



## Digital Native on Information Technology Acceptance in Higher Education

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### ABSTRACT

The purpose of this study is to find convergence between students as digital natives and university managers as digital immigrants in Higher Education (HE) managing information technology to resolve digital divide between information technology users. The research methodology used in this study is quantitative research to measure Technology Acceptance Model (TAM). The results of the TAM analysis are followed by the formulation of an agenda which is considered important for overcoming issues relating to technology acceptance. The results of research on the acceptance of information technology applied by HE shows that student perceptions have a value that exceeds the ideal conditions on the variable usefulness, and intention to use, but do not meet the ideal conditions on the variable ease of use, and actual system use. Testing the research hypothesis shows that partially and simultaneously the ease of use, usefulness, and intention to use variables have a positive and significant effect on actual system use. Based on the problems in the ease to use variable, it is necessary to improve the aspects of human and computer interaction on the information technology used, including the interaction model, features, and information system usage procedures. This improvement based on the structure of relationships between variables will increase the actual system use. Improvement models in information systems can use Agile manifesto, which emphasizes the development of information systems more attention to the perspectives and opinions of users in designing information systems.

**Key words:** agile manifesto, digital native, information technology, Technology Acceptance Model

### 1. INTRODUCTION

The development of information technology facilitates the rapid exchange of information without the constraints of space and time. The progress of an organization in the information age is very dependent on the ability of its members in utilizing knowledge. This characteristic of society is known as the knowledge-based society. In a knowledge-based society, the level of mastery of knowledge is an indicator of competitiveness [1]. In the era of knowledge-based society, the process of transforming the use of information and communication technology in various fields of tasks, work and public services are inevitable [2]. Higher education (HE) as an institution that provides education services cannot be separated from these dynamics, transformation of HE by involving information technology in its business processes.

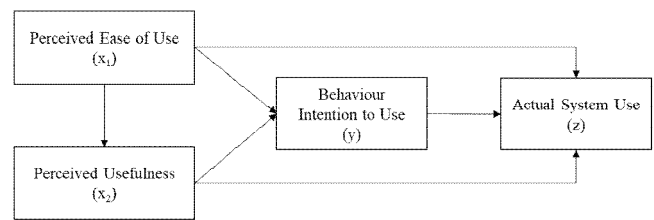
In certain perspectives, the main clients of HE services are students. The needs and character of students must be the main consideration in choosing the technology that will be implemented by HE. HE students in the development of information technology today, can be categorized as digital native. Digital native is the young generation currently living in the digital era, where the internet is a part of everyday life [3]. In another definition, it is stated that digital natives are those born in the digital age and interacting with digital equipment at an early age. Children born after the 1990s are classified as the beginning of the native digital generation. A prominent feature of this generation is that it considers communication devices as an integral part of life [4]. Digital natives are people who have new ways of building social relations, creating identities, communicating and playing [5]. At the same time, managers of education in tertiary institutions are digital immigrant groups (people who live in a digital environment when they are adults). This situation can lead to digital divide in HE [6]. Digital divide that can occur is the gap between the design of information technology created

by university managers (digital immigrants) and the characteristics of students as users of information technology. To overcome this problem, it is necessary to conduct research that analyzes the perception of the level of acceptance of information technology designed by HE, followed by a discussion of information technology models that are able to accommodate the interests of both.

There are similar researches that have been conducted, among others: (a) students are generally digital natives who do not always naturally use the latest technology, but are more adaptable and accept new technologies. [7]; (b) research related to digital native was also conducted by assessing the frequency and character of the technology used, the study found that there was no significant influence related to gender, age, and scientific discipline so that a person was said to fulfill the digital native character [4]; (c) Related research was also conducted by looking at the differences in the use of technology between digital native (students) and digital immigrants (teachers) in HE [8]; (d) the scale of digital native assessment among pre-service teachers was carried out using a cross-cultural validation approach and looking at the structure [9], and invariance of native digital rating scales [10]; (e) information technology has been proven capable of streamlining digital native (student) learning activities [11]. However, the original aspect of this research is the focus of the analysis on students who are in the digital native category related to the use of information technology in higher education with the Technology Acceptance Model approach.

**2. METHODS**

This research uses a quantitative approach using survey methods. The object of this study was students of *Universitas Islam Negeri (UIN)/ State Islamic University of Sunan Gunung Djati Bandung*, with a total population of 24131 people. This study measures student acceptance of information technology implemented at UIN Sunan Gunung Djati Bandung. Measurement of information technology acceptance uses structural relationship testing with the Technology Acceptance Model (TAM) developed by Davis (1989, 1993) [12]–[14], include: perceived ease of use, perceived usefulness, behavior intention to use, and actual system use. In line with TAM, the variables examined in this study are predictors of actual system use (z). The operational definition of perceived ease of use ( $x_1$ ) is a belief in individuals that by using a particular system or technology it will be free from large efforts. Perceived usefulness ( $x_2$ ) is defined as the level of confidence in individuals that using a particular system or technology will improve the quality of their work. Behavioral intention (y) is defined as the effort and strong desire of individuals to try or plan to use certain technological products. The research paradigm used as a hypothetical framework in this study is presented in Figure 1.



**Figure 1:** Research Paradigm

The discussion of the study continued with an analysis of the lack of identification results on the research variables. The discussion is carried out by formulating a convergence between the needs of students and managers of HE, assuming that if the desire of both of them is taken into consideration it will increase user acceptance in the use of information technology. The next stage of this research is to formulate things that are considered necessary to overcome the weaknesses encountered.

**3. RESULT AND DISCUSSION**

**3.1 Result**

The study was conducted using survey techniques by taking data sampling using Google Form, which was distributed to students of UIN Sunan Gunung Djati Bandung. Submission of data by students is voluntary, and privacy is respected. Based on the recapitulation of data collection, data obtained from 2144 respondents (with respondents complete filling gender and age is 2131) data sets. The data is analyzed based on the completeness criteria and outlier testing. The results of filtering collected data, data that can be processed for descriptive and inferential analysis are 1883 data sets. The filtered data is then used as data in data processing.

*3.1.1 Descriptive analysis*

This research was conducted on students of UIN Sunan Gunung Djati Bandung. Characteristics of respondents in the age and gender categories can be seen from Table 1.

**Table 1:** Respondent Characteristics

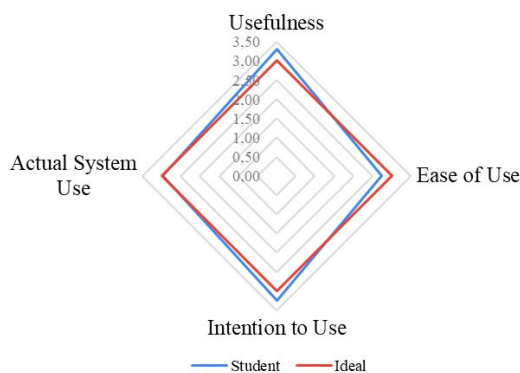
Gender	Age Range	
	17-39 <sup>th</sup> years old	More than 39 <sup>th</sup> years old
Male	813	13
Female	1292	13

Based on general categories, the age dominance of students is in the range of 17-39 years. Value 98.78% (2015/2131), shows the dominance of digital native groups in students who fill the questionnaire is. Digital native designations are those born in 1980 [4], [6], [15].

**Table 2:** Descriptive analysis results on the research variables

Parameter	Variable			
	Ease of Use ( $x_1$ )	Usefulness ( $x_2$ )	Intention to Use ( $y$ )	Actual System Use ( $z$ )
Mean	2.74	3.29	3.25	2.98
Standard Error	0.01	0.01	0.01	0.01
Median	2.80	3.33	3.27	3.00
Mode	2.80	3.44	3.36	3.00
Standard Deviation	0.53	0.49	0.36	0.46
Sample Variance	0.28	0.24	0.13	0.21
Kurtosis	-0.28	-0.01	0.13	-0.08
Skewness	0.03	-0.14	-0.19	0.02
Range	3.30	3.11	2.55	3.20
Minimum	1.00	1.78	1.73	1.50
Maximum	4.30	4.89	4.27	4.70
Sum	5156.00	6195.89	6125.91	5610.90
Count	1883	1883	1883	1883
Confidence Level (95,0%)	0.024	0.022	0.016	0.021

To analyze the position of the research variables, an ideal value of 3. Value 3 was determined based on the results of interviews with the leadership of UIN Sunan Gunung Djati Bandung, which is associated with the estimated performance achievements set in the UIN Sunan Gunung Djati Bandung Development Master Plan. Based on the average value, the ease of use ( $x_1$ ) and actual system use ( $z$ ) variables are below the ideal values. Whereas the Usefulness ( $x_2$ ) and Intention to Use ( $y$ ) variables are above the ideal level (Figure 2).



**Figure 2:** Average measurement results of research variables

### 3.1.2 Path analysis

Testing the research hypothesis as presented in the research paradigm (Figure 1), using AMOS 18 software, the information generated is presented in Table 2.

**Table 3:** Testing the relationship between variables based on the research paradigm

Variable	Estimate	S.E.	C.R.	P	Conclusion
$x_1 \rightarrow x_2$	0.552	0.014	38.587	***	Significant
$x_1 \rightarrow y$	0.166	0.020	8.316	***	Significant
$x_2 \rightarrow y$	0.302	0.024	12.560	***	Significant
$x_1 \rightarrow z$	0.395	0.019	20.854	***	Significant
$y \rightarrow z$	0.312	0.022	14.514	***	Significant
$x_2 \rightarrow z$	0.142	0.023	6.071	***	Significant

Tests on the structural relationship diagram proposed as a research hypothesis show that partially or simultaneously variables of perceived ease of use ( $x_1$ ), perceived usefulness ( $x_2$ ), and behavior intention to use ( $y$ ) have positive and significant effects on actual system use ( $z$ ).

### 3.2 Discussion

Education is a very important aspect to guarantee the sustainability and future of a nation. The development of a nation is inseparable from how the nation manages and develops its education [16]. Higher education is part of the national education system having a strategic role in educating the life of the nation and advancing science and technology by paying attention and applying the value of the humanities as well as the culture and sustainable empowerment of the Indonesian nation. The task and function of higher education is to prepare human resources to become members of the community who have academic and professional skills who can apply, develop and create science and technology [17], [18].

To maintain the sustainability and excellence of HE, HE is required to always adopt information technology to then be used as a tool to support its business processes. Technology adoption is a decision that must be taken with due regard to effectiveness and efficiency, so the adoption of technology needs to consider the level of acceptance from users.

Acceptance of technology by students on the object of research, shows that acceptance of information technology developed by HE, based on student perceptions, has a value that exceeds the ideal conditions on the variable usefulness, and intention to use, but does not meet the ideal conditions on the ease of use, and actual variables system use. This situation is contrary to the characteristics of a digital native generation that considers digital technology as part of their lives [19], so it should be suspected that the design of interaction between humans and computers has not met the expectations of users among students.

Revamping the dimensions of the ease of use variable will have an impact on increasing other variables. In accordance with the results of the study, increasing the value of the ease of use variable will increase the value of the variable perceived usefulness, behavior intention to use, and actual system use. This research focuses on improving the ease of use variable with process improvement during software design. During

the software design process needs to be considered the expectations and needs of users, in this case are students and managers of HE. The platform used in system design needs to focus on intensive communication between the user and the software developer, as stated in the Agile manifesto.

Digital native characteristics that need attention in designing information technology are:

1. The term digital natives arises for individuals born after 1980, because the lives of individuals are influenced by the development of massive technology in supporting their activities [4]. Even in some literature calls digital natives as "net generation" [20], "millennials" [21], or "i-Generation" [22], all of which describe the younger generation who are actively using new technology. Seeing this digital group natives, the design of information technology must of course have to adapt to their style and needs, among others: simple/ minimize and eye catching user interface [23]; available in the form of a mobile application that can be easily accessed at hand [24]; integrated with various social media (with the concept of one account for all), because social media is the most widely used communication media by digital native, including for learning activities [25], [26]; have guaranteed security that can be controlled by the user [27].
2. To meet all the diverse needs of digital native and tend to be many and often changes, the elicitation of requirements must be really detailed and deep to achieve a good quality system [28]. Beside software testing is important and can improve the quality [29], in the concept of software engineering, blue prints/ artifacts/ prototypes/ mock-up as software products must be designed and documented properly and according to standards, can be structured or object oriented [30]–[32]. This can facilitate the development of systems or software that is sustainable. System functions that continue to adapt to the needs of digital natives and fast market trends, need to be supported by methods of rapid software development as well, in addition to Rapid Software Development [33], [34], or Rapid Application Development (RAD) [35], [36], currently a popular and efficient software development methodology used is Agile Methodology [37]–[39]. Agile method is widely used because it involves the user in building the system directly with an estimated rapid development time. In contrast to other software development methods, the Agile method models and documents the system/ software that can be done simultaneously with the coding process. Some Agile methods that are widely used include: Scrum method [40], [41]; Extreme Programming [42], Lean Method [43], [44], Crystal Method [45], others Agile methods.
3. Digital native are individuals who are generally familiar with technology. They can adapt well to the emergence of new technologies, albeit in varying degrees of adaptation.

Therefore, the system must provide a complete manual/ manual for use both as a menu in the system, as well as the system. Based on the results of research on digital natives on the research object, there are a lot of information systems that are often used with the perceived benefits above the normal value limit. However, ease of use is still low, this can be influenced by several factors, such as system functions that take a long time to learn (have high complexity), non-standard user interfaces or generally applied to good software quality in terms of human interaction and computer, as well as minimal usage instructions so users have to guess how to use them.

#### 4. CONCLUSION

The convergence between students (as digital natives) and university managers (as digital immigrant) in running information technology in Higher Education (HE) is important to consider in designing information systems. Based on the perception data from respondents, the ease of use and actual system use variables are lower than the ideal score, while the intention to use and actual system use variables are above the ideal criteria. Testing the research hypothesis shows that partially and simultaneously the ease of use, usefulness, and intention to use variables have a positive and significant effect on actual system use. To increase the ease of use and actual system use, this study recommends the use of HE and student management preferences as a consideration in designing information technology.

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