractive	3
Will You Still Love Me?			8

*The top-three categories based on subjective preference ranking

The Kano model classification, service recipients' subjective preference ranking, and service providers' resource feasibility assessment are used to classify and organize the implementation priorities of the nine adoption services.

To improve the adoption rate, optimize resource consumption, and maximize utility, it is imperative for the service implementation stage to account for the Kano model results and users' needs. The stakeholder analysis results prioritize *Self-Introduction*, *Self-Reliant FAQs*, and *Legal Family* for implementation.

5. Conclusions and Suggestions for Future Work

This study employs holistic service design thinking to analyze and optimize the existing services of a public animal shelter. It does so by considering various touch points and channels from the viewpoints of service recipients and providers. The key conclusions of the study are as follows.

First, this study highlights critical aspects that warrant consideration in a service design process aimed at optimizing adoption services in public adoption agencies. More specifically, it demonstrates the use of different tools and channels to create a low-cost service optimization design focused on improving adoption experiences at the animal shelter. The design process considers adopters and the animal shelter as key stakeholders.

For adopters, it is necessary to facilitate a positive experience during the adoption process by meeting their adoption goals. An expected outcome is an increase in the adoption rate. The researchers attempted to streamline the adoption process to deepen adopters' experience at the shelter and their attitude toward caring for a life. Continuous post-adoption assistance is a key factor preventing adopters from returning the animals to the shelter.

From the viewpoint of the animal shelter, it is necessary to assist the staff in improving their work efficiency, reduce the repetition of problems, and address post-adoption issues.

The objective must be to re-aggregate work values to enhance their sense of enthusiasm, responsibility, and honor.

Second, in service cases with complex stakeholders, co-creation workshops help effectively combine the needs and perspectives of all parties. Incorporating the concept of stakeholders in the service design process allows for co-creation, which treats service providers as internal customers, helps understand their pain points, and facilitates a consensus among service providers through in-depth interviews. The in-depth interviews highlight the staff's attitudes and habits and this information can be used to customize progressive workshops, which significantly help in the co-creation process. In addition to the abovementioned advantages, the workshops assist staff member at different designations in conflict resolution by promoting communication and helping them identify a common goal for the adoption experience.

Co-creation workshops must be conducted using a step-by-step approach considering the participants may not have prior experience. In this study, the workshops were conducted for a short duration and they did not involve the same participants. Thus, the researchers were faced with challenge of explaining the problem and purpose to the participants within a short period. The first step was gaining the approval of the main stakeholders to help enlist other participants. Second, the researcher assessed the participants' awareness and attitude toward the issues facing the animal shelter through preliminary interviews, which helped design the two co-creation workshops. The final step was a meeting to report the preliminary survey findings to help the participants understand the direction of the workshop topics. The first workshop was conducted with focus on the design concepts, that is, adoption processes and navigation visual design. The key objective of the workshop was to experience the implementation process of the workshop. Scenarios and artifacts as well as a semi-gamified desktop walkthrough were used to increase participation and guide participants in their design review. Once the participants became familiar with the workshop format, a second workshop was conducted to enable staff at different positions to collaboratively determine adoption experience goals.

The co-created service design re-inspires the passion of the staff. The workshops give proactive improvement by externally stimulating the staff's internal drive. After the co-creation workshop, the staff has spontaneously implemented one of the innovative adoption services, *Self-Introduction* (figure 7). It is such a powerful symbol that even the few staff who originally show little interest in participation were eager to contribute to the idea.

Figure 7 The staff has spontaneously implemented one of the services concept: Self-Introduction.

Finally, service design testing integrated with stakeholders' opinions helped enhance the recognition of the design concept and the probability of implementation. Fick and Ritchie (1991), as previously mentioned, indicate that SERVQUAL is not applicable to service experiences involving overall factors. Thus, this study integrated the subjective evaluation of multiple stakeholders to test the service design concept. In particular, it adopted the Kano model to test the nine adoption services with focus on service recipients and providers. Service recipients ranked the services on the basis of subjective preferences and service providers ranked the feasibility of the implementation as per their practical experience and existing resources.

Design thinking is a human-centric approach to innovation that integrates user needs, technological possibilities, and the success factors of a business. In other words, innovation accounts for users' desirability, the viability of a business, and technological feasibility. Therefore, a concept evaluation must account for these three aspects and the subjective evaluations of both service providers and receivers to ensure their needs are met. Using these evaluation aspects to gain insight for subsequent optimization can deepen service providers' recognition of the final service concept, thus increasing the possibility of implementing the service concept.

5.1 Suggestions for Future Research

This study proposes a new service concept for an existing adoption process by considering both service recipients and providers and using the Kano model for a preliminary evaluation. However, the service system is subject to certain drawbacks that remain to be addressed. Issues warranting further research and the direction for further studies are discussed as follows.

1. Consider a holistic channel: The service design concept proposed in this research is primarily based on the physical environment and service process optimization. Future research could attempt to combine various other channels to optimize the system at the different adoption stages.

- Pre-adoption: This phase aims at ensuring adopters receive accurate and comprehensive information about animal adoption. The online channel is an important touch point for adopters because it helps establish brand image and thus, strengthens brand recognition.
  - During adoption: In addition to passive navigation methods (e.g., navigation visual design), researchers can connect channels from the pre-adoption stage to the offline physical environment (e.g., provide multi-directional navigation through ChatBot). Including diversified channels also ensures consistency in service experiences.
  - Post-adoption: This stage focuses on assisting adopters to prevent them from returning their animals to the shelter. Future research must consider establishing convenient consultation channels to help adopters and the animal adapt to each other.
2. Include more stakeholders: This study examines the needs and pain points of adopters and the staff through two co-creation workshops. Opinions from multiple stakeholders help expand the team's design horizon. However, service recipients and providers also include other stakeholders such as animal protection organizations and volunteers at the animal shelter. Expanding the team to a diverse set of stakeholders will help broaden research insights and design possibilities.
  3. Establish a more comprehensive system for service concept evaluation: This study employs the Kano model to test the preference, feasibility, and priority for each service concept from the perspective of service recipients and providers. However, it does not verify the effectiveness of each MOT. Thus, future research must consider a more comprehensive evaluation system. In addition, when conducting the Kano model test, researchers ought to explore ways to accurately present the service concept considering participants have not previously experienced the design concept.

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