Students' Attitude in Utilizing Information and Comunication Technology in Open and Distance Learning

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ABSTRACT

The utilization of information and communication technology (ICT) in open and distance education is very important. Universitas Terbuka (UT-The Indonesia Open University) gradually began developing and using ICT applications for a variety of purposes, both academic and administrative. In academic services, UT provides learning materials specifically designed for independent learning. The students can utilize learning materials provided by UT through the internet such as online tutorials (tutorial online-tuton), web supplements, internet television (I-TV), and online independent exercises (LM-Online). The objectives of the research were: (i) to describe students' attitude in using information and communication technology in open and distance learning, and (ii) to describe the relationship between the students characteristics and their attitude in using information and communication technology in open and distance learning. This research was conducted using survey methods and observations in the Regional Office (RO-UT) in Serang and Bengkulu. The 52 respondent (students) samples were randomly selected. The data were analyzed through Spearman's rank correlation test. The result showed most of the students' agree that online tutorial can help them to improve their knowledge and beneficial to their learning activities/process. There is a significant correlation between the students' educational background and their attitude in using web supplements and I-TV. The students' residential region is also significantly correlated to their attitude in using I-TV. There was also a significant correlation between the internet facilities availability and computer ownership and their attitudes for using tuton, web supplement and I-TV.

Keywords: students' attitude, information and communication technology, open and distance learning

INTRODUCTION

Universitas Terbuka (UT-The Indonesian Open University) as the provider of a long-distance, open higher education system (Pendidikan Tinggi Terbuka Jarak Jauh-PTTJJ) demands its students to be able to study independently. As a form of service for assisting the students in studying independently, UT provides several facilities as a source of learning materials besides the main source of learning material, printed learning materials (Bahan

Ajar Cetak-BAC). The services to assist students' learning process will be further addressed as academic services. The purpose for providing academic services is to assist students in their learning process in the form of tutorials, practical instructor advice, and independent exercises in the form of pre-exam preparation exercises. Through the guided, independent learning process and the utilization of various learning sources as a unified learning process, it is hoped that the students could undergo an optimum learning process with satisfactory results.

The academic services provided by UT are, among others, tutorials, practicals, academic advisory, online independent exercises (Latihan Mandiri-LM-Online), internet television (I-TV), web supplements, exam announcements, the online examination system (Sistem Ujian Online-SUO), and other services. Some of the academic services are already available online to make it easier for students who live far from UT's Regional Office (RO-UT). Students can access academic services any time and from any place without having to come to the RO-UT.

The utilization of information and communication technology (ICT) in the system is compulsory. With the arrival of internet-based technology in Indonesia in the mid 1990s, UT has gradually developed and utilized ICT applications for various needs, both academic and administrative. The development of ICT utilization by UT has been significant since the launching of UT's online portal which had started to be developed in 2001.

At present, UT has developed many programs based on information and communication technology (ICT). Based on UT's 2010-2021 strategic plans (Renstra), ICT can be used for online learning including online tutorial (tutorial online-tuton) in long-distance learning i.e.: course website, audio video captures via web, web conferences, and use of cell phones for downloading learning materials. The presence of the course website give benefits for the students and/or lecturers, for example students can access the website materials anytime and from anywhere. Lecturers can also develop their own websites for their subjects and they can revise various available materials from many sources for reuse.

Even though ICT has a very important role in the PTJJ system, in reality its application in UT still faces many problems, especially the students' preparedness in using the ICT. The results of several studies show that the number of students' who access UT's online services is still low. Sukarsih (2005) found that the students' utilization of UT's online services is still categorized as low (26.1%). Padmo and Julaeha's study (2007) about the assessment of students' use of the internet is categorized as medium; it means they are quite capable of using the internet. Iriani (2010) found that the number of UT students who utilize the SUO facilities is less than 2% of the total number of non-elementary education students at the RO-UT in Surabaya. Whereas Yuliana and Wardiny (2011) found that most of Agribusiness Study Program of UT's Faculty of Mathematics and Natural Sciences students (44.7%) have a low frequency of access to online tutorial.

Using the students' low access to online academic services as a starting point, it would be very interesting to identify UT students' attitude toward utilizing ICT for supporting their learning independence. In order to maintain the focus of the study, the identification of the students' behavior is limited to Agribusiness undergraduate students in UT's Faculty of Mathematics and

Natural Sciences. The purpose of this article is to: (1) describe the students' attitude in utilizing ICT in open and long-distance learning, and (2) describe the relationship between the students' characteristics and their behavior in utilizing ICT in their open and long-distance learning.

METHODS

This study is descriptive-quantitative; it aims to describe the students' behavior in utilizing ICT in supporting their independent learning activities. The population of students is all Agribusiness major undergraduate students in the Faculty of Mathematics and Natural Science. The respondents are selected using the simple random sampling method.The samples selected were 52 students RO-UT in Serang and Bengkulu. This selection is based on representation in Java (Serang) and outside Java (Bengkulu).

The data collected in this study were primary and secondary data. Data collection was done by sending out questionnaires to students and conducting interviews via telephone.

The data were analyzed descriptively and inferentially. The data were analyzed descriptively by frequency tables and the percentages. Spearman's rank correlation was used to observe the relationship between the students' internal and external characteristics and the students' attitude in utilizing ICT in open and long-distance learning.

RESULTS AND DISCUSSION

In the world of education, the presence of an information and communication technology system is an inseparable component of educational activities. An educational institution must have all the components needed to run an educational operation such as students, facilities and infrastructure, an organizational structure, a process, human resources (teaching staff), and operational costs. A communication and information system consists of components that support an educational institution in providing information needed by decision makers when performing educational activities (Pustekkom, 2006).

Based on data found on www.internetworldstats.com, the number of internet users in Indonesia has grown 2.750 % in the last 10 years. In 2011, the total number of internet users reached 55 million people. However, compared to the total population of Indonesia (245.6 million people), the number of Internet users is relatively low, only approximately 22.4 %.

ICT has enabled individualization, acceleration, enrichment, expansion, and increased effectiveness and productivity of learning which in turn will increase the quality of education as an infrastructure for the development of human resources as a whole. Through the use of ICT, every student will be motivated to develop his/her potentials and skills. Learning using ICT demands creativity and self-reliance, enabling the students to develop all the potentials they have (Kusumah, 2010).

Based on Smeureanu and Isaila' findings (2011), it is concluded that ICT is a tool that is beneficial in developing new ways of thinking and new behavior which allow the teaching staff to fulfill every new need. This was also supported

by Gokalp's study (2010) about the effect of information technology on university students which showed that information technology has affected the students' academic success in a positive way.

In the teaching and learning process, the ICT education model gives more emphasis on the students' individual ability to absorb the teaching materials which have been organized based on readiness so that students could show expected behavior. Teaching materials and teaching methodologies are determined with the support of technology. In short, teaching technology can essentially replace the role of teaching staff and students can play an active role as instructors who learn all useful data and skills (Palupiningdyah and Widiyanto, 2011).

The Respondents' Internal Characteristics

The internal characteristics discussed in this study are the respondents' age, formal education, occupation, and monthly income. The spread of the respondents' internal characteristics can be seen in Table 1.

Table 1. The Spread of the Respondents' Internal Characteristics

No.	Internal Characteristics (X_1)	Category	Range	Total	
				n	(%)
1.	Age ($X_{1.1}$)	Low	Late adults (> 40 years)	24	46.1
		Medium	Mid-adults (31-40 years)	17	32.7
		High	Early adults (< 31 years)	11	21.2
			Total	**52**	**100**
2.	Formal Education ($X_{1.2}$)	Low	D3 (3-year diploma)	8	15.4
		High	Senior high school	44	84.6
			Total	**52**	**100**
3.	Occupation ($X_{1.3}$)	Low	Unemployed	8	15.4
		High	Employed	44	84.6
			Total	**52**	**100**
4.	Monthly income ($X_{1.4}$)	Low	< 1 million	16	30.8
		Medium	1-2 million	27	51.9
		High	> 2 million	9	17.3
			Total	**52**	**100**

Based on the findings in Table 1, it is seen that most of the respondents are in the late adult category (46.1%). According to Pikunas (Yuliana, 2007), people in the late adult category are characterized by their reluctance to accept advancements in science and technology in their daily lives. They tend to feel comfortable with the existing conditions and are very difficult to introduce to new discoveries (science and technology).

The majority of the respondents' formal education is within the senior high school category, 84.6%. This shows that the interest of senior high school graduates in Agribusiness Study Program is quite large; however, they are not fresh graduates. They have undergone a diploma level higher education but have not graduated and chose to pursue their education in Agribusiness Study Program. This can be seen from their ages which are dominated by the late adult category. This finding differs from Yuliana and Wardini's study results

(2011) that showed UT's Agribusiness Study Program is dominated by 3-year Diploma graduates who mostly work as agricultural extension officers. The large number of senior high school graduates interested in Agribusiness Study Program bodes well for the study program, signifying that senior high school graduates have begun to show interest in studying agribusiness. This is in line with UT's purpose to increase the number of non-teacher students who are, of course, senior high school graduates (UT's Strategic Plan for 2010-2020). So, Agribusiness Study Program does not only rely on Agricultural Extension Diploma graduates who already work as extension officers, but have a chance to accept more senior high scholl graduates. These senior high school graduates are expected to have better skills in using computers and the internet compared to students who are already employed. Therefore, there is no need to worry about their ability to follow tutons any longer (Yuliana and Wardiny, 2011).

Based on the data in Table 1 about the occupations held by the respondents, it can be seen that a vast majority of them (84.6%) are employed and have their own income. Students who are already employed can access the internet from their workplaces or at home and at internet cafes outside office hours. In order to access the internet, the respondents can set aside part of their income. Therefore, most of the respondents have no difficulty paying for internet access costs.

Findings about the level of income in Table 1 show that more than half of the respondents (51.9%) have incomes between IDR 1,000,000 and IDR 2,000,000 which is categorized as medium. This amount is deemed adequate for fulfilling daily needs and for covering the internet access cost. If the students who are already employed can access the internet from their workplace, they do not have any need to allocate a part of their income for internet access.

The Respondents' External Characteristics

The external characteristics discussed in this study are the region of residence, urbanity, the availability of internet facilities, the possession of a PC/laptop, and internet access intensity. The spread of the respondents' external characteristics can be seen in Table 2.

Table 2. The Spread of the Respondents' External Characteristics

No.	External Characteristics (X_2)	Category	Range	Total	
				n	(%)
1.	Residential region ($X_{2.1}$)	Low	Outside of RO-UT	49	94.2
		High	Within RO-UT	3	5.8
			Total	**52**	**100**
2.	Urbanity ($X_{2.2}$)	Low	< 3 times	29	55.8
		Medium	4-6 times	6	11.5
		High	> 6 times	17	32.7
			Total	**52**	**100**
3.	The availability of Internet facilities ($X_{2.3}$)	Low	None	12	23.1
		Medium	Home/internet cafe/office	39	75
		High	Home, internet cafe, and office	1	1.9

No.	External Characteristics (X$_2$)	Category	Range	Total	
				n	(%)
			Total	52	100
4.	Possession of a PC/laptop (X$_{2.4}$)	Low	No	26	50
		High	Yes	26	50
			Total	52	100
5.	Intensity of internet access (X$_{2.5}$)	Low	Never	17	32.7
		Medium	> once every 2 weeks	12	23.1
		High	< once every 2 weeks	23	44.2
			Total	52	100

A vast majority of the respondents (94.2%) live outside of the RO-UT cities. The students who do not live in RO-UT cities must set aside a considerable amount of time to deal with academic administrative and student affairs at the RO-UT office. As a solution, they choose to use the internet to deal with these needs.

Nowadays, the internet can be accessed from regions far from large cities. Infromation and communication technology (ICT) has undergone a rapid development in both quality and quantity. The impact shows that ICT has deeply penetrated almost all aspects in our lives. The government has interests in responding to the effects of ICT penetration in a wise way in the economic, governmental, and educational sectors. In the world of education, ICT is rapidly utilized in the learning process (UT's Strategic Plans for 2010-2021).

The spread of the students' urbanity is categorized as low, 55.8%. Pujiriyanto' findings (Wahyono and Pujiriyanto, 2010) show there is a relatively signficant correlation between the students' having mobility in searching for sources with the utilization of ICT productively when the ICT tends to be used for searching for academically based information. Whereas students who do not have ICT supporting facilities such as PCs at home or bad internet connectivity and accessibility tenr to focus on the recreational aspect and have low mobility (both physical and non-physical) in searching for learning material sources. The avaiability of personal computers at home gives many benefits, for example helping people communicate with each other via e-mail or social networks, doing their assignments at home, writing books, making PowerPoint presentation slides, or joining online classes/seminars. The wide variety of uses are due to the quick feedback they give to the users.

Students can access the internet from their homes, internet cafes, or their offices. Based on the data in Table 2, most of the respondents (75%) have internet facilities at home/internet cafes/the office. The availability of internet access at home will make it easier for the students both in going through the academic process and accessing administrative sevices. The availability of these facilities is expected to make it easier for the students to follow the teaching-learning process. In line with UT's characteristic in providing open and long-distance education, the avaialability of internet facilities will strongly support the academic service and administrative processes.

Exactly half of the respondents (50%) have personal computers, meaning that the other half (50%) do not own a personal computer. Possession of a computer (if equipped with internet access) could increase students' access to internet services for the academic process and academic administration services. Students' who do not have computers at home could access the

internet at internet cafes. The cost for accessing tutons at an internet cafe is relatively cheaper if compared to the benefits reaped by the students. In order to increase students' access to UT's online services, it is advised that UT develop more collaboration with regional internet providers.

Intensity is the frequency in which something is done. The relation with this study is how often the respondents use the internet. Based on Table 2, 32.7% of the respondents have low intensity of internet access and 44.2% have high intensity. The spread of frequency shows that the respondents do not frequently access the internet in their daily activities. This is supported by previous studies by Yuliana & Winata (2009) and Susanti (2007); most UT students have low competence in operating computers and using the internet.

The Students' Attitude in Utilizing ICT in Open and Long-Distance Learning

The students' attitude in utilizing ICT in open and long-distance learning can be explain by online tutorial, websuplemen, I-TV, and LM-Online services. The spread of the students' attitude in utilizing ICT in open and long-distance learning can be seen in Table 3.

Table 3. The spread of the Students' Attitude in Utilizing ICT in Open and Long-Distance Learning

No.	Variabel	Category		n	%
1.	Students' attitude towards online tutorial	Agree		22	42.3
		Neutral		20	38.4
		Disagree		9	17.3
			Total	**52**	**100**
2.	Students' attitude towards websuplemen	Agree		19	36.5
		Neutral		24	46.2
		Disagree		9	17.3
			Total	**52**	**100**
3.	Students' attitude towards I-TV	Agree		18	34.6
		Neutral		27	51.9
		Disagree		7	13.5
			Total	**52**	**100**
4.	Students' attitude towards LM-Online	Agree		15	28.9
		Neutral		28	53.8
		Disagree		9	17.3
			Total	**52**	**100**

The result from Table 3 showed that students' attitude in utilizing ICT in open and long-distance learning to online tutorial was in agree category. This mean that most of the student (42%) agree that with utilizing online tutorial can help them to improve their knowledge and beneficial to their learning activities.

Meanwhile, the students' attitude in utilizing ICT in open and long-distance learning to websuplemen. I-TV, and LM-Online were in neutral

category. Many of students do not know about the existence about the websuplemen, I-TV, and LM-Online. So, they have not realized the benefits of the three learning services in their study. Whereas, its can help the students to increase their knowledge and more their understanding about printed learning materials.

The Relationship between Internal and External Characteristics and the Students' Attitude in Utilizing ICT in Learning

According to Servaes (2007), the development of ICT such as computers and communication technology especially the internet can be used to create a bridge for information and knowledge which are scattered among those who master information and those who don't. Access to digital communication helps increase access, among others to the opportunity to receive education. Therefore, it is important for UT students to be aware of the availability of academic services so that they may help increase their knowledge. The relationship between internal and external characteristics and the students' attitude in utilizing ICT in their learning can be seen in Table 4.

Table 4. The Relationship between Internal and External Characteristics and the Students' Attitude in Utilizing ICT in Learning

No.	Variable	Attitude			
		Tuton	Web-supplement	I-TV	LM Online
Internal Characteristics					
1.	Educational background	0.178	0.310*	0.312*	0.265
2.	Occupation	0.258	0.170	0.135	-0.024
External Characteristics					
3.	Residential region	0.100	0.116	0.277*	-0.062
4.	Availability of internet facilities	0.436**	0.357**	0.276*	0.219
5.	Computer ownership	0.436**	0.357**	0.276*	0.219
6.	Internet access intensity	-0.115	0.236	0.120	0.252

Based on the findings in Table 4, it can be seen that internal characteristics, i.e the educational background has a significant correlation to the students' attitude to web-supplements as a learning medium. The higher the educational background, the better the attitude toward utilizing web-supplements and I-TV as learning media. The next finding is that the respondents' region of residence has a significant correlation to to the students' attitude to I-TV as a learning medium. The closer the students live to the RO-UT, the better their attitude toward the utilization of I-TV as a learning medium.

External characteristics, i.e. the availability of internet facilities and ownership of a computer, have a significant correlation to the students' attitude to tuton, web-supplements, and I-TV as learning media. The better the availability of internet facilities and possession of a computer, the better their attitude toward the utilization of tuton, websupplements, and I-TV as learning media. According to Belawati (2003), UT's supplementary teaching materials are presented in various formats, from single-medium (text-based with still pictures) to multi-media which integrate texts, audio, and video. At the beginning, the supplementary teaching materials were only developed in audio and video cassette/CD formats. Since 1995, when the internet was introduced in Indonesia, UT has begun developing supplementary teaching materials in the form of HTML files which used the FrontPage software. At the same time, UT began developing supplementary teaching materials in the Computer Assisted Instruction (CAI) format which was distributed to students via internet. These teaching materials were then integrated with the audio/video programs owned by UT. The video programs were also uploaded to the internet separately so that students could watch them in internet cafes.

According to Pribadi (2004), teaching materials in the form of video programs and television broadcasts have long been used as media to deliver teaching contents or materials in long-distance learning. Video teaching-materials have the advantage of being able to deliver authentic information and knowledge. In addition, video teaching-materials are able to effectively deliver materials that are in the form of a process or are procedural. Video teaching-materials can also be used to increase students' understanding of the application of the concepts they are currently studying in the main teaching materials or modules.

Based on Wahid's study (2006), it was discovered that the internet (the application of information technology) tends to be used especially in increasing educational capability in a personal level and experience in using the internet. Schools in Indonesia and other developing countries can play an important role in developing their attitude and skills to increase the social benefits of using the web.

Conclusion

The results of the study show that most of the students' agree that online tutorial can help them to improve their knowledge and beneficial to their learning activities/process. The students' educational background has a significant correlation to their attitude in using web-supplements and I-TV. A significant correlation is also found between the region of residence and the students' attitude to I-TV. The characteristics of internet facility availability and computer ownership have significant correlation with their attitude in using tuton, web-supplements, and I-TV.

ICT has given many benefits, especially in the field of education. It has enabled individualization, acceleration, enrichment, expansion, and an increase of effectiveness and productivity in learning. For more expectation, ICT will increase the quality of education as an infrastructure in the development of human resources.

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