

Proposal of Customer Value Consistency Canvas, Using an Ontology of Value Proposition with Service Dominant Logic

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ABSTRACT

Designing a Value Proposition to customers is one of the very important elements in a new business. The business model becomes inconsistent if the Value Proposition design is inconsistent. There are various methods that support a Value Proposition design, such as Value Proposition Canvas, but there are still difficulties in terms of improving and explaining the consistency of the Value Proposition. Therefore, we propose a Customer Value Consistency Canvas based on the ontology of Service Dominant Logic, which is an important concept of Service Design. Unlike a Value Proposition Canvas, a Customer Value Consistency Canvas supports and facilitates a Value Proposition design by detailing necessary components to be considered. This method facilitates a Value Proposition design, improves the consistency of the Value Proposition, and makes it possible to improve and explain the consistency of the Value Proposition. We evaluate the Customer Value Consistency Canvas based on individual work using the Value Proposition design and evaluation interviews with experts in designing Value Proposition. For the ease of understanding, availability, and effectiveness, we assess the results of each evaluation and confirm the verification and validation of the proposed method.

Keywords: Value Proposition; Business model; Service dominant logic; Ontology.

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1. INTRODUCTION

In creating a new business, designing a Value Proposition, that is, “what kind of value is provided to whom” is inseparable from the business model design (Magretta, 2002).

Value Proposition is regarded as one of the elements for constructing Business Model Canvas, which is a method for designing business model (Osterwalder *et al.*, 2010). In addition, Value Proposition Canvas, which is one of the components of Business Model Canvas, has been proposed as a tool to further refine and design Value Proposition (Osterwalder *et al.*, 2014). Value Proposition Canvas is a canvas to confirm that the needs of the customer and the seeds of the business are consistent. This canvas has two characteristic elements: Gain Creator and Pain Reliever. Gain Creator describes how a business's products and services create customer gains. Pain Reliever describes how the products and services alleviate specific customer pains. This canvas is configured so that the solution's Gain Creator or Pain Reliever respond to the customer's own Gain or Pain for the job of the target customer segment. In other words, this canvas aims to align needs and seeds by filling in the business model elements related to Value Proposition in the corresponding entry fields. However, it is difficult to explain the relationship between each components of Value Proposition Canvas, and it cannot be confirmed whether each element entered is consistent as a whole canvas. As a result, there is a problem in that the elements of the business model design itself cannot be explained. Therefore, in this study, when designing Value Proposition in new business design, we propose Customer Value Consistency Canvas as a method to support Value Proposition design by utilizing the idea of value creation in service dominant logic, which is the important concept of Service Design.

The purposes of this study are to achieve the following three advantages over the existing method, i.e., Value Proposition Canvas. First it facilitates Value Proposition design by allowing more detailed consideration of its components. Second, it helps to improve the consistency of Value Proposition. The third, it is possible to explain the consistency of Value Proposition. In order to evaluate whether this proposed method, Customer Value Proposition Consistency Canvas, achieved the purposes of this study, we carried out an actual use evaluation with individual work and interview evaluation for expert of Value Proposition design. From the view points of the ease of understanding, availability, and effectiveness, we assess the results of each evaluation.

The novelty of this study is to clarify the relationship of the components of Value Proposition from the viewpoint of value creation in service dominant logic and making it more detailed than Value Proposition Canvas. Osterwalder *et al.* (2014) has proposed Value Proposition Canvas to support Value Proposition design. However, this is not a research that focuses on the consistency among the components of Value Proposition. Also, Donaldson *et al.* (2006) has proposed Customer Value Chain Analysis, focusing on Value exchange. However, it is not a research that focuses on the consistency of customer interactions. The contribution of this study is that we explained the concept of service design such as customer value proposition in service by using the concept of system design such as ontology.

This paper contains four sections. Section 1 describes the background and issues related to Value Proposition design. Section 2 describes the Customer Value Consistency Canvas as a tool that can explain the consistency of Value Proposition using the ontology proposed in this study. Section 3 explains the evaluation results and considerations of the proposed method. Finally, Section 4 describes the results of this study and the prospects for future research.

2. PROPOSED METHOD AND APPROACH

2.1. APPROPACH

As stated in Section 1, we discuss Value Proposition to customers in order to build an approach focusing on the consistency between the components of Value Proposition to customers. Service-dominant logic is an idea that discusses business and marketing from a user-centered perspective on the value proposed to a customer, not a value-centered perspective such as money (Vargo and Lusch (2004)). The characteristic of this service dominant logic is to transfer the subject of value creation from the company as a producer to user. The value is created by using a service (Solution) to a customer. The magnitude of the value obtained by using the service changes depending on the issues and concerns of the customer using the service. Based on this, we will organize the scenes where customers use services to create value on Figure 1.

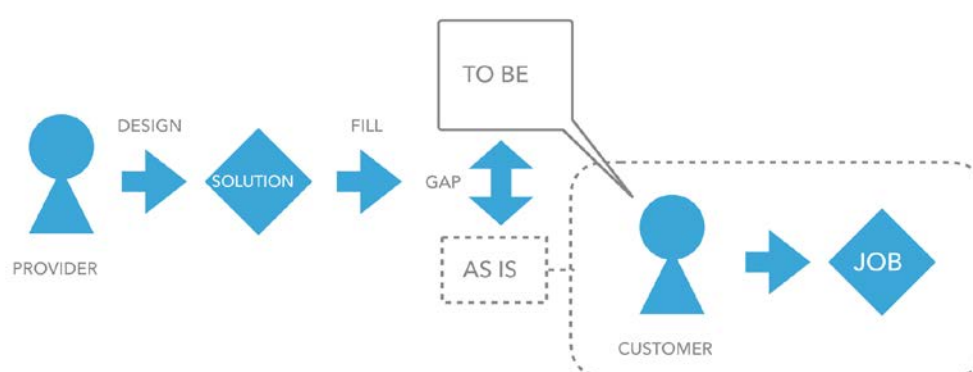


Figure 1. Usage scene of services in service dominant logic

A customer who uses a service has an achievement status ("TO BE") that should be on the premise of an interest in the job when trying to achieve a certain job ("JOB"). There is a difference ("GAP") between this desired achievement status ("TO BE") and the current achievement status ("AS IS"). The service has a function to achieve the achievement status that should be from the present to fill the difference ("GAP"). When Service can fill in "GAP" resulting from "AS IS" and "TO BE" of this customer, it can be said that Service is used for the customer and the value is created for the customer.

Figure 2 illustrates ontology where Solutions are used by customers to create value. Customers have needs and corresponding concerns (Gutman, 1982). With respect to the concern (Concern), the customer who is the stakeholder has a concern ("CONCERN") for the purpose ("JOB") to be achieved (ISO 42010, 2011). The needs of the customer arise as "TO BE" of the customer and "GAP" of the "AS IS" of the customer (Langford *et al.* (2007)). On the other hand, using the concept of Suyama *et al.* (2018) Solution has three layers: Solution's purpose ("WHY"), Solution content ("WHAT"), and Solution realization method ("HOW").

The solution matches the needs ("GAP") because the purpose of the solution ("WHY") is to fill the "AS IS" of the customer and the "GAP" of "TO BE". There is a need. That is, the above indicates that the solution is used to bring value to the user as indicated by the service dominant logic.

What is organized on the point of occurrence of value in terms of service dominant logic is summarized ontology as shown in Figure 3.

We will describe the definitions of each component as shown in Figure 3.

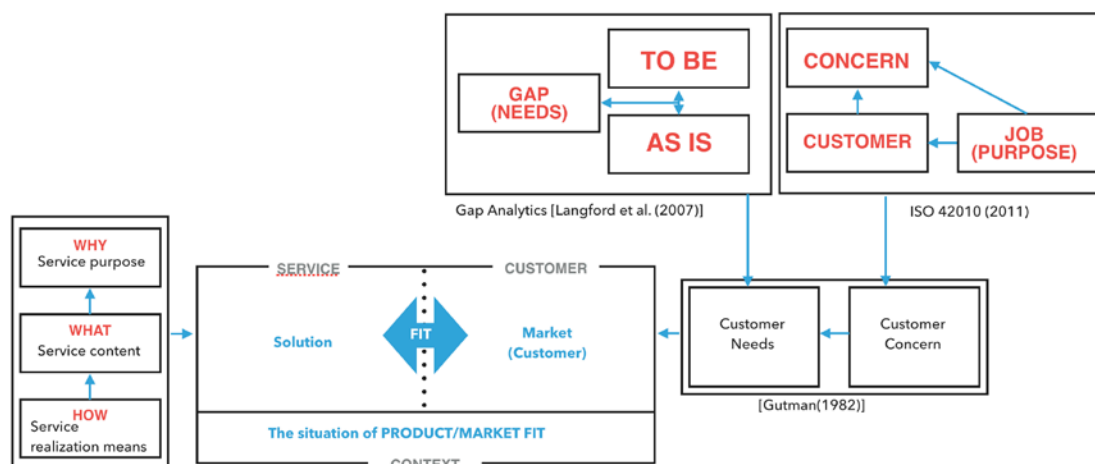


Figure 2. Organizing the situation where the solution is used by customers

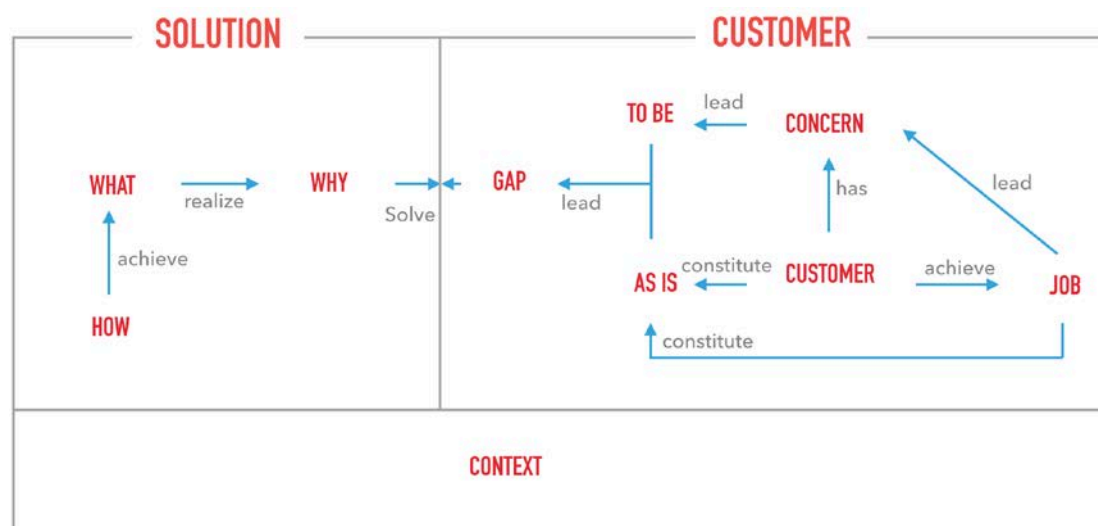


Figure 3. Ontology of Value Proposition based on Service Dominant Logic

<Definition of each component>

- "JOB" defines the job that the target customer wants to achieve.
- "CUSTOMER" defines customers targeted for Solution.
- "CONCERN" defines concerns or interests of the target customer derived from "JOB" and features of the target customer.
- "AS IS" defines status of how the target customer has achieved the current "JOB".
- "TO BE" defines the situation of how to achieve "JOB" derived from the matter of interest.
- "GAP" defines the difference between "AS IS" and "TO BE". Pain/Gain in Value Proposition Canvas correspond to this component.

- "WHY" defines the intended use of the solution itself to fill in "GAP". Hit Pain Reliever / Gain Creator.
- "WHAT" defines solution content to achieve "WHAT".
- "HOW" defines means to realize Solution.
- "CONTEXT" defines the scene setting where this Solution is actually used.

In the ontology of the above discussion, items decomposed as components are mutually related to each other. "CUSTOMER" has "CONCERN" for a certain "JOB". The current resolution state of "JOB", "AS IS", is derived by "JOB" and "CUSTOMER". The resolution state "TO BE" that should be for "CUSTOMER" of "JOB" is derived from "CONCERN". At this time, the purpose of Solution ("WHY") is to fill "GAP" of "AS IS" and "TO BE". The content of Solution that realizes this "WHY" is "WHAT", and it is "HOW" that realizes this "WHAT". This customer's "GAP" is filled by Solution when Solution is used by "CUSTOMER".

Every component has a specific "CONTEXT" as its use scene. Basically, each component has a relation with adjacent components, and from this property "CONTEXT" has a relation with all components. In this way, by expressing the occurrence of the value of service dominant logic as ontology, it was possible to express the occurrence of value by the components that make up the value itself and the relationship between the components. Comparing the ontology of Figure 3 with Value Proposition Canvas, which is the previous research, needs and seeds are arranged on the left and right, and they are aligned in the center. The difference between the Value Proposition Canvas and Figure 3 is that the components constituting Figure 3 are more detailed than the Value Proposition Canvas, and the relationships between the respective components are clearly defined. By making each component into a form for entry while maintaining the relationship between the components constituting Figure 3, a canvas of the proposed method is obtained. By constructing the canvas based on the ontology, it is possible to confirm whether the components filled in satisfy the relation from the components constituting the canvas and the relation between the components. Table 1 summarizes the functions and methods of the proposed method.

2.2. PROPOSED METHOD

We design the proposed method based on the above canvas built in Figure 3. The proposed method consists of (1) a canvas based on the ontology and (2) guidelines for explaining its consistency. In designing a new business, when considering Value Proposition for a customer, fill in the necessary information on the canvas of the proposed method. At this time, the relationship between each entry component is defined by an arrow and a sentence that clearly indicates its contents. For example, the relationships on the left side of the figure represent the relationships in which WHAT is realized by HOW and the relationships in which WHY is achieved by WHAT. From these things, each component is filled in so that the relationship between the components written in is maintained. Although the order of entry is not defined, the left side of the canvas is an area constituting Solution, ie, the seeds, and the right side of the canvas is an area constituting the customers, ie, the needs. Since the lower side shows the situation where seeds and needs are consistent, we will start from the side that is particularly obvious when designing a business model. Thus, by starting with the components that are already clear, we aim to reduce the flexibility when filling in the

blanks by the described components and to facilitate the design of the Value Proposition.

Table 1 Summary of the proposed method

No.	function	Method to realize function
1	Facilitates Value Proposition design by considering more detailed components than Value Proposition Canvas.	Demonstrate ontology the generation of value in service dominant logic.
2	Help to enhance the consistency of Value Proposition	Write on the canvas to satisfy the relationship between the component to be filled and the components around it.

Figure 4 Customer Value Consistency Canvas

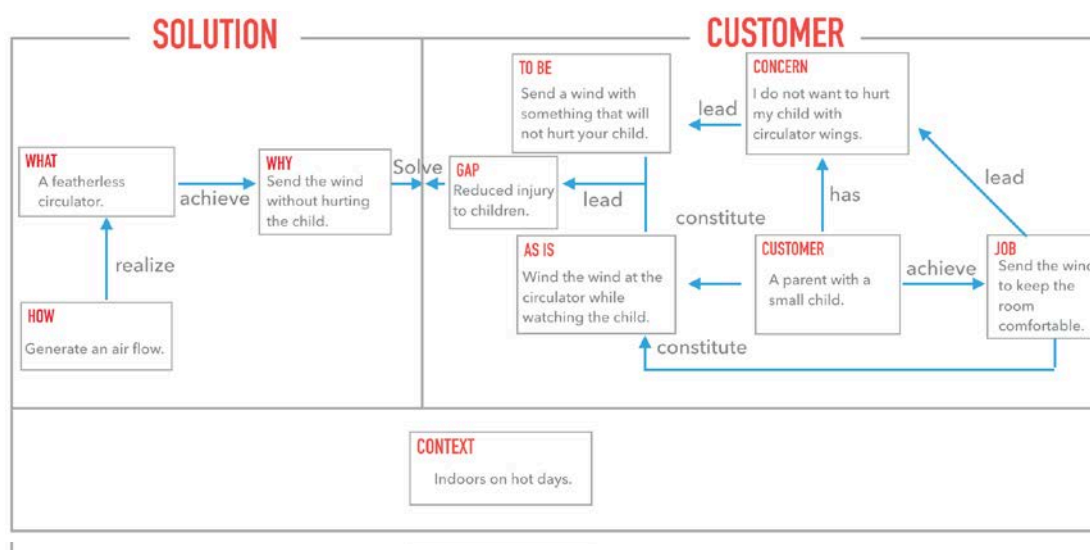


Figure 5. An example canvas of "Dyson Air Multiplier"

Items to be entered in each item of the canvas conform to the ontology in Figure 3. As a practical example, the value proposition of Dyson's circulator "Dyson Air Multiplier" is described on the canvas.

- "JOB": Send the wind to keep the room comfortable.
- "CUSTOMER": A parent with a small child.
- "CONCERN": I do not want to hurt my child with circulator wings.

- "AS IS": Wind the wind at the circulator while watching the child.
- "TO BE": Send a wind with something that will not hurt your child.
- "GAP": Reduced injury to children.
- "WHY": Send the wind without hurting the child.
- "WHAT": A featherless circulator.
- "HOW": Generate an air flow.
- "CONTEXT": Indoors on hot days.

By completing the above, it was possible to explain the customer value of "Dyson Air Multiplier" in ontology. That is, the customer value of "Dyson Air Multiplier" is as follows.

For "parents with children", when "keep the room comfortable indoors on a hot day", "you can keep the room comfortable by blowing without hurting the child".


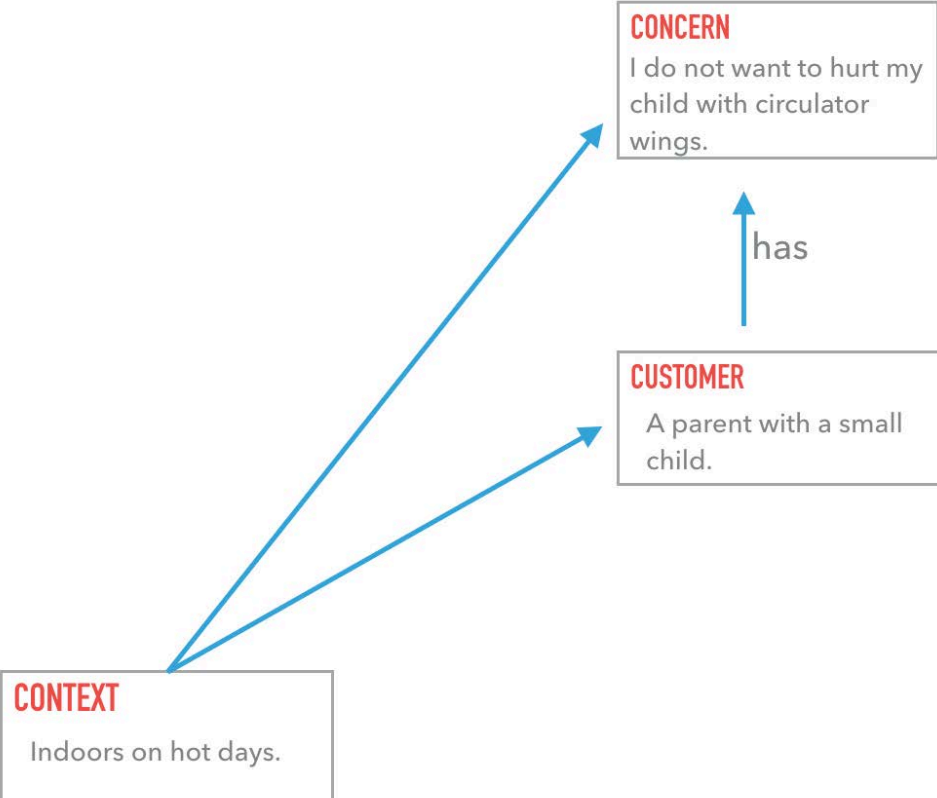
For canvases that support the review of Value Proposition, the guidelines set a function to check if the canvas is consistent after the canvas is created. This is the text of the relationship of each component in Table 2. By completing the confirmation for all items in the guidelines, the relationship of the entire canvas is confirmed. In this way, consistency can be explained by establishing relationships between components.

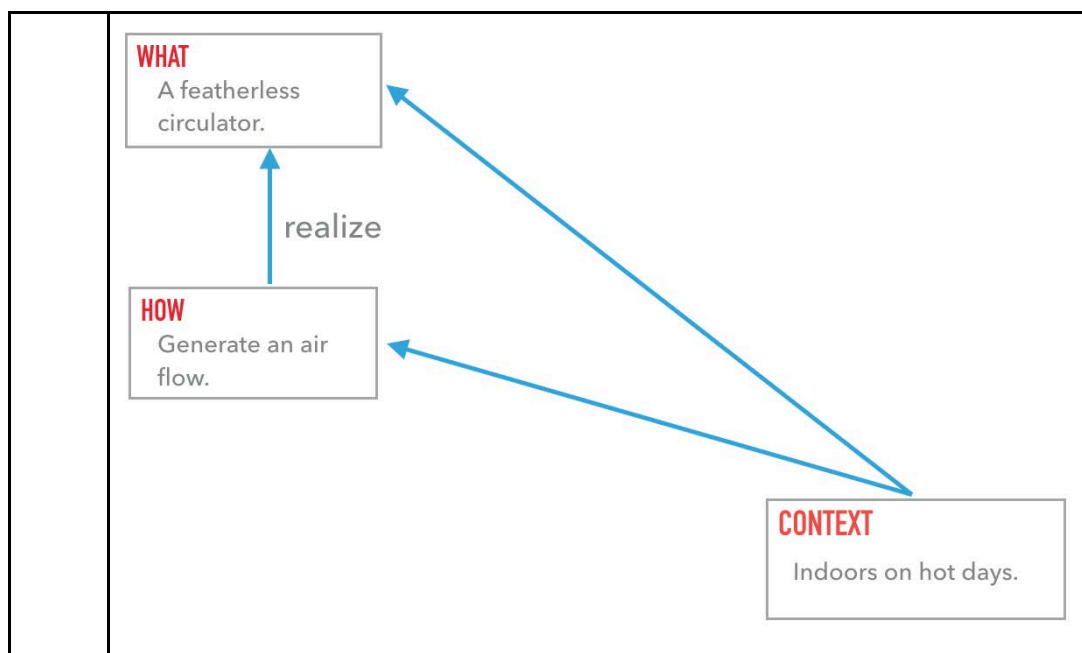
By actually describing using this canvas and adjusting the description content of each component based on the guidelines, the relationship between each component is matched, and the alignment of Value Proposition is confirmed. In fact, on the web page of the successor model of "Dyson pure cool", which was taken up as an example of Value Proposition in this paper, Value Proposition for customers is posted as follows in sentences. "There is no high-speed rotating blade like a general fan, and there is no concern that a child holds a finger. It can be used safely by anyone." (Dyson limited (2018)). These sentences were very close to the sentences of Value Proposition created by using the proposed method.

Table 2 Guidelines for the Proposed Method

No.	Guidelines
	The corresponding area of the canvas
1	Is "CUSTOMER" having "CONCERN" for "JOB" reasonable?

	<p>WHAT A featherless circulator.</p> <p>HOW Generate an air flow.</p> <p>CONTEXT Indoors on hot days.</p> <p>realize</p>
<p>2</p>	<p>Is "CUSTOMER" achieving "JOB" like "AS IS" reasonable?</p> <p>AS IS Wind the wind at the circulator while watching the child.</p> <p>CUSTOMER A parent with a small child.</p> <p>JOB Send the wind to keep the room comfortable.</p> <p>achieve</p> <p>constitute</p> <p>constitute</p>
<p>3</p>	<p>Is "TO BE" derived from "CONCERN" reasonable?</p> <p>TO BE Send a wind with something that will not hurt your child.</p> <p>CONCERN I do not want to hurt my child with circulator wings.</p> <p>lead</p>
<p>4</p>	<p>"WHY" solves "GAP", is it appropriate?</p>

	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid gray; padding: 5px; margin-right: 20px;"> <p>WHY Send the wind without hurting the child.</p> </div> <div style="text-align: center; margin-right: 20px;"> <p>Solve</p>  </div> <div style="border: 1px solid gray; padding: 5px; margin-left: 20px;"> <p>GAP Reduced injury to children.</p> </div> </div>
<p>5</p>	<p>Is "CUSTOMER" appropriate to have "CONCERN" in "CONTEXT"?</p> <div style="margin-top: 20px;">  </div>
<p>6</p>	<p>Is "WHAT" realized by "HOW" appropriate to be used in "CONTEXT"?</p>



3. EVALUATION OF THE PROPOSED METHOD

3.1. Evaluation method

In order to evaluate the ease of understanding, availability, and effectiveness of the proposed method, we carried out actual use evaluation and interview evaluation respectively.

Evaluation 1: Evaluation of actual use in individual work

The contents of the implementation were as follows. The subjects wrote four ideas corresponding to the theme "business ideas that you thought were innovative before." The subjects designed and described Value Proposition using the existing method for two of the four ideas and using the proposed method for the remaining two. The existing method used for this evaluation was Value Proposition Canvas. In order to mitigate the effects of the order of implementation of the existing method and the proposed method, we divided 40 people into two groups, and changed the order of the methods to be implemented for each group and performed the evaluation. After the implementation of each method, we conducted a questionnaire on the subjects and evaluated the proposed method from the viewpoint of the ease of understanding, availability and effectiveness of the method.

Evaluation 2: Demonstration and interview for experts

We actually conducted demonstrations of the proposed method and interviews through it to two experts who actually design Value Proposition in their daily work. As a demonstration, we explained how to use the proposed method, and actually used it in front of the experts to design the Value Proposition. The purpose of this evaluation is to confirm through interviews that "it is effective to consider the place of actual new business development" to consider Value Proposition using this proposal method.

Interviewee 1

Ms. KW: Service design consultant. Entrepreneur. She makes business proposals to customers on a daily basis, and also regularly lectures and explains Value Proposition in business development as training for companies that are clients.

Interviewee 2

Mr. TS: Service designer. He is a manager of an ICT system development company managing projects specializing in design thinking and UX design. He manages multiple projects that create human-centered ideas and design Value Proposition.

3.2. Evaluation results

Evaluation 1: Evaluation of actual use

In the actual use evaluation by individual work, after the experiment using the proposed method, the whole proposed method was evaluated by answering the questionnaire from three viewpoints of the ease of understanding, availability, and effectiveness. There are two questions for each viewpoints, one is a five-step response using the Likert scale, and another is a question that asks for a free-form answer (Likert R. (1932)). On the 5-point evaluation, the subjects choice answer from the following 5 items (+2-“Strongly agree”, +1-“Agree”, 0-“Neither agree nor disagree”, -1- “Disagree”, -2-“Strongly disagree”). Scores from +1 to +2 were assumed to be valid for designing Value Proposition. Table 3 shows the contents of the questions.

Table 3 Questionnaire items for understanding, availability and effectiveness

No.	Questionnaire	Viewpoints of evaluation
1	Did you understand the method?	Ease of understanding
2	Did you make it easier to write Value Proposition for the method?	Availability
3	Do you think that the method canvas is effective when considering the idea's Value Proposition?	Effectiveness

Table 4 shows the results of each question in the 5-point evaluation. The average value of the proposed method was higher than the questionnaire results of the existing method in each of the ease of understanding, availability, and effectiveness, and the significance probability of the proposed method to the existing method was 5% significant.

From these results of the evaluation, we confirmed that the proposed method makes it easier to consider Value Proposition than the existing method, Value Proposition Canvas.

Table 4 Questionnaire results on proposed method and existing method

	Questionnaire	+2 Strongly agree	+1 Agree	0 Neither agree nor disagree	-1 Disagree	-2 Strongly disagree
Customer Value Consistency Canvas (Proposal method)	No.1	35%	48%	8%	10%	0%
	No.2	45%	33%	18%	5%	0%
	No.3	35%	43%	18%	5%	0%
Value Proposition Canvas (Existing method)	No.1	18%	26%	48%	8%	0%
	No.2	25%	38%	25%	10%	2%
	No.3	10%	48%	15%	20%	8%

Evaluation 2: Demonstration and interview with experts

Interview 1 Summary:

- The relationship between the components that make up the model (Canvas) of the proposed method and the components that make up the model (Canvas) is valid. The proposed method can act as an ontology of Value Proposition because these emerging components are MECEs in considering Value Proposition.
- The existing method, Value Proposition Canvas, is certainly too flexible when trying to fill in, and therefore it may make it difficult to consider the Value Proposition design. I (Interviewee 1) sympathize with that point.
- For those who are not familiar with the Value Proposition design, it seems to be a particularly effective proposal when enhancing the integrity of the Value Proposition, in view of the fact that the relationships between the components are shown in advance.
- It is better to consider the correspondence of structure with Value Proposition Canvas in order to deepen ontology.
- In fact, the use of Solution can create another Pain. It would be even better if we could add usages and corrections that could cover that issue.

Interview 2 Summary:

- I agree with the purpose of the proposal. The proposal itself seems to be effective.
- As this method is developed, the method may become more compatible with UX design etc. depending on the order in which the user of this method writes in. That is, in order to fill in the customer-side component of the canvas of the proposed method, it seems that the combination with the research method of human-centered design such as UX design seems to be effective, and to fill in the service-

side component of the canvas of the proposed method. It seems that some knowledge of specific domains is necessary, such as how to realize it. When designing Value Proposition, the order of writing and the approach for investigating unknown factors may be guided by whether the customer-side or service-side factors are known. Please consider such usage.

- It seems that there are actually effective projects among companies. Possibly effective for people in standing positions like entrepreneurs (Entrepreneurs are entrepreneurs working inside an organization).
- In the actual business development field, Value Proposition itself often changes as the project progresses, Pivot. How can you use this canvas to manage Value Proposition while guaranteeing its consistency as Pivot? It will be a critical problem to lose the consistency of initial Value Proposition in the business project. If it is lost in a lot of pivoting, any pivots will be bad updates. This canvas can help to solve this problem.

3.3. Consideration of evaluation

In this section, we discuss the evaluation results of the proposed method shown in "3.2 Evaluation results". By analysis of the questionnaire results, the proposed method was evaluated as easy to understand and easy to use. Also, because all the subjects were able to fill the canvas, it was possible to use the canvas to explain the consistency of the Value Proposition.

Next, we were able to evaluate expert interviews to confirm the validity of the proposed method and the ontology itself of the proposed method. We considered each interview comment as below.

Interview 1 Summary:

- The relationship between the components that make up the model (Canvas) of the proposed method and the components that make up the model (Canvas) is valid. The proposed method can act as an ontology of Value Proposition because these emerging components are MECEs in considering Value Proposition.
- The existing method, Value Proposition Canvas, is certainly too flexible when trying to fill in, and therefore it may make it difficult to consider the Value Proposition design. I (Interviewee 1) sympathize with that point.

From the above comments, it is shown that the proposed method Customer Value Consistency Canvas can express Value Proposition as an ontology. In addition, experts agreed on the issues for the existing method, Value Proposition Canvas, which is the background of the research purpose.

- For those who are not familiar with the Value Proposition design, it seems to be a particularly effective proposal when enhancing the integrity of the Value Proposition, in view of the fact that the relationships between the components are shown in advance.

We evaluated the evaluation target people simply as "the person who designs a new business". However, from the above comments, it is suggested that the proposed method may be a more effective method especially for "new business designers" who are not familiar with it. This is because the proposed method is built based on the ontology. The canvas of the proposed method is based on the ontology, and it is possible to "cover the components that make up the Value Proposition and ensure the

consistency of the components that make up the Value Proposition. It can be a particularly effective method for those who do not know the factors to be considered when designing Proposition, and for the inexperienced people who are inexperienced and tend to cause a relationship mismatch between the factors, which are the factors to consider. In order to confirm more clearly, it is necessary to confirm how the effectiveness is evaluated by the experience of new service development.

- It is better to consider the correspondence of structure with Value Proposition Canvas in order to deepen ontology.
- In fact, the use of Solution can create another Pain. It would be even better if we could add usages and corrections that could cover that issue.

From the above comments, it was pointed out that the use of Solution could actually generate new Pain as an event not covered by the proposed method. Martin points out that the introduction of System (Solution) to solve the problem occurring in a certain context causes a change in the original Context itself (Martin (2011)). As pointed out in the above-mentioned interview comment, providing a Service that realizes the Value Proposition considered in the proposed method changes the original Context, which allows us to interpret that a new Concern will occur for the customer. Therefore, it is possible to extend the method based on Martin's "The Seven Samurai of Systems Engineering" in order to design a Value Proposition in which Pain is also generated by realization of Service.

Interview 2 Summary:

- I agree with the purpose of the proposal. The proposal itself seems to be effective.

The above comments showed the effectiveness of the proposed method.

- As this method is developed, the method may become more compatible with UX design etc. depending on the order in which the user of this method writes in. In order to fill in the customer-side components of the canvas of the proposed method, it seems that the combination with the research method of human-centered design such as UX design seems to be effective, and to fill in the service-side components of the canvas of the proposed method it seems that some knowledge of specific domains is necessary, such as how to realize it. When designing Value Proposition, the order of writing and the approach for investigating unknown factors may be guided by whether the customer-side or service-side factors are known. Please consider such usage.

The above interview comments suggested that we could still consider the order of the canvas. In this proposal, we basically do not stipulate the order of the canvas entry, "we will fill in from where it can be entered and aim for the relationship between the components to hold as a whole". However, the above comment indicated that it is possible to define an order that is easier to fill in, depending on the conditions at the time of new business review. For example, if you have already conducted a customer survey based on the UX design concept, filling in from the customer side with a large amount of known information will reduce the number of items to be considered rather than from scratch. It may be possible to reduce the flexibility of the review. If the usage scene of the service and the technology to be used have been determined in advance, components of CONTEXT and HOW should be filled in beforehand as known information, and the canvas writer should be aware of other conditions under those constraints. By filling in the remaining components, it may be possible to think of Value

Proposition so as not to remove constraints. Such filling the remaining components of the canvas after considering constraint conditions may be compatible with the forced association method, for example matrix method. Then, Customer Value Consistency Canvas may useful to create new business ideas.

- It seems that there are actually effective projects among companies. Possibly effective for people in standing positions like intrepeneurs (Intrepeneurs are entrepreneurs working inside an organization).
- In the actual business development field, Value Proposition itself often changes as the project progresses, Pivot. How can you use this canvas to manage Value Proposition while guaranteeing its consistency as Pivot? It will be critical problem to lose the consistency of initial Value Proposition in the business project. If it is lost in a lot of pivoting, any pivots will be bad update. This canvas can help to solve this problem.

As the comment states, “In the field of actual business development, Value Proposition itself often changes as the project progresses.” In fact, Value Proposition appeals to customers more as the project progresses. It may be possible to change it.

Such changes are called Pivots and are often used when advancing projects with high uncertainty, such as development of new business. Interview comments pointed out that it is critical problem to manage pivoting while guaranteeing the consistency of Value Proposition. In fact, when project owners decide to pivot, they expect their business model to be updated to a better business model. If they are only concerned about the changes in the pivot business model update, changes in the business model can cause the loss of Value Proposition consistency. To solve this problem that occurs in business development, it is necessary to support pivoting while ensuring the consistency of value proposition.

Next, we consider the structure of the canvas of the proposed method constructed in ontology. This canvas consists of the components that make up Value Proposition and the relationships between those components. Since the relationship is defined in advance on the canvas, the canvas receives only the contents of each component as an input. Grasping the canvas as a means to express Value Proposition, we can consider that this canvas is a model that expresses Value Proposition by the combination of the input components. Therefore, when comparing different Value Propositions, we considered that it was possible to discuss the differences between Value Propositions by combining components. By discussing the differences and identifying the combinations in which the differences occur, in the Value Proposition described in the Customer Value Consistency Canvas, we can identify which combination of components the novelty of the Value Proposition in the design arose from. We consider this point as a methodology that makes it possible to explain the novelty of Value Proposition.

From the above discussion, we conclude that, the proposed method achieves the research purpose of realizing the functions necessary for the purpose, facilitating the examination of the Value Position at the time of new business examination, and making the consistency of the ontology possible.

4. CONCLUSION

This study proposes a Customer Value Consistency Canvas for customer value proposition in designing a new business. This proposed method facilitates the Value Proposition design and explains the design consistency. Comparing with an existing method Value Proposition Canvas, Customer Value Consistency Canvas proposed in this study is a method to facilitate the Value Proposition design by allowing more detailed considerations of its components that enhances and explains the Value Proposition consistency. We evaluated the proposed method in two ways. One involved a comparison evaluation with the existing method by individual work using the proposed method. Another one involved an evaluation interview with experts. The analysis results support the proposed method in terms of the ease of understanding, availability, and effectiveness. As a validation of the proposed method, we evaluated whether the research purpose was achieved by the entire proposed method based on expert interviews. Based on the findings, we confirmed that the proposed method realized the ease of understanding and consistency of Value Proposition to a larger extent than what a Value Proposition Canvas did. In particular, the proposed method might be highly effective for beginners in business review. Nevertheless, we could still consider the order of the canvas for further improvement. An evaluation also revealed a problem caused by a pivot in business development that could cause a loss of Value Proposition consistency. To solve this problem, we could apply the proposed method to project management that supports projects with high a high level of uncertainty.

Future research themes are suggested to include the following. First, the effectiveness of the proposed method can be evaluated according to the experience of a new business development serving as an object of verification. Second, from Martin's "The Seven Samurai of Systems Engineering" point of view, we can apply the proposed method to cope with a change of context by introducing and using the designed services. Third, the proposed method can serve as a business idea creation method, e.g., a method to create a new Value Proposition by combining Customer Value Consistency Canvas with the Forced Association Method. Fourth, to solve the problem concerning the loss of Value Proposition inconsistency caused by a pivot, we can apply the proposed method to describe the Value Proposition that changes in the process of a pivot, which is useful to managing a pivot and deriving pivot options. Finally, we can consider how to combine the ontology components with the proposed method for explaining the novelty of a Value Proposition. These possible future research themes will contribute to the literature of Value Proposition design for new business development.

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