Assessing The Influence of Big Five Personalities at The Level of Student Engagement and Lostness on The Faculty Website

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Abstract:
The use of websites in the education sector is increasingly widespread, the website is not only a complementary means of information but rather as a means of introducing institutional images, marketing strategies, and even to build relationships. The user interacting experience on the website determines the success of the role as a bridge of communication and means of building relationships. Using a prototype from the Universitas Mercu Buana Fasilkom website, this study collected quantitative data from 100 respondents of computer science faculty students when interacting with the Fasilkom website. The user difficulty level of experience can vary depending on the respondent’s personality. This observation found that openness respondent tends to be more tolerant and loyal. Other personalities according to the big 5 personality model correlate to neither lostness nor student engagement. This study found that the most influence on student engagement is lostness.

Keywords —lostness metric, the big 5 personalities, student engagement, path analysis,cursor distance, usability evaluation

I. INTRODUCTION
Nowadays Educational websites are built as a means of supporting teaching, communication and supporting and improving learning functions [1]. The good educational website construction needs to adopt all the changing needs of users [2] [3], easy to use [4] and accurate [5].

Educational websites have a high level of complexity [1][6][7], this makes website navigation more complicated. The complexity of websites navigation makes it harder for browsing the content [8]. As a result, often the user becomes incomprehensible [9] when crossing references between more than one page and causing the user's navigation pattern to go back and forth to the same page [10]. In addition, changes in the needs and behavior of users in browsing websites have resulted in an adjustment of content settings to the easiest and ideal navigation pattern [2] so that users are not reluctant to re-access the site.

Previous research has explained the factors that influence user experience, causing users to stay loyal to visit the sites [11]. From these factors, the dimensions studied are sensorial components, emotional components, cognitive components, pragmatic components, lifestyle components,
relations components with uses and gratification approaches [12]. In addition, there are also studies that check user personality, namely openness to experience, conscientiousness, extraversion, agreeableness, neurotics [13].

However, the results of these studies have not explained the relevance of user behavior caused by differences in personality towards loyalty and the presence or absence of the influence factors of student engagement to re-access the website.

II. LITERATUR REVIEW

A website is something that is commonly used by every educational institution. The role of the website as a means of supporting teaching [1] [14] [15], administrative [15], communication [14], and as a means of marketing [14] [15]. Changes in needs, functions of the website [15] lead to adjustments to content and navigation by the latest user-oriented recommendations [2] [3] [16] [17].

Effective learning activities must fulfill aspects such as more student-centered teaching and learning activities [18] [19], the interaction between teachers and students in the learning process, variations in teaching methods, the use of proper teaching materials, and the media and environment conducive to accommodating a good teaching and learning process [20] [21]. Therefore website-based learning needs to consider website support for problem-solving, critical thinking and supporting diverse user capacities [19] [22].

The development and maintenance of a good website will have a positive impact on engagement levels [23] [24] and the effectiveness of the website [25]. The perceived differences in interests of the website cause the resources invested in developing and maintaining the website [1]. Some educational websites focus on marketing objectives [26], used to communication [14].

Fasilkom as a faculty that promotes information technology both in learning and other activities need a website not just as informative media. This website is one of the milestones to help teaching, learning, and communication [1]. The influence of user experiences in earlier researches [12] [23] [25] [27] obtained from aspects of information, personal identity, social integration and interaction, and entertainment [11] [23] [25], and has examined the linkages user personality towards the choice of access to a website [13].

However, understanding the students' personality has not received significant attention so that it has not been able to explain levels of student personality influences on student engagement and has not explained the level of the lostness of websites navigation towards student engagement.

Fasilkom needs to improve the effectiveness of its website so that it can accommodate and align with the needs and personality of its students [13]. Therefore, we need to measure the current effectiveness of the website [25] by knowing the level of lostness [27] of the Fasilkom website navigation and understanding students' personality whose influence the level of student engagement [13].

The lostness metric can calculate the accuracy of user navigation by using experimenting with a sample of students to use the Fasilkom website and completing assigned tasks. The number of pages visited, the number of unique pages visited, and the optimal number of pages visited to complete the tasks is used as a reference to calculate the lostness value [8] [27][28].

The use of the lostness formula is as follows:

$$L = \frac{N}{S} - 1)^2 + \frac{R}{N} - 1)^2$$

Where:

- **R** = the number of links to complete the task successfully on the optimal path;
- **S** = the total number of pages visited by users;
- **N** = the number of unique pages visited by users.
5-factor model personality variables that consist of openness to experience, conscientiousness, extraversion, agreeableness, neurotics[11] have a correlation to academic achievement [29][30]. The hypothesis created to measure influences levels of big 5 personality models [31] on student engagement and to measure the influence of personality models on student engagement through the value of lostness [13][32].

RESEARCH METHOD

A. Steps to Work and Data Collection

The steps taken are starting from making navigation from the Fasilkom website as shown in Fig. 1. Then determine the optimum number of clicks for each test scenario. The test consists of 5 tasks, namely: looking for TOEFL / TOEIC information and dispensation, Finding information on learning plans, looking for passing grade information for elective courses and MKCU, looking for practical work guide information, looking for information on distribution courses per semester.

Prepare a questionnaire to test the level of student engagement. The questions are:

1. How often have you visited the Fasilkom website before this session?  
   Never 1-3 times 4-6 times 7-9 times > 9 times
2. Has the Fasilkom webpage answered your needs
   Yes No
3. Is the web contents easy to understand
   Yes No
4. Do you check the Fasilkom web first before asking the administration/ supervisor/ lecturer?
   Yes No
5. Do you recommend your friends who are looking for information about lectures to check the Fasilkom website?
   Yes No

Respondents’ personality testing by the big five personality uses the help of the website www.truity.com. The hypothesis of the test used is like Fig. 2.

Then look for 100 respondents from computer science faculty students. Respondents asked to use the Fasilkom's website and complete all five testing assignments. During the testing process, three assistants monitored and counted the number of clicks and web pages accessed. After that, respondents asked to take a personality survey at www.truity.com and the assistant noted the results given. Furthermore, respondents asked to fill out a questionnaire consisting of 5 questions about student engagement.

B. Data Processing

After the data from 100 respondents obtained, it processed using hypotheses such as in fig. 2, the results of the data were normally distributed (table.1) and the data were free of colinearity as shown in table 2.

| Table 1. Normality Result |
After the data proved normal and free of collinearity, linearity analysis was then carried out. The results of linearity analysis showed that personality variables correlated with variables of lostness and student engagement, and lostness variables correlated with student engagement variables as seen in table 3.

Table 3. Linearity Test Result

<table>
<thead>
<tr>
<th>Model</th>
<th>Deviation from linearity</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lossness (Y) * Openness (X1)</td>
<td>1.190</td>
<td>0.290</td>
<td></td>
</tr>
<tr>
<td>Lossness (Y) * Conscientiousness (X2)</td>
<td>1.002</td>
<td>0.459</td>
<td></td>
</tr>
<tr>
<td>Lossness (Y) * Extraversion (X3)</td>
<td>0.946</td>
<td>0.518</td>
<td></td>
</tr>
<tr>
<td>Lossness (Y) * Agreeableness (X4)</td>
<td>1.289</td>
<td>0.224</td>
<td></td>
</tr>
<tr>
<td>Lossness (Y) * Neuroticism (X5)</td>
<td>1.135</td>
<td>0.339</td>
<td></td>
</tr>
<tr>
<td>Student Engagement (Z) * Openness (X1)</td>
<td>0.825</td>
<td>0.666</td>
<td></td>
</tr>
<tr>
<td>Student Engagement (Z) * Conscientiousness (X2)</td>
<td>1.460</td>
<td>0.145</td>
<td></td>
</tr>
<tr>
<td>Student Engagement (Z) * Extraversion (X3)</td>
<td>0.831</td>
<td>0.641</td>
<td></td>
</tr>
<tr>
<td>Student Engagement (Z) * Agreeableness (X4)</td>
<td>1.412</td>
<td>0.157</td>
<td></td>
</tr>
<tr>
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<td>1.151</td>
<td>0.326</td>
<td></td>
</tr>
<tr>
<td>Student Engagement (Z) * Lossness (Y)</td>
<td>1.531</td>
<td>0.113</td>
<td></td>
</tr>
</tbody>
</table>

Furthermore, calculated the value of the path coefficient and the value of the residual variable

### Table 4. Signification Coefficients of Lostness

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Openness (X1)</td>
<td>0.054</td>
<td>0.075</td>
<td>1.041</td>
<td>0.312</td>
</tr>
<tr>
<td>Conscientiousness (X2)</td>
<td>-0.026</td>
<td>-0.075</td>
<td>-0.346</td>
<td>0.734</td>
</tr>
<tr>
<td>Extraversion (X3)</td>
<td>0.038</td>
<td>0.054</td>
<td>0.708</td>
<td>0.492</td>
</tr>
<tr>
<td>Agreeableness (X4)</td>
<td>-0.040</td>
<td>-0.060</td>
<td>-0.667</td>
<td>0.505</td>
</tr>
<tr>
<td>Neuroticism (X5)</td>
<td>0.066</td>
<td>0.093</td>
<td>0.648</td>
<td>0.523</td>
</tr>
<tr>
<td>Lossness (Y)</td>
<td>-42.995</td>
<td>-70.303</td>
<td>-6.131</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Based on the results of Table 4, the variables openness, conscientiousness, extraversion, agreeableness, neuroticism did not much influence lostness. Where only 2.6% of personality variables affect lostness. 52% of the causes of student engagement can be explained by the relationship between variable lostness and variables personality.

The lostness has a significant effect on student engagement as seen in Table 5. Personality variables do not have a significant effect.

### Table 5. Signification Coefficient of Student Engagement

<table>
<thead>
<tr>
<th>Model</th>
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<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>24.735</td>
<td>7.004</td>
<td>3.532</td>
<td>0.001</td>
</tr>
<tr>
<td>Openness (X1)</td>
<td>0.054</td>
<td>0.075</td>
<td>1.041</td>
<td>0.312</td>
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<td>Conscientiousness (X2)</td>
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</tbody>
</table>

The direct, indirect, and total influence of each variable looks like Table 6.
A. Result and Discussion

From the results of data processing, it is known that personality variables have no effect on lostness or student engagement. Personality variables only explain 2.6% of lostness, this means that there are other variables that have not been observed in this study such as age, GPA, gender, placement of links based on eye movement, root grouping, time.

The Fasilkom website which is the official website of the computer science faculty makes all students need and must use it even though there are shortcomings on the website. So that the personality variable does not much affect student engagement.

III. CONCLUSIONS

Personality variables consisting of openness, conscientiousness, extraversion, agreeableness, neuroticism, it doesn't much effect on lostness variables on the Fasilkom website. These personality variables also have no significant effect on student engagement variables on the Fasilkom website.

The variables that much influence student engagement variables are only lostness variables, where the correlation value is inversely proportional. The higher the value of lostness, the lower the value of student engagement.

This research is not enough to find out what causes student engagement. However, it is known that at least 50% of the reasons for students reluctance to get access to the Fasilkom website are the level of lostness. Therefore it is necessary to study in further research other aspects that affect lostness and student engagement such as demographics, user interface design, eye tracking, student opinion surveys, lostness study with system logs, and other relevant studies.

Table 6. Influence Value of Each Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Direct Influence</th>
<th>Indirect Influence</th>
<th>Total Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Openness</td>
<td>1.018</td>
<td>8.40594</td>
<td>9.422</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-0.498</td>
<td>-0.94688</td>
<td>-1.445</td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.749</td>
<td>-7.22384</td>
<td>-6.488</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-0.815</td>
<td>0.17985</td>
<td>-0.641</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>1.267</td>
<td>-0.77296</td>
<td>0.494</td>
</tr>
<tr>
<td>Lostness</td>
<td>-9.662</td>
<td>-9.662</td>
<td></td>
</tr>
</tbody>
</table>

ACKNOWLEDGMENT

This research is original and has never been published in any journal. This study uses site www.truity.com to help calculate the personality values of each respondent.

This research is known and approved by Universitas Mercu Buana for the use of the Fasilkom website as a prototype for this research.

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REFERENCES


