

PROPOSAL OF VISUALISING MODEL OF CUSTOMER DEMANDS SUFFICIENCY DEGREE IN DESIGNING PRIVATE LIFE INSURANCE

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ABSTRACT

Since May 2016, customers' demands confirmation at the time of life insurance solicitation was strengthened by the Japanese Financial Services Agency (FSA). It requires not only confirming what the customer is requiring, but also to realize what is required through the insurance plan proposal. To realize this, life insurance companies must firstly understand their customers' needs and then need to show how the it can be realized through the proposed insurance plan as well as how it matches with their own needs. This means that both customer needs and the matching between these needs with the proposal must be visualized. The visualisation can be realized by using a three-dimensional model which contains time, space, and products axes. These three axes represent the elements of insurance products, where time represents 'when' the insured will deserve the benefits and space represents 'for what' the insured will deserve the benefits. The customer's insurance expectation is, in other words, a clarification of the function which a customer is expecting out of entire functions of this insurance. This clarification of required insurance functions leads to identification of that customer's insurance demands. Therefore, the three-dimensional model can be used to visualize both what the insurance can do as well as the customer's own demands.

This paper aims to propose a visualised, three-dimensional model which represents the structure, essence, and the concept of insurance. The three-dimensional model is a model which enables the visualization of sufficiency degrees of customer demands that could be invisible in most of the cases. Each axis of the three-dimensions represents the function of insurance. The visualising model of customer demands sufficiency degree enables a comprehension of the function of insurance in public social security, private life/non-life insurance, and customer demands point of view. Through the process of understanding insurance as a system by using this model, people will understand how can insurance support their financial risk and find out what they should and should not expect for private life insurance products.

Through the result of several workshops and interviews with professionals and a life insurance specialist in order to evaluate the model, it was proven that the model helped in understanding the features and functions of life insurance, and participants could better

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understand their needs of insurance. Additionally, they had the impression that life insurance is something valuable and will be of benefit for future financial risks.

Keywords: Life insurance, Three-dimensional, customer demands

INTRODUCTION

The Financial Services Agency (FSA) in Japan has revised the Insurance Business Law in May 2016. The Insurance Business Law is a basic law to supervise insurance business and operation for which its main purpose is to protect the policy owner of the insurance contract. This change required not only the insurance companies, but also the insurance agency to follow the “basic rules of insurance at solicitation” which was established by this amendment. The basic rules require the followings (FSA, 2016);

Introducing “Duty of understanding customers’ intention”

- Understand the customer’s needs.
- Realise the insurance plan proposal based on the customer needs.
- Tracking the record of initial and finalized proposal including the customer needs.

Before this change, insurance companies had followed the order from Financial Services Agency (FSA) of ‘Confirm the customer’s needs’ at solicitation. Due to this revision of the Insurance Business Law, the current confirmation process has been strengthened from ‘Confirming’ to ‘comprehending’ their intention. However, when it comes to ‘how’ to confirm the customer needs, it has been left as an area up to the life insurance company’s discretion and it is not clearly stated in the revised law.

As “Duty of understanding customers’ intention” requires that an insurance company must 1) understand customer needs and 2) show how the proposal of insurance plan from the insurance company matches with the customer’s needs, this means that both customer needs and the match between customer’s intention and proposal must be jointly presented to prevent the misunderstanding between the customer and insurance company.

This paper explains the visualising model of customer demands sufficiency degree as a solution for understanding and jointly presenting customer needs with matches and mismatches between a customer’s intention and an insurance company’s proposal, along with the results’ evaluation through workshops, questionnaires and interviews.

The visualising model of customer demands sufficiency degree is a model built to visualise elements of insurance. This visualization of the elements of insurance enables a visual representation of the sufficiency degree in customer demands which could be invisible in theory.

This model was built by decomposing the elements of insurance and categorizing the elements by its functionality as below.

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- Time: ‘When’ people would like to receive the benefit of insurance coverage.
- Space: ‘For what’ people would like to receive the benefit of insurance coverage.
- Products: Insurance system (i.e. Life, Non-life, Social), plus Customer demands.

Customer demands, in other words is what people are expecting from the insurance. Clarifying the expectations of insurance will make what an insurance policy can do more obvious. The customer’s expectation of insurance is, in other words, the required functions out of the entire functions which insurance owns. For that, it needs clarifying that the function which a customer expects is actually equal to intent of the customer needs. That is to say, the three-dimensional model built using the elements of insurance is a model that shows both functions of insurance and the customer needs. Additionally, as this three-dimensional model has a separate layer of customer demands in the product level other than insurance system, enabling the sufficiency degree of insurance system fulfillment to the customer demands to be shown as well.

PREVIOUS STUDIES

In the U.K., a life insurance company provides a document called ‘Key Features’ and ‘Suitability Letter’ at solicitation. The Key Features document contains the objective of the product and risk factors information of the proposed life insurance product. In addition, the Suitability Letter contains the reason why the product is suitable for the customer. However, these two documents are facing problems in that they contain large volumes of information to follow the detailed regulation, or technical terms being used frequently (Takasaki, 2007). Also, it’s been reported by the Financial Services Authority that the benefit of Suitability Letter is not meeting the cost required (FSA U.K. 2007).

The difference between the U.K.’s suitability letter and the visualising model of customer demands sufficiency degree is that a suitability letter describes the functionality of insurance products and how it is fitting to one’s need in text using special legal terms, whereas the visualising model of customer demands sufficiency degree shows it as a visual image indicating the function, features and structure of insurance products.

The measure of market demands describes the different types of areas where the demands by the market are likely to be detected. This has been introduced by Kotler in his book called ‘*Marketing management: analysis, planning, implementation and control.*’. It divides the areas to be measured into 90 different types by having six different product levels, five different space levels and three different time levels. Each demand measure serves a specific purpose (Kotler, 1997). The measure of market demands shows how much the customer desires it, in other words what customer demands are there under particular conditions. The model of measures of market demands is a three-dimensional model and composed by the elements of market that is product, space and time. These elements are the same as the elements of which three-dimensional model of life insurance is composed, and therefore the visualizing model of customer demands sufficiency degree is a model that can effectively describe customer needs.

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In Kotler's model, various types of sales of each individual layer are set in the product level. However, in the visualizing model of customer demands sufficiency degree, insurance systems (i.e. Life insurance, Non-life insurance and social insurance) and customer demands are set as separate layers. Having the customer demands as an individual layer in the product level enables it to describe the sufficiency degree of customer demands. The details of sufficiency degree of customer demands will be explained in the next chapter.

VISUALISING MODEL OF CUSTOMER DEMANDS SUFFICIENCY DEGREE

The visualising model of customer demands sufficiency degree is a model that enables the visualisation of the sufficiency degree of customer demands which is in many cases invisible. The three axes of the model represent functions that compose the insurance, and also each axis composes the individual dimensions, and by building that each dimension makes the cube-type three-dimensional model.

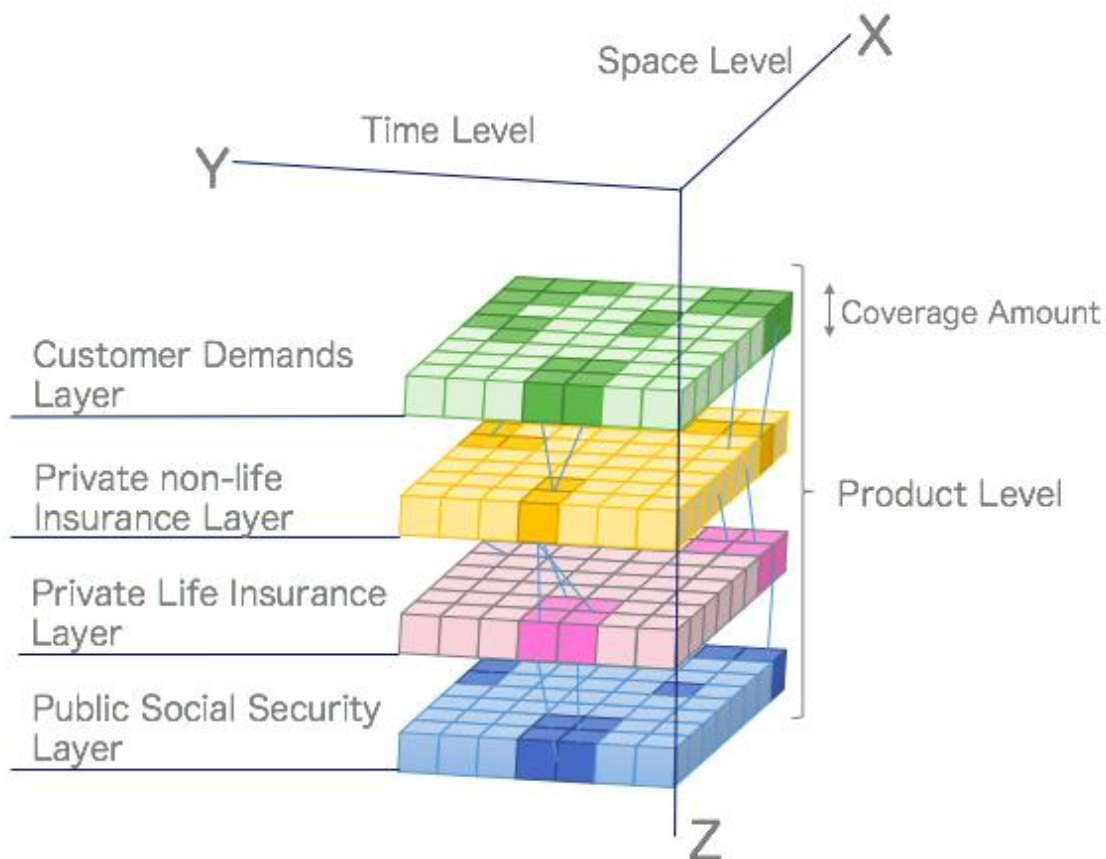


Figure 1. Visualising Model of Customer Demands Sufficiency Degree

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The reason why the visualising model of customer demands sufficiency degree are able to visualise the customer demands sufficiency degree, is because the element that composes the model is the function which insurance has. Also, having the customer demands as an independent layer in the product level help realise it. This separation of insurance system and customer demands as a layer in the same product level enables a view of it from the product dimension point of view.

As for both what each separate layer can do and what is customer's expectation will be being represented from the same stand point inside the insurance system level, it enables the subtraction between the separate layers and the sufficiency degree to be shown.

Elements of three-dimensional model

The visualizing model of customer demands sufficiency degree has three different axes where each axis represents the function of insurance.

The functions which compose insurance are as follows:

- Time: 'When' people would like to receive the benefit of insurance coverage.
- Space: 'For what' people would like to receive the benefit of insurance coverage.
- Products: Insurance system (i.e. Life, Non-life, Social), plus Customer demands.

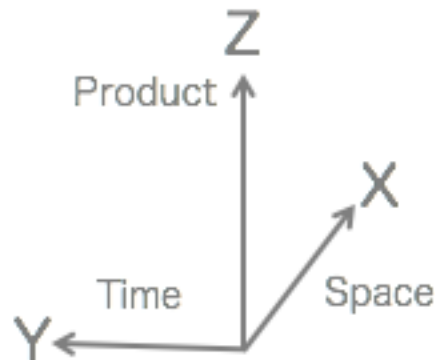


Figure 2. Three axes of the model

Time: When people would like to receive the benefit of insurance coverage.

Insurance is a product for which people sign a contract with the insurance company to cover the financial risks that may happen in the future. The time axis will show 'when' people usually get the financial support from the insurance company. If the contract was a life insurance product then the timing of 'when' will be one of the eight different health stages in people's life. Such as the time when they get a surgical operation, nursing become necessary or people would pass away.

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Space: 'For what' people would like to receive the benefit of insurance coverage

The space axis represents what kind of financial support will people receive from insurance contract. For example, the financial support that is needed is medical care expenditure, cost of living while being hospitalized, being unemployed due to illness, or funding prepared for the retirement and others. Those financial areas that insurance is supporting are shown in the space axis.

Product: Insurance system (i.e. Life, Non-life, Social), plus Customer demands

The product axis is made out from four different layers, which is 1) Life insurance, 2) Non-life insurance, 3) Social Insurance and 4) Customer Demands. The 'Time' and 'Space' axes, placed on horizontal and vertical directions to generate a matrix that covers the entire feature of insurance system. The product level axis uses this matrix to represent those features of different insurance systems. Additionally, the customer expectations will be shown on a customer demands layer using the same matrix.

	Treatment cost	Cost of living - Insured	Cost of living - Family	Cost of living - Family	Reserve for old age	Asset formation	Education	Inheritance succession
Death								
Eldery Care								
Home remedy								
Hospitalized								
Surgery								
Being diagnosed								
Not feeling well								
Healthy								

Figure 3. Example of Matrix of insurance system

Matrix of insurance systems

Using the functional elements of 'Time' and 'Space' axes on the horizontal and vertical direction creates a matrix for insurance systems. This matrix represents the function and features of insurance and becomes the layer for the product axis. By plotting the necessary information in the matrix per insurance system such as life insurance, non-life insurance and social insurance, the matrix is able to tell what kind of financial support and when you can get it from which insurance system. Then finally pile up each layer to make a layered three-dimensional model. Please note that only life insurance functions are applied for example shown in Figure 3.

As the matrix is created per insurance system, each matrix shows what kind of benefit that each insurance system has and when people will deserve the benefit per insurance system. Therefore, the matrix can show and can be used to compare the separate insurance systems. This enables the comparison of life insurance and non-life insurance, or the comparison within life insurance systems, or the comparison between companies or even by types of products possible. The comparison of the insurance system layer and the customer

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demands layer enables demonstrates how life insurance, non-life insurance or the whole insurance system itself satisfies the customer's need.

The matrix also is three-dimensional and has height axis which represents the coverage amount of each cell. The difference of the height of each cell shows the difference of financial support amount that each function can make.

The three-dimensional model use case

As each layer in the product level represents a separate insurance system and the subtraction of the layer from other layers shows the difference and gaps between the layers that are compared.

Understanding insurance

By subtracting layers and finding the difference of each layers leads to understand more about each insurance systems. Knowing what each layer can do and cannot do will give a better understanding of what you can expect to insurance from the financial support point of view.

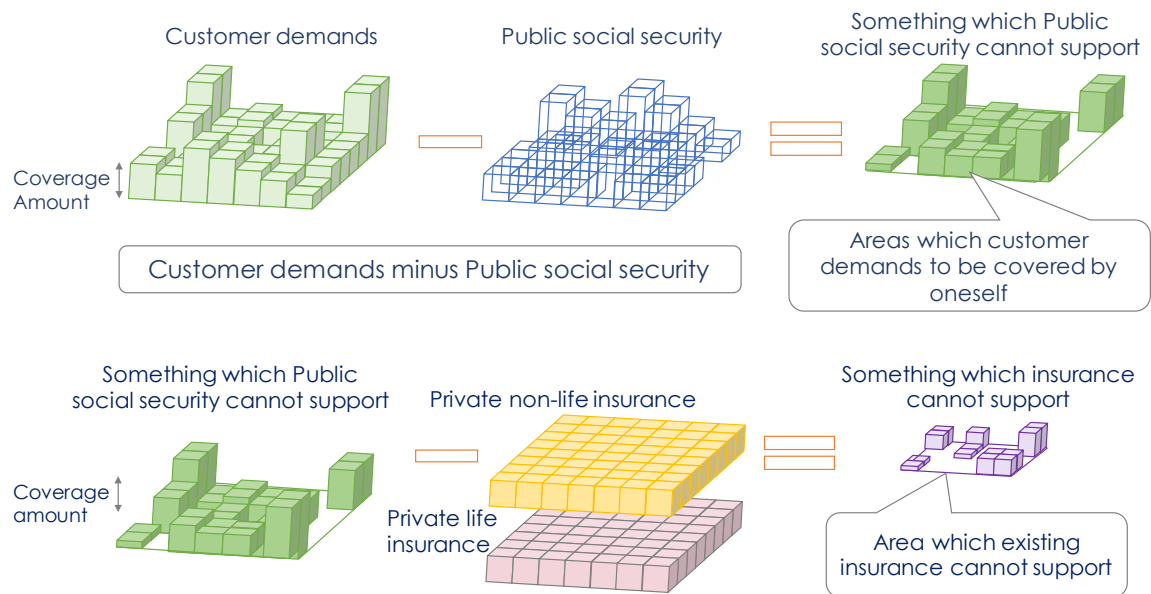


Figure 4. Procedure of understanding customer demands fulfilment by insurance system

Reviewing individual customer demands

In the model, the life insurance layer is placed above of social insurance layer since the life insurance either compensates or complements social insurance. Therefore, the model will show how much of customer's expectations to insurance are covered by the social insurance and how much more does the private insurance must cover to fulfill customer

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needs. As a result, people are able to look back on their original expectations of insurance and are able to know in which area they have enough coverage and which areas are not enough. Continuing these steps of review, the customer demands will be finalized and become mature.

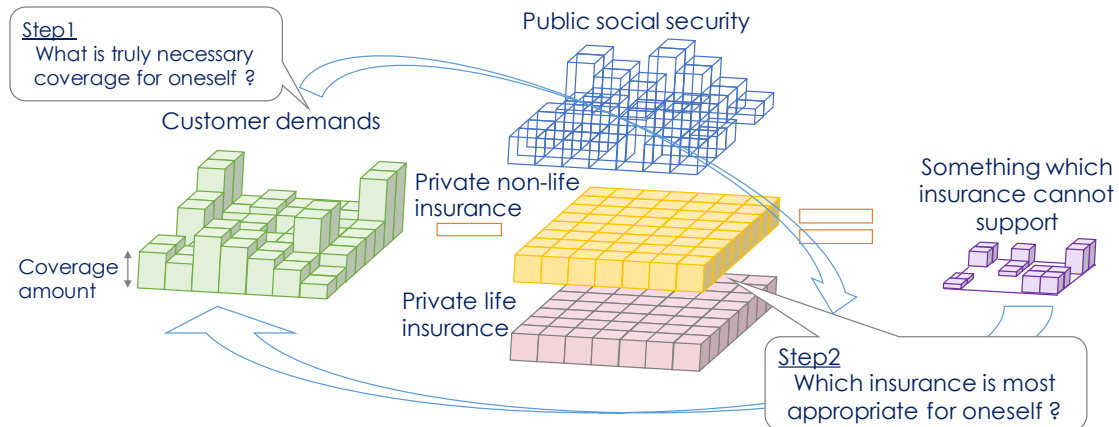


Figure 5. Procedure of reviewing customer expectation

The model can be stretched to cover up one social insurance system of one country as a maximum area to be covered. If multiple social insurance systems exist in one country then a separate model must be created per social insurance system. Furthermore, not only the comparison between each insurance system layers within single model is possible but also the comparison of the same system layer of the multiple separate models is possible too. For example, the model can be used to compare social insurance system of each country or within one country if multiple social insurance systems exist. Although, it must be noted that this model only allows comparing the difference between the two or more models and it does not state which is good or bad.

RESULTS & DISCUSSION

Results

Through the evaluation, we have verified that the model visualizes the sufficiency degree of customer demands by applying Japanese life insurance as the case through interviews, workshops, and questionnaires.

Details of evaluation architecture

The evaluation of the model including the evaluation of insurance functions matrix, was carried out using the following methods to measure from both qualitative and quantitative points of view:

- Two types of interviews
 - Professional

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- Specialist
- Workshop with questionnaire (Executed in Japan)

The objective of the evaluation was to confirm the following:

- Both model & matrix has *comprehensibility* among the insurance structure and life insurance products.
- *Generalization of customer demands* using the model and matrix
- The *appropriateness* of the model and matrix.

Each of the objectives is evaluated by the following approaches.

Evaluation Axes	Evaluation objective	Evaluation Method		Specialist Interview
Comprehensivity	Is Structure and product of insurance is comprehensive ?	Workshop	Professional interview	
Generalization of demands	Is customer demands generalized ?	Workshop	Professional interview	
Appropriateness	Is life insurance being appropriately expressed in the model and matrix ?	Specialist Interview		

Figure 6. Evaluation objectives matrix

Interviews to professionals

The main objective of these interviews was to confirm the appropriateness of the structure of model and matrix. Additionally, to confirm that the model and matrix has comprehensibility of insurance system and are generalizing customer demands.

The target interviewees have more the 10 years of working experience in a single or multiple Life Insurance Companies, where being in-charge of either Sales or back office operation management.

Interview to a specialist

The main objective of the interviews to the specialist of life insurance was to confirm the appropriateness and understandability of the structure of model and matrix. Although the target interviewee does not have a working experience in a Life Insurance Company, the interviewee still has an experience working at Financial Services Agency in Japan.

As a result of the interviews, it was proven that the model clearly represents the insurance structure, concepts, functions and features. Especially, the part describing insurance coverage in a 'block' image in the three-dimensional structure and allowing the subtraction between each layer, is considered new but also very appropriate considering the characteristic of the insurance system and customer demands. They mentioned the model is

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also helping to ease the understanding even for those who are not familiar with life insurance. For the individual customer, this model will help not only when looking for new contract but to review their own existing contracts, by providing the logically structured information of insurance through the visualizing model of customer demand sufficiency degree. For sales people, this model can be used to review customer's demands after the interview and it also can be used to confirm that both the customer and sales person are on same understanding about the proposal by the sales person.

Workshop and questionnaire

The main objective of the workshop was to confirm the comprehensibility of the model and matrix by those who are not familiar to insurance in general compared to the professionals and specialists. The workshop contained the brief explanation of the model and matrix including the background, objective and its usage.

The target interviewees have no working experience in Life Insurance Company. Some of them were life insurance contract holders but some were not, therefore the level of life insurance knowledge varies. The difference in level of understanding life insurance was not alight in advance to conduct the workshop.

The questionnaire survey was conducted to 20 people who attended the workshop and got valid response from all the attendee. The workshop attendee answered two types of questionnaire, the pre-questionnaire and post questionnaire. The pre-questionnaire was conducted in advance to the workshop execution and the post questionnaire conducted after the workshop. The list of questions is shown on Table 1. Responses were given on a five-point ordinal scale, ranging from "1=Strongly agree", "2=Somewhat agree", "3=Neither agree nor disagree", "4=Somewhat disagree" and "5=Strongly disagree". Scores of 1 and 2 were assumed to be valid for this evaluation.

Table 1. List of questions in the questionnaire

Assessment criteria	Question
Comprehensibility in Pre-questionnaire	Do you understand the structure of insurance?
Comprehensibility in Post questionnaire	Were you able to understand the structure of insurance?
Generalization in Pre-questionnaire	Do you know what kind of insurance you need?
Generalization in Post questionnaire	Were you able to know the insurance which is necessary for you?

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The paired t-test was executed as an evaluation method. The result of paired t-test for “Comprehensibility” and “Generalization” are shown in Table2. The result for comprehensibility shows that this model is useful to understand the functions and features of life insurance. And, the result of generalizing can be said that it is useful for improving generalizing the demands of customers by understanding the insurance which is necessary for oneself.

Table 2. Results of paired t-test

#	Assessment criteria	Mean		Standard deviation	Significance probability.
1	Comprehensibility	Pre	2.70	0.191	0.000
		Post	1.60		
2	Generalization	Pre	3.05	1.348	0.044
		Post	2.40		

Discussion

Through the evaluation, comprehensibility, generalization and appropriateness of the model has been confirmed and its effectiveness was proven. The interviews and workshops have brought many practical and useful insights that utilize the model more than the original idea.

Comprehensibility

Both from the qualitative and quantitative point of view, the interviews and workshops proved that the model and matrix has the ability of comprehensibility of insurance. It helps people to understand insurance in general and functions and features of the insurance through the model. The depth or the width of the comprehensibility may depend on the existing knowledge or experiences which one already has. Although still the model and matrix are able to help people to deepen or widen their understanding and knowledge of insurance.

During the workshop, many of the participants shared their thoughts about the information of insurance. They mentioned that insurance is not a topic which they proactively learn. On top of that, it is not a topic where they would be triggered to search information very often. Therefore, the workshop has become a good occasion for the participants to think about their own insurance, and the model as well as matrix were useful enough to support their understanding. Also, many of the participants mentioned that talking about insurance to others and listening to other’s thoughts and understanding of insurance has helped a lot to understand about it more.

From this, the below can be stated,

- More educational campaigns to spread the information of insurance in general are required (including both public and private life/non-life insurance).

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- A workshop style education using the model and matrix could help people to understand and earn knowledge of insurance, especially that the communication and discussion with others helps.

Generalization of Customer demands

The quantitative results of the questionnaires conducted at workshops has proven that the model and matrix will support the function of generalizing customer demands for life insurance. The matrix will not show the exact insurance plan or products people should have and how much you should spend for. Nevertheless, it will give some clues and provide a venue to think about one's provision against their financial risk.

Appropriateness

The appropriateness of the model and matrix was confirmed by both life insurance professionals and the specialist through the interviews. They commented that they do not feel any particular inappropriateness from a life insurance company point of view. However, the evaluation was only performed for life insurance cases and does not yet fully include the non-life insurance points of view, necessitating its needed confirmation through future research.

CONCLUSION

Insurance is not something that can be seen or touched by people. It can be explained verbally, written down in texts, and described using images, however it is not a tangible entity. Some policies are very expensive and some are very complex to understand without basic insurance knowledge. The insurance system itself is complex too. Public social insurance and private life/non-life insurance systems do not stand on their own and usually interact to each other as constraints and assumptions at the same time.

In this paper, the concept, structure, function and features of the insurance system was described in the visualising model of customer demands sufficiency degree as a proposal to ease the comprehensibility of insurance systems. Once the customer demands are set then by subtracting what the public social insurance institution and private life/non-life insurance product has as a function from it, it will tell the customer which areas of risk will be supported by which function of insurance. By visualising what is ready now for supporting each individual financial risk, it does not only help people to understand but to look back and find out what is the true expectation to insurance from the customer's point of view.

The evaluation was conducted from both quantitative and qualitative approach. Interviews with several professionals and a specialist as well as multiple workshops were executed to confirm that the model and matrix has 1) comprehensibility, 2) generalization of customer needs and 3) appropriateness to be used for insurance systems. The comprehensibility and generalization of customer needs was statistically proven to have the valid significance. Also, the feedback through interviews and questionnaires was very positive and showed

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that model has great value and contribution to the problem that life insurance has. The appropriateness has also been proven by the confirmation of life insurance professionals and a specialist.

These evaluations results show that visualising model of customer demands sufficiency degree provides support to people understanding life insurance, and helps generalization of customer needs. It has also shown that through the support of the visualising model of customer demands sufficiency degree, people will get more positive impressions to life insurance products, as many of the participants of the workshop expressed a feeling that they wish to actively research or review their respective life insurance products.

REFERENCES

- FSA(U.K.), 2000, *Consumer Research 5 Informed decisions?*
- FSA(U.K.), 2007, *Assessment of the benefit of the FSA suitability letter.*
- KOTLER, P., c1997. *Marketing management: analysis, planning, implementation and control.* (9th ed.) edn. Upper Saddle River, N.J.: Prentice Hall International, c1997.
- TAKASAKI, Y., 2004. *Provision of comparative information of life insurance products. – focus on European cases.* Journal of insurance science, (585), pp 62-89
- TAKASAKI, Y., , 2007. *Business management under principle of customers first from Financial Services Act in U.K.* Journal of insurance science, (599), pp213-232
- YASUI, T., 2011. *Non-payment of insurance benefit and Japanese insurance administration : Why did the directional change took place ?* Nippon Hyoron sha co. Ltd., Tokyo