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Exploring User Expectancy With Regard to the Use of Institutional Repositories Among University Academics in Indonesia: A Case Study at Syarif Hidayatullah State Islamic University

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Abstract

Academic works produced by university members are valuable resources that should be managed properly. The development of Institutional repositories (IRs) was purposed to preserve and disseminated these resources so that benefit to the university in enhancing university scholarship and performances.. However, the existing of repository system is less used. It is alleged that lecturers are not aware and reluctant due to the lack of their motivation. User expectancy is regarded as motivational factor that lead invidual to use insitutitional repositories. The purpose of this paper is to examine the relationship between user expectancy and the use of institutional repositories in higher education institutions in Indonesia. A study is conducted with 50 university lecturers at Syarif Hidayatullah Jakarta. Structural Equation Modelling Partial Least Square (PLS-SEM) is used for data analysis. SmartPLs 2.0 software is employed in the analysis. The result indicated that since the measuring instruments are valid and reliable, user expectancy have influence to the use of IRs. Based on the structural model, it was found that user expectancy contributes to the use of IRs up to 57,6 %.

Keywords : *task complexity, user expectancy, information need, institutional repository, partial least square, academic libraries, Indonesia*

Introduction

Institutional repositories (IRs) are becoming *worldwide trending issue* in higher education institutions. It has been becoming an indispensable component for higher education institutions for preserving, organizing, and disseminating their scholarly works. Many universities in the world have been developing the repository system for years, and it was considered as the solution for the crisis of scholarly publishing and as a new model of scholarly communication. In addition,

institutional repositories are also beneficial to increase the credibility of university, and to improve the performance and accreditation of institution. According to Crow (2002), the important of the development of the institutional repository is to respond of two strategic issues confronted by academic institutions in reforming the system of scholarly communication, and in having the potential to serve as tangible indicators of a university's quality of academic scholarship and of organisational performances and accreditations. Managing institutional repositories will increase the credibility of university and improve the performance and accreditation of organisation. Institutional repositories will increase the visibility, prestige, and citation impact of the university (Johnson, 2002; Bailey, 2008).

In Indonesian today, this issue is very relevant with the university's programs towards research university and world class university. Since 2010 universities in the country have been installing the system for managing their repositories. Right now, IRs have becoming a noteworthy issue for academic libraries in Indonesia. According to the data form Open DOAR (*Directory of Open Access Repositories / www.opendoar.org)* and Ranking Web Repositories (RWR) (http://repositories.webometrics.info/), there are 42 university repositories released by both agencies. Studies on the IRs, therefore, will have an important role to contribute the success of the IRs development .

Since the development of institutional repositories is related with individual in organizational environment, it is significant to investigate the individual and organizational aspects as determinants factors of the IRs use. The study will explore the influence of task complexity, information need, user expectancy varibles on the use of institutional repositories (IRs) among lecturers as well as to examine the relationship these variables in regard with the IRs use. In this pilot study these factors were invetsigated by examining the validity and reliability of its instruments, and then evaluating the structural model used in this study.

Literature Review

Institutional repositories (IRs) are defines as a system designed and developed to provide a wider and open access to scholarly works and publications produced by university members (Crow, 2002; Lynch, 2003; Ware, 2004; Narayana, 2006). It contains of a variety of materials produced by university scholars from many units, such as e-prints, technical reports, theses and dissertations, data sets, and teaching materials (Bailey, 2008). The development of IRs in universities is aimed to supply foundations and infrastructures of university scholarship as well as to increase the visibility and credibility of organization. (Crow, 2002; Johnson, 2002; Prosser, 2003; Wust, 2006; Gozetti, 2006; Palmer, 2008; Bailey, 2008; Dhuranceau, 2008; Ware & Mabe, 2009; Giesecke, 2011).

Meanwhile, the success of IRs implementation will depended on the use of that system by its users, especially by university lecturers. Some studies reveals that although IRs have been adopted and developed by universities over the last years, there were many repository systems that were less used, and most its collections contain only few items . Demographic factors, social and cultural factors, awareness, intrinsic benefits, and norms have been identified and associated with the emptiness or the lack of repositories collections. Most lecturers are reluctant, not aware,

and skeptic, and others prefer to delegate their tasks to libraries (Allen, 2005; Wust, 2007; Alemayehu, 2010; Stanton & Liew, 2011; Casey, 2012; and Obiora & Ogbomo, 2013).
Actually since the IRs system is considered as a technological product, some theories on technology acceptance and adoption may be used to confirm the influence factors of the IRs use such as Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Technology Readiness Index (TRI), and Diffusion of Innovation (DoI) models. However, are these theories are really appropriate to explain the adoption of IRs? According to Campbell-Meier (2008), the development of IRs is complex project, and the success of the implementation will be influenced by many factors. Nance & Straub (1996), Rieger (2008), and Schroeder (2009) stated that not all these technology adoption models can be employed to explain the IRs use due to its characteristics and context. For example, Nance & Straub (1996) stated that TAM model only rely on perceptual construct, not appropriate for specific technological product, and less useful to explain relationship between usage and task performance. In addition, Rieger (2008) revealed that these models are technological-centered. It was not relevant to examine the IRs use from a predominantly technological perspective. Moreover, according to Schroeder (2009), the use of the repository system is not only a subjective process perceived by individual, but also the processes in which objectively designed by an organization to achieve the goals.

Based on the explanation above, it is significant to conduct a study on the IRs adoption in order to develop a particular model of IRs use. This model will comprehend the characteristics of IRs, its user, and its context where it is implemented. From user's perspective, it is important to understand user's characteristics both in individual and organizational levels as well. In line to this users' characteristics, exploring the user expectancy may be valuable effort to understand the influence factor of the IR use. User expectancy is individual or personal factors that lead and motivate user to use the IRs. In the perspective of human behavior studies, user expectancy are the types of motivation that influences to the human attitudes and behaviors.

In organizational behavior studies, expectancy is one of the prominent part to explain individual motivation within organization. Robbins and Judge (2013) stated that expectancy theory, particularly from Victor Vromm's Expectancy theory is the most widely accepted expalanations of motivation. Expectancy, according to this theory, is one kind of the motivations that drives individual to a certain behavior. Based on this theory, individual behavior or performance will highly depends on the strength of individual expectancy. Expectancy provide a power for individual to act a certain way. According to Robbins and Judge (2013), in expectancy theory, there are four main concepts that are interrelated, i.e. individual effort, individual performance, organizational rewards, and personal goals.

However, in the acceptance or adoption model, expectancy was regarded as the determinant or factor associated with the use of a system, product, or technology. The Unified Theory of Acceptance and Use of Technology (UTAUT) introduced by Venkatesh et.al. (2003) was considered as the main model included expectancy theory within the model (Attuquayefio & Addo, 2014). Venkatesh et.al. (2003) in the UTAUT model explained that there are some constructs considered to have significant direct relationships to the intention or use information

technology, i.e effort expectancy, performance expectancy, social influence, and facilitating condistions. According to Venkatesh et. al. (2003), performance expectancy is the degree to which an individual believes that using the system will help him or her to attain gains in job performance. It will be observed through the constructs such as perceived usefulness, extrinsic motivation, job-fit, relative advantage, and outcomes expectations. In addition, effort expectancy is defined by the degree of ease associated with the use of the system. It consists of perceived ease of use, complexity, and ease of use.

As the determinant factors, user expectancy has widely examined to investigate the individuals behavior regarding with the use of particular technology. Venkatesh et.al. (2003) with UTAUT model was considered as the prominant model using expectancy theory. This UTAUT model has extensively adopted and adapted in the different fields of research such as in ICT (Attuquayeflo, 2014; Mardikyan et.al., 2012; and Akbar (2013), in e-banking (Ghalandary, 2012 ; Abu Shanab & Perason, 2007; Tao Zhou et.al., 2010; and Chian-Son Yu, 2012), in education (Maldonado et.al., 2011; William et.al., 2011; Cheng et.al., 2011), and in other fields. Attuquayeflo and Addo (2014) have reviewed studies with UTAUT model in the different field of research. Theses studies acknowledged that performance expectancy and effort expectancy have influenced individual behavior.

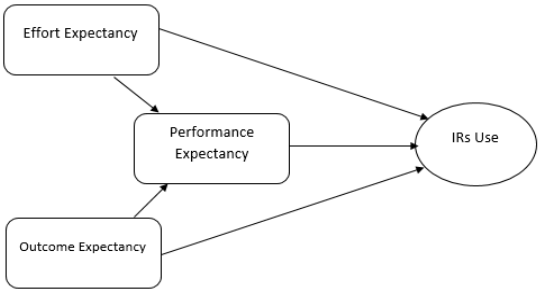
However, outcome expectancy is considered as the result of effort and performance expectancy. If individuals perform their task, the outcomes expected are accordingly achieved. Outcome expectancy is the effect of performance. In this study, outcome expectancy is regarded as the cause, not the effect. Therefore, performance expectancy, effort expectancy as well as outcome expectancy will equally determine the individual behavior in using institutional repsoitories. Studies conducted by Hahn & Lengerke (1998), Haile (1994), and, for example, found that outcome expectancy has correlated to behavior intention.

Conceptual Framework

Base on the literature review, this present study will explore user expectancy in relation to the use of institutional repositories. The user expectancy in this study is differentiated into performance expectancy, effort expectancy, and outcome expectancy. Performance expectancy as define by Venkatesh et.al. (2003) is the degree to which an individual believes that using the system will help him or her to attain gains in job performance. It will be observed through the constructs such as perceived usefulness, extrinsic motivation, job-fit, relative advantage, and outcomes expectations. Effort expectancy is defined by the degree of ease associated with the use of the system, or the degree to which individuals belief that the use of a particular technology will be easy and effortless (Cruz-Cunha, 2013). Outcome expectancy is defined as the degree to which individuals belief that a certain behavior is expected to certain outcomes in the future. It is a person's expectantions about the consequences of an action (William, Anderson & Winett, 2005) . These expectancies are regarded as the determinant factors that influence to the use of IRs.

The conceptual framework of this study is figured as below.

Figure 1
Research Framework



Basen on the research framework, the hypotheses of this study are :

1. Performance expectancy, export expectancy and outcome expectancy have significant relationship to the use of institutional repsoitories
2. Export expectancy and outcome expectancy have significant relationship to the performance expectancy in regard to the use of institutional repsoitories

Methodology

This study is conducted in a small-scale that is called as a pilot study. The main objective of a pilot study is to test reliability and validity of measuring instrument. The pilot study is organized at Syarif Hidayatullah Islamic University. The data is obtained through a questionnaire administered on 50 university lecturers selected by purposive sampling method. Research instruments consist of two parts of close ended questions. The part one consists of demographic information questions, and part two consists of expectancy questions. It is developed based on theorized factors, and measured by using a 5-linkert' scale.

This study employed the SmartPLS 2.0 software for data analysis. The measurement model analysis is conducted to evaluate the validity and reliability of instruments. Validity test is conducted by evaluating the convergent and discriminant validity while the reliability is tested by examining the indicator and composite reliability. The study also evaluates the structural model used in this research. The structural model is examined by evaluating the coefficient of determinant or R-square, path coefficient, and effect size.

Results and Discussion

There ara two steps in analysing model using Partial Least Square, namely (1) measurement model assessment, and (2) structural model assessment (Sanches, 2013; Ghozali, 2015). Measurement model assessment or the so called outer model is the evaluation of the relationships between the

latent variables and their indicators, and structural model or inner model assessment is the evaluation of the relationships between the latent variables that show the research model.

A. Measurement Model Assessment

According to Proctor (2005), while reliability refers to the consistency in reaching the same results when the measurement is made over and over again, validity refers to the degree to which the question measures what it is supposed to be measuring. A reliable instrument is the instrument that has a high stability and consistency as well to measure. The validity of instrument relates with construct, content, and criterion-related of the instrument to measure (Kimberlin and Winterstein, 2008).

1. Instrument Reliability

Reliability is the degree to which a set of indicators are internally consistent, the extent to which the instrument yields the same results on repeated trials (Robert, 2007). In PLS-SEM analysis, the construct reliability is measured by examining indicator reliability and composite reliability. Indicator reliability is measured by outer loadings numbers while composite reliability is determined by internal consistency reliability numbers or tested by *Cronbach Alpha* (Vinzi, 2010). Reliability coefficients range from 0.00 to 1.00, with higher coefficients indicating higher levels of reliability.

The measurement is considered to be reliable when the construct (construct reliability) is higher than 0.70. However, if it is an exploratory research, 0.4 or higher is acceptable for indicator reliability (Hulland, 1999), and 0.6 or higher for composite reliability (Beghozzi and Yi, 1998)

Figure 2
Outer Loadings

	EE	OE	PE	USE
EE10	0,915468			
EE6	0,871188			
EE7	0,912327			
EE8	0,932040			
EE9	0,933316			
OE11		0,815745		
OE12		0,818573		
OE13		0,923188		
OE14		0,895765		
OE15		0,882487		
PE1			0,863767	
PE2			0,888256	
PE3			0,923740	
PE4			0,889203	
PE5			0,881739	

USE1				0,871261
USE2				0,882340
USE3				0,820134
USE4				0,885009
USE5				0,854240

The figure 2 shows that the result of testing indicator reliability, the all values of outer loadings of all constructs are higher than 0.70. The other outer loadings ranged from 0.81 to 0.93. It means that the constructs are reliable.

Figure 3
Composite Reliability & Cronbachs Alpha

	AVE	Composite Reliability	R Square	Cronbachs Alpha
EE	0,833834	0,961649		0,950567
OE	0,753791	0,938540		0,917771
PE	0,791307	0,949874		0,933952
USE	0,744641	0,935771	0,578037	0,914526

The figure 3 depicts that the result of testing internal consistency reliability indicates that the value of composite reliability and Cronbach's Alpha are very high, ranging from 0.91 to 0.96. It means that the consistency of constructs are reliable.

2. Instrument Validity

A reliable instrument does not ensure that the instrument is valid. But, a valid measure is always reliable. According to Proctor (2005), a reliable measure is not necessarily a valid one. While pretesting, revision and further testing a questionnaire may increase its reliability, it will not necessarily increase its validity. Therefore, a test for instrument validity is important to ascertain its reliability and validity as well. The quality of research will depend on the degree of instrument validity. In this study, instrument validity is acquired by testing the convergent and discriminant validity. Convergent and discriminant validity are both considered subcategories or subtypes of construct validity.
In PLS analysis, convergent validity is conducted by measuring factor loadings and AVE (Average Variance Extracted) numbers. Beghozzi and Yi (1998), Gefen (2005), and Hair et.al (2012) stated that convergent validity should be 0.5 or higher.

Figure 4
Values of Average Variance Extracted (AVE)

	AVE
EE	0,833834
OE	0,753791
PE	0,791307
USE	0,744641

Figure 4 is telling that all AVE values for the latent construct are above 0.5, ranging from 0.74 to 0.83 for USE construct and Effort Expectancy construct respectively. It means that the instrument of research is valid in term of convergent validit.

Figure 5
Cross Loadings

	EE	OE	PE	USE
EE10	0,911018	0,640486	0,508810	0,451835
EE6	0,870502	0,580189	0,512513	0,443056
EE7	0,917930	0,545189	0,417265	0,293135
EE8	0,936481	0,564634	0,433105	0,323618
EE9	0,930719	0,557521	0,423805	0,367596
OE11	0,644748	0,826780	0,706049	0,544371
OE12	0,541367	0,811777	0,474985	0,524534
OE13	0,571703	0,923328	0,657634	0,595557
OE14	0,529308	0,892137	0,646484	0,643927
OE15	0,484195	0,881349	0,650265	0,635020
PE1	0,423850	0,602180	0,863709	0,622692
PE2	0,359184	0,630887	0,888873	0,626832
PE3	0,527661	0,731850	0,925837	0,656648
PE4	0,446389	0,641579	0,887518	0,690474
PE5	0,501102	0,627482	0,880736	0,618387
USE1	0,256104	0,482691	0,593378	0,871327
USE2	0,348433	0,558402	0,678231	0,882427
USE3	0,378216	0,510319	0,497083	0,820032
USE4	0,468043	0,708797	0,647596	0,884868
USE5	0,351356	0,641845	0,675305	0,854321

The figure 4 represents the value of discriminant validity. The figure 4 shows that the square root of AVE values for all constructs are greater than the squared correlation with other constructs. It also means that the instrument have fulfil the requirement of discriminant vality.

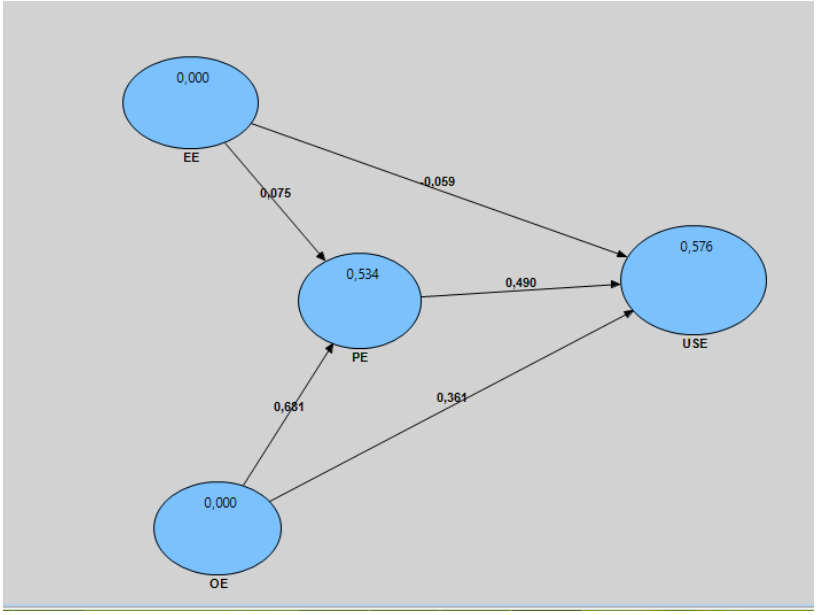
B. Structural Model Assessment

After evaluating measurement model, the next step is to assess the structural model or inner model. Inner model assessment is a proses to examine the relationship between latent variables or constructs. In this pilot study, this assessment is conducted to examine the feasibility of research model proposed. The assessment is conducted by calculating the R-square (R^2) and the level and significance of the path coefficients (Hair, Ringle, & Sardedt, 2015). Evaluation the R-square is performed to determine the effect or infleunce of exogenuos laten variables to endogenous variables. Sanchez (2013) classified the value of R-square into three categories; low (R<0.30), moderate (0.30<R<0.60), and high (R>0.60). Similarly, Ghozali (2015) stated that the value of R-square 0.75, 0.50, and 0.25 describes that the model is high, moderate, and low.

Based on the assessment of structural model, the result of R-square evaluation is shown in the following graph.

Figure 6

Coefficient of Determination (R^2)



The figure 6 structural model shows that influence of effort expectancy, outcome expectancy, and performance to the use of institutional repository among lecturers at UIN Syarif Hidayatullah Jakarta. The figure describes that the R-square (**R^2**) value of the use of the repository institutions is 0.576. This means that these variables contributes 57.6 % on the use of institutional repository The remaining 42.4% of the use of the repository are influenced by other factors that are not discussed in this study. The figure also shows that variables of effort expectancy and outcome expectancy contibute 53.4 % to the performance expectancy. Out of 46.6 % of performance expectancy are explained by other factors that are not included in this study.

The next step of the structural model assessment is evaluating path coefficient. The path coefficient represents the strength or the significant of the relationship between latent variables. It also refutes the hypotheses (Kamarul, 2012). According to Garson (2016), the value of path

coefficient is standardized varying from 0 to 1. Urbah & Ahleman (2010) mentioned that path coefficient more than 0.1 is desirableto be accountable for particular impact in the model, and should be significant at least at the siginificance level of 0.05. According to Cohen (1988), the recommended values for estimating the magnitude of the path coefficients are 0.02, 0.15, and 0.35 representing the relationships of small, medium, and large respectively.

As shown in figure 6, the values of path coefficient relationship range from 0.069 to 0.681 indicating the significance of relationship of the variables measured. The relationship between outcome expectancy (OE) and performance expectancy (PE) is the highest while the relationship between effort expectancy (EE) and the use of IRs is the lowest. The figure also shows that the relationships between EE and PE, and EE and USE are small (low) while the relationships between OE and PE, OE and USE, and PE and USE are cosidered as larga (high).

However, the degree of significant of path coefficient are deteremined by the value of t-statistics value. In PLS-SEM, the algorithm test and boostraping are generated to evaluate the sign of path coefficient, magnitude, and the significance by calculating the t-statistics. According to Hair et.al. (2011), the siginificant of t-statistics values should be higher than t-table values (p-value). The t-table or p-values for a two-tailed test is 1.65 (p-value 0.1), 1.96 (p-value 0.05) and 2.59 (p-value 0.01).

Figure 7

Significance of Path Coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)
EE -> PE	0,075370	0,071273	0,085610	0,085610	0,880388
EE -> USE	-0,059221	-0,056435	0,071936	0,071936	0,823252
OE -> PE	0,680725	0,684845	0,080911	0,080911	8,413291
OE -> USE	0,360983	0,354157	0,121319	0,121319	2,975478
PE -> USE	0,490490	0,497983	0,105518	0,105518	4,648409

The figure 7 explains that the value of t-statistics are ranging from 0.823 to 8.413. The values of relationship as shown in t-statistics indicated that the two relationships (EE->PE and EE->USE) are lower than t-table 1.96 (p-value 0.05) and three relationships are higher than t-table value of 1.96 with p-value 0.05. It means that the path magnitudes of effort expectancy to performance expectancy and to the use of IRs are weak. The other path magnitudes of outcome expectancy to performance expectancy and to the use of IRs, and performnace expectancy to the use of IRs are high or large. However, the overal path magnitude of expectancy constructs are medium with the value 3,548164. It represents the statistically siginificance of the relationship between variables observed in the structural model.

Another analysis in PLS-SEM is the effect size evaluation. It measures the impact of an independent construct on dependent construct. By eliminating the other constructs, the effect size

assesses the substantive effect of the exegenous variable on the endegenous variable. Based on the evaluation the effect size of user expectancy on the use of institutional repository as below.

Figure 8

Significance of Path Coefficients

Path	R^2 Included	R^2 Excluded	f-Squared	Effect Size
EE->PE	0,534	0,262	0,5837	Large
OE->PE	0,534	0,534	0	None
OE->USE	0,576	0,466	0,2594	Medium
EE->USE	0,576	0,185	0,9222	Large
PE->USE	0,576	0,522	0,1274	Small

Figure 8 shows that the effect size of the independent variable on dependent variable is vary, ranging from none effect to large effect. The effects of effort expectancy on performance expectancy and on the use of IRs are high or large. The respective effects of outcome expectancy and performance expectancy on the use of IRs are medium and small while the effect of outcome expectancy on performance expectancy is none. There is no effect size for outcome expectancy on the performance expectancy.

Conclusion

As noted above that the result of study indicated that the levels of reliability and validity of the instrument are high, and acceptable. Indicator reliability and internal consistency or composite reliability are above 0.7 while convergent validity is above 0.7, and discriminant validity is higher than the correlation among the other latent variables. It means the measuring instrument is valid and reliable to be used in the large study. Moreover, based on the analysis of coefficient of determinant (R-square) for examining structural model, it was found that the value of R-square is 0.576. The impact of user expectancy on the use of IRs is 57,6 %.

However, since this study in conducted in a limited sample, the result is expected increase when the samples increase. In addition, the rest of 42.4 % of the use of IRs among university lecturers are influenced by other factors. Therefore, this results provide a chance for any researchers to conduct further study in this field.

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