Implementation of Indonesia National Qualification Framework to Improve Higher Education Students: Technology Acceptance Model Approach

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Abstract. In order to face the global competition, graduates' competence is nowadays problem faced by many higher learning institutions. This study is aimed to test students' competence using the Technology Acceptance Model (TAM) framework. It tests the effect of perceived usefulness (PU) and perceived ease of use (PEU) on behavior intention to use (BIU) and student' competence. The data used is a primary data that was collected by distributing questionnaire to 128 students who use e-learning. The samples were selected using the convenience sampling method. The data obtained was evaluate both by reliability and validity tests, while the hypothesis was tested using multiple regression. The result shows that PU and PEU have significant effect on BIU, and furthermore BIU has significant effect on student' competence (cognitive, affective, and psychomotor). It provides theoretical contribution that technology utilization can improve student' competence.

Keywords: Perceived usefulness · Behavioral intention to use
Cognitive · Affective · Psychomotor

1 Introduction

To create graduates with knowledge, attitude, skills, and competence is the responsibility of university as administrator of education. President Regulation No. 8 of 2012 on the Indonesian National Qualification Framework (*Kerangka Kualifikasi Nasional* Indonesia-KKNI) mandates university to organize education in order to create graduates who have abilities in accordance with the level of competence needed. Graduates' competence can be measured using three indicators: cognitive competence

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(knowledge), affective (attitude), and psychomotor (skill) [1]. This study is conducted to understand student' competence through the utilization of information technology (e-learning) using the Technology Acceptance Model (TAM) framework. Information technology and information system have the same terminology [2], so in this study technology/information system will be referred to as information technology (IT).

TAM developed by Davis [3] is behavioral concept referring to technology users. Studies in the implementation of TAM are highly interesting because (1) the literature review of TAM only identifies its technological aspect; (2) even though TAM is very popular, this concept needs to be developed according to the changes in the environment [4]. Several researchers have used the TAM framework in various areas such as consumer behavior [5–7]; employees' behavior in non-profit organizations [8, 9] and employees' behavior in manufacturing companies [10]. Other studies have proved that the concept of TAM affects information system users' performance [11, 12]. This study is interesting because the TAM concept to test the students' competence in the implementation of KKNI is still limited.

According to previous studies Lee *et al*. [13]; Peslak *et al*. [14], perceived usefulness (PU), perceived ease of use (PEU), and behavior intention to use (BIU) are the constructs of TAM. PU is used to assess the benefit of a new technology that will be used. Somebody will accept a new technology if they feel that technology is beneficial [6]. PEU is an important factor for people when they want to choose a new technology. When a technology is user-friendly it will increase people's trust and improved user convenience [7]. Besides PU and PEU, Behavioral intention to use has a strong effect on people so that they try to improve their ability by utilizing the technology [12].

Besides explaining the relationship among several constructs in TAM, this study also explains the effect of TAM on student' performance who utilize e-learning. In this study, student' performance is measured using three competences according to the Bloom taxonomy: cognitive, affective, and psichometric [15]. Therefore, the aim of this study is to test the effect of PU and PEU on BIU, as well as testing the effect of BIU on student' competence who use e-learning. This study will provide benefit in the development of e-learning and theory testing related with TAM.

The rest of this paper is organized as follows. Section 2 describes the theoretical framework. Section 3 describes hypothesis development. Section 4 presents methodology and data analysis. Section 5 presents results and discussion. Finally, the conclusion of this work is described in Sect. 6.

2 Theoretical Framework

2.1 Technology Acceptance Model

One of the most important models in analyzing IT implementation is Technology Acceptance Model (TAM). This model developed by Davis [3] explains that IT users will decide to accept a new technology by considering several constructs which consist of PU, PEU, and BIU [6]. Perceived usefulness is defined as the prospective users subjective probability that using a specific application system will increase their job performance within an organizational context. Usefulness is also defined as a total value a user perceives from using an innovation [7, 16]. The PEU is defined as the

degree to which the prospective user expects the target system to be free of effort [3, 14]. The BIU is defines as the actual usage of gives information system and therefore determines technology acceptance [9]. The main mechanism underlying perceived usefulness is effort decreasing and the core mean underlying PEU are system design and features [17, 18].

2.2 Competence

President Regulation No 8 of 2012 on KKNI is a framework of competence and qualification hierarchical arrangement that will be able to reconcile, equalize, and integrate education, vocational training, and job experience field in order to provide recognition on work competence according to job structure in various sectors. Students' ability/performance in this case is a combination of cognitive, affective, and psychomotor domains [19]. Cognitive competence consists of behavior that emphasizes intellectual aspects such as knowledge and thinking ability. This domain consists of six levels [20, 21]: (1) knowledge, (2) comprehension, (3) application, (4) analysis (understanding and elaboration), (5) synthesis (integration), and (6) evaluation (appraisal). In the context of university students, cognitive competence is define as student's ability in academic field which represented by their grade point. A high grade point is an indicator used to understand the level of students comprehension on the courses that they have taken. The affective domain is about values, attitudes and behaviors. It includes, in a hierarchy, an ability to listen, to respond in interactions with others, to demonstrate attitudes or values appropriate to particular situations, to demonstrate balance and consideration, and at the highest level, to display a commitment to principled practice on a day-to-day basis, alongside a willingness to revise judgment and to change behavior in the light of new evidence [22–24]. In the context of university students, the affective competence shows the ability in conveying ideas in a group setting and their discipline so that they can be accepted in an environment.

The psychomotor domain is concerned with motor skills or actions and the performance that these produce and 'embrace coordinated physical movements evaluated in terms of time, precision and technique' [23, 25, 26]. In its context, university students use this domain when they perform a presentation. Students who have a high psychomotor ability will have a good attitude when they do a presentation, or presenting the paper systematically and answering the questions clearly. Based on several study results and on definition explained above, a study model is presented in Fig. 1.

3 Hypothesis Development

3.1 Perceived Usefulness and Behavioral Intention to Use

In order to increase competitiveness, universities can implement technology, because IT implementation can benefits organizations [13, 27]. Because of that, the user perception and understanding of IT is the most effective way and is a very important factor in understanding the benefit of a technology [28]. PU reflects how strong somebody's trust is in trying to utilize the technology. Somebody will have certain expectations on the IT benefit and will decide to use it [29]. The result from previous studies [4, 7, 9]

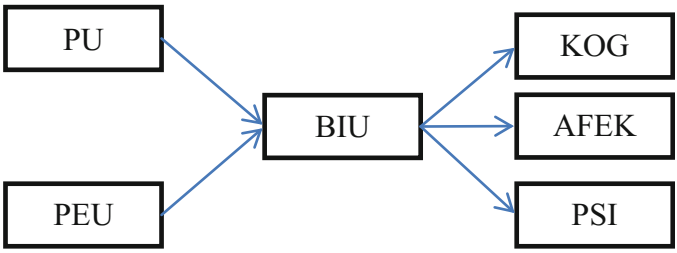

Fig. 1. Relationship between independent variables and dependent variable

explain that PU affects BIU: the higher the user's level of trust, the higher the BIU to use IT. Based on the results of the above-mentioned studies, the hypothesis is proposed as follows:

Hypotheses 1: PU has a significant effect on BIU

3.2 Perceived Ease of Use and Behavioral Intention to Use

TAM is a framework of model used to predict and explain the behavior in using technology [9]. Besides PU, PEU is also an antecedent that may affect people's willingness to adopt a technology [3, 13]. The end user of IT will feel that a technology is easy or hard to use. Before utilizing a new technology the prospective user will learn the excellence and try new technology before deciding to adopt it [10]. The organization will swiftly accept and implement a technology that is easy to use. A prospective user will not choose complex technology, but he will choose the technology that is easy to use. The easier the technology, the more likely it is to be used more often [4, 7, 8, 13, 18, 30]. Based on the result, the hypothesis is proposed as follows:

Hypotheses 2: PEU has a significant effect on BIU

3.3 Behavioral Intentions to Use and Competence

Prior research suggests that individual technology acceptance level may effect the learning performance outcome when activities are conducted through information technology. Although the current research stream is ultimately interested in performance as a key outcome of use, intentions are relevant to understand how the individual's reactions might affect the performance [12]. Besides that, Goodhue and Thompson [31] explain that technology will affect the individual's performance if the technology is put to a good use and to support the work. The other research from Yu and Yu [32] found evidence that IT implementation is related with people's performance. People behavior were represented with the intensity of using the technology has

a potential to increase their performance [10, 11]. Based on the description above the hypothesis is proposed as follows:

Hypotheses 3a: behavioral intention to use affects the cognitive competence
Hypotheses 3b: behavioral intention to use affects the affective competence
Hypotheses 3c: behavioral intention to use affects the psychomotor competence

4 Research Method

4.1 Research Sample and Data Collection Method

The samples in this study are 128 university students from semester 2, 4, and 6 of the Accounting Department who have utilized e-learning. The samples are divided into three groups of courses taught by three lecturers. This study uses non probability sampling (convenience) method in selecting the samples. The sampling technique allows researchers to select samples based on the convenience [33]. Many studies investigating TAM use the convenience sampling. Furthermore, this technique is used to ensure a better response rate in a short period of time [9]. This study employs two approaches to gather the data, questionnaire and observation. The Questionnaire was selected because it questionnaire method is an effective tool to collect large amount of data in a within short period of time [18, 34]. The questionnaire was distributed to the students to measure the implementation of TAM through e-learning. To assess students' competence on cognitive, affective, and psychomotor dimensions, the lecturers performed an observation.

4.2 Operationalization of Variables

Students' competence is measured using three constructs: cognitive, affective, and psychomotor dimensions. Cognitive competence shows students' ability/performance during their study. Referring to previous studies [12, 35] the cognitive construct is measured using students grade point, (1–4 point) drawn from university database. The affective competence is measured using 6 items using the indicator from Miller [23] and Winkel [36]: (1) receiving; (2) responding; (3) value; (4) organization; (5) characterization; and (6) valuing. The psychomotor competence consists of movement and physical coordination, including perception, readiness, reaction, and creativity. The psychomotor competence is measured using 5 questions with the indicators from Winkel [36]: (1) perception; (2) set; (3) response; (4) mechanism; and (5) origination. The PU is measured using 5 question items adopted from Davis [3], Anormaliza *et al.* [4] with the following indicators: (1) speed of learning process; (2) performance improvement; (3) ease of use; (4) user effectiveness; and (5) user productivity. The PEU is measured using five question items adopted from Davis [3] Alharbi and Drew [9] with 6 question items with the following indicators: (1) perceived ease; (2) perceived experience; and (3) flexibility. BIU is measured using three question

items adopted from Davis [3], Alharbi and Drew [9] with the following indicators: (1) intention; (2) prediction; and (3) plan of information system usage. In this study, the responses for point '4' scale for affective and psychomotor items are treated as one category called 'strongly agree'. While, point '1' are treat as one category called 'strongly disagree'.

4.3 Data Analysis Method

Validity and reliability testing of instruments is performed before the data are analyzed. Validity is tested using product-moment correlation with 5% probability. Reliability testing is performed using Cronbach's Alpha with a minimum threshold of 0.6. The gathered data is analyzed using multiple linear regression analysis to find the effect of each variable. The model fit testing is performed using F-test, while the hypothesis testing is performed using a t-test with significance level of 5%. The coefficient of determination is employed to find the strength of relationship between the independent variables and the dependent variable. The hypothesis testing is performed using following regression models:

$$\mathrm{BIU} = \alpha + \beta_1.\mathrm{PU} + \beta_2.\mathrm{PEU} + \mathrm{e} \quad (1)$$

$$\mathrm{KOG} = \alpha + \beta_3.\mathrm{BIU} + \mathrm{e} \quad (2)$$

$$\mathrm{AFEK} = \alpha + \beta_4.\mathrm{BIU} + \mathrm{e} \quad (3)$$

$$\mathrm{PSI} = \alpha + \beta_5.\mathrm{BIU} + \mathrm{e} \quad (4)$$

Model 1 is used to test the first hypothesis (H_1) and second the hypothesis (H_2) with BIU as dependent variable, and PU and PEU as independent variable. Model 2, model 3, and model 4 are used to test the third hypothesis (H_3a; H_3b; H_3c) with KOG (cognitive competence), AFEK (affective competence), and PSI (psychomotor competence) as dependent variables and BIU as independent variable.

5 Results and Discussion

The objective of this study was to identify the factors of the behavioral concept of technology users related to students' competences based on empirical analysis. Because the factors referring to technology users' behavior can be identified by measuring students' perceptions, this study selected the students and surveyed them for the purpose of this research. The survey research method is very useful in collecting data from a large number of individuals in a relatively short period of time and at lesser cost [37]. Hence, for the current study, the questionnaire survey was chosen for data collection (See Appendix). This study is based on responses from 128 students from PGRI University Yogyakarta. Based on the results from questionnaires filling (See Table 1) we have 35 (27.3%) male respondents and 93 (72.7%) female respondents. 28.1% are in semester 2, 39.1% are in semester 4, and 32.8% are in semester 6. Based on the

Table 1. Respondents' Demographics

Demographics	Total	Percentage
Gender		
Male	35	27.3%
Female	93	72.7%
Semester		
Semester 2	36	28.1%
Semester 4	50	39.1%
Semester 6	42	32.8%
Usage Frequency		
<10 times (low)	30	23.4%
10–20 times (moderate)	46	35.9%
>20 times (high)	52	40.6%

frequency of usage, 40.6% use e-learning 20 times or more, 35.9% respondents use e-learning 10–20 times, and 23.4% respondents use e-learning <10 times. The results of questionnaire distribution is presented in respondents' demographics in Table 1.

5.1 Validity and Reliability Testing

Validity testing is performed to test the extent to which the instrument can be used as a measuring tool. In this study, validity testing is performed by reviewing the p value in the result of correlation testing using Pearson product-moment. The Pearson correlation is calculates between each item of the questionnaire and the total score. the instrument is valid if $p < 0.05$. Reliability testing is performed to test the extent to which the instrument will generate similar results if re-testing is performed, or showing the consistence of answer from time to time. In this study instrument reliability is tested using Cronbach's Alpha. The instrument is reliable if Cronbach's Alpha > 0.6 [38]. Based on the results of validity and reliability testing (Table 2) we can explain that all instruments were less than < 0.01; thus we can conclude that all instruments are valid. The Cronbach Alpha value of PU is 0.666; PEU of 0.734; BIU of 0.604; AFEK of 0.620; and PSI of 0.602. Based on the testing results, all variables have a Cronbach's Alpha value > 0.6 (all instruments are reliable).

The results of mean value testing on competency are presented at Table 3. The mean value for cognitive competency is on the range 2.96–3.36. The mean value for the affective competency is on the range of 3.04–3.35, while the mean value for the psychomotor competency is on the range of 2.91–3.18. These results mean that the mean value of the high-frequency users of e-learning is higher than that of low-frequency users. However, these results are needed further in-depth study.

5.2 Hypotheses Testing

The analysis results (Table 4) show that all hypotheses proposed in this study are supported. Based on Table 4 we can be explain that PU has a positive effect on BIU (p-value = 0.045, $\beta = 0.256$) (hypothesis 1 is supported). PEU has a positive effect on

Table 2. Validity and reliability testing

Variable	Instruments	Pearson correlation	Cronbach' Alpha
Perceived usefulness (PU)	Speed of learning process	0.726**	0.666
	Performance improvement	0.707**	
	Ease of use	0.408**	
	User effectiveness	0.667**	
	User productivity	0.730**	
Perceived ease of use (PEU)	Perceived ease	0.788**	0.734
	Perceived clear and understandability	0.511**	
	Perceived skillful	0.805**	
	Perceived flexibility	0.444**	
	Perceived easiness of usage	0.522**	
	Perceived experience	0.816**	
Behavioral intention to use (BIU)	Intention of using the information system	0.759**	0.604
	Prediction of using the information system	0.742**	
	Plan of using the information system	0.746**	
Affective (AFEK)	Receiving	0.677**	0.620
	Responding	0.542**	
	Value	0.490**	
	Organization	0.662**	
	Characterization	0.574**	
	Valuing	0.575**	
Psychometric (PSI)	Perception	0.585**	0.602
	Set	0.632**	
	Response	0.722**	
	Mechanism	0.650**	
	Origination	0.509**	

**significant at $p < 1\%$

Table 3. Mean rating of competency

Frequency	Cognitive		Affective		Psychomotor	
	Mean	S. Dev.	Mean	S. Dev.	Mean	S. Dev.
<10 times (low)	2.96	0.235	3.04	0.330	2.91	0.300
10–20 times (moderate)	3.23	0.226	3.22	0.356	3.13	0.452
>20 times (high)	3.36	0.179	3.35	0.353	3.18	0.425

BIU (p-value = 0.009, $\beta = 0.366$) (hypothesis 2 is supported). BIU has a positive effect on KOG (p-value = 0.004, $\beta = 0.250$) (hypothesis 3a is supported). The testing for hypothesis 3b generates a R^2 value of 0.065 significant at 0.004 (hypothesis 3b is supported), while for hypothesis 3c the R^2 value is 0.034 significant at 0.037 (hypothesis 3c is supported).

Table 4. Hypothesis Testing

	Coef β	Sig (t test)	Sig (F test)	R2/Adj R2	Result
PU → BIU	0.256	0.045*	0.000**	0.317/0.306	Supported
PEU → BIU	0.366	0.009**			Supported
BIU → KOG	0.250	0.004**	0.004**	0.063/0.055	Supported
BIU → AFEK	0.255	0.004**	0.004**	0.065/0.058	Supported
BIU → PSI	0.184	0.037*	0.037*	0.034/0.026	Supported

**significant at $p < 1\%$, *significant at $p < 5\%$

Even though Lee *et al.* [13] stated that a person who considers a technology too easy and simple will probably not help in improving performance, however this study provides different evidence. This study results proves that PU has a significant effect on BIU, which is consistent with the study results by [4, 9, 29]. This shows that PU of e-learning will improve the behavior in using e-learning. In line with the concept of TAM, which states that the benefits of PU felt by somebody when implementing technology has a big contribution to IT user. Even if somebody believes that IT is highly beneficial, but feels that the IT is hard to use, then the benefit of implementing it does not match with the improvement of performance [3]. Because of that, individuals will tend to utilize IT if they feel that the technology is easy to use and can assist them in performing a better work [7].

6 Conclusion and Future Work

This study has presented the implementation of Indonesia national qualification framework to improve higher competences of education students by using the technology acceptance model (TAM). The result of this study have proven that the implementation of a technology/information system can improve users' competence, thus very beneficial for organization development. The results of hypothesis testing showed that PU and PEU have a significant effect on BIU. Besides that, BIU also affects information system users' competence. The result of this study proves that universities can implement TAM in the field of information system development. For students, this study implies that their perceived understanding on technology is a very important factor in improving their competence. Universities as education administrators must be able to choose the proper technology, easy to understand, and easy to be used because proper technology may decrease costs [13] and improve effectiveness and efficiency [18]. Technology users' behavior also implies for the organization (university) because the organization can try new methods in developing e-learning [18] by implementing the differentiated strategies based on technology and thus create various innovation opportunities, both for products and services [29].

The limitations and suggestions proposed in this study are: firstly, the researcher conducted a size power test, and the results suggest that the sample size should be increased, as a higher sample size would help draw a more general conclusion [9]. Secondly, this study only tests the implementation of TAM and students' competence in using e-learning; future studies can elaborate the theory of end-user computer

satisfaction (EUCS) because a technology that is easy to use and beneficial will affect users' satisfaction [14]. Thirdly, PU and PEU of e-learning depend on individual expectation and can change according to their experience in using the IT [13, 39] compatibility is connected on the fit of technology with prior experiences of users' [10]. Because of this reason, next studies can test respondents' competence based on their experience in using technology/information system. The regression models (model 1, 2, 3) have low of R^2 value. The suggestion for future researchers who are interested in developing the concept of technology adoption would be using the Partial Least Squares (PLS) [40], which can simultaneously test the relationship among variables.

Appendix

Questionnaire for students	
No	Behavioral intention to use
1	I intend to use e-learning in the next semester
2	I predict that I would use e-learning in the next semester
3	I plan to use e-learning in the next semester
No	Perceived usefulness
4	Using e-learning would enable me to accomplish tasks more quickly
5	Using e-learning would make it easier to do my job
6	Using e-learning would improve my job performance
7	Using e-learning in my job would increase my productivity
8	Using e-learning would enhance my effectiveness on the job
No	Perceived ease of use
9	I feel that using e-learning would be easy for me
10	I feel that my interaction with e-learning would be clear and understandable
11	I feel that it would be easy to become skillful at using e-learning
12	I would find e-learning to be flexible to interact with
13	It would be easy for me to get e-learning to do what I want to do
14	I feel that my ability to determine e-learning ease of use is limited by may lack of experience
Questionnaire for teachers	
No	Affective
15	Actively provides idea in group
16	Defends the idea
17	Seriously does all of assignments
18	Accepts recommendations and suggestions
19	Behaves with discipline
20	Accepts the decisions
No	Psychomotor
21	Ability in using tools for serving a presentation

(*continued*)

(*continued*)

Questionnaire for students	
No	Behavioral intention to use
22	Ability in arranging material
23	Level of speed in doing the assignments
24	Behavior in doing a presentation
25	Ability in analyzing and answering the questions

References

1. Rahyubi, H.: Teori-teori belajar dan aplikasi pembelajaran motorik; Deskripsi dan tinjauan kritis, Cetakan ke 2, Penerbit Nusa Media, Bandung (2014)
2. Budiarto, D.S.: Accounting information systems (AIS) alignment and non-financial performance in small firm. Int. J. Comput. Netw. **6**(2), 15–25 (2014)
3. Davis, F.D.: Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Q. **13**(3), 319–339 (1989)
4. Anormaliza, R., Sabate, F., Viejo, G.: Evaluating student acceptance level of e-learning system. In: Proceeding of ICERI 2015, Seville, Spain: pp. 2393–2399 (2015)
5. Constantiou, I.D., Mahnke, V.: Consumer behavior and mobile TV service: do men differ from women in their adoption intentions? J. Electr. Commer. Res. **11**(2), 127–139 (2010)
6. Celik, H.E., Yilmaz, V.: Extending the technology acceptance model for adoption of e-shopping by consumer in turkey. J. Electr. Commer. Res. **12**(2), 152–164 (2011)
7. Talukder, M., Quazi, A., Sathye, M.: Mobile phone banking usage behavior: an Australian perspective. Australas. Acc. Bus. Financ. J. **8**(4), 83–100 (2014)
8. Lane, M., Stagg, A.: University staff adoption of i pads: An empirical study using an extended Technology Acceptance Model. Australas. J. Inf. Syst. **18**(3), 53–73 (2014)
9. Alharbi, S., Drew, S.: Using the technology acceptance model in understanding academics behavioral intention to use learning management systems. Int. J. Adv. Comput Sci. Appl. **5**(1), 143–155 (2014)
10. Veloo, R., Masood, M.: Acceptance and intention to use the i-learn system in an automotive semiconductor company in the northern region of Malaysia. Procedia Soc. Behav. Sci. **116**, 1378–1382 (2014)
11. Lucas Jr., Hendry, C., Spitler, V.K.: Technology use and performance: a field study of broker workstation. Decis. Sci. **30**(2), 291–311 (1999)
12. Buche, M.W., Davis, L.R., Vician, C.: Does technology acceptance affect e-learning in a non-technology intensive course. J. Inf. Syst. Educ. **23**(1), 42–50 (2012)
13. Lee, Y., Hsieh, Y., Hsu, C.N.: Adding innovation diffusion theory to the technology acceptance model: supporting employee intentions to use e-learning systems. Educ. Technol. Soc. **14**(4), 124–137 (2011)
14. Peslak, A., Ceccucci, W., Bhatnagar, N.: Analysis of the variables that affect frequency of use and time spent on text messaging. Issues Inf. Syst. **13**(1), 361–370 (2012)
15. Athanassiou, N., McNett, J.M., Harvey, C.: Critical thinking in the management classroom: Bloom's Taxonomy as a learning tool. J. Manag. Educ. **27**(5), 553–555 (2003)
16. Kim, H., Chan, H., Gupta, S.: Value-based adoption of mobile internet: an empirical investigation. Decis. Support Syst. **43**(1), 111–126 (2007)
17. Moore, T.: Toward an integrated model of it acceptance in healthcare. Decis. Support Syst. **53**, 507–516 (2012)

18. Al-Adwan, Al-Adwan, A., Smedley, J.: Exploring students acceptance of e-learning using technology acceptance model in Jordanian universities. Int. J. Educ. Dev. Inf. Commun. Technol. **9**(2), 4–18 (2013)
19. Rovai, A.P., Wighthing, M.J., Baker, J.D., Grooms, L.D.: Development of an instrument to measure perceived cognitive, affective, psychomotor learning in traditional and virtual classroom higher education setting. Internet High. Educ. **12**(1), 7–13 (2009)
20. Bloom, B.S.: Taxonomy of educational objectives: the classification of educational goalss. Longmans, Green, New York (1956)
21. Adams, N.E.: Bloom's taxonomy of cognitive learning objectives. J. Med. Libr. Assoc. **103** (3), 151–153 (2015)
22. Shepard, K.: Higher Education for Sustainability: Seeking affective learning outcomes. Int. J. Sustain. High. Educ. **9**(1), 87–98 (2008)
23. Miller, C.: Improving and enhancing performance in the affective domain of nursing students: insights from the literature for clinical educators. Contemp. Nurse **35**(1), 2–17 (2010)
24. Cazzell, M., Rodriguez, A.: Qualitative analysis of student beliefs and attitudes after an objective structured clinical evaluation: implications for affective domain learning in undergraduate nursing education. J. Nurs. Educ. **50**(12), 711–714 (2011)
25. Gunther, M., Alligood, M.R.: A discipline-specific determination of high quality nursing care. J. Adv. Nurs. **38**(4), 353–359 (2002)
26. Merritt, R.D.: The psychomotor domain: Research Starter Education. Great Neck Publishing, NY (2008)
27. DeRouin, R.E., Fritzsche, B.A., Salas, E.: E-learning in organizations. J. Manag. **31**(6), 920–940 (2005)
28. Lau, S.H., Woods, P.: An investigation of user perception and attitudes toward learning object. Br. J. Edu. Technol. **39**(4), 685–699 (2008)
29. Averdung, A., Wagenfuehrer, D.: Consumers acceptance, adoption and behavioral intention regarding environmentally sustainable innovations. E3 J. Bus. Manag. Econ. **2**(3), 98–106 (2011)
30. Ong, C.S., Lai, J.Y., Wang, Y.S.: Factors affecting engineers acceptance of asynchronous e-learning systems in high-tech companies. Inf. Manag. **14**, 795–804 (2004)
31. Goodhue, D., Thompson, R.L.: Task-technology fit and individual performance. MIS Q. **19**(2), 213–236 (1995)
32. Yu, T.K., Yu, T.Y.: Modeling the factors that affect individuals' utilization of online learning systems: an empirical study combining the task technology fit model with the theory of planned behavior. Br. J. Edu. Technol. **41**(6), 1003–1017 (2010)
33. Zikmund, W.G.: Business research methods. The Dryden Press, Oak Brook (2000)
34. Saunders, M., Lewis, P., Thornhill, A.: Research methods for business student, 5th edn. Person Education Limited, UK (2009)
35. Davis, L.R., Johnson, D.L., Vician, C.: Technology-mediated learning and prior academic performance. Int. J. Innov. Learn. **2**(4), 386–401 (1995)
36. Winkel, W.S.: Psikologi pengajaran, Edisi Lima belas, Penerbit Media Abadi, Yogyakarta (2012)
37. Lee, E., Choi, Y.: A study of the antecedents and the consequences of social network service addition: a focus on organizational behaviors. Glob. Bus. Financ. Rev. **20**(2), 83–93 (2015)
38. Hair, J.R., William, C., Barry, J., Rolph, E.A.: Multivariate data analysis, 7th edn. Prentice Hall, Pearson (2010)
39. Venkatesh, V., Davis, F.D.: Assessing it usage: the role of prior experience. Manag. Inf. S. Q. **19**(4), 561–570 (2000)
40. Budiarto, D.S., Rahmawati, Prabowo, M.A.: Accounting information systems alignment and SMEs performance: A literature review. Int. J. Manag. Econ. Soc.Sci. **4**(2), 58–70 (2015)