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Do Electronic Information Resources Improve Student Academic Performance? Case at the Student of Management Study Program in Yogyakarta Indonesia

R. Heru Kristanto HC[1], Purbudi Wahyuni[2]

[1][2]Associate Professor in Faculty of Economics and Business UPN Veteran Yogyakarta Indonesia

heru_kris2010@yahoo.com, purbudi.wahyuni@upn.ac.id

Abstract. The use of information technology is an integral part of the learning process in the University. The research aimed to find out empirical evidence of the impact of electronic information resources on improving the academic performance of students in the Management Study Program. The research model used mediation regression with SEM and the PLS statistical software. Purposive sampling with 210 respondent. Electronic information resources were measured by the availability of software application infrastructure, online journals, online databases, institutional repositories, e-books, e-journals, and websites. Electronic information resources were measured by using skills electronic information resources in the learning process, making final assignments, publications. Academic performance was measured from the teaching and learning process, publications of students, improvement of achievement index, contribution to society. The results showed that the availability of software application infrastructure, online journals, online databases, institutional repositories, e-books, e-journals, and websites had an effect on academic performance. Habits or use fullness of using electronic information resources mediated the effect of electronic information resources on academic performance.

Keywords. Electronic information resources, the use fullness of electronic information resources, academic performance

Introduction

Factors that affect the academic performance of students are very important. These factors will greatly affect the university's academic policies, assessment of lecturer performance, and modification of the way lecturers teach. Bawaneh (2011) stated that the use of information technology is an integral part of learning procedures in universities. Several teaching staff have enthusiastically implemented technological innovations as part of the classroom learning process. However, the influence of information technology on student academic performance has become a matter of considerable debate.

Bawaneh (2011) stated that before computers were familiar in the community, the learning process was carried out traditionally. However, in recent years, along with advances in technology, the use of computers in society is increasing. This increase in the use of information technology has a positive impact on the world of education, especially in the way and process of delivering learning materials. In fact, most universities in America have conducted

accounting courses independently online with orientation to the use of the website and social media.

Guney (2009), Bawaneh (2011), Bakhsh, M., et.al., (2017) stated that in the learning process, the development of presentation applications became quite dominant, especially the use of PowerPoint. Several studies have shown that there was a significant effect between the use of PowerPoint and student learning achievement, but there were also studies that stated that there was no relationship between the use of PowerPoint and student achievement.

This study will try to examine the effect of information technology on student achievement. Regarding Bawaneh's research (2011), the researcher tried to develop the research by not only testing the PowerPoint aspect as a learning medium but also testing the use of information technology in general on student achievement that the use of technology in the learning process included several things, including the use of PowerPoint slides for the lecture process, the use of the internet in lectures online, the use of excel in working on questions and lectures online with a base website. The use of information technology in the lecture process is expected to make students more interested in the material presented and in the end be able to improve student academic performance.

The development of computers and the internet has had a significant impact on the world of education. Higher education institutions invested in various IT equipment such as computer laboratories, website, IT-based learning media, hotspot, and teleconference. The availability of adequate facilities in the field of technology is expected to be able to support the academic climate of students, improve student performance and improve the quality of education (Guney, 2009; Bakhsh, M., et.al., 2017).

Based on the phenomena above, the purpose of the study were: 1) Testing the effect of electronic resources information on the habit of using e-resources of students in the Management Study Program. 2) Testing the effect of habits of using e-resources on the academic performance of students in the Management Study Program. 3) Testing the mediating role of skills on the effect of electronic resources information on the academic performance of the students in the Management Study Program.

Literature Review and Hypothesis Development
The use of information technology is an integral part of the learning process in the University. The influence of information technology on the academic performance of students and lecturers is still a matter of debate (Bawaneh, 2011; Guney, Y. (2009). The factors that affect the academic performance of students and lecturers are very important to solve. These factors will greatly influence or determine the policy of the University's academics, evaluation of lecturer performance and modification of the way lecturers teach (Guney, 2009; Bakhsh, M., et.al., 2017). Technological advances, use of computers, statistical applications, websites, and e-journals in education has developed rapidly. The increasing use of information technology has a positive impact on education, especially in the way and process of delivering learning materials, research and publications.

Bawaneh (2011), Guney, Y. (2009). stated that today's information technology cannot be separated from the education process in higher education. Information technology is able to prove its role in improving academic performance, integrating tasks to achieve high achievement (Kanapahippillai et al., 2012; Yaftian et. all., 2017). The educational environment is all internal conditions and external influences in educational activities.

Ettinger et. all, (2006); Adjani and Adam (2013) revealed that the motivation of the teaching and learning process, the final project had a significant influence on academic performance. Nugraha (2015) stated that academic performance was influenced by study

habits. Sukmadinata (2005), Nugraha (2015), and Turner et. all. (1998) revealed that learning achievement is the result of the potential abilities of students which can be seen from the behavior of mastery of knowledge that has been obtained during the learning process, thinking skills, and motor skills (Yaftian, A., et.al., 2017). It was believed that information technology can significantly affect the teaching and learning process and had an impact on the academic performance of students and lecturers.

The process of rapid development of information technology affected the education process in higher education. The academic performance of students and lecturers will be greatly helped by the presence of e-resources information and the ability or skill to use e-resources (Bakhsh, M, et.al., 2017; Carrillo, P., et.al., 2011). Student final assignments, lecturer research, publications were largely determined by the expertise and infrastructure that provided e-resources information (Bakhsh, M., et.al., 2017; Nor Hasan, et.al., 2019).

Framework

Figure. 1. Research Framework
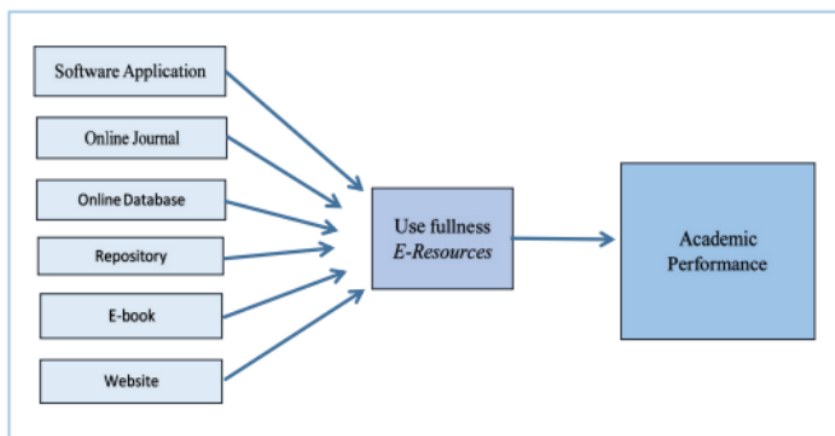
Research Method

The research was designed using the causality quantitative approach through the testing formulation of the problem and primary data analysis. The research samples were students who took a thesis or who would conduct an undergraduate thesis exam in Management Study Program. After successful data collection, the questionnaire was coded, data was inputted, analyzed, and concluded. Intervening regression models were used SEM to answer the hypothesis (Greene, 2014; Wooldridge, 2019). The econometric model in this study used mediation regression. Varimax rotational, explanatory factor analysis used statistical tools SEM model.

Operational Definition of Variables and Measurement

The operational definitions of variables and measurements in this study are: e-resource information is all materials (collections) that require computer access either remotely or locally via personal computers (PCs), mainframes, or mobile devices, type-resources, namely: application software, online journal, e-book, repository, e-database, and website. Online journals or electronic serials are scientific journals or intellectual magazines that can be

accessed via electronic transmission. Application software is a computer program that functions to perform specific tasks, such as analyzing data, interpreting data, creating documents, manipulating photos, or making reports. The E-book is digital books or electronic versions of books. If the book generally consists of a combination of paper that can contain text or images, E-books contain digital information which can also be in the form of text or images. A repository is storage and/or access to folder, printer, microfiche, audiotape, CD, LP, videotape, DVD, and access to the MandInternet CD-RO data warehouse. The database is an application that documents data, administer data and information on regional conditions, institutions, parts of online-based organizations. A website is a collection of interconnected web pages, usually on the same server, containing a collection of information provided by an individual, group, or organization. Usage skills are skills possessed by students and lecturers in using e-resources to support academic performance. Academic performance is the results of measurements, assessments, evaluations used to determine student outcomes which can be in the form of academic abilities, research, and impact on society. E-resources information, proficiency in using e-resources, and academic performance were measured by questions to respondents on a 5 Likert scale.

Result and Discussion
We used Cronbach's Alpha to measure reliability, factor loading to see the validity. The measurement results can be seen in table 1.

Table 1. Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
E-book	0.927	0.928	0.941	0.696
Use Fullness	0.948	0.950	0.957	0.735
Academic Performance	0.956	0.958	0.962	0.717
Online Database	0.919	0.921	0.937	0.711
Online Journal	0.944	0.946	0.956	0.783
Repository	0.891	0.898	0.914	0.604
Application Software	0.958	0.960	0.965	0.775
Website	0.949	0.956	0.957	0.737

Source: data processed (2021)

The results of the reliability test in table 1. indicated that the question items on the questionnaire of each research variable were reliable and valid. This was indicated by the magnitude of Cronbach's Alpha and rho_A of 0.800. The results also showed Composite Reliability of 0.9, Average Variance Extracted of 0.500.

Test of the Hypotheses
Based on the results of statistical tests in table 2, it showed that use fullness had an R Square of 0.835. While the academic performance had an R Square of 0.929. These results indicated that use fullness and academic performance can be explained by the variables of the availability of e-books, online journals, repositories, online databases, software applications, and websites.

Table 2. Path Coefficients

|	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
E-book -> E-Resources Usage Skills	0.248	0.252	0.036	6,959	0.000
Proficiency in Using E-Resources -> Academic Performance	0.964	0.965	0.009	112.376	0.000
Online Database -> E-Resources Usage Skills	0.124	0.129	0.052	2,397	0.017
Online Journal -> E-Resources Usage Skills	0.221	0.217	0.042	5,228	0.000
Repository -> E-Resources Usage Skills	0.197	0.196	0.041	4,805	0.000
Application Software -> E-Resources Usage Skills	0.137	0.136	0.050	2,734	0.006
Website -> E-Resources Usage Skills	0.183	0.182	0.043	4.238	0.000

Source: data processed (2021)

Table 3. Specific Indirect Effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
E-book -> E-Resources Usage Skills -> Academic Performance	0.239	0.243	0.035	6.892	0.000
Online Database -> E-Resources Proficiency -> Academic Performance	0.119	0.124	0.050	2,394	0.017
Online Journal -> E-Resources Usage Skills -> Academic Performance	0.213	0.209	0.041	5,227	0.000
Repository -> E-Resources Proficiency -> Academic Performance	0.190	0.189	0.039	4.816	0.000
Application Software -> E-Resources Usage Skills -> Academic Performance	0.132	0.131	0.049	2,728	0.007
Website -> E-Resources Proficiency -> Academic Performance	0.176	0.175	0.042	4.239	0.000

Source: data processed (2021)

Figure 2. Path Diagram
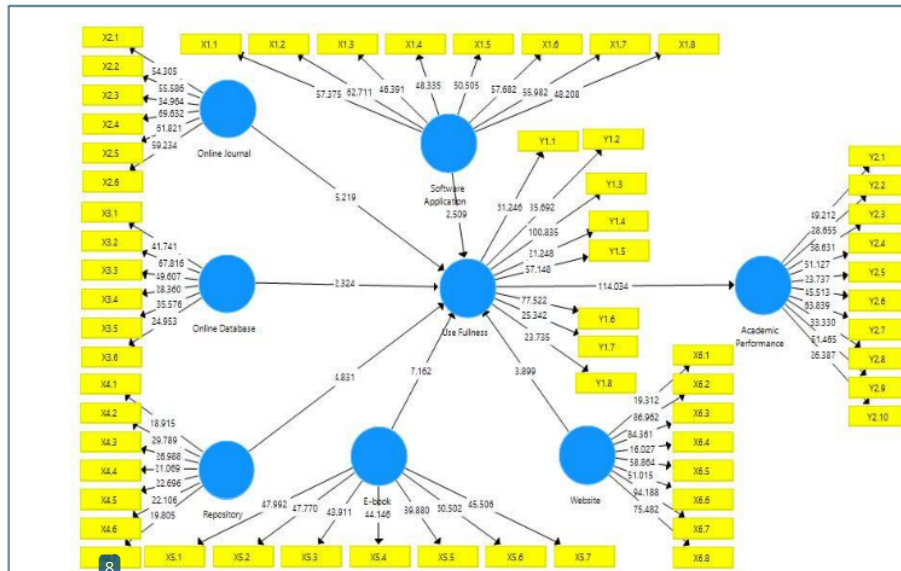
Source: data processed (2021)

Based on the results of statistical tests in table 2, table 3, and figure 2, it was known that the variable availability of e-book, online journals, repositories, online databases, application software, and website affected use fullness. This can be seen in the p-value (≤0.00). Use fullness had a positive effect on academic performance. It can be seen from the p-value. (≤0.00). Use fullness was able to moderate the influence of the availability of e-books, online journals, repositories, online databases, software applications, and websites on organizational performance. It can be seen from table 3. specific direct effect of p-value≤0.00 and the t-statistic was significant.

The availability of e-books affected use fullness. The more e-book models and students use, the more use fullness will be. This can be seen from the path analysis with a t-statistic of 6.69 and a p-value≤0.00. These results were supported by the research of Bawaneh (2011), Guney (2009). Research showed that information technology cannot be separated from the education process in universities. Information technology is able to prove its role in improving academic performance,

The online journal affected use fullness. The more online journals, the higher the students use so that it will increase use fullness. This can be seen from the path analysis with a t-statistic of 5.288 and a p-value≤0.00. The repository affected use fullness. The more you use the repository, the more you will improve use fullness. This can be seen from the path analysis with a t-statistic of 4.805 and a p-value≤0.00. The choice of an online journal as an information medium of interest cannot be separated from its function which can meet the scientific information needs of the academic community (lecturers, staff, and students). The dependence of the academic community (lecturers, staff, and students) on online media is because the need for scientific information was in line with theoretical exposure used and gratification. Basic assumptions of theory used and gratification still revolved around the existence of one's social needs with the function of information presented in the media.

The online database affected use fullness. The higher the student uses, the higher the use fullness. This can be seen from the path analysis with a t-statistic of 2.397 and a p-value

of ≤0.00. Advances in technology, the use of computers, statistical applications, websites, and e-journals in the world of education have grown rapidly. The increasing use of information technology had a positive impact on the world of education, especially on the way and process of delivering learning materials, research, and publications (Guney, 2009; Bawaneh, 2011; Bakhsh, M., et.al., 2017).

Software application affected the use fullness. The more online journal application software, will increase the use fullness. This can be seen from the path analysis with a t-statistic of 2.734 and a p-value of≤0.00. This result was in line with the research of Bakhsh, M., et.al., (2017). The results revealed that the development of application software, website, email, and social media expanded communication networks both between lecturers and students as well as with fellow students. The use of software applications can have a positive impact on student academic achievement if properly directed.

The website affected use fullness. The more you use the website, the more you will increase your use fullness. This can be seen from the path analysis with a t-statistic of 4.238 and a p-value≤0.00. The results of this study supported the findings of Mo (2011) stated that the development of computers and the internet had a significant impact on the world of education. Higher education institutions invested in various IT equipment such as computer laboratories, websites, IT-based learning media, hotspot, and teleconferences. The availability of adequate facilities in the field of technology is expected to be able to support the academic climate of students, improve student performance.

Use fullness affected academic performance. Use fullness was able to mediate the influence of e-books, online journals, repositories, online databases, software applications, and websites on organizational performance. It can be seen from the path analysis with a p-value ≤0.00. Information technology was able to prove its role in improving academic performance, integrating tasks to achieve high achievement (Horzum, et. al., 2014; Yaftian et. all., 2017). The educational environment was all internal conditions and external influences in educational activities. The academic performance of students and lecturers will be greatly helped by the presence of e-resources information and the ability or proficiency to use e-resources (Bakhsh, M, et.al., 2017; Carrillo, P., et.al., 2011).

Conclusions and suggestions

This study used a sample of 210 students of the Management Study Program in Yogyakarta Indonesia. The results showed that electronic information resources affected use fullness and academic performance. Use fullness was able to moderate the influence of electronic information resources on academic performance. Electronic information resources in this study were the availability of e-books, online journals, repositories, online databases, software applications, and websites.

It took education, understanding, and application of information technology to improve academic performance in higher education. The government, academics, managers must be able to take the strengths and opportunities from the development of information technology. An appropriate investment is needed, right on target in developing information technology.

The utilization of technology and information is an effort to eliminate the limitations of the academic community. The information available through the internet today is very diverse. This can provide inspiration and opportunities to develop academic performance.

Universities must develop digital literacy, funds, and the availability of e-books, online journals, repositories, online databases, software applications, and websites. Digital literacy is the ability to use information and communication technology to find, evaluate, create, and

communicating information, which requires cognitive and technical skills. The 8 components of digital literacy are:

1. Cultural, namely understanding the various contexts of users of the digital world.
2. Cognitive, namely the power of thought in assessing content.
3. Constructive, namely the creation of something expert and actual.
4. Communicative, namely understanding the performance of networks and communications in the digital world.
5. Responsibility and confidence.
6. Creative, doing new things in new ways.
7. Critical in addressing content.
8. Socially responsible.

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