

行政院國家科學委員會專題研究計畫 期末報告

設計複合商店的魅力因子研究-以誠品書店為例

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中文摘要： Facing to the experience economy, the enterprises have to know the motives and the values of consumers' activities and then design the experience which can satisfy consumers' expectation. Eslite bookstore, a famous bookstore in Taiwan, is the object of this study. This study aims to figure out the motive of coming Eslite, and construct the mind map of Eslite' s value. Finally, to find out the value of sense of design, and what kind of elements generate design. By ' Means-End Chain' and ' ZMET' , to find out the links of ' Attributes-Consequences- Values' of Eslite.

中文關鍵詞： 隱喻誘引, 誠品報告

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英文關鍵詞：

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THE RELEVANCE OF CONSUMER'S VALUE AND EXPERIENCE DESIGN ELEMENTS IN ESLITE BOOKSTORE. SUBTITLE4-12PAGES

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ABSTRACT

Facing to the experience economy, the enterprises have to know the motives and the values of consumers' activities and then design the experience which can satisfy consumers' expectation. Eslite bookstore, a famous bookstore in Taiwan, is the object of this study. This study aims to figure out the motive of coming Eslite, and construct the mind map of Eslite's value. Finally, to find out the value of sense of design, and what kind of elements generate design. By "Means-End Chain" and "ZMET", to find out the links of "Attributes- Consequences- Values" of Eslite.

Keywords: user experience evaluation, ZMET,

INTRODUCTION

How long have you not been to a physical bookstore? One week? One month? Or one year? When the online bookstore is more convenient, people buy books without going to a physical bookstore. Except for selling books, what physical bookstore can do? Can physical bookstore give consumers new value, and new user experience to attract them? In Taiwan, Eslite bookstore creates the new style of bookstore. A writer even says, "Eslite for me is not just a store. It's an attitude, an event, a kind of narcissism, a character, and a need (Lee,2005). There are some purposes of this paper. First, find out the aspects of user experience in Eslite bookstore. Second, which value do consumer concern most? Third, the relevance of consumer's value and experience design elements in Eslite bookstore.

LITERATURE REVIEW

ESLITE BOOKSTORE

Eslite bookstore was held in 1989. The ideals of Eslite bookstore are to lead consumers to access the beauty of soul and knowledge and to taste culture, art and creativity.

Eslite bookstore has held for 22 years (Lin,2007) . The first phase is "culture", 1989-1994. In this period, his goal consumer is elite. But elite is rare, so that Eslite add cultural and artistic activities to attract other consumers. The second phase is "a neighborhood bookstore", 1995-2004. In this period Eslite open new stores in the hospital, MRT and so on. The third phase is "a marketplace", 2005-now. In 2005, Eslite flagship store opened. In this flagship store, sells books, foods, clothing, design products and so on. Eslite is not only a bookstore, it become a show room of life style. Generally speaking, Eslite pays more attention on "creativity and life".

The thesis of Eslite are talking about brand position (Cheng, 2002; Chu, 2005), marketing (Liou,2003; Pan,2006; Lin, 2007; Torng,2007), activity design (Huang, 2008), and interior design (Hsieh, 1999; Lin,2008; Ou,1998). However there is not the research about consumer's value. So that this study is based on consumer' experience to discuss the consumer's value of Eslite bookstore, the motivation of going to Eslitee bookstore, and becomes its fan.

RESEARCH METHOD

MEC

Means-end chain theory is common in consumer's value research (Chang,2007; Cheng,2007; Wu,2002; Hung,2003; Huang,2001). Means-end chain has three levels. From top to bottom is value, consequence,

and attribute. To build up the connection model of attribute-consequence-value can understand how consumer transfer the product attribute to the meaningful connection(Hung, 2003).

The researcher often one-to-one interview to ask interviewee what is important and why is important, until he can't answer anymore. And the researcher has to dig the connection of attributes (A), consequences (C), and value (V) gradually.

ZMET

ZMET, Zaltman Metaphor Elicitation Technique is a kind of interview method which combines nonverbal (images) and verbal language. This method is used for digging out consumer's perception and feeling which consumer hard to express clearly.

Metaphor usually means to take one thing to represent the other. Metaphor for ZMET, the meaning is broader. The levels of metaphor are surface metaphors, metaphor themes, and deep metaphor. (Figure 1)(Zaltman, 2007).

The surface metaphor are used every day, e.g., money run through his fingers, the bank froze his assets. These metaphors have meanings by themselves, and they can bring out the deeper feelings and meanings.

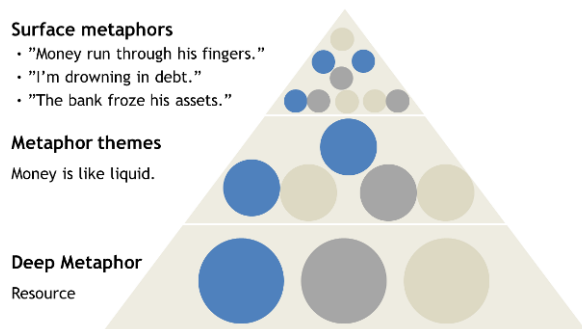


Figure 1. Metaphor level. (Zaltman, 2007)

Interview process

1. Story telling

Purpose: Let interviewee describe all images which he prepares.

- Q
- Please describe what you see in this picture?
 - Why do you pick up the image? What is the relation between it and the subject?
 - Which object or things let you have this feeling?

2. Missing images

Purpose: Let interviewee describe the images which

he can't find, and describe the meaning in it.

- Q
- In finding images, what kind of images can't you find out? Can you describe it?

3. Classifying (mood, meaning, feeling, state...)

Purpose: Let interviewee classify the images and to name. About 3 times.

- Q
- Please classify those images into 3-4 categories, and name them.
 - What is meaning of these categories?

4. Extract constructs

Purpose: the relationship between constructs.

- Q
- Please talk about the relation between the images and the subject. Have you ever confronted the similar situation? What's your feeling? Why do you have the feeling?
 - Why are those feelings and experience important to you?

5. The most representative of images

Purpose: Let interviewee pick up an image which is tally with subject

- Q
- Please pick up one image which can represent feeling and thinking about the subject, and describe the meaning.

6. Reverse image

Purpose: Let interviewee describe the image is reverse of the subject

- Q
- Please imagine the reverse image of the subject. What will it look like? What factor will be in it? Why?

7. Sense image

Purpose: the sense of sight, hearing, taste, smell, and touch about the subject

- Q
- What does the subject taste like? And not?
 - What does the subject seems like? And not?
 - What does the subject feel like? And not?
 - What does the subject sound like? And not?
 - Which color is the subject? And not?

8. Image collage

Purpose: to express the important construct by using images

- Q
- Please create a new image by those images.

9. A short essay

Purpose: Let interviewee write down a short essay to help communicate important concept.

- Q
- Please describe the image you create. What do you want to express?

Table 1. ZMET interview process.

INTERVIEW PROCESS

This study combines ZMET and laddering technique to capture the connection of consumers' consensus maps about Eslite bookstore. By ZMET, to interview 12-15 typical consumers can get enough data which can represent a precise consensus map of most people of the market segmentation (Zaltman, 2003). In this study, typical consumer has to fit two conditions. First, he must have purchased in Eslite bookstore and market. Second, he must be the high-involvement consumer of Eslite bookstore. In order to determine the degree of his involvement, researcher asks interviewee to fill out the Revised Personal Involvement Inventory, RPII, which is composed by Zaichkowsky. The lowest score of this inventory is 40, and the highest score is 100. Above 85 score is seen as high-involvement consumer. The score of all interviewees is above 85, and the mean score is 91.5. According the standard of RPII, these interviewees are high-involvement consumers of Eslite bookstore.

Before formal interview, researcher asks interviewees to prepare 8-12 images about their feelings, impressions, and thinking of Eslite bookstore. The logo of Eslite bookstore and other obvious symbol which represent Eslitebook store can't show on the images.

The interview flow follows the ZMET interview process (Table 1) Between the interview researcher uses laddering technique to lead interviewee to talk about the activities in Eslite bookstore, what elements makes him enjoy, and what kind of reason let him want to do so by images (Figure 2). The goal is to find out the relationship between consequence (activity) and value, value and value, consequence and consequence.

DATA ARRANGEMENT

The result of interviews represents in two styles, one is the consensus map, and the other is hierarchy of value map. Researcher can find out what construct is more important and which constructs are affected by a construct with the consensus map, and realize the relationship of attributes, consequences, and values clearly.

There are some steps to create these two maps. Both of them are created by constructs and connections. So first is to sort each interview data by sentence,

and to name each category. Then examine whole categories, and combine the similar categories into one, until all categories are independent each other. The names of final categories are constructs. Second, according to property of attribute, consequence and value to classify all constructs. Third, re-examining the interview data, and draw the connection between the constructs. Fourth, count the number of referred times of constructs. Fifth, draw A/C/V summary implication matrix. Direct relation plus 1, and indirect relation plus 0.001. Researcher can realize which constructs the relationship is much closer, and what the main construct is. Sixth, draw the consensus map. The constructs in the consensus map have to be referred by one third of interviewee. In this study, it means 4 people. Seventh, draw the HVM with summary implication matrix. The constructs in HVM also have to be referred by over 4 interviewees. And the relation between constructs has to be referred by one fourth interviewees.



Figure 2. The image collage of an interviewee. "Accumulate energy to fly to the future. Except for the legs, it symbolizes that good to apply the force of knowledge, you may change gradually. The man sit the corner, that's a start. If you read more, you'll get more harvest, and then these ideas will germinate. These ideas push you to climb up higher and higher, and you can see farer and farer. Once you are here, it means you accumulate energy. Some day you can fly, fly to the faraway future. It is like the larva of the butterfly. Finally, it will fly. This girl is arranged here, because she has a happy image. This thing makes people happy. Or she congratulates those successful persons. She waves her hands to them, and congratulates them. It's delightful and full of joy."

RESULT AND ANALYSIS

HVM-FIND THE KEY VALUE AND KEY ACTIVITY

In this study, there are 107 constructs. In order to avoid drawing and analyzing the consensus map hard,

researcher sieves out the typical and important constructs from 107 constructs. The way is to count the referred times by interviewees (Table 2). As the construct was referred by over one third interviewees, it can be brought into the consensus map and HVM. There are 12 interviewees in this study, so as long as the referred times is over 4, the construct can show up on the consensus map and HVM.

no.	Construct	times
1	Originality design treasure-house	10*
2	Refresh	8*
3	Not only books but everything	8*
4	A number of books	7*
5	Seats	6*
6	Gather quality goods	5*
7	Clean	5*
25	Learning and absorbing	10*
26	Distribution of people	9*
27	Compound	8*
28	Sit down	8*
29	Treasure hunting	8*
30	Multiple choices	8*
31	No bothering	7*
32	Low profile	7*
33	No limits	6*
34	Access to unknown	6*
35	Top of pyramid	6*
36	Be designed	6*
37	Keep new	5*
38	No stress	5*
39	Tour guide	5*
40	We are together	5*
41	Isolated	5*
42	Sense of design	5*
43	Modern	5*
44	Interesting	5*
45	Cultural	5*
46	Unmannered	5*
47	Warm	5*
48	Over burden	5*
49	Ease to close	5*
50	Convenient	4*
51	Play and stroll	4*

52	Dating	4*
53	Sharing	4*
54	Close to nature	4*
55	Speed up pump	4*
56	Landmark Full of joy	4*
57	Fashion life	4*
58	Life education	4*
87	Forget time	8*
88	Escape the real life	7*
89	Upgrade	7*
90	Evoke ideas	7*
91	Be yourself	6*
92	Finding surprise	6*
93	Take it easy	6*
94	Belonging	6*
95	Comfortable	6*
96	Fill with fuel	5*
97	Unusual Ease	5*
98	Forward ideal	5*
99	Delightful	5*
100	Ease	4*

Table 2. Referred times of constructs. * It represents that the construct is more important. The list only shows the more important construct.

HVM is mainly drawn by A/C/V summary implication matrix which seems like Table 3. The relation between constructs has to be referred by one fourth interviewees. Only direct relation, the cut-off value is 3. Both of direct relation and indirect relation, the cut-off value can be 2.001 or 1.002. Only indirect relation, the cut-off value is 0.003.

	25	26	27	28	29	30	31	103	104	105	
1	3	0.001	2	3			2		0.001		35.016
2	2	0.001	2	3	0.001	3					26.018
3	6		1	2			2	0.002		0.001	25.007
4			2	1			1				13.008
5	1	0.001	1			7		2	0.002		19.019
25									0.001		17.007
26	2	0.001									20.012
27								1			7.005
28			1			3					7.002
29	1						1				12.002
87					1						4.002
88											1
89											2
90	1		1								7
91									0.001		3.002
92								1			1
93											5
94											4.002
95											0
96	1										2
97											3
98											0
99											3.001
100									0.001		4.002
	29.007	12.002	16.003	6.001	15.001	6.002	7.003	2.005	3.001	4.002	

Table 3. A part of A/C/V summary implication matrix.

There are 37 means-end chains (Table 3). In order to figure out the more important chain, so that researcher sums up the roll and column score of the construct (Table 4).

NO.	Links	Score	Placing
1	1-25-90-89	108.062	1
2	1-25-89	83.048	
3	1-25-99	84.042	
4	1-25-93	98.05	5
5	1-25-96	70.038	
6	1-42-25-89	84.049	
7	1-42-25-99	85.043	
8	1-42-25-93	99.051	4
9	1-42-25-96	71.039	
10	1-42-94	39.024	
11	1-93	57.037	
12	3-27-29-90-89	82.06	
13	4-29-90-89	79.057	
14	4-90-89	66.044	
15	4-25-90-89	107.057	2
16	4-25-89	82.043	
17	4-25-99	83.037	
18	4-25-93	97.045	
19	4-25-96	69.033	
20	5-41-95-87	85.166	
21	5-41-93	68.136	
22	5-28-41-95-87	104.181	3
23	5-28-95-87	87.172	
24	5-28-93	70.142	
25	5-28-41-93	87.151	
26	5-28-87-93	96.167	
27	5-87-93	42.134	
28	26-25-96	45.129	
29	26-25-99	84.037	
30	26-25-89	83.043	
31	26-25-93	98.045	6
32	26-90-89	67.044	
33	26-61	27.017	
34	26-95-87	74.062	
35	31-95-87	62.053	
36	55-104	9.002	
37	88-93	44.021	

Table 4. The relation score of means-end chain.

Top 6 means-end chains are: The first important chain is (1) Originality design treasure-house–(25)

learning and absorbing–(90) evoke ideas –(89) upgrade. The second is (4) a number of books – (25) learning and absorbing–(90) evoke ideas – (89) upgrade. The third is (5) seats–(28) sit down– (41) isolated– (95) comfortable– (87) forget time. The fourth is (1) Originality design treasure-house– (42) sense of design– (25) learning and absorbing– (93) take it easy. The fifth is (1) Originality design treasure-house– (25) learning and absorbing– (93) take it easy. The sixth is (26) distribution of people – (25) learning and absorbing– (93) take it easy. The HVM of Eslite bookstore includes the 6 means-end chains (Figure 3).

Among these 6 chains, “learning and absorbing” appears 5 times. Obviously, learning and absorbing are the key activities for consumers. Down to attributes and consequences, it relates to a number of books, originality design treasure-house, sense of design, and distribution of people. It means that the resource of learning is not only from book. It can be people, design and so on. And the main consumer’s value of Eslite bookstore is “take it easy” and “upgrade”. They are totally different concepts, but both of them are consumer’s value of Eslite.

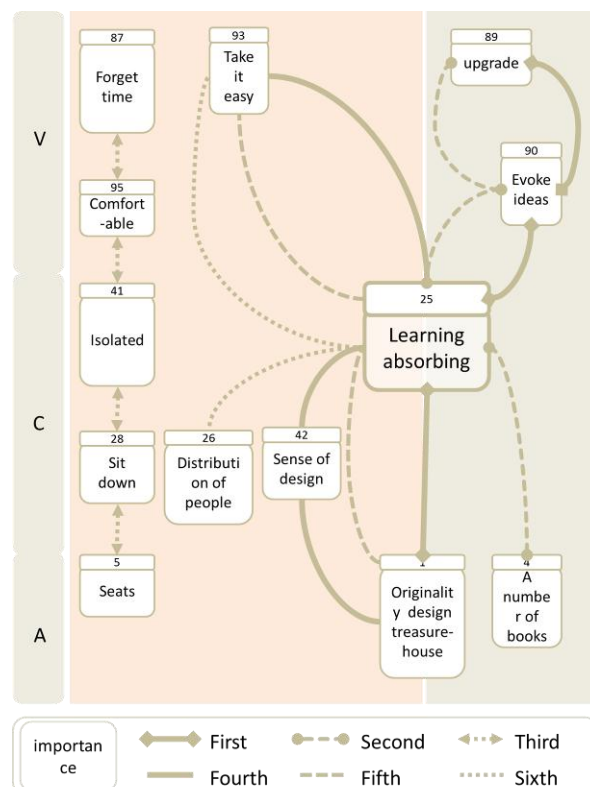


Figure 3. HVM of Eslite bookstore. Learning and absorbing is the center of means-end chain. Many attributes and value are around it. It is the key activity in Eslite bookstore. And consumers have many different thinking of learning and absorbing in Eslite.

The interviewee, F1 collages the images in to a forest (Figure 4). She said, “The forest is Eslite’s entire environment. Music broadcasts by the amplifier. The decoration and design appear everywhere. Light is one part of the environment, but I don’t want it to occupy too much space. I place the spot of finding surprise in many places. And then I can find the surprises everywhere. I place Einstein in the middle of the image, because I came here for learning. This type of learning is to find something new unintentionally, and to find something I like. I can receive much information unintentionally, this is important to me, because those are things that I don’t know. To learn more is benefit to me. It can be the talking point, and even be the inspiration.



Figure 4. Image collage by interviewee- F1.



Figure 5. Image collage by interviewee- M2.

Learning can be divided into two types, one is learning on purpose, and the other is learning unintentionally. The interviewee, M2 collages images into a boat (Figure 5). He said Eslite is like a boat which sails the sea. Its main function is the sail. The library is as the sail. It is the most important power to push the boat to go forward. And the bridge is the body of the boat. It can connect everything. The basement is the playground. It makes the boat float. Nobody can see its effort. I think when we face to difficulty we have to keep the relaxed attitude.

CONSENSUS MAP

According to consensus map of Eslite bookstore, there are four images of Eslite bookstore. It contains accumulate capacity to qualitative change, release the stress in a slow space, complete a tour to find treasures, and be the elite of taste (Figure 6). In the part of “accumulate capacity to qualitative change”, “learning and absorbing” is the core construct. It connects 18 constructs, e.g., “we are together”, “life education”, “people distributing center”, “speed up pump” and so on (Figure 6). Learning and absorbing sound like common concept for a bookstore. But to see more deeply can find the element which can attract people to learn is not only book.

There are three aspects of “learning and absorbing”. They are “educational function of Eslite- content which consumer learns”, “environment atmosphere- consumer’s learning condition”, “self-growth”. As a bookstore, to provide a space to let consumer study is a common thing. However Eslite is a complex market which integrates creativity and culture. Eslite offers not only knowledge in books but also architecture design itself, interior design, and product display. Consumers also can learn something from other consumers. That is, Eslite offers “a kind of experiential aesthetic education”. Consumers can take their “self-learning dish” to get information they want. They also can close to the design treasure house, learn something from design books, magazine, and fashion products.

In the aspect of environment atmosphere, majority of interviewees referred to décor and display. Except for space, design product is also the key element.

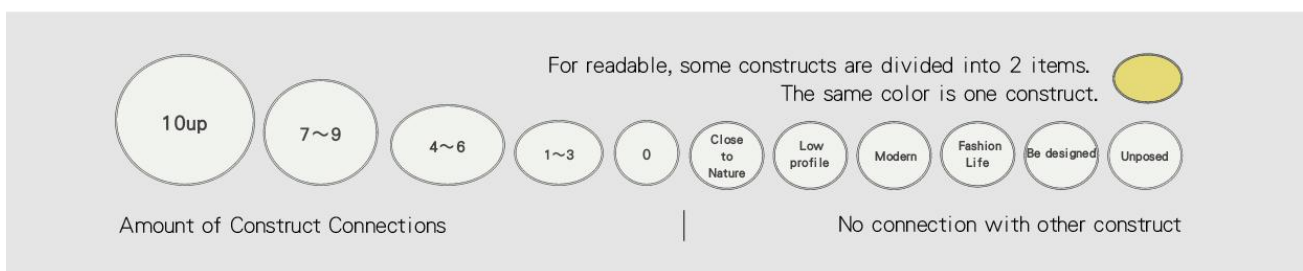
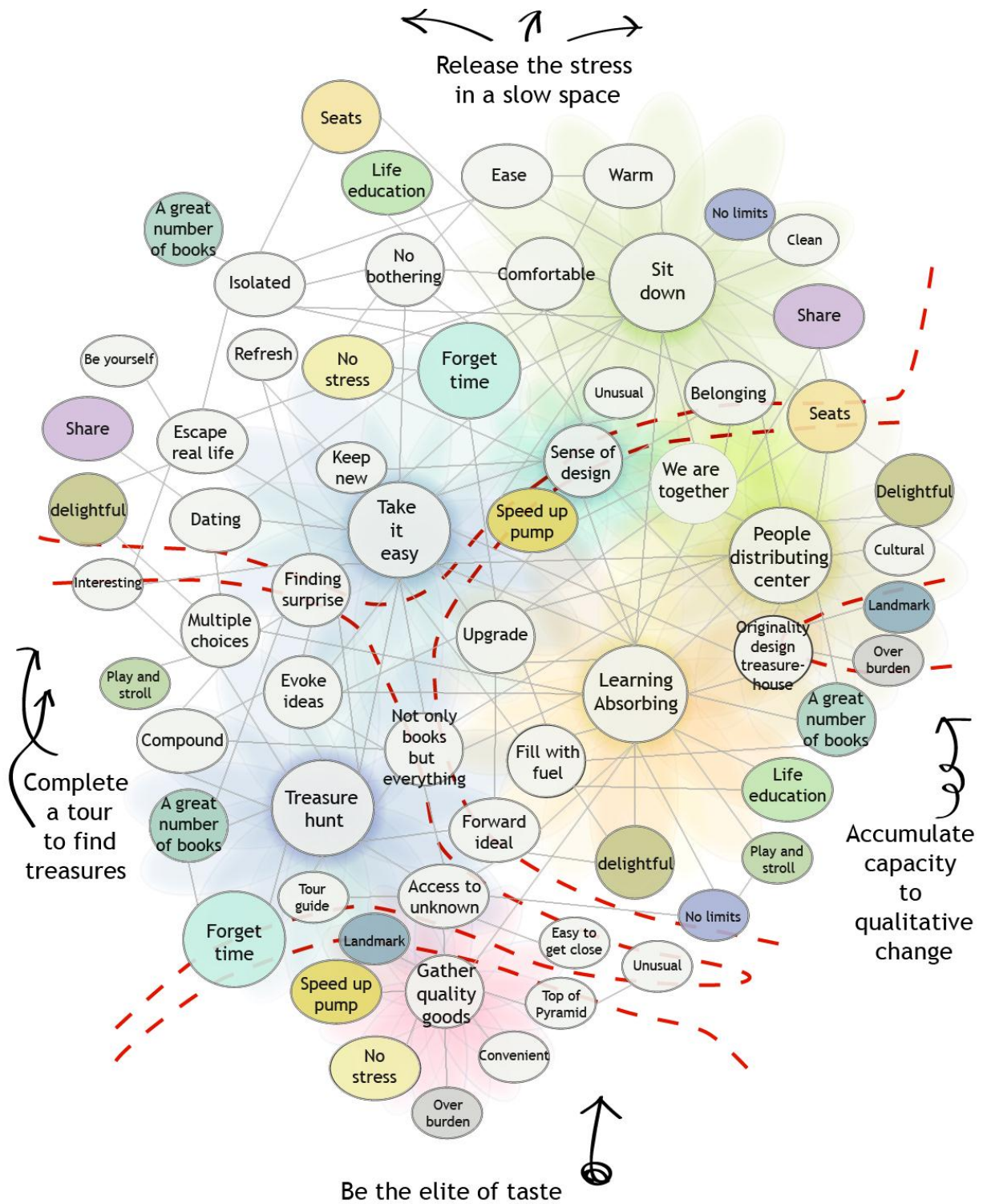


Figure 6. Consensus map of Eslite bookstore.

CONCLUSION

Upgrade and Take it easy are the two important consumers' value. People go to Eslite bookstore is for accumulating their capacity. Eslite bookstore gathers a number of books, design, fashion, and high level persons. Consumers can learn something from them, and evoke ideas, access to unknown area, broaden their horizon. And Eslite bookstore offers seats. Consumers have not to stand for long time, they can sit down comfortably, and read books a whole evening, even a day. So people have more intention to go to Eslite bookstore.

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A Study on the role of Usability in Universal design certification system

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Abstract: In the preliminary stage of Universal Design(UD) implementation, as the public sector to popularize UD concepts to general public by market communication and knowledge education; and also to encourage and stimulate the industry circle to get involved in the research and development of UD. To establish the certification system of UD is one of the design promotion strategies. This study aims to review the UD certification system over the world to find out the crucial elements ensuring the UD commitment. We survey the existing 9 certification systems from USA, Germany to Japan, and the certificated targets are from visual design, product, service, space to professionals. We analysis these certification systems by its target, criteria, test method and relative promotion plan by interviewing the authorities and analyzing the reference documents. We found out the UD evaluation should include not only the Universal Design measurement program and user participation but also Usability testing. By conducting the usability testing, it provides quantitative performance information and professional suggestion to the subject. However, the usability testing method is vary from product to product, and the needed time and resource of evaluation task depend on the complexity of the subject. The establishment of UD certification system needs to consider its target and scope to come to the most beneficial result.

Key words: *UD Performance Measure, Certification system*

1. Introduction

Since 2000 the development of universal design (UD) in Taiwan began to draw the attention of the academy circle. In 2004, Taiwan's industries were thinking the future transformation and started paying much attention to the future importance for universal design. Currently, the field of UD has possessed certain capacity in academic research, public sector and design industry, but has not yet been formed an integrated trend. In recent years, the authorities proposed a direct method- "Certification Mechanism, Rewarding Development", while they were beginning to think that how to promote industries to develop the UD products; therefore, most global countries started to carry out the researches on rewarding UD and certification.

1.1 UD development in each country

Universal design is originated from the idea: "the design of products and environments to be usably by all people, to the greatest extent possible, without the need for adaptation or specialized design i." which proposed by Prof. Ron Mace in the United States around 1980s. However, in last two decades, different

practical guidelines of universal design existed globally and applied to the cut-in angle and development direction for various industries.

U.S. is the origin of this theory. North Carolina State University established the Center for Universal Design (professional research institute) in 1989, and ADA (the Americans With Disabilities Act) and ADAAG (the Americans With Disabilities Act Accessibility Guidelines) were promulgated in 1990. We can discover that the U.S. started with the protection of civil rights to ensure the accessibility for mental and physical disabilities, and continuously developed the accessible public spaces, architectural environment, information and service, and enactment of law; however, there're no specific issues on the development of design issues, design strategy and method; in addition, there're no specific key words of forming market communication.

The terms, Design for all (DfA), Inclusive Design, are mostly used in Europe, and some teaching institutes and design promotion organizations have successively proposed that innovation is came from the co-development with the extreme users and which is an important leading design concept. In addition, Norway is the only country that takes UD as its policy guideline and has promulgated UD Action Plan 2009-2013 in 2009. Norway has also published Norway Universally Designed by 2025 in 2010, and to be the country of practicing UD idea very thoroughly.

In addition, with respect to the coming aging and lower birth rate society, the German industries reached an agreement to regard the universal design as a basis of innovative design, including Weimar Declaration signed in the Germany industrial expert conference that held in mid-November 2009, to declare the UD's duty and viewpoint to German industries.

Moreover, in terms of Japan, the country possesses the intensive aging situation, it started to protect mental and physical disabilities in 1970s, next prepared for the aging welfare society in the late 1980s, and then in the 1990s, Japan placed much attention to the universal living environment for all their citizens; therefore, in Japan UD is not only applied to the protection of social welfare system (public systems of residence, transportation, information, etc.), but also developed some vital commodities into the standard for industrial development, as well as to be the principle for enterprises' operating strategy and CSR, and local government's policy measure. In addition, the media also will make an annual ranking for those enterprises who introduced UD.

In Taiwan, UD has drawn much attention since 2000, including industry, government, academy and research organizations all engaged in the research and trying. In recent years, the government authorities continuously published related books, carried out the promotion or established the task force to conduct the exploratory researches; however, enterprise and the public still have some myths about the universal design, such as: it is the design that only provided for senior personnel, and mental and physical disabilities, the introduction of such design is expensive, etc.; therefore, broadly speaking, it is still in the phase of guiding recognition and looking for the internal development.

1.2 Universal Design Performance Measures

In order to understand the effects of UD application on product, space and service, then provide designers as a framework and based on each design principle to communicate with users, as well as review the issues of product's usability. As a result, many evaluation methods yielded to investigate on the redesignable points for

products, compare the difference in similar products, and confirm whether the design result follow the practice of UD principle. Among which, the main idea is the Universal Design Performance Measures, which is proposed by the Center for Universal Design (CUD), North Carolina State University, U.S., and developed according to 29 sub-principles of 7 main principles of the UD theory (announced on 1st April, 1997, 2.0 ver.).

PRINCIPLE ONE EQUITABLE USE		Full Accessible	Partially Accessible	Not Accessible	Not Needed	Not Applicable	Comments
1A.	All potential users could use this product in essentially the same way, regardless of differences in their abilities.						
1B.	Potential users could use this product without feeling segregated or stigmatized because of differences in personal capabilities.						<i>O: The voice output needs a headphone jack. X: The headphone jack could be better integrated into the overall design.</i>
1C.	Potential users of this product have access to all features of privacy, security, and safety, regardless of personal capabilities.						
1D.	This product appeals to all potential users.						

Figure.1 UD Performance Measures (Picture Source: The Center of Universal Design)

It should be noted that the measurement of UD performance: product’s actual score of each principle is meaningless, but needs to have users’ opinions; and provide a framework which can be used to focus on the lifecycle of product usability, and confirmation of the usability feedback from users of various groups and mental and physical capability.

2. UD Certification Mark Systems

This study collects related UD certification marks from various countries, such as Japan, Germany, U.S., to carry out the further analysis, including: Organizer, evaluation object, evaluation method and system effectiveness. 9 certification systems in total, and the categories include visual design, product design, space, industrial standard and professionals, the list is shown as follows:

Table 1. List of UD Mark Certification Categories v.s Countries

	Visual /Product	Space	Industrial Standard	Professionals
Japan	2.1 Enterprise Mark 2.2 Usability Verified by user testing		2.4 U-mark (information, telecommunication products) 2.7 Color UD Certification 2.9 CRX	2.5 UD Coordinator 2.6 Certification Test for Housing Environment Coordinator for Elderly and Disabled people
Germany	2.3 Excellent UD!			
U.S.		2.8 UD HOUSING		2.10 UDCR (NARI)

2.1 Enterprise Self-established Mark

Japanese enterprises specifically have the mark on the package or promotion activity for their products that developed or considered according to UD principle, as their commitment to consumers. Thus, these are the basic prototypes for UD marks, such as KOKUYO, PANASONIC, TOTO, TOYOTA, etc.

In addition, since the late 1990s, Japanese media - NIKKEI DESIGN (Nikkei Business Publications, Inc.) also established the ranking mechanism for enterprises' introduction of UD, and the ranking method contains 2 sections: enterprises' self-evaluation and the implementation of market survey on customer, and after its editing sector carrying out the statistic evaluation, the result will be published then. This can be regarded as a key indicator of industrial climate.

2.2 Usability Verified by User Testing

Organizer: Institute of Advanced Studies in Universal Design (IASUD). The goal is to ensure the "evaluation of common consumers", and "development method and procedure". It initiated in 2004, and its goal was to serve as an impartial third party of evaluation and certification unit of the "usability" for Japanese products.

Evaluation Object: including visual design, image, product and space, etc.; and others, such as the policy and service system are within the scope of investigation.

System Effectiveness: so far, 11 products obtained certification, and the product types include: stationary, office appliance, hand tool, building hardware, packing, etc.

2.3 Excellent UD!

Organizer: German Design Council, Berlin's International Design Centre (IDZ), and TÜV NORD CERT jointly cooperated to establish the product UD mark.

Since 2008, they carried out the certification for those "self-explanatory, easy to handle" universally usable, for all ages friendly products; at the same time, used the publication, planning of tour exhibition and professional knowledge website to promote the UD certification system.

Evaluation Object: except the medical products, there's no restriction on the applying qualification currently, and any application can be submitted all year round. Application fees will be different according to the complexity of the applying products.

System Effectiveness: since its launch in 2008, so far, there're 5-10 product applications per year, and 2 products would get certification; in addition, most applications were consumer household products.

2.4 Japan Tele-Communication Industrial Standard - Umark

Organizer: Info-Communication Access Council

Evaluation Object: focus on the tele-communication equipment and its software and service. According to the common standard for such industries, enterprises review the design standards as the referral guideline to R&D personnel for further development. The considering points can be divided into three aspects: operating usability, machine design and service.

Evaluation Method: The Council set the UD considering points for every product, next enterprises will make self-evaluation for their own products according to these considering points, and then submit the evaluation

result. After this Council's confirmation, enterprises can publish such information on their official website as the reference to consumers. At the same time, enterprises can print the certification of Umark on their product packaging and user manual for consumers to make further purchase.

2.5 Universal Design Coordinator

Organizer: Institute of Advanced Studies in Universal Design (IASUD).

It promotes and carries out the cultivation of "professional talents" and the certification program, and it adopts 4 classes to determine the knowledge level and the practice of specific knowledge.

Evaluation Object: the certification of professional fields are 7 classes: daily life course, printing course, educational course, service course, space design course, product manufacturing course and interface course.

There're 4 classes totally, Class 3 and Class 2 as general knowledge can be directly joined; certification of Quasi-Class 1 and Class 1 include the practice of specific knowledge, it requires to attend the course of certain hours to get qualification of apply the certification. Since its launch in 2006, the accumulated number of passing certification is around 2,000 till 2011.

2.6 Certification Test for Housing Environment Coordinator for Elderly and Disabled people

Organizer: The Tokyo Chamber of Commerce and Industry. This certification test can make the living environment to more friendly and suitable for senior and mental and physical disabilities. Meanwhile, they have comprehensive knowledge of medical, welfare, architecture, household decoration and social system that allow them to provide a proposal of integrating cooperation with various professionalisms.

Evaluation Method: it can be divided into 3 classes, and the examination time will be 2 hours. Two exams will be held per year.

It established the association, fjc21(福祉住環境コーディネーター協会), for providing information exchange and advanced education for these qualifiers; and adopted regular workshops and study groups to build a good knowledge network. Then, it carried out the promotion activities to make the public to know the importance of such certification.

2.7 Color Universal Design (CUD)

Organizer: Color Universal Design Organization (CUDO for short). In order to make people with different color visibilities who can easily recognize and use objects, thus any facility or product that complied to CUDO's UD consideration can obtain the certification mark.

Evaluation Object: visual design, products and facilities

Evaluation Method: it adopts a user with normal color vision and 4 types of color vision defects to carry out the examination

System Effectiveness: started in 2005 and there're about 100 cases obtained the mark in 2008. In addition, there're few cases that got the certification with first-time application.

2.8 UD HOUSING

Organizer: Center for Universal design

Evaluation Object: building, housing.

Evaluation Method: provides a simple and applicable design suggestion to constructors as the reference example for modifying the existing space and environment. Its contents include: elements, characteristics,

concepts and proposals, etc. In 2001, CUD carried out the UD verification for housing, and according to different UD practicing levels determined these verifications as Gold, Silver and Bronze medals.

2.9 Collaboration for Research and Exchange (CRX for short)

In 1995, Japan's three major office machine manufacturers - Canon, Ricoh and FujiXerox, considered that the office machine industry is lack of the design agreement between different brands that existed in the auto and stereo equipment industries, where the design styles of each interface are different to each other, thus users are unable to know how to use or operate. As a result, it only needs to compose a joint research institute to plan the design agreement for office machine, as well as correspond to ISO and JIS standards, thus the market territory of office machine can be expanded then.

2.10 Universal Design Certified Remodeler (UDCR)

Organizer: the National Association of the Remodeling Industry (NARI)

Evaluation Object: Remodelers, who have a minimum of five years continuous full time experience in the remodeling industry, and completed 8 hours of education addressing UD or universal remodeling principles, and sign an attestation to uphold NARI's Code of Ethics.

Evaluation Method: pass both an educational course and a certification test in universal design. The test is about: UD fundamentals, client needs assessments, Design, construction techniques, electrical Systems, plumbing Systems, exterior Universal Design Considerations.

Form the exploration of global universal design certification and mark, it discovered that the certification systems of professionals and color application possessed the best certification promotion effectiveness. In terms of the professional certification: especially for the certification of the housing and coordinator, which is not only the impartial review for their professionalism, but it also can be regarded as a common method of knowledge dissemination for industries. For the certification of color application, it's the basic design research issues, and the visual information related to products, services and spaces should be also considered the color vision. In addition, the certification method and criterion are fixed that the reason why this system can be used in different fields.

3. Usability as one element of the UD Certification Systems

This study mainly focuses on the UD certification of "industrial products", especially for carrying out the comparison between the certification systems of product "usability", in order to explore the aspect of usability for UD products. This study herein takes "Usability Verified by User" and "Excellent! Universal Design" as the cases to discuss. The data sources are from websites, related publications, and interview conducted by researchers, and organized as the following table:

Table 2. Case Study of Product UD-Usability Certification Systems

	Usability Verified by User Testing (Japan)	Excellent! Universal Design(Germany)
Certification content	Evaluation of product usability (including universal design) and the development procedure	Conformed to universal design and usability testing, and passed the certification review of safety technique that conducted by TÜV NORD CERT
Universal Design Certification Goal	No announcement of introducing the measuring of UD achievement rate	<ul style="list-style-type: none"> • Call for users of various age groups to review 100 standards from 7 principles: the Point system, it needs to pass 80% standard mainly. • Experts can use a set of comprehensive criteria to carry out the review on product and information design for whether the product can be provided to users with different mental and physical capabilities
Testing Method	<ol style="list-style-type: none"> 1. Users and main functionality 2. Methodology and accuracy of obtaining information 3. Accuracy of real usage 4. interview such as: think aloud, guided conversation 5. (Opened) users' behavior and thinking 6. (Designated) users' behavior and thinking 7. Recruitment of testee and management system 8. Functional tests and conditional test (including certification survey questionnaire) 9. Professional (ensure of the accuracy and professionalism for the result interpretation) 	<p>Users observation</p> <p>semi-structured interviews, think-aloud ...etc.</p> <p>Record all processes for further analysis, and then propose the testing report at last.</p>
Certification Procedure	<p>Except initial review, the main review is divided into 3 procedures:</p> <ol style="list-style-type: none"> 1. Based on the UD to carry out the investigation. Confirm the key to improvement. 2. Carry out the evaluation of usability 	<p>It is divided into 2 phases: the initial review and product verification.</p> <ol style="list-style-type: none"> 1. Initial review includes enterprise's self-evaluation 2. Product verification includes; <ol style="list-style-type: none"> a. Universal design

	proposal 3. Verify the validity of new prototype	b. Usability c. TÜVNORD CERT (national standard)
Users	Call for actual users to participate in the review process	Call for users of every age groups as possible
Certification Fee	Certification Application Fee ¥ 31,500 (USD 335-) Review Fee ¥ 105,000 (USD 1115-) Month fee of Mark ¥ 8750(USD 93-), paid annually. It can only pay for the first three months of the initial application.	If this product will not change, the validity of certification will be 5 years. Application fee will be different according to products: <ul style="list-style-type: none"> ● Products with no key and switch : 5,000~7,000 € (USD 6390~8950-) ● Complicated Products (with key and switch, etc. : 8,000~15,000€ (USD 10226 ~ 19173 -) ● Precision products above 15,000 € (USD 19173 -)
Promotion Effectiveness	Since 2004 to date, 11 products obtained certifications.	Since the promotion in 2008, so far there're around 5-10 applications annually, and about 2 applications of products can pass and obtain certification
Review Period	Take the 11th product – doashisu (auto door lock) as example, it took about 2 years to complete the verification work.	Application time of mark depends on the precision of product, in average, it will take about 3 months to complete the verification work.

To discuss the difference and similarities between two certification systems comprehensively:

(Including method and promotion status)

- A. They are focusing on different key points for certification, but they have the same core value: Japan emphasizes the reliability for the methodology of product development, and Germany requires that product design should be conformed to national standard; therefore, except universal design and usability, they all regarded “Safety” as the important issue.
- B. These two major certification systems are all took the feedback from “users’ opinions” as the basis of evaluation: among which, Excellent! Universal Design especially carries out the evaluation on the using status for users of “all age groups” and “different mental and physical disabilities”, and the Usability Verified by User Testing can only reveal the participation for “actual users”.
- C. Both systems establishes their own system verification methods: both two systems will carry out the design of preliminary testing method according to different types of products, and then the verification procedure will be adjusted according different precision levels of the testing object.

- D. Different time of project certification: Japan's certification scope for the Usability Verified by User Testing will place more attention to the trials of "development methods" and related proposals; therefore, the certification process may take more than one year to complete. Excellent! Universal Design adds the verification of whether it possesses national standard or not, and the certification process will take about 2~3 months.
- E. After review, Japan's Usability Verified by User Testing will grant the right of using the certification mark, without providing related market promotion package. Excellent! Universal Design announced the market strategy of quality mark, including marketing and promotion plans, and will hold exhibition to invite consumers to experience and to try out the products with initial certification; and their opinion and feedback would be noted.

4. Conclusions

The core concept of universal design yielded values due to it has considered every possible user demand and using possibility before developing. In general, it adopts 7 main principles to conduct the evaluation: the key point of usability design is to make product's design that can conform to users' habit and demand. There're 5 usability goals that frequently used to make evaluation, including: Learnability, Efficiency, Memorability, Errors (as in low error rate) and Satisfaction (Nielsen, 1994).

From the comparison between these two systems, we can easily discover that UD is the design of emphasizing mental requirement, and usability will focus on the issues of functional handling, which all pay much attention to the design value: "humanity", especially in the fields of software and product design. We need conducting the evaluation testing and design method as a framework to consider different users' demands and using situations, and also to implement these important principles. The most important issue to promote the industrial consciousness of UD certification system is to emphasize the consideration for all people from planning, manufacturing, marketing, usage and discard, every link of this circular cycle should be carefully deal with.

This study reviews the existing certification systems in various countries and discovers: the test and certification methods should be established by corresponding to different industrial attributes and various product types. In addition, the development of every test technique and basic theory are the core value to verify the certification system. In addition, the promotion strategy of certification system still needs to consider in other aspects:

First, the product UD certification fee is expensive and the review process will take a long time; thus, the most situations is that only few products can pass the verification and get the certification in the first application; therefore, they need the assistance from project consultants when applying the certification project. It shows that there is gap for enterprise to involve in UD certification. Thus, not only establish a verification system, it has to provide the knowledge exchange platform for professionals.

Second, when developing the certification system, it also needs to provide integrated plan to attract and encourage enterprises' involvement. For example, to promote the good examples which have passed the

certification, to general public by mass media. By telling the story of UD products, it will also help consumers to connect to the idea of UD directly.

We can catch some issues from the Japanese enterprises' planning of the self-established UD mark, they use the self-own labeled products to communicate with the market and as well to educate consumers, and further commit to their social responsibility. However, Taiwan's industries are still in the phase of UD concept development currently, thus the market or consumers still have some myths for UD products. The product certification promotion still has a long road. Hence, the current phase needs to be returned to the discussion of the fundamental elements of UD in Taiwan's industry circle, and then establish a self-developed method. These are 2 important tasks now. Once the mindset has gradually matured, then implement the UD certification system will obtain the maximum effectiveness.

5. References and Citations

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國科會補助計畫衍生研發成果推廣資料表

日期:2013/12/31

國科會補助計畫	計畫名稱: 設計複合商店的魅力因子研究-以誠品書店為例
	計畫主持人: 范成浩
	計畫編號: 101-2410-H-144-008- 學門領域: 環境藝術與設計
無研發成果推廣資料	

101 年度專題研究計畫研究成果彙整表

計畫主持人：范成浩		計畫編號：101-2410-H-144-008-					
計畫名稱：設計複合商店的魅力因子研究-以誠品書店為例							
成果項目		量化			單位	備註（質化說明：如數個計畫共同成果、成果列為該期刊之封面故事...等）	
		實際已達成數（被接受或已發表）	預期總達成數（含實際已達成數）	本計畫實際貢獻百分比			
國內	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	0	0	100%		
		專書	0	0	100%		
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（本國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		
國外	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	1	1	100%		
		專書	0	0	100%		章/本
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（外國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		

<p>其他成果 (無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。)</p>	<p>無</p>
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	成果項目	量化	名稱或內容性質簡述
科 教 處 計 畫 加 填 項 目	測驗工具(含質性與量性)	0	
	課程/模組	0	
	電腦及網路系統或工具	0	
	教材	0	
	舉辦之活動/競賽	0	
	研討會/工作坊	0	
	電子報、網站	0	
	計畫成果推廣之參與(閱聽)人數	0	

國科會補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估

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論文： 已發表 未發表之文稿 撰寫中 無

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