FACTORS INFLUENCING THE USABILITY OF INFORMATION SYSTEMS IN SELECTED INDONESIAN PRIVATE HIGHER EDUCATIONAL INSTITUTIONS

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FACTORS INFLUENCING THE USABILITY OF INFORMATION SYSTEMS IN SELECTED INDONESIAN PRIVATE HIGHER EDUCATIONAL INSTITUTIONS

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ABSTRACT

In the implementation of Information Systems in Indonesian Private Higher Education Institutions several problems arise, including the problem of disparity in the use of Information Systems. Information Systems helps policymakers in Higher Education Institutions make decisions quickly, precisely, clearly, and accurately. Regarding the decision-making process, the institutions are required to regulate the process effectively and efficiently. The most felt gap is the problem of understanding the ease of use of Information Systems, several factors that influence users are reluctant to use Information Systems are in terms of difficulties in using Information Systems. Following prior studies around the above-mentioned phenomena, the usability level of Information Systems implementation is still low. On the other hand, Government has targets following the Work Program that must be realized immediately. The goal of this study is to discover what elements influence Usability Information Systems on the Indonesian Private Higher Educational Institutions that have been chosen. The research model used is a model resulting from integrating the Parasuraman readiness model with the Nielsen Usability model. The population chosen for this study was the Leaders or Lecturers or Staff at selected Indonesian Private Higher Educational Institutions. While the sample was chosen based on simple random sampling. Samples totaling 249 were taken and determined based on the accreditation of rank B of Indonesian Private Higher Educational Institutions which totaled 709 with the formula for determining samples from Isaac and Michael. Survey responses are valid and are analyzed using structural equation modeling method in quantitative research. 25 hypotheses have been examined. The degree of disagreement between the traits that should not be quantified by the measuring instrument has been met, and theoretical conceptions concerning the variable have been excluded. Factors that produce influence are Discomfort on Significant Memorability, Innovation on Efficiency, Learnability, Memorability, Reliability, and Significant Satisfaction, Insecurity on Efficiency, Learnability, Memorability, Reliability, and Satisfaction in Significant, Reliability on System Usability Significant, and Satisfaction on System Significant Usability. The results will be able to contribute to the parties involved in preparing for Information Systems in the future and these findings become material for making decisions about the usability of Information Systems. From the presence of the new model, it can be tried to be applied in various institutions to provide input on the continued use of the integrated model.

APPROVAL

This is to certify that this thesis conforms to acceptable standards of scholarly presentation and is fully adequate, in quality and scope, for the fulfilment of the requirements for the degree of Doctor of Philosophy

The student has been supervised by: **Associate Professor Ts Dr Aedah Binti Abd Rahman** and co-supervised by: **Dr A'ang Subiyakto**

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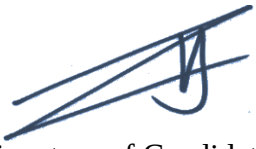
This thesis was submitted to Asia e University and is accepted as fulfilment of the requirements for the degree of Doctor of Philosophy.

Professor Dr Siow Heng Loke
Asia e University
Chairman, Examination Committee
26 July 2022

DECLARATION

I hereby declare that the thesis submitted in fulfillment of the Ph.D. degree is my work and that all contributions from any other persons or sources are properly and duly cited. I further declare that the material has not been submitted either in whole or in part, for a degree at this or any other university. In making this declaration, I understand and acknowledge any breaches in this declaration constitute academic misconduct, which may result in my expulsion from the program and/or exclusion from the award of the degree.

Name of Candidate: Dwi Yuniarto



Signature of Candidate: Date: 8 April 2022

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LIST OF ABBREVIATIONS

AVE.	Average Variance Extracted
BLUD.	Badan Layanan Umum Daerah
CPNS.	Calon Pegawai Negeri Sipil
CRM.	Customer Relationship Management
DCF.	Discomfort
DIKTI.	Pendidikan Tinggi
EFC.	Efficiency
ERP.	Enterprise Resource Planning
FORLAP.	Forum Laporan
HEIs.	Higher Education Institutions
ICT.	Information Communication and Technology
IDI.	ICT Development Index
INV.	Innovation
IPO.	Input-Process-Output
IPTIK.	Index of Information and Communication Technology Development
IS.	Information Systems
ISC.	Insecurity
ITIL.	Information Technology Infrastructure Library
ITSM.	Information Technology Service Management
ITU.	International Telecommunication Union
LLDIKTI.	Lembaga Layanan Pendidikan Tinggi
LRN.	Learnability
MMR.	Memorability

MS.	Microsoft
NRI.	Networked Readiness Index
OPT.	Optimism
PD.	Pangkalan Data
PDDIKTI.	Pangkalan Data Pendidikan Tinggi
PhD.	Doctor of Philosophy
PHEIs.	Private Higher Education Institutions
PIIT.	Personal Innovativeness in Information Technology
PLS.	Partial Least Square
PP-PTS.	Program Pengembangan-Perguruan Tinggi Swasta
R&D.	Research and Development
RLB.	Reliability
RQ.	Research Questions
SEM.	Structural Equation Models
SIA.	Sistem Informasi Akademik
SIPK.	Sistem Informasi Pengelolaan Keuangan
STF.	Satisfaction
STMIK.	Sekolah Tinggi Manajemen Informatika dan Komputer
SYU.	System Use
TRI.	Technology Readiness Index
UN.	United Nations
UNESCO.	United Nations Educational, Scientific and Cultural Organization
UPT.	Unit Pelaksana Teknis
USE.	Usefulness, Satisfaction, and Ease of use

VIF. Variance Inflation Factor

WSIS. World Summit on the Information Society

CHAPTER 1.0

INTRODUCTION

The implementation of higher education in various countries has declared itself competing by involving ICT (Information Communication and Technology) in an effort to improve its quality. Meanwhile, the World Summit on the Information Society (WSIS) has come to the opinion that despite the fast expansion in availability and use of ICT around the world, the potential influence of ICT is still limited by the digital gap that exists between countries and communities (Hamelink, 2019). The annual ICT Development Index (IDI), which combines quantitative indicators for ICT access, ICT use, and ICT skills in a large part of the world economy, is used by the International Telecommunication Union (ITU) to document the breadth of ICT and the extent of the digital divide between regions and countries (ITU, 2016).

The World Bank believes that technological advances lead to direct employment in the technology sector. Smartphones, tablets, and other portable electronic gadgets are increasingly being used to work, manage finances, secure and warm their homes, and have fun. Workers design an online interface that promotes this expansion. There are increasing prospects for people to seek jobs in mobile application development and virtual reality design as customer interests change swiftly (World-Bank, 2019).

The behavior of human resources as users is one reason. The current generation of users is very reliable in using ICT devices (Moridis et al., 2018; Nizamani et al., 2018; Saunders et al., 2017; Stachl et al., 2017; Yu & Qian, 2018). All aspects of life that involve ICT it is seen as the vantage point of the current user. ICT comes with the hope that it can help humans in carrying out their activities, due to their limitations. In the management domain of the administration of higher education institutions, there are a number of supporting resources, including human, infrastructure, facilities,

knowledge, and support for collaboration with parties outside the institution (Andari & Ella, 2019; Najib & Ma'arif, 2019; Saide et al., 2019). ICT is "involved in carrying out the functions of achievement and supervision. The function of information and communication technology in supporting strategic and operational management initiatives in order to accomplish high-quality performance targets effectively and efficiently is known as the Achievement Function" (Andari & Ella, 2019; Najib & Ma'arif, 2019; Saide et al., 2019). By using ICT, the mechanism of action will be faster and cheaper, and of course, provide convenience for stakeholders (Andari & Ella, 2019; Najib & Ma'arif, 2019; Saide et al., 2019). This is very possible to be achieved considering that ICT is able to eliminate, simplify, integrate, and automate various manual works that are still being done. In terms of supervision, through the implementation of operational performance measurement concepts, such as those offered by the Balanced Scorecard (Andari & Ella, 2019; Najib & Ma'arif, 2019; Saide et al., 2019). Because there are so many transactions and interactions that happen every day, a leader can easily analyze various aspects of organizational governance using applications such as the "Executive IS, Management IS, Decision Support System, Transactional IS, and Dashboard Management" (Saide et al., 2019).

Currently Indonesian higher education, in particular, there are gaps in the issue of educational resources. In addition to quantity, the problem of quality causes inequality in educational institutions (Saide et al., 2019). One example is the issue of study program accreditation and institutional accreditation. Financial problems, human resources, infrastructure, facilities, knowledge, and support for collaboration with parties outside institutions owned by institutions providing higher education have not been able to become a force in improving its accreditation rank (Saide et al., 2019). However, the readiness and success of an institution that organizes higher education

are not merely seen from the aspect of physical assets alone. Good governance is one of the strengthened levels of readiness and success of an institution providing higher education (Saide et al., 2019).

The Networked Readiness Index (NRI), which analyzes countries' ability to use ICT to increase competitiveness and prosperity, is used in the Global Information Technology Report to assess the readiness of the network of 139 countries. (Baller et al., 2016; Subiyakto et al., 2016). It also looks at recent innovation patterns via the prism of NRI. International organizations provide around half of the individual indicators utilized in NRI. The International Telecommunication Union, UNESCO, and other UN agencies, as well as the World Bank, are the main contributors. The World Economic Forum's Executive Opinion Survey provides the other half of the NRI indicators (Survey). This survey is intended to assess qualitative topics for which international statistics are unavailable for a sufficient number of nations. This is the 2015 version. More than 14,000 company executives from more than 140 countries took part in the poll (Baller et al., 2016).

ICT development in Indonesia has experienced improvements over the past two years, marked by an increase in the value of Index of Information and Communication Technology Department (IP-TIK), which was 5.07 in 2018 to 5.32 in 2019 on a scale of 0-10, with a growth of 4.96 percent. The same thing also happened to the three sub-indexes that made up IP-TIK which has experienced development from 2018 to 2019. In the last condition, namely in 2019, the highest sub-index value was the expertise sub-index, amounting to 5.84, followed by the access and infrastructure sub-index at 5.53, and the usage sub-index at 4.85. Of these three sub-indexes, the fastest growth in the last two years occurred in the usage sub-index, which increased by 8.99 percent.

Meanwhile, the access and infrastructure sub-index grew by 3.56 percent and the expertise sub-index grew by 1.31 percent.

In Table 1.1 it can be seen that the difference in growth between the sub-index changes the amount of the contribution of each sub-index to IP-TIK 2019 compared to its contribution to IP-TIK 2018. The contribution of the use sub-index to IP-TIK 2019 is 36.47 percent, an increase compared to its contribution to IP-TIK 2018 of 35, 12 percent. On the other hand, the contribution of the access and infrastructure sub-index, as well as the expertise sub-index to IP-TIK 2019, decreased compared to its contribution to IP-TIK 2018.

Table 1.1: Indonesian Information & Communication Technology Development Index (IP-TIK), 2018−2019

Sub-index	IP-TIK 2018	IP-TIK 2019	Growth %
Access and Infrastructure	5.34	5.53	3.56
Use	4.45	4.85	8.99
Expertise	5.76	5.84	1.31
IP-TIK	5.07	5.32	4.96

The purpose of this study is to find out what factors affect the Usability of Information Systems at selected Indonesian Private Universities. The research model used is a model resulting from integrating the Parasuraman readiness model with the Nielsen Usability model. The population chosen for this study was the Leaders or Lecturers or Staff at selected Indonesian Private Higher Educational Institutions. While the sample was chosen based on simple random sampling. Samples totaling 249 were taken and determined based on the accreditation of rank B of Indonesian Private Higher Educational Institutions which totaled 709 with the formula for determining samples from Isaac and Michael. Survey responses are valid and are analyzed using structural equation modeling method in quantitative research.

1.1 Background

Every day, many decision-making processes occur in the campus environment. Higher education leaders such as chancellors, directors, deans, or heads of units must deal with a variety of complicated issues that require precise and quick decision-making. Of course, a fast and quality decision-making process requires an appropriate and sufficient amount of data and information. Considering how much data and information they have and the need for such data and information to be processed sufficiently, it is clear that appropriate ICT is needed. The next strategic ICT function that must be possessed by universities is as a management tool in the decision-making process. This system consists of three major components, namely: (i) a storage system for various types of data and information owned by universities; (ii) a data and information processing system becomes the “knowledge” needed by various users; and (iii) a system that serves to present the results of the processing into a format that facilitates decision-making in studying the data and information represented (Saide et al., 2019).

In this aspect, the quality of data and information is critical to decision-making efficacy. Incorrect data or information is extremely risky since it can make decision-making ineffective and dangerous. That is why the principle of “garbage-in, garbage-out” must be considered by the campus management. Information Audit is "one of the ways that can be taken to ensure the availability of quality data and information in the campus ICT environment" (Saide et al., 2019).

When it comes to the deployment of an organization's business processes and services, “ICT is often referred to as information technology (IT) or Information Systems (IS) development initiatives” (Francis et al., 2019; Jiang et al., 2019; Wing, 2019). IS is a set of operational management tasks that enable a system to make the