Asian Journal *of* Distance Education

http://www.AsianJDE.org

ISSN 1347-9008 Asian J D E 2010 vol 8, no 1, pp 63-80

An Interactive Virtual Fitting Room for Improved Service in Taiwan

Ying-Hsiu CHEN, & Wen-Cheng WANG
National Cheng Kung University, Taiwan & Hwa Hsia Institute of Technology, Taiwan
p3897103@mail.ncku.edu.tw & wcwang@cc.hwh.edu.tw

ABSTRACT :

Along with the growth of the on-line shopping web sites, the actual requirements of the users about the On-Line Interactive Fitting Room service quality and how to assist the users in the process of their consumption with the virtual cloth try-on, the investigation is, however, minimal. Therefore, this research is focused on the actual requirements of the users toward the service quality of the On-Line Interactive Virtual Fitting Room and the result is analyzed in order to come up with the key attributes for the elevation of the On-Line Interactive Virtual Fitting Room service quality. This research is divided into two phrases and the findings have shown that: 1) ease of use, security and reliability are the "**Must-Be quality**", user interface, responsiveness and customization are the "**Attractive quality**"; 2) In the aspect of the On-Line Interactive Virtual Fitting Room service quality, the expectation of "customization" has scored the highest mark. What the customers expect the most is the abundance level of the information of the products they are interested in, and whether the appearance is close to reality. And, the On-Line Interactive Virtual Fitting Room must be in the possession of the customized service; 3) The provided products must match with the actual products in every way. Whenever I encounter a problem, the fine solution mechanism must be provided, so that I can match my desired cloth, and accessories, etc. The mentioned three factors with the aspect of responsiveness constituted the key attributes of the On-Line Interactive Virtual Fitting Room service quality.

1. INTRODUCTION

Under the business environment where data or information flows in a rapid kind of way, the key element for the success of the on-line one-man business not only rely on the display method or the low-price strategy, but as for the consumers, the most important thing is the fine on-line shopping service quality (Zeithaml et al., 2002), it is a way to ensure the one of main sources of competence. Therefore, before a design of a website is done, not only the elevation of the overall technology should be considered, but the view should be set from the angle of a consumer, the requirements should be met accordingly. The service that meets the requirement of the consumers should be found, and this will indeed becomes the key in the development of the On-Line Interactive Virtual Fitting Room (OIVFR). In the past, relative investigation s have been done with the on-line consumption behavior as the focus, this includes satisfaction level, willingness to purchase and the loyalty. This research is focused on the actual requirements of the users toward the service quality of the On-Line Interactive Virtual Fitting Room and the result is analyzed in order to come up with

the key attributes to strengthen for the elevation of the On-Line Interactive Virtual Fitting Room service quality. This is done to figure out the basis of the attributes for the improvement of the service quality. Therefore it is a question worthy of a discussion about how to improve the standards of the shopping websites and consequently improve the willingness of the customers to shop on-line through E-Service Quality, E-SQ in order to elevate process of the consumers shopping experience.

This research adopts the concept model of on-line service quality as the basis and takes Keno's 2-dimension quality model to further categorize the Virtual Fitting Room service quality so that the importance of the individual characteristics of the products required by the customers can be constructed and the key attributes of the service quality can be analyzed. This enables the requirement of the customers about On-Line Interactive Virtual Fitting Room to be realized in a detailed fashion. The specific purposes of this research as follows:

1 The key factors of the On-Line Interactive Virtual Fitting Room are generalized to provide to provide researchers and service developers with reference basis.
2 With the application of Keno's model, the actual requirements of the customers about On-Line Interactive Virtual Fitting Room can be investigated, so that the finding may assist the customers with on-line shopping and cloth try-on service. It is also expected to create more possibilities for service.

METHODS

This research takes the Keno's model to categorize and analyze the characteristics of On-Line Interactive Virtual Fitting Room service quality with 2-dimension quality test and it is also about the research of the confirmation on the importance analysis of the key customers service quality attributes. The experiment is divided into two steps, mainly included a 2-phrases questionnaire. First is to generalize a questionnaire about on-line service quality, and according to the findings, the questionnaire of Kano's two-way model on quality is designed to carry on with the conduction of the experiment. The steps are followed to obtain the precise Voice of the Customers (VOC). E-Business affairs is about knowing who is using the website, and aims at this particular group to carry on with deep understanding. These two experiments at difference phrases take its subjects with random-sampling, and the main group is in the age between 20 to 39 years old and has a basic monthly salary of 20 to 40 thousand NT dollars.

Step one: The questionnaire design of the on-line service quality

This research has integrated many of the aspects of the on-line service quality measurement proposed by the scholars in an attempt to sort out any relative aspects of the service quality that can serve in the measurement. From the investigation of the literatures it is known that, although many scholars have proposed many relative aspects or methods for the measurement of the service quality, nevertheless, it is found that these aspects can not break away from the E-Service Quality (E-SQ for short)as proposed by Zeithaml, Parasuraman & Malhotra in year 2000. It includes the 7 aspects of efficiency, reliance, fulfillment, privacy, responsiveness, compensation and contact. This research takes the aspects as proposed by the scholars as the basis. Furthermore, taking the previous scholars verifications as the references, artistic nature (Wolfinbarger et al., 2003; Jabnoun & Chaker, 2003), usability (Yang、Peterson & Huang, 2001), entertainment (Liu & Arnett, 2000), data content security, contactable are also added as the aspects, making it a total of 13 aspects (Table 1).

In these 13 aspects, the definitions of many of the aspects are the same. Therefore, this research takes aspects with similar definitions and similar item

contents to integrate into 6 on-line service quality aspects, including easy of use、security、reliability、user interface、recovery、customization (Table 2). And the design of representative on-line service quality questionnaire is also conducted to come up with initial questionnaire so that the pre-test can get under way. First, 30 subjects are invited for the investigation and the reliance analysis of the questionnaire is done with the Stats Application Software namely SPSS for Windows 10.0. And after this analysis, the question items with no discerning ability are deleted. Guielford (1965), If cronbach's Alpha is higher than 0.7, it implies a high reliability, a value between 0.7 and 0.35 means acceptable validity, and a value lower than 0.35 means rejected validity.

Step two: The questionnaire design of the Kano's two-way model on quality

According to the aspects analysis on service quality in Step 1, 29 service quality aspects are generalized using the reliance analysis and the questionnaire of Kano's two-way model on quality is designed. Part of the meanings of the questions is slightly modified so that the subjects would understand better about the questions and the efficiency of the questionnaire may be increased. Moreover, the design method of the Keno's questionnaire in this research uses grading system for each questions in the questionnaire, scoring from totally unsatisfied, not satisfied, okay, satisfied, totally satisfied, all of which to indicate the satisfaction level of the customers. The purpose is providing ease for the subjects and the ease for the future satisfaction level analysis; later, the categorization method of Kurt and Hans (1998) will be adopted to categorize every quality key factors. The reason for adoption is that this method is the most widely used method by the scholars, and the question descriptions are clear, making it easy for the subjects to understand.

STUDY RESULT AND DISCUSSION

Study result of experiment step one

Because there are far too many on-line service quality key elements, this research takes those key elements to compose a questionnaire with a total of 43 questions. Through the findings it is known that, the measurement of the Cronbach's alpha value is over 0.906, this indicates the consistency level of the reliance in this research. Furthermore, low reliance value with a Cronbach's alpha value of lower than 0.35 are deleted, and a total of 14 items are deleted including various payment methods, other web-sites offering easy-access to this website, the duration of stay on this website is made known, the all-year-round service, offering of advertisements or the propagation of relative service and products, instant update of the content of the website, if the goods are to be returned, the goods can be pick up at my place or company, if there are loses occurred during my transaction, adequate compensation can be offered, the accumulated number of deals and amounts allow me to benefit from greater savings, provision of sufficient discussion space, products saving activities can be passed to me though E-paper or E-mails, proper greetings can be given at particular day of the year, like holidays, search function can be provided so that I can search for the information I want. On-line service quality questionnaire reliance is sorted and exhibited in Table 1:

Table. 1 Cronbach's alpha coefficient analysis of the On-Line Interactive Virtual Fitting Room

Aspect name	Key element of the on-line service quality	Reliance Cronbach's alpha		
ease of use	Enables me to find the products I want easily	0.630		0.601
	Enables me to be connected to the page I want	0.407		
	Given the search function which enables me to search fort he information I want	0.681		
	Various payment methods are provided	0.289	□	
	Other websites which allow easy access to this website	0.249	□	
	Product information is organized	0.555		
	The categorization in searching for the products is disciplined	0.575		
	I can know the duration of my stay at this page	0.041	□	
security	The insurance of my personal and transaction data will not be leak in any way	0.702		0.682
	Provision of trading security mechanism	0.534		
	Equip with basic defense system	0.641		
reliability	The product information is abundant and complete	0.513		0.754
	Provision of a mechanism of reliable product quality.	0.676		
	Provision of correct link	0.461		
	Provision of complete transaction procedures	0.667		
	Provision of complete personal data search	0.550		
	Provision of all-year-round-service	0.229	□	
	The product quality provided is identical with the actual product	0.561		
	If the goods are to be returned, the goods can be pick up at my place or company	0.057	□	
user interface	The website design is visualized with easy to read fonts	0.709		0.654
	The website design colors are abundant and beautified	0.565		
	Based on the function of the website, proper multimedia function is applied	0.489		
	Provision of multi-functional operation	0.516		
	The content of the website can be instantly undated	0.094	□	
	If I am not clear about the function of the website, there is addition description	0.451		

	If the goods are to be returned, the goods can be pick up at my place or company	0.276	□	
	If I run into problems, there is a fine mechanism to solve my problems	0.608		
	If there are loses occurred during my transaction, adequate compensation can be offered	0.217	□	
responsiveness	Provision of on-line instant customer service	0.441		0.764
	Before the shipment of the goods is made, I can cancel the deal at my will	0.583		
	Complete after-sell service	0.571		
	the accumulated number of deals and amounts allow me to benefit from greater savings	0.171	□	
	It is easy to make contact with the website	0.410		
	Provision of customized service	0.666		
	provision of sufficient discussion space	0.265	□	
	products saving activities can be passed to me though E-paper or E-mails	-0.018	□	
	Adequate information can be given to me according to my preference	0.497		
	Proper greetings can be given at particular days of the year	0.099	□	
customization	Information display method will be given according to my own likings	0.730		0.570
	Provision of a search function that meets my requirement	0.185	□	
	Provision of ample information that I need	0.102	□	
	My preference will be recorded and additional information will be provided to me	0.395		
	I have the power to freely match my cloth and accessories	0.524		

Note: ◎refers to the Cronbach's alpha value <0.35, low reliance level and so is deleted accordingly

Study result of experiment procedure two

With the result of the investigation of the on-line service quality, the Kano questionnaire is designed. The survey is in 3 parts including Kano 2-dimension quality attribute categorization, importance analysis of the key elements of On-Line Interactive Virtual Fitting Room service quality and the survey of satisfaction coefficient of the consumers. First, with the survey of the forward and reverse quality key elements in the questionnaire, the Kano 2-dimension quality attributes of the subjects about current on-line service quality is analyzed. The method of evaluation is by using percentage and number of times to define every quality attribute; the questionnaire takes 5 degree of Likert Scale for evaluation to investigate the level of overall satisfaction

of subjects about the quality key elements and to analysis the expected importance of the subjects about the on-line service quality; moreover, it is to calculate the increase or decrease of the customer satisfaction coefficient, so that the primary service quality key elements may be strengthened. And the findings are as follow:

Here, the relative opinions in majority about the key elements and aspects of every quality are used for categorization. And the result is shown in Table 2. Three quality elements are categorized as One-dimensional quality, 9 are categorized as must-be quality, and another 9 are categorized as Attractive quality and the final 8 are categorized as Indifferent quality. Out of the 29 service aspects, none is categorized as Reverse quality; and the results on every aspect showed that the 2-dimension categorization conducted on the service quality aspects has categorized ease of use, security, reliability as the Must-be quality, user interface, responsiveness, customization as the Attractive quality. From this it is known that, the subjects believe on-line virtual Fitting-Room should be equipped with attractive web-site functions and provide multi-dimensional personalized service function. And in the process of operation, the recovery function must be there in order to reach the customer's satisfaction; furthermore, the customers believe that on-line virtual Fitting-Room should be able to provide correct information about the products, and be able to protect against personal data, the browsing should be done with ease and the desired products are quickly found as to speed up the process of purchase. The individual descriptions are as follows:

1 One-dimensional quality: The provided product quality is identical to the actual product, if I run into problems, there is a fine mechanism to solve my problems and I have the power to freely match my cloth and accessories, the above mentioned three have been categorized as One-dimensional quality. It is to say when these quality elements are insufficient, the customers will feel unsatisfied and vice versa.

2. Must-be quality: an easy search function allowing me to search for the products I want, product information is organized, the categorization in searching for the products is disciplined, the insurance of my personal and transaction data will not be leak in any way, provision of trading security mechanism, provision of correct link, provision of complete trading procedures, and complete after-sell service, the above mentioned 9 are categorized as the Must-be quality. It is to say when these quality elements are insufficient, the customers will feel unsatisfied and vice versa.
3. Attractive quality: The product information is abundant and complete, the website design is visualized with easy to read fonts, the website design colors are abundant and beautified, based on the function of the website, proper multimedia function is applied, provision of on-line instant customer service, before the shipment of the goods is made, I can cancel the deal at my will, provision of customized service, adequate product information would be given to me according to my preference, My preference will be recorded and additional information and service will be provided to me, the above mentioned 9 are categorized as the Attractive quality. It is to say when these quality elements are insufficient, the customers will feel unsatisfied and vice versa.

Table. 2 Kano's two-way model on quality attributes categorization

Aspect name	Virtual Fitting-Room On-line Service Quality Key Elements		Method of Evaluation				Quality Catego-rization
			A	O	M	I	
ease of use	It is easy to find the products I want	Frequency	9	11	12	24	I
		Percentage	16.1%	19.6%	21.4%	42.9%	
	It is easy to link to the desired webpage	Frequency	7	9	15	25	I
		Percentage	12.5%	16.1%	26.8%	44.6%	
	A simple search function allowing me to search for the desired products	Frequency	11	6	26	13	M
		Percentage	19.6%	10.8%	46.4%	23.2%	
	Product information is organized	Frequency	5	8	30	14	M
		Percentage	8.8%	14%	52.6%	24.6%	
	The categorization in searching for the products is disciplined	Frequency	6	13	25	13	M
		Percentage	10.5%	22.8%	43.9%	22.8%	
Total Frequency of the Aspect Categorization		Frequency	38	47	108	89	M
		Percentage	67.5%	83.3%	191.1 %	158.1%	
security	The insurance of my personal and transaction data will not be leak in any way	Frequency	1	18	30	7	M
		Percentage	1.8%	32.1%	53.6%	12.5%	
	Provision of trading security mechanism	Frequency	5	15	31	6	M
		Percentage	8.8%	26.4%	54.3%	10.5%	
	Equip with basic defense system	Frequency	3	7	30	16	M
		Percentage	5.4%	12.5%	53.6%	28.5%	
Total Frequency of the Aspect Categorization		Frequency	9	40	91	29	M
		Percentage	16%	71%	161.5 %	51.5%	

reliability	The product information is abundant and complete	Frequency	24	9	12	11	A
		Percentage	42.9%	16.1%	21.4%	19.6%	
	Provision of a mechanism that is liable for the shopping quality	Frequency	14	12	10	21	I
		Percentage	24.6%	21.1%	17.5%	36.8%	
	Provision of correct link	Frequency	6	3	37	11	M
		Percentage	10.5%	5.3%	64.9%	19.3%	
	Provision of complete trading procedures	Frequency	7	9	25	15	M
		Percentage	12.5%	16.1%	44.6%	26.8%	
	Provision of complete search for the personal data	Frequency	9	4	8	35	I
		Percentage	16.1%	7.1%	14.3%	62.5%	
	The provided product quality is identical to the actual product	Frequency	16	24	13	4	O
		Percentage	28.1%	42.2%	22.7%	7%	
Total Frequency of the Aspect Categorization		Frequency	76	61	105	97	M
		Percentage	134.7%	107.9%	185.4 %	172%	
user interface	The website design is visualized with easy to read fonts	Frequency	28	14	6	9	A
		Percentage	49.1%	24.6%	10.5%	15.8%	
	The website design colors are abundant and beautified	Frequency	29	9	6	13	A
		Percentage	50.9%	15.8%	10.5%	22.8%	
	Based on the function of the website, proper multimedia function is applied	Frequency	34	4	5	13	A
		Percentage	60.7%	7.1%	8.9%	23.3%	
	Provision of multi-functional operation	Frequency	18	4	2	32	I
		Percentage	32.2%	7.1%	3.6%	57.1%	
	If I am not clear about the function of the website, there is addition description	Frequency	7	4	17	29	I
		Percentage	12.3%	7%	29.8%	50.9%	
Total Frequency of the Aspect Categorization		Frequency	116	35	36	96	A
		Percentage	205.2%	61.6%	63.3%	169.9%	

responsiveness	If I run into problems, there is a fine mechanism to solve my problems	Frequency	4	28	14	11	O
		Percentage	7%	49.1%	24.6%	19.3%	
	Provision of on-line instant customer service	Frequency	31	7	4	14	A
		Percentage	55.4%	12.5%	7.1%	25%	
	Before the shipment of the goods is made, I can cancel the deal at my will	Frequency	26	14	8	8	A
		Percentage	46.4%	25%	14.3%	14.3%	
	Complete after-sell service	Frequency	6	13	31	7	M
		Percentage	10.5%	22.8%	54.4%	12.3%	
	It is easy to make contact with this website	Frequency	11	7	11	28	I
		Percentage	19.3%	12.3%	19.3%	49.1%	
Total Frequency of the Aspect Categorization		Frequency	78	69	68	68	A
		Percentage	138.6%	121.7%	119.7 %	120%	
customization	Provision of customized service	Frequency	36	8	1	12	A
		Percentage	63.1%	14%	1.8%	21.1%	
	Adequate product Information would be given to me according to my preference	Frequency	35	6	1	14	A
		Percentage	62.5%	10.7%	1.8%	25%	
	Information display method will be given according to my own likings	Frequency	12	6	2	37	I
		Percentage	21.1%	10.5%	3.5%	64.9%	
	My preference will be recorded and additional information and service will be provided to me	Frequency	34	5	2	15	A
		Percentage	60.7%	8.9%	3.6%	26.8%	
	I have the power to freely match my cloth and accessories	Frequency	14	22	12	9	O
		Percentage	24.6%	38.6%	21.1%	15.7%	
Total Frequency of the Aspect Categorization		Frequency	131	47	18	87	A
		Percentage	232%	82.7%	31.8%	153.5%	

- A: Attractive quality, O: One-dimensional quality, M: Must-be quality, I: Indifferent quality.
- The categorization of the quality key elements of undetermined and reverse-quality are lower than 1%, hence it is omitted in the list (R: reverse-quality appeared in questions 6.12.13.17.18.21.22.26.28 for once, un-determined appeared in question 1.2.3.8.9 for once).

THE IMPORTANCE ANALYSIS OF THE VIRTUAL FITTING-ROOM ON-LINE SERVICE QUALITY KEY ELEMENTS

Method of Calculating the weight-vector is applied to investigate the satisfaction level of consumers about on-line service quality. 5 degree of Likert Scale is applied for evaluation. After the calculation of the values for every element, the weight vector order of the elements will then be known. This order is used to ensure the key elements that needed to be improved with priority (Table 3). Viewing from the mark of the "Overall Quality Aspects" and "Every Quality Key Elements", the result after importance analysis has shown that "The product information is abundant and complete", "The provided product quality is identical to the actual product", "Provision of customized service" and "I have the power to freely match my cloth and accessories" all scored an average mark of 4. Therefore, it is known that the customers value whether the product information is abundantly given or the displayed product do match with the actual product. Moreover, the virtual fitting-room should meet the requirement of the complete customized service; "The provision of the complete search for personal data" has scored a lowest 3.2 simply because in the virtual fitting-room, the main service provided is about try-on of clothing and so the low mark for this quality key element. Moreover, from the result of the overall quality aspect importance analysis it is known that, "Customized" has the highest average score of 3.8, and the expectation of the customers are to try-on the cloth at their own wills with different styles. Different information is provided with individual preference, and the result also indicates the increase of the customers' sensual perception when the service is completely customized; "Ease of use" and "Responsiveness" both have the lowest score of 3.5. These two scored about the same mark with other aspects and therefore, the customers do not feel that these two are not important, but merely not expected as much as all the other six aspects. The On-Line Interactive Virtual Fitting Room should look deeper into these two aspects in order to obtain the practical requirement of the customers and make improvements.

Table. 3 Expectation Importance Analysis of consumers about Virtual Fitting-Room On-Line Service Quality Aspects

Aspect Name	Virtual Fitting-Room On-Line Service Quality Key Elements		Method of Evaluation					Total	Impor-tance
			I like it	It is ought to be done	No comment	About right	I do not like it		
ease of use	Easy to find the product I wan	Frequency	5	20	27	3	1	57	3.4
		Score	25	80	81	8	1	195	
	Easy to link to the page I want	Frequency	5	23	25	4	0	57	3.5
		Score	25	92	75	8	0	200	
	A simple search function allowing me to search for the desired products	Frequency	3	23	27	4	0	57	3.4
		Score	15	92	81	8	0	196	

	Product information is organized	Frequency	3	27	24	3	0	57	3.5
		Score	15	108	72	6	0	201	
	The categorization in searching for the products is disciplined	Frequency	2	28	24	3	0	57	3.5
		Score	10	112	72	6	0	200	
Total Frequency of the Aspect Categorization		Frequency	18	121	127	18	1	285	3.5
		Score	90	484	381	36	1	992	
security	The insurance of my personal and transaction data will not be leak in any way	Frequency	12	16	24	5	0	57	3.6
		Score	60	64	72	10	0	206	
	Provision of trading security mechanism	Frequency	9	22	20	5	1	57	3.6
		Score	45	88	60	10	1	204	
	Equip with basic defense system	Frequency	6	17	29	4	1	57	3.4
		Score	30	68	87	8	1	194	
Total Frequency of the Aspect Categorization		Frequency	27	55	73	14	1	170	3.6
		Score	135	220	219	28	1	603	
reliability	The product information is abundant and complete	Frequency	14	29	12	2	0	57	4.0
		Score	70	116	36	4	0	226	
	Provision of a mechanism that is liable for the shopping quality	Frequency	5	22	26	4	0	57	3.5
		Score	25	88	78	8	0	199	
	Provision of correct link	Frequency	3	23	24	6	1	57	3.4
		Score	15	92	72	12	1	192	
	Provision of complete trading procedures	Frequency	7	15	30	5	0	57	3.4
		Score	35	60	90	10	0	195	
	Provision of complete search for the personal data	Frequency	4	11	36	5	1	57	3.2
		Score	20	44	108	10	1	183	
	The provided product quality is identical to the actual product	Frequency	20	22	13	2	0	57	4.1
		Score	100	88	39	4	0	231	

Total Frequency of the Aspect Categorization		Frequency	53	122	141	24	2	342	3.6
		Score	265	488	423	48	2	1226	
user interface	The website design is visualized with easy to read fonts	Frequency	16	24	12	3	2	57	3.9
		Score	80	96	36	6	2	220	
	The website design colors are abundant and beautified	Frequency	16	19	17	5	0	57	3.8
		Score	80	76	51	10	0	217	
	Based on the function of the website, proper multimedia function is applied	Frequency	9	18	26	4	0	57	3.6
		Score	45	72	78	8	0	203	
	Provision of multi-functional operation	Frequency	5	14	33	5	0	57	3.3
		Score	25	56	99	10	0	190	
	If I am not clear about the function of the website, there is addition description	Frequency	12	21	20	2	2	57	3.7
		Score	60	84	60	4	2	210	
Total Frequency of the Aspect Categorization		Total Frequency of the Aspect Categorization	58	96	108	19	4	285	3.7
		Score	290	384	324	38	4	1040	
responsiveness	If I run into problems, there is a fine mechanism to solve my problems	Frequency	6	24	21	6	0	57	3.5
		Score	30	96	63	12	0	201	
	Provision of on-line instant customer service	Frequency	12	17	26	2	0	57	3.7
		Score	60	68	78	4	0	210	
	Before the shipment of the goods is made, I can cancel the deal at my will	Frequency	8	15	21	10	3	57	3.4
		Score	45	60	63	20	3	191	
	Complete after-sell service	Frequency	9	21	24	3	0	57	3.6
		Score	45	84	72	6	0	207	

	It is easy to make contact with this website	Frequency	2	19	30	5	1	57	3.3
		Score	10	76	90	10	1	187	
Total Frequency of the Aspect Categorization		Total Frequency of the Aspect Categorization	38	96	122	26	4	286	3.5
		Score	190	384	366	52	4	996	
customization	Provision of customized service	Frequency	22	18	12	3	2	57	4.0
		Score	110	72	36	6	2	226	
	Adequate product Information would be given to me according to my preference	Frequency	7	16	32	2	0	57	3.5
		Score	35	64	96	4	0	199	
	Information display method will be given according to my own likings	Frequency	6	19	30	2	0	57	3.5
		Score	30	76	90	4	0	200	
	My preference will be recorded and additional information and service will be provided to me	Frequency	16	16	21	4	0	57	3.8
		Score	80	64	63	8	0	215	
	I have the power to freely match my cloth and accessories	Frequency	26	18	11	2	0	57	4.2
		Score	130	72	33	4	0	239	
Total Frequency of the Aspect Categorization		Total Frequency of the Aspect Categorization	77	87	106	13	2	285	3.8
		Score	385	348	318	26	2	1079	

Moreover, according to the Kano's questionnaire data analysis, although the categorization and importance of the 2-dimension quality feature of On-Line Interactive Virtual Fitting Room of customer service quality are known, but on the operation of the improvement of the customers service quality, there is not much information to be used. If the customers' satisfaction coefficient is applied to distinguish which customers service qualities should best be improved, then it would make the overall satisfaction level more beneficial. First, according to formula 1 and 2 of the model of categorization result of the 2-dimension

quality feature of On-Line Interactive Virtual Fitting Room of customer service quality together with Kano's two-way model on quality, the "**Coefficient of increasing customers' satisfaction level**" and the "**Coefficient of decreasing the level of customers' dissatisfaction**" (*Herzberg et al., 1959*) are computed in Table 4.

$$satisfaction\ increment\ index(SII) = (A + O) \div (A + O + M + I) \quad (1)$$

$$dissatisfaction\ decrement\ index(DDI) = -(A + O) \div (A + O + M + I) \quad (2)$$

Table. 4 Coefficient of the satisfaction level of the customers

Aspect Name	Virtual Fitting-Room On-Line Service Quality Key Elements	Quality Attribute	Increasing Satisfaction Coefficient	Decreasing Dissatisfaction Coefficient	Aspect Increasing Satisfaction Coefficient	Aspect Decreasing Dissatisfaction Coefficient
ease of use	Easy to find the product I wan	I	0.3571	-0.4107	0.3016	-0.5488*
	Easy to link to the page I want	I	0.2857	-0.4286		
	A simple search function allowing me to search for the desired products	M	0.3036	-0.5714*		
	Product information is organized	M	0.2281	-0.6667*		
	The categorization in searching for the products is disciplined	M	0.3333	-0.6667*		
security	The insurance of my personal and transaction data will not be leak in any way	M	0.3393	-0.8571*	0.2896	-0.7749*
	Provision of trading security mechanism	M	0.3509	-0.8070*		
	Equip with basic defense system	M	0.1786	-0.6607*		

	The product information is abundant and complete	A	0.6071*	-0.3750		
	Provision of a mechanism that is liable for the shopping quality	I	0.4561	-0.3860		
	Provision of correct link	M	0.1579	-0.7018*		
reliability	Provision of complete trading procedures	M	0.2857	-0.6071*	0.4068	-0.4889*
	Provision of complete search for the personal data	I	0.2321	-0.2143		
	The provided product quality is identical to the actual product	*O[sd1]*	0.7018*	-0.6491*		
	The website design is visualized with easy to read fonts	A	0.7368*	-0.3509		
	The website design colors are abundant and beautified	A	0.6667*	-0.2632		
user interface	Based on the function of the website, proper multimedia function is applied	A	0.6786*	-0.1607	0.5336*	-0.2500
	Provision of multi-functional operation	I	0.3929	-0.1071		
	If I am not clear about the function of the website, there is addition description	I	0.1930	-0.3684		

responsiveness *[sd4]*	If I run into problems, there is a fine mechanism to solve my problems	*O[sd2]*	0.5614*	-0.7368*	0.5207*	-0.4828*
	Provision of on-line instant customer service	A	0.6786*	-0.1964		
	Before the shipment of the goods is made, I can cancel the deal at my will	A	0.7143*	-0.3929		
	Complete after-sell service	M	0.3333	-0.7719*		
	It is easy to make contact with this website	I	0.3158	-0.3158		
customization	Provision of customized service	A	0.7719*	-0.1579	0.6296*	-0.2290
	Adequate product Information would be given to me according to my preference	A	0.7321*	-0.1250		
	Information display method will be given according to my own likings	I	0.3158	-0.1404		
	My preference will be recorded and additional information and service will be provided to me	A	0.6964*	-0.1250		
	I have the power to freely match my cloth and accessories	*O[sd3]*	0.6316*	-0.5965*		
Total Average of the aspects			0.4564	-0.4418	0.4470	-0.4624

- is the coefficient absolute value which is higher than the total average value of the overall coefficient value
- *[sd]* is the Virtual Fitting-Room Service Quality Key Attribute of the customers or the 2-dimensionalquality feature categorization of the aspects

From the findings it is know that, in the satisfaction coefficient of the customers, one that is high in the increasing of the customers' satisfaction level and high in the decreasing of the customers' satisfaction level are the one that categorized as the key quality elements of the On-Line Interactive Virtual Fitting Room. There is a total of 3 items in every element, and they are "**The provided product quality is identical to the actual product**", "**If I run into problems, there is a fine mechanism to solve my problems**" and "**I have the power to freely match my cloth and accessories**". And all these quality attributes belong to the 2-dimensional categorization of One-dimensional quality. As with other aspects, the key service quality aspect of the customers is "responsiveness". Therefore it is a must to keep strengthening and improving the quality elements and recovery aspects of these three service quality elements, in an attempt to promote the increase of the satisfaction level and loyalty, and carry on to strengthen the competence between enterprises.

CONCLUSION

This research takes survey research as the basis and applies Kano's model to conduct the categorization of the 2-dimensional features, importance analysis and the confirmation of the key customers service quality attributes of the On-Line Interactive Virtual Fitting Room service quality. And the findings are as follows:

1 As with the aspect of On-Line Interactive Virtual Fitting Room service quality, ease of use, security, reliability are categorized as Must-be quality, user interface, responsiveness, customization are categorized as Attractive quality.

2 In the expected importance evaluation of the aspect of On-Line Interactive Virtual Fitting Room service quality, the aspect importance of "**Customization**" has scored the highest mark of 3.8, therefore it is known that customers place their emphasis on whether the information of the products is abundantly provided or the products is displayed in the same way as the actual products. The virtual fitting-room must also have customized service.

3. "**The provided product quality is identical to the actual product**", "**If I run into problems, there is a fine mechanism to solve my problems**" and "**I have the power to freely match my cloth and accessories**" together with "**Responsiveness**" constituted the key customer service quality attributes in On-Line Interactive Virtual Fitting Room. They are to be constantly strengthened and improved, so that the satisfaction and loyalty of a customer can be elevated. From the process of this research it is known that, with the use of the investigation on on-line service quality and Kano's model, the real demand of the customers is thus understood. And the transmission process, content, utilized by the service can be examined to see if they do fit the requirement of the customers in either the acceptance or the satisfaction level. Simply because, only if the true perception of the customers is handled well and comprehended, can the management of a business be perfect and reach the highest satisfaction level of a customer. This research also serves the purpose for the service providers to follow the findings concluded here to offer fine On-Line Interactive Virtual Fitting Room service quality.

REFERENCES

Guielford, J.P. (1965), *Fundamental Statistics in Psychology and Education*, 4th ed., McGraw-Hill, New York, NY,.

Herzberg, *F.*, *Mausner*, *B.*, & *Snyderman*, *B. B.* (*1959). The motivation to work* (2nd ed.). *New York*: *John Wiley & Sons*.

Jabnoun, N. and Chaker, M. (2003), Comparing the Quality of Private and Public Hospotals, Managing Service Quality, Vol.13, No. 4, pp.290-299.

Kurt, Matzler and Hans H. Hinterhuber. (1998), How to make product development projects more successful by integrating Kano's model of customer satisfaction into quality function deployment, Technovation, Vol.18, No.1, pp.25-38.

Wolfinbarger, M. and Gilly, M. C. (2002), comQ: Dimensionalizing, Measuring and Predicting Quality of the E-tail

Liu, Chang & Kirk P. Arnett. (2000), Exploring the Factors Associated With Web Site Success in the Context of Electronic Commerce," Information & Management, Vol..38, No.1, pp. 23-34.

Yang, Z., Peterson, R. T., and Huang, L. (2001), Taking the pulse of internet pharmacies, Marketing Health Services, Vol. 21, No. 2, pp. 4-10.

Zeithaml, V. A., Parasuraman, A. and Malhotra, A. (2002), Service Quality Delivery Through Web Sites：A Critical Review of Extant Knowledge, Journal of the Academy of Marketing Science Vol. 30, No. 4, pp.362-375.

Zeithaml, V. A. and Parasuraman, A. and Malhotra, A. (2000), e-service Quality: Definition, Dimensions and Conceptual Model, Working Paper, Marketing Science Institute, Cambridge, MA.

Ying-Hsiu Chen received the B.S. degree from the Ming Chi University of Technology, Taipei, Taiwan, R.O.C., in 2005, and the Master degree from National Taiwan University of Science and Technology, Taipei, Taiwan, in 2008. She is now a Ph.D. Graduate Student, Dept of Industrial Design with the National Cheng Kung University, Tainan, Taiwan. Her current research activities include interface design and display design, universal design, augmented reality, visual communication design and visual psychology.
Email: p3897103@mail.ncku.edu.tw
Address: Dept of Industrial Design, National Cheng Kung University, No.1, University Road, Tainan City 701, Taiwan (R.O.C.), Fax: +886-6-2746088.

Wen-Cheng Wang received the B.S. degrees from the Oxford College, Tamsui Township, Taipei, Taiwan, R.O.C., in 1981 and the Ming Chuan University, Taipei, Taiwan, R.O.C., in 1984, and the Master degree from National Cheng Kung University, Tainan, Taiwan, in 1996. From 2002 to 2004, he was a Lecture of Industrial Design Department with the Huafan University, Shihding Township, Taipei, Taiwan. From 2005 to 2006, he was a Lecture of Travel Management Department with the Hsing Wu College, Linkou Township, Taipei, Taiwan. His current research activities include virtual reality and augmented reality, human-computer interface, hotel management and tourism management.
Email: wcwang@cc.hwh.edu.tw
Address: Dept of Business Management, Hwa Hsia Institute of Technology, 111 Gong Jhuan Rd., Chung Ho, Taipei, Taiwan (R.O.C.), Fax: +886-2-2941-5730.