

Perceived kansei and performance-based usability impact on satisfaction for web-based applications

M Hartono

Department of Industrial Engineering, University of Surabaya, Raya Kalirungkut, Surabaya, 60293, Indonesia

E-mail: markus@staff.ubaya.ac.id

Abstract. Kansei Engineering has been applied intensively for product design and development considering the deepest layer of customer needs, known as Kansei, which is related to emotional need or affect. This method has been extended into service design and innovation. It has been shown that Kansei's impact on customer loyalty is equally important as that of cognition or performance. A recent research in investigating the proportional effect of Kansei and performance on usability measurement for e-services has been conducted. It shows that both Kansei and performance is found to be equally significant as well. Then, a question is raised, whether they are antecedent of customer satisfaction. This study is proposed to investigate both perceived Kansei-based and performance-based usability measures on satisfaction. Both theoretical and practical implication is highly expected due to the growth of more human-computer interaction (HCI) features and services nowadays. A proposed applicative framework followed by an empirical study on how the perceived Kansei and performance-based usability impact on satisfaction for web-based applications is discussed.

1. Introduction

Concerning to web service and web-based applications, usability analysis focuses on structure and behaviour rather than technical aspects. A web-based application is a program which can be accessed through a network connection using HTTP and runs inside a certain web browser. The usability of web-based application is highly expected. Both the impression and performance of the web-based application are significantly expected by the user. A recent study shows that both cognitive and affective process is associated with usability [1]. Cognitive deals with human capabilities, limitations, and tendencies; whereas, affective is known as Kansei (in Japanese) concerns on human feelings and impression. Affect complements the whole cognitive evaluation, according to a study by Hartono and Tan [2]. This study highlights the importance of emotional satisfaction in services, and how the service provider should take the impact of emotional needs on particular service attribute performance for the improvement prioritization.

In the area of Human-Computer Interaction (HCI), both cognitive and affective aspects for usability have been implemented into electronic products, medical equipment, mobile phones and e-commerce sites [1,3,4]. In the case of HCI-based websites, the cognitive aspect includes ease of use, content, identification, delay, and trust. More specifically, in usability study for e-commerce, its



cognitive process covers navigation, interaction, layout, merchandise and information quality [5]. A recent study on the role of affect and cognition on customer satisfaction and loyalty shows that effect has the proportional weight to cognition which leads to customer satisfaction and loyalty [6]. However, effect has received little attention for the usability evaluation [1]. Hence, a study on how to investigate the impact of effect- and cognition-based usability on satisfaction is highly prospective.

There is still no comprehensive conclusion about the relationship between effect and usability and how its impact on user satisfaction. Some studies on the affect-based usability have been conducted [7]. However, some studies could not show that relationship [1]. Therefore, a study on the combination of cognitive and affective processes is highly expected to deliver more comprehensive information for user satisfaction.

A case study on a web-based application is selected, or it is deemed related to the website. The development of usable websites is important for e-business and e-commerce success today as online customers and users will feel, search, and experience products or services mainly through websites. A full usable website has been deemed to be a media for delivering positive attitude toward online shops, boosting engagement and revisit rates and also stimulating online purchase [8]. It is also stated that *difficult-to-understand* website content, inconsistent format, disorientation, poor interaction, and reliability and ill-defined help functions are regarded as common problems for commercial websites [9].

Given this above background, this study has two objectives. First, it is to build an applicative research framework of perceived Kansei and performance-based usability impact on satisfaction for web-based applications. Second, it is to conduct a simple empirical test to investigate the effect of web-based application usability constructs on satisfaction.

This paper is systematically structured as follows. After the introduction section, it is followed by a brief Literature Review. Afterwards, it continues to the Research Methodology and Framework, Result and Discussion, and is wrapped up with Conclusion and Further Research Recommendation.

2. Brief Literature Review

2.1 Usability for website and web-based application

The mutual interaction between human and computer is highly needed in designing and implementing a variety of computing systems. According to ISO 9241 [10], usability is defined as the extent to which a product can be utilized by particular users to obtain effectiveness, efficiency, and satisfaction. Related to website or web-based application, it refers to the extent to which web can be used by specific users in achieving goals in terms of efficiency, effectiveness and satisfaction in a specified context of website or web-based application use.

According to Lee & Kozar [9], effectiveness represents the accuracy where the online users can achieve their goals (e.g., purchase, information gathering); efficiency is related to quick time and less cognitive effort to achieve goals (e.g., website with simple and consistent design features to make the pages easy to read and learn); and satisfaction is defined as the comfort and acceptability of a website to its users (e.g., real-time chat menu with customer support personnel).

2.2 Kansei, Performance and Satisfaction in web-based application usability

In website design and application, affect refers to impression or delight (known as Kansei in Japanese) whereas performance deals with cognition, according to the previous study on emotional needs and Kansei Engineering [1]. Delight, firmness, and convenience are found to be determinants of customer satisfaction and loyalty toward the site [11]. Delight explains the effect, whereas, firmness and convenience are dominantly describing the performance or cognitive processes. Another study proposes a set of usability dimensions such as download delay, navigability, site content, interactivity and responsiveness which bring impact on the customer satisfaction, return possibility and frequency [12].

About various constructs used in various usability studies, Prastawa et al [1] proposes two main factors (i.e., cognitive and affective processes) which bring significant impact on usability. Even though this approach has simplified the understanding of usability performance drivers, an extended approach which is to investigate the proportional impact of effect and cognition on user satisfaction in a case of usable web-based application or website is prospective.

3. Research Framework and Hypothesis

Referring to what has been discussed in Section 1 and 2 above, this study starts with the perceived performance-based and Kansei-based usability measurement, and then followed by the overall satisfaction measurement, as shown in figure 1. The measure variables were adopted from Prastawa et al. [1]. The details of them are provided in the Appendix. According to Helander and Khalid [13], perceived performance-based is related to cognition, which is something more on analytical and rational thinking, whereas Kansei-based is related to emotions and attitudes. Variables of both constructs explain how usability can be derived from both rationale and emotional aspects. For instance, “readability” explains the performance-based usability, it may relate to sentences and steps to operate the website that are easy to understand. For the Kansei-based usability, for instance, “appeal” is proposed. Appeal is related to the appearance of the web is interesting and eye-catching.

Apart from performance-based and affective-based usability constructs, the third construct to consider is overall satisfaction, which is only measured by 1 variable called as “overall satisfaction”. The relationship among the three constructs is shown in figure 1.

There are two hypotheses defined, i.e., H_1 : there is a significant impact of perceived performance-based usability on overall satisfaction, and H_2 : there is a significant impact of perceived Kansei-based usability on overall satisfaction.

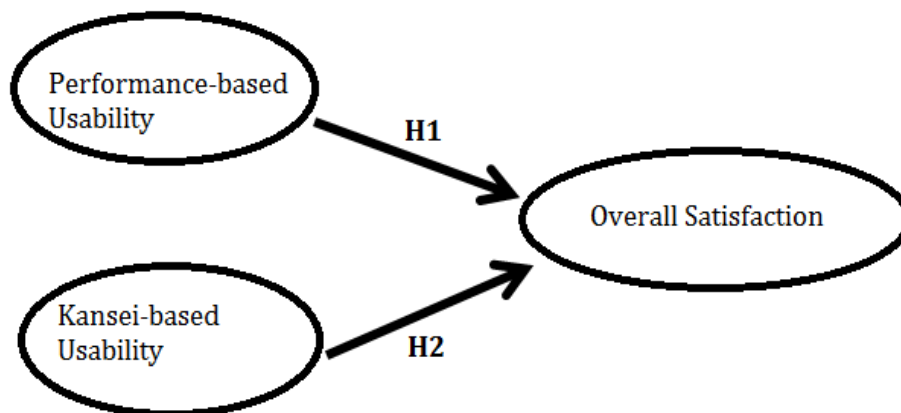


Figure 1. Conceptual framework of Performance- and Kansei-based usability for web-based application.

4. Result and Discussion

A case study has been conducted in one of the famous web-based application operated in Indonesia, namely Tokopedia. The targeted subjects were those who have experienced the Tokopedia services in the last six months (October 2018 – March 2019) through the purposive sampling method. It is a non-probability sampling method when the researchers believe that they can achieve a representative sample through a sound judgment which may save time, effort and money. There were 35 respondents involved during the survey using the questionnaire (20 males and 15 females) with the age range from 20 to 40 years. One copy of the questionnaire was given to represent one group of participants (e.g., either one family or one single respondent). The questionnaire consists of three different parts, i.e., Performance-based Usability, Affective-based Usability, and Overall Satisfaction. It took about 10 minutes to complete a questionnaire.

4.1 Validity and reliability test for constructs

The analysis is performed using SmartPLS 3 [14]. It is Partial Least Squares Structural Equation Modeling (PLS-SEM) which focuses on the analysis of variance with condition of small sample size and little availability of tested theory. Confirmatory factor analysis (CFA) has been carried out for testing how well the measured variables represent the number of constructs. In other words, CFA is used to confirm or reject the proposed measurement theory. Model was deemed fit, as it satisfied the following criteria: root mean square residual (< 0.1), d_{ULS} and d_G ($<$ the upper bound of the confidence interval), and normal fit index (> 0.7 and it is closer to 1). Reliability and validity tests (i.e., convergent validity, discriminant validity and reliability) have been conducted and are showed in table 1 and figure 2. In terms of convergent validity, all constructs were deemed acceptable since: (i) all item factor loadings in all constructs exceed 0.6, (ii) composite reliability in all constructs exceeds 0.7, and (iii) AVE in all constructs exceeds 0.5.

Table 1. Measurement of constructs.

Construct	AVE*	Composite Reliability	Cronbach's Alpha
Performance-based Usability	0.571	0.922	0.905
Kansei-based Usability	0.580	0.917	0.896
Overall Satisfaction	1	1	1

*average variance extracted

Referring to discriminant validity, these three constructs above were considered valid as the square root of AVE for each construct is greater than its corresponding inter-construct correlation coefficient [15]. Lastly, in terms of reliability, all three constructs show Cronbach's alpha values which exceed 0.6, thus, they were deemed acceptable.

4.2 Path coefficients and hypothesis testing

It was found that Kansei-based (known as affect or emotion) and performance-based (referred to cognition or rationale) usability account for 47.7% and 50.5% of their impact on overall satisfaction, respectively, as shown in table 2.

Table 2. Parameter significance values.

Construct	Original Mean	Sample Mean	Standard Deviation	T Statistics	p values
Performance-based Usability	0.505	0.505	0.091	5.538	< 0.001
Kansei-based Usability	0.477	0.479	0.089	5.379	< 0.001

The first hypothesis (H_1) that perceived performance-based usability is positively related to overall satisfaction is supported by the results (T Statistics = 5.538, p-value < 0.001). The second hypothesis (H_2) is also supported. Kansei-based usability is significantly positively correlated with overall satisfaction (T Statistics = 5.379, p-value < 0.001). This study shows that both Kansei and performance-based usability have a significant role and impact on overall satisfaction. They cannot be separated; they are a set of human-based experience evaluation in a service encounter. The high value of R square of 0.918 explains both Kansei and performance are regarded as the significant predictors of overall satisfaction. Their impact on customer overall satisfaction is relatively equally balanced.

More specifically, the critical usability variables for both constructs (performance-based and Kansei-based) were defined according to high factor loadings (i.e., factor loadings ≥ 0.8). The most critical performance-based usability measures were interactivity (P3), logical navigation (P8) and easy

back option (P9), whereas Kansei-based usability measures were salience (A4), appeal (A5) and reliability (A7).

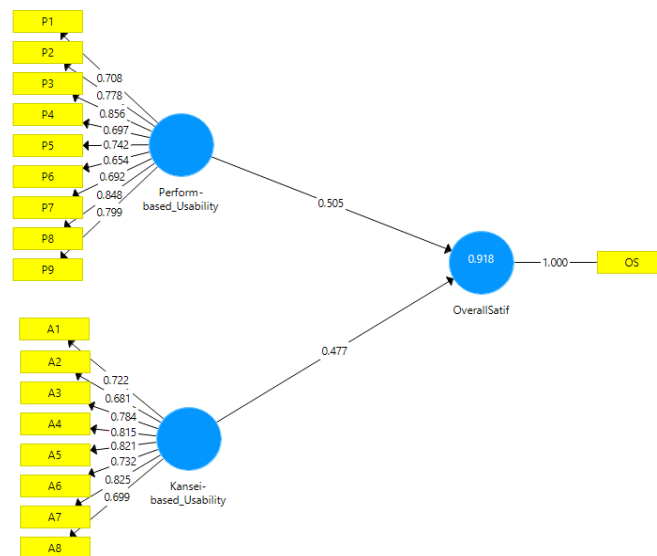


Figure2.Structural model and path coefficients for web-based application case study.

5. Conclusion and Further Research

Kansei(which is related to affect or emotion) was found to be equally important as performance (known as cognition) in usability measurement which brought significant impact on overall satisfaction. This study complements the previous study on usability in web-based application by taking into account both performance and Kansei impact on overall satisfaction. This study is limited due to relatively small sample size and a single service setting. Future study should consider that concern.

6. Appendix

Performance-based and Kansei-based usability variables for web-based application, adopted from [1]

Performance-based usability variables	Kansei-based usability variables
P1. Error prevention a [usability – multiple similar tasks to be done easily]	A1. Colour [usability – conceptual image of the app]
P2. Error prevention b [usability – warning message to prevent possible errors]	A2. Brightness [usability – conceptual image of the app]
P3. Interactivity, Feedback, and Help [usability – multiple opportunities for interaction and communication]	A3. Harmoniousness [usability – compatibility and alignment of the app]
P4. Learnability [usability – appropriate information related to attributes sold]	A4. Salience [usability – convenient use of the app]
P5. Readability [usability – sentences that are easy to understand]	A5. Appeal [usability – appearance of the app is interesting]
P6. Memorability [usability – steps that are easy to remember]	A6. Comfort [usability – convenient use of the app]
P7. Easy Navigation [usability – guide to easy to operate]	A7. Reliability [usability – reliable and trusted app]
P8. Logical Navigation [usability – guide to logical to run]	A8. Attractiveness [usability – attractive and pleasing app]
P9. Easy Back Option [usability – return to the previous page]	

References

- [1] Prastawa H, Ciptomulyono U, Singgih M L and Hartono M 2019 The effect of cognitive and affective aspects on usability *Theor. Issues in Ergon. Sci.* **TIES 20** p 507-531
- [2] Hartono M and Tan K C 2011 How Kano Model Contributes to Kansei Engineering in Services *Ergon.* **54** p 987-1004
- [3] Han S H, Yun M H, Kwahk J and Hong S W 2001 Usability of Consumer Electronic Products *Int. J. of Ind. Ergon.* **28** p 143–151
- [4] Seva R R, Gosiaco K G T, Crea M, Santos E D and Pangilinan D M L 2011 Product Design Enhancement Using Apparent Usability and Affective Quality *Appl. Ergon.* **42** p 511–517
- [5] Li G, Ji S, Li C and Feng J 2011 Efficient Fuzzy Full-Text Type-Ahead Search *The VLDB J.* **20** p 617 – 640
- [6] Hartono M and Raharjo H 2015 Exploring the mediating role of affective and cognitive satisfaction on the effect of service quality on loyalty *Total Qual. Manage. & Bus.Excellence* **26** p971-985
- [7] Lavie T and Tractinsky N 2004 Assessing Dimensions of Perceived Visual Aesthetics of Web Sites *Int. J. of Hum.-Comput. Stud.* **60** p 269–298
- [8] Nielsen J 1993 *Usability Eng.* (London: Academic Press)
- [9] Lee Y and Kozar K 2012 Understanding of Website Usability: Specifying and Measuring Constructs and Their Relationships *Decis. Support Syst.* **52** p 450–463
- [10] ISO 9241-11 2018 *Ergon. of Hum.-Syst. Interact. – Part 11: Usability: Definition & Concept* (Geneve: International Organization for Standardization)
- [11] Kim H K., Hana S H, Park J, Park J 2016 Identifying Affect Elements Based on a Conceptual Model of Affect: A Case Study on a Smartphone *Int. J. of Indust. Ergon.* **53** p 193–204
- [12] Palmer J W 2002 Web Site Usability, Design, and Performance Metrics *Inf.Syst. Res.* **13** p 151–167
- [13] Helander M G and Khalid H M *Handbook of Hum. Factors & Ergon.*, 3rded Salvendy G (New York: Wiley Interscience) p 543 – 572
- [14] Ringle C M, Wende S and Becker J M 2015 *SmartPLS 3* (Boenningstedt: SmartPLS GmbH, <http://www.smartpls.com>)
- [15] Gefen D and Straub D 2005 A practical guide to factorial validity using PLS-graph: tutorial and annotated example *Commun. of the Assoc. for Inf. Syst.* **16** p 91–109

PAPER • OPEN ACCESS

Preface

To cite this article: 2019 *IOP Conf. Ser.: Mater. Sci. Eng.* **703** 011001

View the [article online](#) for updates and enhancements.

A collaborative activity jointly organised by:



**INTERNATIONAL CONFERENCE ON
INFORMATICS, TECHNOLOGY, AND
ENGINEERING**

22-23 AUGUST 2019

***Enhancing Engineering
Innovation Towards
A Greener Future***

EDITOR:

Asst. Prof. Namuel Daniel Pah, Ph.D.

Assoc. Prof. Markus Hartono, Ph.D.

Assoc. Prof. Oki Muraza, Ph.D.

PUBLISHER:

UNIVERSITAS SURABAYA





Preface

Welcome Remarks,
Chair of the Steering Committee

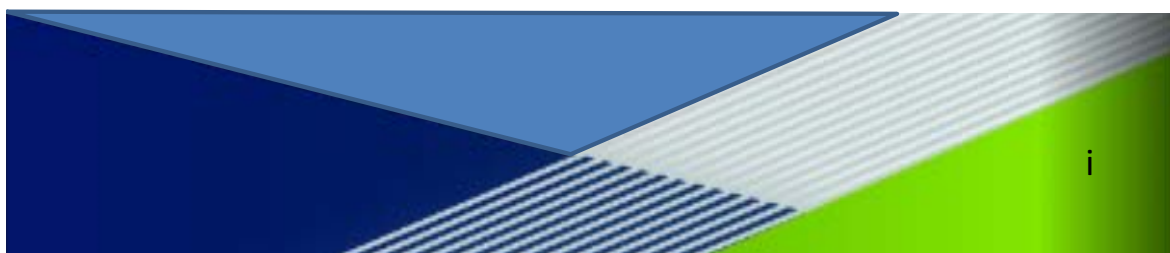
It is a great pleasure to welcome all of you to Bali and to the International Conference on Informatics, Technology, and Engineering 2019 (InCITE 2019) held by the Faculty of Engineering, University of Surabaya (UBAYA) in collaboration with The University of Adelaide, Australia and Sirindhorn International Institute of Technology (Thammasat University), Thailand. The first InCITE has been successfully held in Bali, Indonesia in 2017. We are very delighted to host the second InCITE here in Bali, Indonesia again.

There are more than 75 presentations in this conference. We welcome leading experts not only from Indonesia, but also from different parts of the world. The experts will share the knowledge and experiences in the fields of informatics, technology, science, and engineering. The main theme of this conference is **Enhancing Engineering Innovation Towards A Greener Future** in response to several world challenges including sustainable development, global convergence of information and communications technologies, climate change and global warming as well as the depletion of unrenewable natural resources. We hope this conference will provide you a good opportunity to get to know each other better and consolidate bonds of friendship and mutual trust.

We would like to express our sincere gratitude to the Keynote and Plenary speakers, International Scientific Committee, Steering Committee, and Organising Committee for their huge efforts to make this conference successful.

Thank you all for your support and attendance at InCITE 2019. Please enjoy the conference and Bali !

Asst. Prof. Djuwari, Ph.D.





Preface

Welcome Remarks,
Chair of The Organizing Committee

Welcome to Bali, Indonesia to all delegates and presenters. It is my pleasure and privilege to welcome all of you to the 2nd (second) International Conference on Informatics, Technology, and Engineering 2019 (InCITE 2019) held by the Faculty of Engineering, University of Surabaya (UBAYA) in collaboration with The University of Adelaide, Australia and Sirindhorn International Institute of Technology (Thammasat University), Thailand.

InCITE 2019 has received more than 75 papers to be presented in this conference. All papers represent four following parallel clusters: Green Design and Innovation, Green Manufacturing and Green Processes, Power System and Green Energy Management, and The Role of IT in Innovation Enhancement. Each cluster supports the main theme of the conference, which is **Enhancing Engineering Innovation Towards A Greener Future**. The engineering innovation is the key to increase our awareness in maintaining the sustainable growth and development in the world.

The Organising Committee of InCITE 2019 would like to express our sincere gratitude for the tremendous supports and contributions from many parties. The supports from The Faculty of Engineering of UBAYA, keynote and plenary speakers, our International Scientific Committee, the Steering and Organising Committees are really acknowledged.

The last but not the least, thank you for your supports, enjoy the conference and we hope through this meeting all of you can extend your networks and collaborations.

Asst. Prof. Putu Doddy Sutrisna, Ph.D.



Conference Organizers

SCIENTIFIC COMMITTEE

- Prof. Willy Susilo, Ph.D. (University of Wollongong, AUSTRALIA)
- Prof. Dr. Anton Satria Prabuwo (King Abdulaziz University, SAUDI ARABIA)
- Assoc. Prof. Oki Muraza, Ph.D. (King Fahd University of Petroleum & Minerals, KINGDOM OF SAUDI ARABIA)
- Prof. Ravindra S. Goonetilleke, Ph.D. (Hong Kong University of Science & Technology, PRC)
- Assoc. Prof. Tan Kay Chuan, Ph.D. (National University of Singapore, SINGAPORE)
- Asst. Prof. Aldy Gunawan, Ph.D. (Singapore Management University, SINGAPORE)
- Asst. Prof. Hendry Raharjo, Ph.D. (Chalmers University of Technology, SWEDEN)
- Assoc. Prof. Dr. A. F. M. Saifuddin Saif (American International University, BANGLADESH)
- Asst. Prof. Itthisek Nilkhamhang, Ph.D. (Sirindhorn International Institute of Technology, THAILAND)
- Assoc. Prof. Akawut Siriruk, Ph.D. (Suranaree University of Technology, THAILAND)
- Assoc. Prof. Avirut Chinkulkijniwat, Ph.D. (Suranaree University of Technology, THAILAND)
- Assoc. Prof. Peerapong Uthansakul, Ph.D. (Suranaree University of Technology, THAILAND)
- Assoc. Prof. Dr. Andi Cakravastia Arisaputra Raja (Institut Teknologi Bandung, INDONESIA)
- Assoc. Prof. Dr. Anas Maruf (Institut Teknologi Bandung, INDONESIA)
- Assoc. Prof. Yassierli, Ph.D. (Institut Teknologi Bandung, INDONESIA)
- Prof. Dr. Ali Altway (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Prof. Dr-Ing. I Made Londen Batan (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Assoc. Prof. Setiyo Gunawan, Ph.D. (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Prof. Renanto Handogo, Ph.D. (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Prof. Mauridhi Hery Purnomo, Ph.D. (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Prof. Nur Iriawan, Ph.D. (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Prof. I Nyoman Pujawan, Ph.D. (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Asst. Prof. Budi Hartono, Ph.D. (Universitas Gadjah Mada, INDONESIA)
- Prof. Sarjiya, Ph.D. (Universitas Gadjah Mada, INDONESIA)
- Asst. Prof. Nemuel Daniel Pah, Ph.D. (Universitas Surabaya, INDONESIA)
- Assoc. Prof. Markus Hartono, Ph.D (Universitas Surabaya, INDONESIA)
- Prof. Joniarto Parung, Ph.D. (Universitas Surabaya, INDONESIA)
- Prof. Lieke Riadi, Ph.D. (Universitas Surabaya, INDONESIA)



Conference Organizers

STEERING COMMITTEE

Chair:

Asst. Prof. Djuwari, Ph.D.

Honorary Members:

Prof. David Lewis, Ph.D.

Prof. Joniarto Parung, Ph.D.

Prof. Lieke Riadi, Ph.D.

Asst. Prof. Dr. Steve Kardinal Jusuf

Asst. Prof. Dr. Itthisek Nilkhamhang

Members:

Assoc. Prof. Amelia Santoso, Ph.D.

Mr. Agung Prayitno

Assoc. Prof. Emma Savitri, Ph.D.

Assoc. Prof. Markus Hartono, Ph.D., CHFP.

Assoc. Prof. Budi Hartanto, Ph.D.

Mr. Sunardi Tjandra

Assoc. Prof. Eric Wibisono, Ph.D.

Asst. Prof. Nemuel Daniel Pah, Ph.D.

Assoc. Prof. Elieser Tarigan, Ph.D.

Assoc. Prof. Jaya Suteja, Ph.D.

Prof. Joniarto Parung, Ph.D.

Assoc. Prof. Hudiyo Firmanto, Ph.D.

Assoc. Prof. Restu Kartiko Widi, Ph.D.

ORGANIZING COMMITTEE

Chair :Asst. Prof. Putu Doddy Sutrisna, Ph.D.

Vice Chair :Dr. Delta Ardy Prima

Secretary :Ms. Aprilia Karina

Treasurers :Ms. Dhiani Tresna Absari

Secretariat :Maria Agatha E.Gunawan, Ph.D.

Asst. Prof. Lanny Sapei, Ph.D.

Mr. Rahman Dwi Wahyudi

Ms. Yenny Sari

Ms. Yuana Elly Agustin

Ms. Susana Limanto

Ms. Monica Wideasri

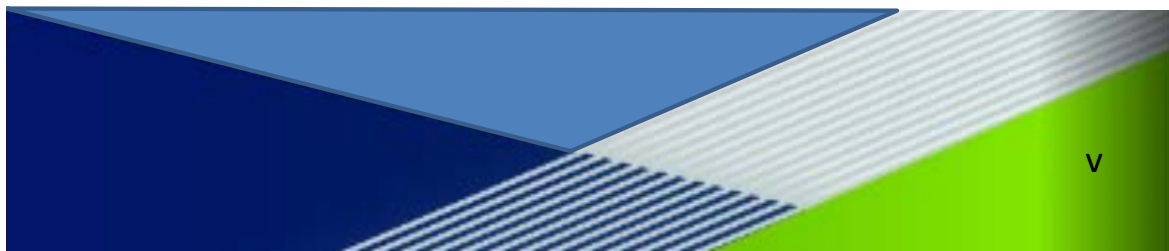


Conference Organizers

Program	:Mr. Yunus Fransiscus Ms. Melissa Angga Mr. I Made Ronyastra Mr. Henry Hermawan Mr. Felix Handani Ms. Indri Hapsari Mr. Mochammad Arbi Hidayat
Website	:Mr. Daniel Soesanto Mr. Marcellinus Ferdinand Suciadi
Design	:Ms. Tyrza Adelia
Sponsorship	:Assoc. Prof. Susila Candra, Ph.D.
Logistic:	Mr. Arief Rachman Hakim Mr. Muhamad Yulham Effendy

REVIEWER

- Prof. David Lewis, Ph.D. (University of Adelaide, AUSTRALIA)
- Prof. Willy Susilo, Ph.D. (University of Wollongong, AUSTRALIA)
- Dr. Jingwei Hou (University of Queensland, AUSTRALIA)
- Asst. Prof. Hendry Raharjo, Ph.D. (Chalmers University of Technology, SWEDEN)
- Prof. Dr. Anton Satria Prabuwono (King Abdulaziz University, SAUDI ARABIA)
- Assoc. Prof. Oki Muraza, Ph.D. (King Fahd University of Petroleum & Minerals, KINGDOM OF SAUDI ARABIA)
- Prof. Dr. Winarto Kurniawan (Tokyo Institute of Technology, JAPAN)
- Dr. Wahyudiono (Nagoya University, JAPAN)
- Prof. Ravindra S. Goonetilleke, Ph.D. (Hong Kong University of Science & Technology, PRC)
- Asst. Prof. Dr. Steve Kardinal Jusuf (Singapore Institute of Technology, SINGAPORE)
- Assoc. Prof. Tan Kay Chuan, Ph.D. (National University of Singapore, SINGAPORE)
- Asst. Prof. Aldy Gunawan, Ph.D. (Singapore Management University, SINGAPORE)
- Assoc. Prof. Dr. A. F. M. Saifuddin Saif (American International University, BANGLADESH)
- Asst. Prof. Itthisek Nilkhamhang, Ph.D. (Sirindhorn International Institute of Technology, THAILAND)
- Assoc. Prof. Akawut Siriruk, Ph.D. (Suranaree University of Technology, THAILAND)
- Assoc. Prof. Avirut Chinkulkijniwat, Ph.D. (Suranaree University of Technology, THAILAND)
- Assoc. Prof. Peerapong Uthansakul, Ph.D. (Suranaree University of Technology, THAILAND)
- Asst. Prof. Dr. Phuong Lan Tran Nguyen (Can Tho University, VIETNAM)
- Assoc. Prof. Dr. Anas Maruf (Institut Teknologi Bandung, INDONESIA)
- Dr. Khoiruddin (Institut Teknologi Bandung, INDONESIA)
- Assoc. Prof. Dr. Veinardi Suendo (Institut Teknologi Bandung, INDONESIA)



Conference Organizers

REVIEWER

- Assoc. Prof. Dr. Andi Cakravastia Arisaputra Raja (Institut Teknologi Bandung, INDONESIA)
- Assoc. Prof. Yassierli, Ph.D. (Institut Teknologi Bandung, INDONESIA)
- Prof. Dr. Judy Retti B. Witono (Universitas Parahyangan, INDONESIA)
- Asst. Prof. Budi Hartono, Ph.D. (Universitas Gadjah Mada, INDONESIA)
- Prof. Sarjiya, Ph.D. (Universitas Gadjah Mada, INDONESIA)
- Asst. Prof. Dr. Hendri Himawan Triharminto (Akademi Angkatan Udara Yogyakarta, INDONESIA)
- Assoc. Prof. Dr. Djoko Budiyanto Setyohadi (Universitas Atmajaya Yogyakarta, INDONESIA)
- Prof. Dr. Ali Altway (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Prof. Renanto Handogo, Ph.D. (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Prof. Mauridhi Hery Purnomo, Ph.D. (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Prof. Nur Iriawan, Ph.D. (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Asst. Prof. Astria Nur Irfansyah, Ph.D. (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Prof. Dr-Ing. I Made Londen Batan (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Assoc. Prof. Setiyo Gunawan, Ph.D. (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Prof. I Nyoman Pujawan, Ph.D. (Institut Teknologi Sepuluh Nopember, INDONESIA)
- Asst. Prof. Rr. Poppy Puspitasari, S, Ph.D (Universitas Negeri Malang, INDONESIA)
- Asst. Prof. Ratna Surya Alwi, S.T., M.Si., Ph.D (Universitas Fajar Makassar, INDONESIA)
- Prof. Joniarto Parung, Ph.D. (Universitas Surabaya, INDONESIA)
- Prof. Lieke Riadi, Ph.D. (Universitas Surabaya, INDONESIA)
- Asst. Prof. Nemuel Daniel Pah, Ph.D. (Universitas Surabaya, INDONESIA)
- Assoc. Prof. Markus Hartono, Ph.D (Universitas Surabaya, INDONESIA)
- Asst. Prof. Dr. Hazrul Iswadi (Universitas Surabaya, INDONESIA)
- Asst. Prof. Gunawan, Ph.D (Universitas Surabaya, INDONESIA)
- Assoc. Prof. Dr. Evy Herowati (Universitas Surabaya, INDONESIA)
- Assoc. Prof. Dr. Amelia Santoso (Universitas Surabaya, INDONESIA)
- Assoc. Prof. Eric Wibisono, Ph.D. (Universitas Surabaya, INDONESIA)
- Asst. Prof. Dr. Joko Siswantoro (Universitas Surabaya, INDONESIA)
- Assoc. Prof. Dr. Budi Hartanto (Universitas Surabaya, INDONESIA)
- Asst. Prof. Dr. Delta Ardy Prima (Universitas Surabaya, INDONESIA)
- Asst. Prof. Jimmy (Universitas Surabaya, INDONESIA)
- Assoc. Prof. Lisana (Universitas Surabaya, INDONESIA)
- Assoc. Prof. Dr. Emma Savitri (Universitas Surabaya, INDONESIA)
- Assoc. Prof. Restu Kartiko Widi, Ph.D. (Universitas Surabaya, INDONESIA)
- Assoc. Prof. Akbarningrum Fatmawati (Universitas Surabaya, INDONESIA)



Conference Organizers

REVIEWER

- Assoc. Prof. Akbarningrum Fatmawati (Universitas Surabaya, INDONESIA)
- Asst. Prof. Putu Doddy Sutrisna, Ph.D. (Universitas Surabaya, INDONESIA)
- Asst. Prof. Djuwari, Ph.D. (Universitas Surabaya, INDONESIA)
- Asst. Prof. Elieser Tarigan, Ph.D. (Universitas Surabaya, INDONESIA)
- Assoc. Prof. The Jaya Suteja, Ph.D (Universitas Surabaya, INDONESIA)
- Assoc. Prof. Dr. Susila Candra (Universitas Surabaya, INDONESIA)
- Asst. Prof. Sunardi Tjandra (Universitas Surabaya, INDONESIA)
- Asst. Prof. Yuwono Budi Pratiknyo (Universitas Surabaya, INDONESIA)

CONFERENCE ORGANIZING COMMITTEE:
FACULTY OF ENGINEERING, UNIVERSITAS SURABAYA
DEAN BUILDING TB 2, RAYA KALIRUNGKUT
SURABAYA, 60293, INDONESIA
PHONE: +62-31-2981150, FAX: +62-31-2981151
E-MAIL: incite@unit.ubaya.ac.id
WEBSITE: <https://incite.ubaya.ac.id>; <http://teknik.ubaya.ac.id>

Conference Photographs





This site uses cookies. By continuing to use this site you agree to our use of cookies. To find out more, see our Privacy and Cookies policy.



Table of contents

Volume 703

2019

◀ Previous issue Next issue ▶

**International Conference on Informatics, Technology and Engineering
22–23 August 2019, Bali, Indonesia**

[View all abstracts](#)

Accepted papers received: 6 November 2019

Published online: 5 December 2019

Preface

OPEN ACCESS

Preface

+ [View abstract](#)  PDF

OPEN ACCESS

Peer review statement

+ [View abstract](#)  PDF

Papers

Green Manufacturing and Green Processes

OPEN ACCESS

The use of blockchain to support sustainable supply chain strategy

J Parung

+ [View abstract](#)  PDF

OPEN ACCESS

Green chemical engineering: challenges in chemical industrial processes for a better life

L Riadi

[+](#) [View abstract](#)  [PDF](#)**OPEN ACCESS**Xylanase production from combined *Reutealis trisperma* with potato dextrose broth by *Tricoderma reesei*: the effect of pretreatment

Y E Agustin, L Riadi and T P Utami

[+](#) [View abstract](#)  [PDF](#)**OPEN ACCESS**

Regulatory performance of two different tuning methods for milk cooling control system

R Agustriyanto

[+](#) [View abstract](#)  [PDF](#)**OPEN ACCESS**

The solubility correlation of azobenzene derivatives in supercritical carbon dioxide: a short review

R S Alwi and A S Iryani

[+](#) [View abstract](#)  [PDF](#)**OPEN ACCESS**

Container storage tariff policy analysis using combining game theory and system dynamics approach

A G Budianto and B Wirjodirdjo

[+](#) [View abstract](#)  [PDF](#)**OPEN ACCESS**Effect of NR- β -cellulose coupling agent into NR-cellulose composite dispersibility and its physical properties

H Handayani, A Cifriadi, A S Handayani, M Chalid, S Savetlana and M Christwardana


[+](#) [View abstract](#)  [PDF](#)**OPEN ACCESS**

Formulation and characterization of chitosan-alginate freeze dried matrices loaded with oleoresin extract of red ginger

E A Krisanti, A Safiya and K Mulia

[+](#) [View abstract](#)  [PDF](#)**OPEN ACCESS**The effects of electroculture on shoot proliferation of garlic (*Allium sativum* L.)


Von Louie R Manguiam, Ashley Marie N. Margate, Rose Danielle G Hilahan, Harold Gian L Lucin, Kristopher Ray S Pamintuan and Adonis P Adornado

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Preparation and characterization of polyvinyl alcohol-chitosan-tripolyphosphate hydrogel for extended release of anti-tuberculosis drugs

K Mulia, S A Chadarwati, A J Rahyussalim and E A Krisanti

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

The surface roughness analysis using sound signal in turning of mild steel

Anayet U Patwari, A A Zamee, M H Bhuiyan and S M Sakib

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

A review of a machine design of chocolate extrusion based co-rotating twin screw extruder

P Pitayachaval and P Watcharamaisakul

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Tofu wastewater treatment through a combined process of coagulation-flocculation and ultrafiltration

P Prawati, A Oktariany, S S Putri, I Aditya and S Kartohardjono

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Carbon emission modelling in container terminal operations planning using a system dynamics approach

D N Prayogo

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Effects of initial concentration, adsorbent mass, pH and temperature to personal care products waste removal with activated carbon as adsorbent


H R Priyantini, L Riadi, C Effendi, F Effendi and A Mitayani

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

The integration of social responsibility into business operation: case study of Indonesian manufacturing industry


E D Rinawiyanti, C Huang and S As-Saber

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

A kinetic study of oil-in-water emulsion formation stabilized by rice husk ash and lecithin

L Sapei, S W Kurniawan and A P Siantoro

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

A systematic literature review for developing sustainability assessment tool: formulating the state of the art and future direction

Y Sari, A Hidayatno, A Suzianti and M Hartono

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Controlled release fertilizer based on starch chitosan encapsulation

E Savitri, E Purwanto, A N Kodrat and E Yonathan

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Price and inventory policy strategy model in a price sensitive dual channel supply chain structure considering product substitution

R Y H Silitonga and N Christina

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Assessing materials from hoarded mobile phones: hidden e-waste subject for reverse logistics

R Siringo, H Herdiyansyah, R D Kusumastuti and A E Lucianto

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Optimisation of subtractive rapid prototyping process parameters using response surface methodology

T J Suteja and M A Hadiyat


[+](#) [View abstract](#)  [PDF](#)

Green Design and Innovation

OPEN ACCESS

Green dynamic capability for enhancing green innovations performance in a manufacturing company: a conceptual framework


R Amaranti, R Govindaraju and D Irianto

[+](#) View abstract  PDF

OPEN ACCESS

Combined structural equation modelling – artificial neural networks model for predicting customer loyalty

M A Hadiyat

[+](#) View abstract  PDF

OPEN ACCESS

The use of consumer behavior to identify the flow mapping of waste cooking oil: A finding from Semarang, Indonesia

S Hartini, D P Sari and A A Utami

[+](#) View abstract  PDF

OPEN ACCESS

Perceived kansei and performance-based usability impact on satisfaction for web-based applications

M Hartono

[+](#) View abstract  PDF

OPEN ACCESS

Measurement of student satisfaction and loyalty using service quality model for higher education (HedQual) at industrial engineering department University of Pelita Harapan

N Hartono, Laurence and B F Tjahjadhi

[+](#) View abstract  PDF

OPEN ACCESS

Expertise-based decision makers' importance weights for solving group decision making problems under fuzzy preference relations

E Herowati

[+](#) View abstract  PDF

OPEN ACCESS

Organic-inorganic nanocomposite membranes for molecular separation and bioapplications

J Hou, P D Sutrisna, L Li and V Chen

[+](#) View abstract  PDF

OPEN ACCESS

Tensile Properties of Kenaf Fiber by Alkalinization Treatment: Effect of different concentration

Ismojo, K A Zahidah, E Yuanita, E Kustiyah and M Chalid

[+ View abstract](#)

OPEN ACCESS

How do the Indonesian ecologically conscious millennials value upcycled clothing?

C A Parung

[+ View abstract](#)

OPEN ACCESS

Passive design implementation as sustainable development approach on vertical housing case study: Sentra Timur Residence

T Riotama and H Herdiansyah

[+ View abstract](#)

OPEN ACCESS

Development and usability evaluation of virtual guide using augmented reality for Candi Gunung Gangsir in East Java

I M Ronyastra, I Hapsari and F P Pani

[+ View abstract](#)

OPEN ACCESS

The Role of Ergonomics in Supporting Supply Chain Performance in Manufacturing Companies: a Literature review

N Sampouw and M Hartono

[+ View abstract](#)

OPEN ACCESS

Fluazinam Potential as a Fungicide in Liquid Culture System for the Growth of *Haematococcus pluvialis* Microalgae

J R Witono, V Novianty, H Santoso, A Miryanti and A J Kumalaputri

[+ View abstract](#)

Power System and Green Energy Management

OPEN ACCESS

The use of pyrolusite to remove Pb and Cd in aqueous solutions: isotherm and thermodynamic

Y Fransiscus, M W B Kembie and N M Tanusaputra

[+ View abstract](#)

OPEN ACCESS

Power generation in a plant-microbial fuel cell assembly with graphite and stainless steel electrodes growing *Vigna Radiata*

K R S Pamintuan and K M Sanchez

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Gas sensitive properties of ZnO nanorods formed on silicon and glass substrates

V V Petrov, A P Starnikova, Y N Varzarev, K A Abdullin and D P Makarenko

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

The study of the properties of lead zirconate-titanate films on silicon substrate after halogen lamps rapid thermal annealing

V V Petrov, A S Kamentsev, V V Polyakov and Y N Varzarev

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Temperature Dependence of Electrical Properties of ZnO Nanorods Array

V V Petrov, Y N Varzarev and K A Abdullin

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

The kinetics oxidative degradation of chitosan in formic acid with the presence of hydrogen peroxide

E Purwanto, J Connor and Y Ngothai

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Drying of celery leaves (*Apium graveolens L.*) using a PV/T solar dryer

L Sapei, E Tarigan, D N Sugiarto and D Gianluca

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Mass transfer kinetic model and removal capacity of acid blue 29 adsorptions onto activated carbon

P Setyoprato, H R Priyantini and R Agustriyanto

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Utilization of rice straw and used paper for the recycle papermaking

N Suseno, T Adiarto, M Sifra and V Elvira

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Current Perspectives and Mini Review on Zeolitic Imidazolate Framework-8 (ZIF-8) Membranes on Organic Substrates

P D Sutrisna, E Savitri, N F Himma, N Prasetya and I G Wenten

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

The Influence of water and catalyst leach process toward propane oxidation on MoVTeNb catalyst

R K Widi

[+](#) [View abstract](#)  [PDF](#)

The Role of IT in Innovation Enhancement

OPEN ACCESS

Requirements analysis for the disaster logistics inventory information system to improve the effectiveness and efficiency of handling emergency response periods

N U Handayani, D P Sari, Y Widharto and G Basyir

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Anchored instruction ITS: a novel approach to make learning programming interesting and effective

B Hartanto and J Reye

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

The evaluation of academic website using eye tracker and UEQ: a case study in a website of xyz

A H Kusumo and M Hartono

[+](#) [View abstract](#)  [PDF](#)

OPEN ACCESS

Computer vision system in measurement of the volume and mass of egg using the disc method

M Wideasri, L P Santoso and J Siswanto

[+](#) [View abstract](#)  [PDF](#)

JOURNAL LINKS

[Journal home](#)

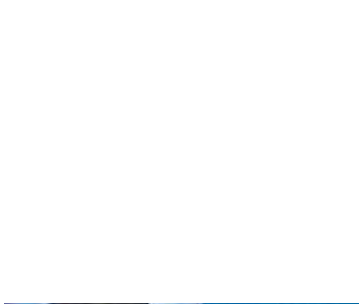
[Information for organizers](#)

[Information for authors](#)

[Search for published proceedings](#)

[Contact us](#)

[Reprint services from Curran Associates](#)



PAPER • OPEN ACCESS

Perceived kansei and performance-based usability impact on satisfaction for web-based applications

To cite this article: M Hartono 2019 *IOP Conf. Ser.: Mater. Sci. Eng.* **703** 012026

View the [article online](#) for updates and enhancements.