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.

| 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   |
| Creative    | 0.9004   | Perfect     | 0.3982   |
| Unique      | 0.9129   | Informative | 0.6586   |
| Modern      | 0.9173   | Secure      | 0.7199   |
| Dynamic     | 0.9198   | Sharp       | 0.7640   |
| Impressive  | 0.9345   | Luxury      | 0.7873   |
| Colorful    | 0.9412   | Complicated | 0.8512   |
| Fresh       | 0.9773   | 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 | Category          | Variables          | Coefficient | Average Range |
|-----------------------|-------------------|--------------------|-------------|---------------|
| Background            | Gray color        | BWA                | 0.1138      | 0.2276        |
|                       | White color       | BWP                | -0.1138     |               |
| Background-color Blue |                   | HBB                | 0.0479      |               |
| Background-color White|                   | HBP                | -0.0042     | 0.0625        |
| Background-color Gradient |               | HBG                | -0.0146     |               |
| Background-Image There |                  | HBA                | -0.0399     | 0.0798        |
| Background-Image Nothing |               | HBT                | 0.0399      |               |
|                       | Menu Available    | HMA                | -0.1019     | 0.2038        |
|                       | Missing Menu      | HMT                | 0.1019      |               |
|                       | Left Logo Position| HPK                | 0.0399      | 0.0798        |
| ...                   | ...               | ...                | ...         | ...           |

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 | Coefficient | Average 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 no     |
| 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        | Arial 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 |
|----|-------------------------------------------------|---------|---------|----------|
|    | Usability                                       |         |         |          |
| 1  | The web is easy to operate                     | -0.2    | -0.45188| UP       |
| 2  | Interaction with the web is clear and easy      | -0.533  | -0.45188| HOLD     |
|    | to understand with the web is clear and easy    |         |         |          |
|    | to understand with the web is clear and         |         |         |          |
|    | easy to understand with the web is clear        |         |         |          |
| 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                        |
|----|----------------|------------|------------|------------------------------------|
|    | GAP            |            |            |                                    |
| 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 |
|----|-------------------|----------------|------------|------------|
| **Usability** | | | | |
| 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 |
| **Information Quality** | | | | |
| 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 |
| **Service Interaction** | | | | |
| 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.

Acknowledgements
The author would like to thank the support of all parties who have helped and support in completing this research

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