

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

Ariyani Wardhana*, Sulis Sandiwarno**

*(Information System, Universitas Mercu Buana, Indonesia

Email: ariyani.wardhana@mercubuana.ac.id)

** (Information System, Universitas Mercu Buana, Indonesia

Email: sulis.sandiwarno@mercubuana.ac.id)

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:

$$L = (N / S - 1)^2 + (R / N - 1)^2$$

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.

One-Sample Kolmogorov-Smirnov Test

Dependent Variable: Lostness			Dependent Variable: Student engagement			
	Unstandardized Residual	N	Unstandardized Residual	N		
Normal	Mean	0	Normal	Mean	0	
Parameters ^{a,b}	Std. Deviation	2,98791127	Parameters ^{a,b}	Std. Deviation	2,49276204	
	Most Extreme Differences	Absolute	0,046	Most Extreme Differences	Absolute	0,043
		Positive	0,032		Positive	0,04
	Negative	-0,046		Negative	-0,043	
Test Statistic		0,046	Test Statistic		0,043	
Asymp. Sig. (2-tailed)		,200 ^{c,d}	Asymp. Sig. (2-tailed)		,200 ^{c,d}	

- a. Test distribution is Normal.
- b. Calculated from data.
- c. Lilliefors Significance Correction.
- d. This is a lower bound of the true significance.

Table 2. Collinearity Result

Model	Collinearity Statistics			
	Tolerance	VIF	Tolerance	VIF
(Constant)				
Openness (X1)	,941	1,063	,948	1,055
Conscientiousness (X2)	,949	1,053	,958	1,043
Extraversion (X3)	,978	1,023	,983	1,017
Agreeableness (X4)	,952	1,051	,952	1,050
Neuroticism (X5)	,954	1,049	,960	1,042
Lostness (Y)	,974	1,026		

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

Deviation from linearity	F	Sig.
Lostness (Y) * Openness (X1)	1.190	0.290
Lostness (Y) * Conscientiousness (X2)	1.002	0.459
Lostness (Y) * Extraversion (X3)	0.946	0.518
Lostness (Y) * Agreeableness (X4)	1.289	0.224
Lostness (Y) * Neuroticism (X5)	1.135	0.339
Student Engagement (Z) * Openness (X1)	0.825	0.666
Student Engagement (Z) * Conscientiousness (X2)	1.460	0.145
Student Engagement (Z) * Extraversion (X3)	0.831	0.641
Student Engagement (Z) * Agreeableness (X4)	1.412	0.157
Student Engagement (Z) * Neuroticism (X5)	1.151	0.326
Student Engagement (Z) *Lostness (Y)	1.531	0.113

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

with endogenous variables. The results obtained are as seen in Fig. 3.

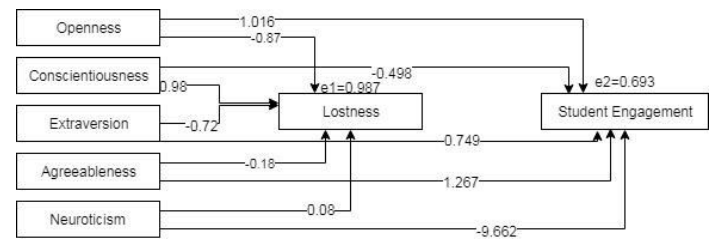


Fig 3. Path Analysis Result

The correlation significance values of each personality variable on the lostness variable are shown in table 2.

Table 4. Signification Coefficients of Lostness

Model	Coefficients ^a				
	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1 (Constant)	0,183	0,161		1,134	0,260
Openness (X1)	-0,001	0,001	-0,087	-0,832	0,407
Conscientiousness (X2)	0,001	0,001	0,098	0,946	0,347
Extraversion (X3)	-0,001	0,001	-0,072	-0,699	0,486
Agreeableness (X4)	0,000	0,001	-0,018	-0,172	0,864
Neuroticism (X5)	0,001	0,001	0,080	0,768	0,444

a. Dependent Variable: Lostness (Y)

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

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Error			
(Constant)	24,735	7,004		3,532	0,001
Openness (X1)	0,054	0,054	0,075	1,016	0,312
Conscientiousness	-0,026	0,052	-0,037	-0,498	0,619
Extraversion (X3)	0,038	0,050	0,054	0,749	0,456
Agreeableness (X4)	-0,040	0,049	-0,060	-0,815	0,417
Neuroticism (X5)	0,066	0,052	0,093	1,267	0,208
Lostness (Y)	-42,995	4,450	-0,703	-9,662	0,000

a. Dependent Variable: Student Engagement (Z)

The direct, indirect, and total influence of each variable looks like table 6.

Table 6. Influence Value of Each Variables

Variables	Direct Influence	Indirect Influence	Total Influence
Openness	1,016	8,40594	9,422
Conscientiousness	-0,498	-0,94688	-1,445
Extraversion	0,749	-7,23684	-6,488
Agreeableness	-0,815	0,173916	-0,641
Neuroticism	1,267	-0,77296	0,494
Lostness	-9,662		-9,662

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.

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.

We thank Universitas Mercu Buana for funding and support. Thank you to www.truity.com for facilitating us in calculating the personality values of each respondent, and thanks to all respondents and those who have supported this research.

REFERENCES

- [1] Wardhana, Ariyani (2018). Designing of Library Information System to Support Learning in High School. IJCT, Vol. 5.
- [2] Taddeo, C., & Barnes, A. (2014). The school website: Facilitating communication engagement. British Journal of Educational Technology.
- [3] Praba, M. S., Khanna, P., Saxena, A., Jain, S., & Pal, R. (2018). Educational Website Based on Dynamic Recommendation and Filtering Techniques. International Journal of Emerging Technologies in Engineering Research , 84-87.
- [4] Norkute, milda. Redesign of a website for technical information and service tools following a human centered design process to reflect the workflow of different users. Stockholm : kth royal institute of technology school of electrical engineering and computer science, 2018.
- [5] An Experimental Investigation on Understanding the Difficulties and Challenges of Software Modellers When Using Modelling Tools. Pourali, Parsa and Atlee, Joanne M. Ontario : David R. Cheriton School of Computer Science, 2018.
- [6] Sandiwarno,Sulis (2016). Perancangan Model E-learning Berbasis Collaborative Video Conference Learning Guna Mendapatkan Hasil Pembelajaran yang Efektif dan Efisien. Journal ilmiah FIFO, 8, 2, 191-200.
- [7] Handriani, Inge (2017). Design Concept E-Learning Using Absorb-Do-Connect Type Method For Junior Homeschooling Education. IJCTJournal, 54, 3, 120-126.
- [8] Abidin, Ahmad Hisham Zainal. An investigation into accessible and usable web navigation for the blind people . s.l. : Murdoch University , 2016.
- [9] Gwizdka, J., & Spence, I. (2007). Implicit measures of lostness and success in web navigation. Elsevier , 357-369.
- [10] Chen, S. Y., & Macredie, R. D. (2002). Cognitive style and hypermedia navigation: development of a learning. Journal of the American Society for Information Science and Technology , 3-15.
- [11] Boechler, P. M. (2001). How spatial is hyperspace? Interacting with hypertext documents: cognitive processes and. Cyber Psychology and Behavior , 23-46.
- [12] Calder, B. J., Malthouse, E. C., & Schaedel, U. (2009). An Experimental Study of the Relationship between Online Engagement and Advertising Effectiveness. Elsevier , 321-331
- [13] Gentile, c., spiller, n., & noci, g. (2007). How to Sustain the Customer Experience: An Overview of Experience Component that Co-Create Value with The Customer. European Management Journal , 395-410.
- [14] Kosinski, M., Bachrach, Y., Kohli, P., Stillwell, D., & Graepel, T. (2013). Manifestations of user personality in website choice and behaviour on online social networks. Mach Learn Springer .
- [15] Nurfa, M Sidiq, Wardhana, Ariyani (2018). Analysis and Design of Decision Support System for Improving School Education Quality Case Study: SMK Aero Dirgantara Islamic Village. IJCSMC, Vol. 7, pp. 97-108.

- [16] Tubin, D., & Klein, S. (2007). Designing a school Website: contents, structure, and responsiveness. *Planning and Changing*, 191-207.
- [17] Taddeo, C., & Barnes, A. (2014). The school website: Facilitating communication engagement. *British Journal of Educational Technology*.
- [18] Philip melbi, markus biamont, alexander danielsson, anton frölander, gustav johansson, eric petersson, joakim strandberg, anna wikström, johannes ålander. *Linping - Linqueueping without queue*. s.l. : Linköpings universitet, 2017.
- [19] Walton, Rachel. *Looking for Answers: A Usability Study of Online Finding Aid Navigation*. The American Archivist. Spring/ Summer, 2017, Vol. 80, 1, pp. 30-52.
- [20] The foundations and assumptions of technology-enhanced student-centered learning environments. Hannafin, Michael J. and M.Land, Susan. Nedtherland : Kluwer Academic Publishers, 1997, *Instructional Science*, Vol. 25, pp. 167–202.
- [21] New horizons in entrepreneurship: from teacherled. Sarah Robinson, Helle Neergaard, Lene Tanggaard, Norris Krueger. 7/8, s.l. : Emerald Group Publishing, 2016, Vol. 58. <http://dx.doi.org/10.1108/ET-03-2016-0048>.
- [22] "I'm a Facilitator of Learning!" Understanding What Teachers and Students Do". Goodyear, Victoria and Dudley, Dean. 3, Birmingham : Taylor & Francis in Quest, 2015, Vol. 67, pp. 274-286.
- [23] Lestari, D. A., Siswandari, & Indrawati, C. D. (2019). The Development of Digital Storytelling Website Based Media for Economic Learning in Senior High School. *International Journal of Active Learning*, 10-17.
- [24] A Design Framework for Enhancing Engagement in Student-Centered Learning: Own It, Learn It, and Share It. Lee, Eunbae and Hannafin, Michael J. 4, s.l. : ERIC, 2016, *Educational Technology Research and Development*, Vol. 64, pp. 707-734.
- [25] Undervalued or Overvalued Customers: Capturing Total Customer Engagement Value. V. Kumar, Lerzan Aksoy, Bas Donkers, Rajkumar Venkatesan, Thorsten Wiesel, Sebastian Tillmanns. 3, s.l. : Sagepub, 2010, *Journal of Service Research*, Vol. 3. DOI: 10.1177/1094670510375602.
- [26] User engagement by using a knowledge-creation based model in the virtual community. Echo Huang, Juh-Cheng Yang. s.l. : The International Association of Organizational Innovation (IAOI), 2011, *International Journal of Organizational Innovation*.
- [27] How to Capture Consumer Experiences: A Context-Specific Approach To Measuring Engagement. Bobby J. Calder, Mathew S. Isaac. s.l. : *journal of advertising research*, 2016, pp. 39-52.
- [28] A Usability Evaluation Method Based on the Lostness of Unit Action for Coding Education Software. Hee Sung Park, Kwang-Hyun Park. 2, Seoul : *Journal of Korea Robotics Society*, 2015, Vol. 10, pp. 096-103. <http://dx.doi.org/10.7746/jkros.2015.10.2.096>.
- [29] An empirical study of Web browsing behaviour: Towards an effective Website design. Gek Woo Tan, Kwok Kee Wei. s.l. : Elsevier, 2006, *Electronic Commerce Research and Applications*, Vol. 5, pp. 261-271.
- [30] Laidra, K., Pullmann, H., & Allik, J. (2007). Personality and intelligence as predictors of academic achievement: A cross-sectional study from elementary to secondary school. *Elsevier*, 441-451.
- [31] Stajkovic, A. D., Bandura, A., Locke, E. A., Lee, D., & Sergent, K. (2018). Test of three conceptual models of influence of the big five personality traits and self-efficacy on academic performance: A meta-analytic path-analysis. *Elsevier*, 238-245.
- [32] Tubin, D., & Klein, S. (2007). Designing a school Website: contents, structure, and responsiveness. *Planning and Changing*, 191-207.

Mail your Manuscript
[to editorijctjournal@gmail.com](mailto:editorijctjournal@gmail.com)
editor@ijctjournal.org