

# Interface and Service Analysis on Student Website Using Kansei Engineering and Kano

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**Abstract.** This research has the purpose of making design interface recommendations for student websites and service suggestions that need to be improved and maintained on the student website. In conducting research for interface analysis using kansei engineering that manipulates the user's feelings into things that can be transformed into website interface design and analysis services that have been on the website using canoe method. This research produces one major factor influencing the interface that is "fresh" and for the first priority service attribute that needs to be improved there is 1 attribute of usability, information quality and service interaction dimension, second priority attribute that needs to be improved 3 attributes of information quality, 1 attribute from service interaction. A third priority attribute that needs to be improved one attribute of usability and one attribute of information quality. The first priority must be maintained 3 attributes of information quality and service interaction. The second priority should be to maintain the 7 attributes of usability, the 4 attributes of the service interaction. Research will help the website creator in designing good software website, application in design because with design that adapted to user feeling will make user interested in using software made so that developer do not feel useless in work.

## 1. Introduction

Website has a purpose to improve the quality of information provided. Users will be interested in making use of the website when the initial interface of a website is convenient to the eye [1]. In private universities, students are an asset in the continuity of the development of the college. While the students need academic information that is not possible all the majors are managed by the campus only, so that every department is expected to have a student website that is accompanied by improving the quality of services provided by the website [2]. In designing the interface that is convenient to the eyes of the user in this study utilizing the method of kansei engineering. This method manipulates the emotions of the users involved to get the website design elements [3-5]. Many methods are used in research quality of service one of them canoe method. The canoe method categorizes the attributes of the website, as well as measures how well the website attribute satisfies the user's freedom [6].

This research is done by the authors get references from various sources, one of the relevant research studies relevant to the research conducted by the author. Previous ones too. Ana [7], Nalini [8], Anitawati and nor [3], Mahboube [9], Pan and Nobuhiro [10]. All of these references are fundamental in conducting research both for the method of kansei engineering and canoe methods.



One of the differentiators of research done with previous research is interface and service analysis performed in one study

## 2. Methods

### 2.1. Kansei Engineering

Kansei Engineering or Kansei Engineering has been used to design Kansei for a variety of products worldwide; Kansei Engineering is a technology that allows the incorporation of human emotions in design requirements. It has the perspective that Kansei is unique to different domains and also unique to different target user groups, and uses verbal measurement instruments in its methodology [4].

Kansei Engineering is a technology that combines Kansei into the world of engineering in realizing products that suit the needs and desires of consumers. In other words Kansei Engineering is a technology in the field of customer-oriented ergonomics for product development including in software products [4].

### 2.2. Kano Method

The kano method is a tool used to produce a quality product or service. Based on the explanation mentioned, kano method can be used in order to improve the quality of a product or service based on perception owned by the customers [2].

## 3. Result and Discussion

### 3.1. Results Kansei Engineering Questionnaire

Data processing questionnaire using multivariate analysis that will be processed using tools XLSTAT Version 2014.

*3.1.1. Factor Analysis (FA).* Analyzing using Factor Analysis (FA) aims to find significant factors from Kansei Word in determining the new concept website that will be designed. The results of FA analysis show two factors that are considered to have a dominant influence on user emotional factors Factor 1 and Factor 2 are quite representative in determining which variables will be the reference in designing the website design. The FA results can be seen in Table 1.

**Table 1.** Correlations between Factors with Emotions.

Kansei Word	Factor 1	Kansei Word	Factor 2
Complicated	-0.3500	Simple	-0.9368
Simple	-0.3352	Bright	-0.7498
Secure	-0.0756	Bright	-0.6662
Bright	0.1457	Elegant	-0.6506
Sharp	0.3201	Formal	-0.5042
Luxury	0.3568	Dynamic	-0.2914
Masculine	0.4412	Fresh	-0.1294
Bright	0.4960	Interesting	-0.0853
Informative	0.5005	Colorful	0.0502
Formal	0.6635	Creative	0.1938
Elegant	0.7158	Impressive	0.1972
Interesting	0.8813	Unique	0.3518
Perfect	0.8893	Modern	0.3563
<b>Creative</b>	<b>0.9004</b>	Perfect	0.3982
<b>Unique</b>	<b>0.9129</b>	Informative	0.6586
<b>Modern</b>	<b>0.9173</b>	Secure	0.7199
<b>Dynamic</b>	<b>0.9198</b>	Sharp	0.7640
<b>Impressive</b>	<b>0.9345</b>	Luxury	0.7873
<b>Colorful</b>	<b>0.9412</b>	Complicated	0.8512
<b>Fresh</b>	<b>0.9773</b>	Masculine	0.8865

The design of the website you want to design has the concept of emotions "fresh", "colorful", "memorable", "dynamic", "modern", "unique" and "creative" Sharpen the amount of emotion, it will use the concept of emotion that has a value of more than 0.9 . Based on Table 6 the concept of "fresh" emotion has the highest value on factor one and from factor 2 does not exist because the value is less than 0.9, so there is one main concept that will be used as a reference in designing website interface.

**3.1.2. Partial Least Square (PLS).** The main purpose of the Partial Least Square process (PLS is to know the design elements that strongly influence the participants' emotions and translated to produce the design element recommendation) (See Table 2).

**Table 2.** Analysis Results *Partial Least Square* (PLS).

Variable	Fresh	Perfect	Creative	Interesting	Masculine	Secure	...
Background Gray color	0.0469	0.0552	0.0668	0.0442	0.0197	0.0069	...
White background	-0.0469	-0.0552	-0.0668	-0.0442	-0.0197	-0.0069	...
Header Background-Color Blue	0.0198	0.0321	0.0822	0.0457	0.0221	0.0001	...
Header Background-Color White	-0.0021	-0.0287	-0.0505	-0.0185	-0.0310	-0.0122	...
Header Background-Color Gradient	-0.0074	-0.0179	-0.0356	-0.0175	-0.0146	-0.0038	...
Background-Image Header	-0.0201	-0.0014	-0.0372	-0.0326	0.0124	0.0158	...
Header Background-Image No	0.0201	0.0014	0.0372	0.0326	-0.0124	-0.0158	...
...	...	...	...	...	...	...	...

Table 2 shows all the results of PLS analysis. The data displayed is the concept of emotion that all variables have. Because in the previous process of the selected variable "Fresh", then the data processing only for "Fresh" which has a strong influence in making the website design concept recommendations. Results can be seen in Table 3.

**Table 3.** Final Results Based on Ranking on "Fresh" Emotional Concepts.

Emotion Concept: Fresh			Average Range	
Category	Variables		Coefficient	Range
Background	Gray color	BWA	0.1138	0.2276
	White color	BWP	-0.1138	
Header	Background-color Blue	HBB	0.0479	0.0625
	Background-color White	HBP	-0.0042	
	Background-color Gradient	HBG	-0.0146	0.0798
	Background-Image There	HBA	-0.0399	
	Background-Image Nothing	HBT	0.0399	0.2038
	Menu Available	HMA	-0.1019	
	Missing Menu	HMT	0.1019	0.0798
	Left Logo Position	HPK	0.0399	
...	...	...	...	...

After doing all the analysis then the last step is to make a recommendation of the concept of website interface design based on the emotions of respondents. The recommended design concepts are design concepts that match the emotional goals, which mean the concept of design is considered fun by the respondent (See Table 4).

**Table 4.** Recommended Website Interface.

No	Emotion Concept: Fresh		Average Range	
	Category	Coefficient	Range	Design Concepts
1	Background Color	0.1138	0.2276	Gray
2	Header Background-Color	0.0479	0.0625	Blue
3	Header Background-Image	0.0399	0.0798	There is no
4	Header Menu	0.1019	0.2038	There is no
5	Header Logo Position	0.0399	0.0798	Left
6	Navigation	0.0445	0.089	There is
7	Position Menu	0.0399	0.0798	On
8	Text Color Menu	0.1793	0.3103	Blue
9	Body Letters	0.1345	0.2551	14 px
10	Body Type Font	0.0361	0.0722	Arial
11	Content Footer	0.1138	0.0992	Link Socmed
12	Footer Background Color	0.1138	0.2344	Blue

### 3.2. Results of the Service Questionnaire

In section 4 has been given data obtained from the questionnaire. GAP data is classified by the UP category if the gap value of each attribute is greater than the average value of the total GAP, it means that the service attribute must be increased HOLD if the gap value of each attribute is smaller than the average value of the total gap, meaning that the attribute must be retained. (Table 5).

**Table 5.** GAP Category Determination.

No	Service Attribute	GAP	Average	Category
<i>Usability</i>				
1	The web is easy to operate	-0.2	-0.45188	UP
2	Interaction with the web is clear and easy to understand	-0.533	-0.45188	HOLD
3	Easy to find menus within the web	-0.466	-0.45188	HOLD
4	This web has ease in navigation	-0.634	-0.45188	HOLD
5	Web addresses are easily accessible	-0.233	-0.45188	UP

After knowing which attributes need to be maintained and improved. Next do a mapping by Kano method by performing a GAP and Kano merging table and also its priorities, such as Table 6.

**Table 6.** Gap Category Mapping Against Kale Grade.

No	Categories GAP	Grade Kano	Priorities	Explanation
1	UP	M	U1	The first priority should be improved
2	UP	I	U2	The second priority should be improved
3	UP	O	U3	The third priority should be improved
4	UP	A	U4	The fourth priority should be improved
5	HOLD	M	H1	The first priority should be maintained
6	HOLD	I	H2	The second priority should be maintained
7	HOLD	O	H3	A third priority to be maintained
8	HOLD	A	H4	The fourth priority must be maintained

After GAP and Kano mapping charts are available then just compare the categories of GAP and Kano Grade that each attribute gets. As shown in Table 7.

**Table 7.** Attribute Priority Mapping Table.

No	Service Attribute	Categories GAP	Grade Kano	Priorities
<b><i>Usability</i></b>				
1	The web is easy to operate	UP	M	U1
2	Interaction with the web is clear and easy to understand	HOLD	I	H2
3	Easy to find menus within the web	HOLD	I	H2
4	This web has ease in navigation	HOLD	I	H2
5	Web addresses are easily accessible	UP	O	U3
6	The arrangement of information layout in the web is correct	HOLD	I	H2
7	The website has an interesting look	HOLD	I	H2
8	Presentation of information meets the needs of the user	HOLD	I	H2
9	Components on the web according to user needs	HOLD	I	H2
<b><i>Information Quality</i></b>				
10	The information available on the web is accurate	UP	M	U1
11	The information presented on the web can be trusted	HOLD	M	H1
12	Presentation of information on the web is always up to date	HOLD	M	H1
13	The information presented is relevant to the user's field of study	UP	I	U2
14	Text on the web can be read clearly	UP	O	U3
15	Images in the web can be seen clearly	HOLD	M	H1
16	The Web provides detailed information	UP	I	U2
17	Information in this web is presented with the appropriate format	UP	I	U2
<b><i>Service Interaction</i></b>				
18	Overall use of web components does not experience errors	HOLD	I	H2
19	Files that can be downloaded from the web are safe from viruses	UP	M	U1
20	Each file uploaded to convey personal data is kept confidential	HOLD	M	H1
21	The web interface draws the user's interest and attention to access it again	HOLD	I	H2
22	This web provides communication facilities between member and web admin	HOLD	I	H2
23	This web provides a back feed facility	HOLD	I	H2
24	This web guarantees a high level of confidence in the information presented	UP	I	U2
25	This web always provides service updates according to the feedback of the user	UP	I	U2

Each priority has a number of different attributes. Number of service attributes included into U1 priority of 3 attributes, U2 priority 5 attributes, U3 priority 2 attributes, priority H1 4 attributes, priority H2 11 attributes.

#### 4. Conclusions

In increasing the interest of users to use the website can be done by analyzing the interface design and services provided by the website. Analyzing the interface and services provided can utilize the method of kansei engineering to analyze the website interface design and to improve the website services can use the canoe method, the results of this study is a design and service recommendations from the

website. Research can be useful for website creators because it makes it easy to design website interfaces and define the services that need to be created on the website.

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### References

- [1] Odang 2017 *Penerapan Kansei Engineering dalam Rancangan Interface E-Learning untuk Perguruan Tinggi Islam (Studi Kasus: Fakultas Tarbiyah dan Keguruan UIN Sunan Gunung Djati Bandung)*. Bandung: Sekolah Tinggi Manajemen Informatika dan Komputer LIKMI.
- [2] Jaelani I 2015 *Penerpan Metode Kano Berdimensi Servqual dalam Menganalisis Kualitas Layanan Sistem Informasi Akademik Terhadap Kepuasan Pengguna (Studi Kasus SIMAK STT. Wastukencana Purwakarta)*. Bandung: Sekolah Tinggi Manajemen Informatikka dan Komputer LIKMI.
- [3] Anitawati M 2016 *Kansei Engineering: A Study On Perception of Online Clothing Websites*. (Sweden: Lund University Campus Helsingborg)
- [4] Asanka D D 2012 On-line Visualization os Student Facial Emotion in Virtual e-Learning Enviroment. *Kansei Engineering International Journal* **11** No. 4 , 267-276
- [5] Fevi S Y H 2013 Kansei Engineering: The Ke's Package Review. *Global Engineers & Technologists Review* , 8-20.
- [6] Mahboube A, 2013 Application of Kano Model in Higher Education Quality Improvement Study Master's Degree Program of Educational Psychology in State Universities of Tehran. *World Applied Sciences Journal* **17** (3) , 347-353
- [7] H A 2015 Web based E-Learring System Analysis Kansei Engineering *International Conference on Information and Communication Technology (ICoICT)* 560-564
- [8] Nalini D A M 2006 E-Office for UiTM: A Survey Analysis *FTMSK Jurnal* Vol **8** (1) 71-79
- [9] Mostowfi N K 2016 Kansei Engineering and Enviromental Design. *International Journal of Environmental Sciences* **6** No 5 , 759-765
- [10] Pan Qiting N U 2014 *Kano Model Analysis of Customer Needs and Satisfaction at the Shanghai Disneyland* Kyoto: Kyoto Univesity
- [11] Tsuchiya T 2013 Kansei Engineering Study for Streetscape Zoning using Self Organizing Maps *International Journal of Affective Engineering* **12** No. 3 , 265-37.