

# Analyzing the Importance of User Competency to the Effectiveness of Accounting Information System in Banking Sector

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**Abstract**—Information technology is developing very fast now. In this fourth Industrial Revolution, technological development plays an important role in organization. In order to be able to survive, especially in the midst of today's world that increasingly rely on information technology, every organization need Accounting Information System. As a business strategy, Accounting Information System must be supported by competent employees. In other words, without an adequate user competency it is impossible to have an effective Accounting Information System. This research aims to analyse the effect of user competency on the effectiveness of Accounting Information System. Data collection in this descriptive survey research uses questionnaires which were distributed to regional banks located in 24 provinces in Indonesia. Total 176 questionnaires were collected from manager and staff related to accounting. Analysis of data uses Smart Partial Least Square (PLS). Based on the results of this study it can be concluded that user competency affects the effectiveness of Accounting Information System. The results show that inadequate knowledge and skills possessed by the employees will give an impact to the effectiveness of the Accounting Information System. Thus, it is necessary for all banks to increase knowledge and skills of their employees as user of Accounting Information System so they are able to compete. This finding are in line with previous research and support the theory.

**Keywords**—user competency, knowledge, skills, accounting information system

## I. INTRODUCTION

Information technology is developing rapidly especially in this era of industrial revolution 4.0. This causes an impact to all organizations from small to large scale. In order to be able to survive and compete, an organization increasingly relies on information technology especially accounting information system [1-4]. Therefore, accounting information system is designed as a competitive strategy to support business processes and operations as well as decision making.

As the main system in organization, an accounting information system aims to provide information needed by stakeholders [1,5]. In other words, accounting information system is processing data transactions into financial information, and distributing it to interested parties (stakeholders). The effectiveness of an accounting information

system can be measured by its ability to achieve organizational goals or meet user needs [3,5-8].

In reality, there are some problems in various business sectors in Indonesia due to ineffectiveness of accounting information system. These problems related to integration, reliability, flexibility, and usability. Ineffectiveness of accounting information system is affected by several factors. According to Siegel and Marconi, accounting information system are associated with social science (behavioural theory) [9]. Therefore, behavioural aspect for example user competency is one of factors that affect the effectiveness of accounting information system [10].

According to Ward and Peppard if accounting information system has a strategic role in business, then the business should develop and maintain a high level of competency in managing and using accounting information system [11]. In other words, weaknesses in each area of competency will affect the ability of accounting information system, which in turn gives impact on business operations both directly and indirectly [11].

Competency is defined as characteristics possessed and used by individuals in an appropriate and consistent manner in the context of achieving the expected performance [12]. In addition, competency is also interpreted as a combination of knowledge, skills, experience and behaviour of an individual [11]. Competency consist of knowledge and skills needed, so that someone can complete his work assignments. In line with this, Beardwell and Claydon stated that competency is the ability to apply knowledge and skills in understanding work activities [13]. The combination of user knowledge and experience are the best solution [8,14].

One of factors that cause ineffectiveness of accounting information systems is low of competency or inadequate quality of human resources [15-17]. Previous studies proved that user competency influences the effectiveness or successful implementation of accounting information system [18-22]. Survey in this research focuses on Regional Development Bank (BPD Bank) seen from integration, reliability [15,23], flexibility [24,25], and usability [26].

## II. LITERATURE REVIEW

### A. User Competency

Competency is a fundamental characteristic of a person or ability possessed by someone which is used to complete the task or achieve the expected performance [12,27-29]. Competency is defined as a combination of knowledge, skills, behaviours and attitudes that enable a person to do a job [13,30-32]. The combination of knowledge and skills is very important because it will determine one's success in interacting with accounting information systems [5,33].

User competency is very important because the majority of users are people who spend a lot of time communicating and collaborating in teams while using information systems or information produced by this information system [3,14,34-36]. Thus what is meant by user competency in the context of this research is a fundamental characteristic of a person especially a combination of knowledge and skills possessed by user who directly interacts with the accounting information system to enable this user to complete his task properly.

Knowledge is more clearly interpreted as something that can be learned, both in formal education and reading and observing [27,37-39] while Noe et al [31] and Stair and Reynolds [3] define knowledge as a collection of facts or information in the form of procedures needed to support task completion well.

There are two types of knowledge, namely tacit knowledge and explicit knowledge. Tacit knowledge is a knowledge that is formed through experience. It is a direct action that is not documented and generally shared through conversation, whereas explicit knowledge is a knowledge that is stored in documents such as reports and guidelines, books, magazines, journals, or other media that are generally easy to articulate and shared with other parties [30,39-41].

Furthermore, skills are defined as the ability of a person to complete certain tasks according to his expertise [27,31,42]. There are two types of skills, namely conceptual skills and technical skills. Conceptual skills are the ability to work with and through others effectively as team members, where these skills are reflected through the ability to motivate, facilitate, coordinate, lead, communicate and resolve conflicts [43]. Technical skill is the ability in terms of understanding and mastery to carry out certain tasks, which includes mastery of methods, techniques and equipment used in certain functions [30,39-42]. This technical skill is important to be owned by every employee whose job is related to information systems [3].

### B. Effectiveness of Accounting Information Systems

Some experts define accounting information system as (1) data sets and processing procedures that produce information for users [6], (2) subsystems of information system that aim to collect, process and report financial information from business transactions [1], (3) a collection of human resources and equipment, designed to convert financial data and other data into information used by decision makers [2], (4) the process of collecting and processing business transaction data into a report that is useful for decision makers decisions [44], (5) systems

for collecting, recording, storing, and processing data to produce information for decision makers [5].

According to Leitch and Davis the success of a system is measured by the integration between sub-systems/components [45]. In addition, the effectiveness of a system can be measured by its ability to meet user needs, the ability to achieve goals, the ability to meet user satisfaction, and the ability to meet quality standards [3,7]. This is known as the success model of information systems.

The most important factor for the effectiveness of an accounting information system is the purpose of its system [5]. This was also stated by Boczeko that the purpose of accounting information systems is to facilitate data collection, data maintenance, data management, data control and information presentation procedures [46]. In other words, the effectiveness of accounting information system is measured based on integration, reliability, flexibility, and usability.

Integration is assessed based on the integration between sub systems and systems [34,45-51]. The reliability of a system is measured by the ability of the system to function properly starting from data input, processing to produce accounting information (output) and the ability of the system to produce accurate accounting information. Flexibility is assessed from the ability of the system to adapt to the change of conditions/environment and the ability of the system to adapt to the change of needs or business [6,46,48,50,52-54]. Furthermore, usability is assessed from the ease of use and the ease of learning [50,52].

### C. Effect of User Competence on the Effectiveness of Accounting Information Systems

An accounting information system can be implemented effectively if the user has the necessary and competent knowledge and skills [51,55]. In other words, the low competency of users in the form of knowledge and skills are the main factors that cause ineffective accounting information system which in turn give an impact on business performance [11]. Furthermore, Ward and Peppard noted that weakness in each area of competence related to accounting information systems will affect the ability of the accounting information system, which will give impact on business operations and ultimately affect the performance of its business [11]. The same thing was stated by O'Brien and Marakas (2010) that accounting information system will not give benefit to the organization if it is not supported by knowledgeable employees [14]. This means that an accounting information system needs a competent worker with an adequate knowledge, skills and abilities in order to work properly [56].

The above theory is reinforced by the results of previous studies. According to Daoud and Triki the competency of accounting staff influences the success of accounting information system [57]. Furthermore, Afiah and Indahwati prove that user competency influences the quality of accounting information system [20]. Likewise, Nurhayati and Mulyani [19] and Napitupulu and Dalimunthe [21] prove that user competency influences the successful application of accounting information system. The same thing was also stated by Mulyani and Enggar that manager's competency has an

impact on the quality of accounting information produced by the accounting information system [22].

Based on the theories that have been explained above and results of some previous research, it can be said that user competency influences the effectiveness of accounting information system [56]. Thus the conceptual framework of this research can be described as in figure 1.



Fig. 1. Conceptual framework.

The hypotheses proposed in this study are H1: user competency affects the effectiveness of accounting information system.

### III. MATERIALS AND METHOD

This research is categorized as descriptive and explanatory research [58], which is intended to explain the causal relationship and hypothesis testing [59]. Thus this study aims to examine the influence of user competency to the effectiveness of accounting information system.

Unit of analysis in this study is regional banks (BPD Banks) in all provinces in Indonesia and unit of observation is accounting and operational division of each BPD Banks. Furthermore, the respondents in this research are head of accounting division and other related staff as users of accounting information system.

Validity testing in this research is intended to find out whether the questionnaire is able to measure the concept of its variable while the reliability testing is intended to determine the consistency of its concept measurement [60]. According to Kaplan and Saccuzzo [61], an instrument is said to be valid if validity coefficient is  $\geq 0.30$ , while to be reliable if reliability coefficient is  $> 0.70$ . According to Sekaran Bougie, if Cronbach alpha coefficient  $< 0.6$  it means that reliability is categorized as poor, then if Cronbach alpha coefficient is  $= 0.7$  it means that reliability is categorized as acceptable whereas if Cronbach alpha coefficient  $> 0.8$  it means that reliability is categorized as good [58].

Data analysis in this study uses Partial Least Square SEM (PLS SEM). The statistical hypothesis testing in this study are as follows:

- $H_0: \gamma_1 = 0$  User Competency does not affect the Effectiveness of Accounting Information System.
- $H_1: \gamma_1 \neq 0$  User Competency affects the Effectiveness of Accounting Information Systems.

### IV. RESULTS AND DISCUSSION

In this research, the distribution of questionnaires was distributed to 27 Regional Development Banks (BPD Banks) from head office, branch offices to sub-branch offices. The observation units in this study are head of accounting division together with operational staff. The total number of

questionnaires distributed were 275, while return rate of questionnaires from 24 BPDs was 64% (176 questionnaires). This shows the fulfilment of minimum requirements of 30% [58,62].

Validity testing in this research uses product moment correlation while reliability testing uses Alpha-Cronbach method. Statement items are declared valid if the correlation coefficient  $\geq 0.30$  and statement items are declared reliable if the reliability coefficient  $\geq 0.70$  [61]. Data analysis shows the following results in table 1:

TABLE I. RECAPITULATION OF TEST RESULTS FOR VALIDITY AND RELIABILITY

Variable	Statement	Validity	Reliability
User Competency	Item 1	0,730	0,892
	Item 2	0,805	
	Item 3	0,775	
	Item 4	0,747	
Effectiveness of Accounting Information System	Item 5	0,696	0,914
	Item 6	0,743	
	Item 7	0,673	
	Item 8	0,726	
	Item 9	0,770	
	Item 10	0,707	
	Item 11	0,730	
	Item 12	0,704	

Before data analysis is performed, we conduct average categorization of respondent's score based on maximum and minimum score range which are divided by numbers of desired categories. If the score interval shows (1) between 1.00-1.99 it means the category is not good/bad, (2) between 2.00-2.99 it means less good, (3) between 3.00-3.99 it means average/sufficient, (4) between 4.00-5.00 it means good.

The following table 2 below presents recapitulation of respondents' responses average score of user competency dimension:

TABLE II. RECAPITULATION OF RESPONDENTS' RESPONSES AVERAGE SCORE OF USER COMPETENCY DIMENSION

No	Dimension	Real Score	Total Score	Average		% Real Score: Total	Gap %	Category
1	Knowledge	179	240	3,73		74,58	25,42	Average
2	Skills	177	240	3,69		73,75	26,25	Average
Total average		356	480	3,71		74,17	Average	
Gap			1,29		25,83			
Total					100			

Source: results of data processing

Based on table 2 it can be seen that user competency has mean score 3,71. It means that user competency is categorized as average. Therefore, in general employee competency in BPD Banks only reach average level not yet in good level.

Table 3 below presents recapitulation of respondents' responses average score regarding indicators of user

competency at 24 Regional Development Bank (BPD Banks) from all of provinces in Indonesia.

TABLE III. RECAPITULATION OF RESPONDENTS' RESPONSES AVERAGE SCORE REGARDING INDICATORS OF USER COMPETENCY AT 24 BPD BANKS

No	Indicators	Good		Average		Low		Bad		Total BPD
		Total	%	Total	%	Total	%	Total	%	
1	Explicit Knowledge	8	33	16	67	0	0	0	0	24
2	Tacit Knowledge	7	32	15	68	0	0	0	0	24
3	Conceptual skills	5	21	19	79	0	0	0	0	24
4	Technical skills	6	25	18	75	0	0	0	0	24

Based on data in table 3, it can be seen that from 24 BPD Banks being surveyed, most of BPD Banks only have employees with average competency. The details are as follows: (1) for the knowledge dimension, 16 BPD (67%) have average explicit knowledge, 8 BPD (33%) have good explicit knowledge; 15 BPD (68%) have average tacit knowledge and 7 BPD (32%) have good tacit knowledge; (2) for the skill dimensions of 19 BPD (79%) have average conceptual skills; 5 BPD (21%) have good conceptual skills; 18 BPD (75%) have

average technical skills and 6 BPD (25%) have good technical skills.

The following is a recapitulation of respondents' responses average score for each dimension of the effectiveness of accounting information system as stated in table 4 below:

TABLE IV. RECAPITULATION OF RESPONDENTS' RESPONSES AVERAGE SCORE FOR EACH DIMENSION OF THE EFFECTIVENESS OF ACCOUNTING INFORMATION SYSTEM

No		Real Score	Total Score	Average	% Real Score: Total	Gap %	Category
1	Integration	179	240	3,73	74,58	25,42	Average
2	Reliability	183	240	3,81	76,25	23,75	Average
3	Flexibility	172	240	3,58	71,67	28,33	Average
4	Usability	185	240	3,85	77,08	22,92	Average
Total Average		719	960	3,74	74,90		Average
Gap				1,26	25,10		
Total					100		

Source: results of data processing

Based on data in table 4, it can be seen that the effectiveness of accounting information system has a mean score of 3.74, which is in average category. It can be seen that in general the implementation of accounting information system in BPD is not effective but still in average category.

TABLE V. RECAPITULATION OF RESPONDENTS' AVERAGE SCORE RESPONSES FOR INDICATORS OF EFFECTIVENESS OF ACCOUNTING INFORMATION SYSTEMS AT 24 BPD

No	Indicator	Good		Average		Low		Bad		Total BPD
		Total	%	Total	%	Total	%	Total	%	
1	Integration between sub systems and system	7	29	17	71	0	0	0	0	24
2	Integration between sub systems and environment	7	29	17	71	0	0	0	0	24
3	Accounting information system functions correctly starting from inputting data, and processing to produce accounting information	12	50	12	50	0	0	0	0	24
4	Security of accounting information system functions starting from inputting data and processing to produce accounting information	7	29	17	71	1	4	0	0	24
5	The ability of the system to adapt to various needs of users	7	29	17	71	0	0	0	0	24
6	The ability of the system to adapt to changing conditions or environment	5	21	19	79	0	0	0	0	24
7	easy to use	10	42	14	58	0	0	0	0	24
8	easy to learn	8	33	16	67	0	0	0	0	24

Based on the data in table 5 it can be seen that from 24 BPD surveyed, the effectiveness of AIS implementation in general was categorized as average. The details are as follows: (1) for integration dimensions of 17 BPD (71%) have average integration between sub-systems and system and 7 BPD (29%) have good integration between sub-systems and system; 17 BPD (71%) have average integration between sub-systems and environment and 7 BPD (29%) have good integration between sub-systems and environment; (2) for reliability dimensions of 12 BPD (50%) have average security of accounting information system in terms of functioning correctly starting from inputting data, and processing to produce accounting information (output); 12 BPD (50%) have good security of accounting information system in terms of functioning properly starting from inputting data, processing to produce accounting information (output); (2) for reliability dimension as many as 12 BPD (50%) have average accounting information system in terms of functioning correctly starting from data input, processing to produce accounting information (output) and 12 BPD (50%) have good accounting information system in terms of functioning properly starting from data input, processing to produce accounting information (output); then 17 BPD (71%)

have average security of accounting information system functions starting from inputting data, processing to produce accounting information (output) and 7 BPD (29%) have good security of accounting information system functions starting from inputting data, processing to producing accounting information (output); (3) for flexibility dimension 17 BPD (71%) has average ability of accounting information system to adapt to various needs of user and 7 BPD (29%) have good ability of accounting information system to adapt to various needs of user; and 19 BPD (79%) have average ability of accounting information system to adapt to changing conditions or environment and 5 BPD (21%) have good ability of accounting information system to adapt to changing conditions or environment; (4) for usability dimensions 14 BPD (58%) have accounting information system that is quite easy to use and as many as 10 BPD (42%) have accounting information system that is very easy to use; 16 BPD (67%) have accounting information system that is quite easy to learn and 8 BPD (33%) have accounting information system that is very easy to learn.

Figure 2 below describe measurement model of latent variable (user competency) which is reflected in two dimensions and four indicators.

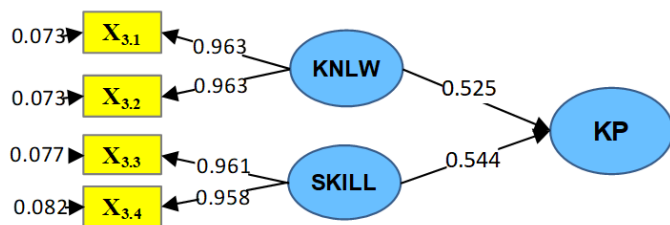


Fig. 2. Measurement model of user competency variables.

The results of data analysis using first order confirmatory factor analysis are presented in table 6 below:

TABLE VI. SUMMARY OF FIRST ORDER VALIDITY TEST MEASUREMENT MODEL OF USER COMPETENCY VARIABLES

No.	Indicator	Loading Factor	CR	AVE
1	Explicit knowledge	0,963	0,962	0,927
2	Tacit knowledge	0,963		
3	Conceptual Skills	0,961	0,959	0,921
4	Technical Skills	0,958		

Source: data that has been processed

Based on table 6 above, loading factor value for each indicator shows more than 0.50. It can be concluded that all indicators are valid. From composite reliability (CR) value for each dimension  $> 0.70$ , it can be concluded that all indicators are reliable. From loading factor value of knowledge dimension, it can be seen that tacit knowledge and explicit knowledge both equally strong in reflecting knowledge dimension. Furthermore, based on average variance extracted (AVE) value 0.927, it can be concluded that 92.7% of information contained in each indicator can be reflected through knowledge dimension.

Likewise, from loading factor value of skill dimension, between two dimensions, conceptual skills provide greater contribution than technical skills. Furthermore, based on average variance extracted (AVE) value 0.921, it can be concluded that 92.1% of information contained in each indicator can be reflected through skills dimension.

The following Table 7 presents measurement model of user competency variable using second order analysis with formative model.

TABLE VII. SUMMARY OF SECOND ORDER VALIDITY TEST MEASUREMENT MODEL OF USER COMPETENCY VARIABLE

Dimension	Regression Coefficient	t-value	R <sup>2</sup>
Knowledge	0,525	32,46	0,948
Skill	0,544	15,59	

Based on table 7 above, it can be seen that t-value of each dimension is greater than 1.96. It shows that both dimensions are significant in forming latent variables (user competency). From R<sup>2</sup> value of 0.948 it can be seen that both dimensions

contribute 94.8% in forming latent variables (user competency). Between two dimensions, skills dimension provides greater contribution in forming latent variable (user competency) than knowledge dimension.

## V. CONCLUSION AND SUGGESTIONS

### A. Conclusion

Based on finding results it can be concluded that user competency influences the effectiveness of accounting information system. This finding results support the theory. Ineffectiveness of accounting information system due to not being fully supported by employees who have adequate knowledge and skills.

### B. Suggestions

Some suggestions to improve user competency include:

- Conduct an HR placement appropriately in the accounting department. Therefore, they must have an educational background in accounting and have adequate knowledge regarding accounting information system. Knowledge enhancement is carried out through higher level of study programs in the field of accounting as well as training related to accounting information system both for employees with accounting and non-accounting backgrounds.
- Improve conceptual and technical skills for employees in accounting and operational division through ongoing training regarding information technology so that employees are able to use accounting information system effectively.

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