THE INFLUENCE OF THE QUALITY OF MANAGEMENT ACCOUNTING INFORMATION SYSTEM, QUALITY OF MANAGEMENT ACCOUNTING INFORMATION, AND QUALITY OF SERVICE OF ACCOUNTING INFORMATION SYSTEM ON THE INFORMATION SYSTEM USER SATISFACTION

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Abstract: *The purpose of this study is to examine the influence of the quality of management accounting information system, quality of management accounting information, and quality of service unit of accounting information system on the information system user satisfaction. The method used for this research is descriptive verificative method with simple random sampling technique drawn from four government general banks in Bandung that includes: 1) Bank Rakyat Indonesia; 2) Bank Mandiri; 3) Bank Negara Indonesia, and 4) Bank Tabungan Negara. The number of collected respondents is 42 respondents. Data are analyzed using SEM-PLS. The results show that the quality of management accounting information system, quality of management accounting information, and quality of service unit of accounting information system have the effects on information system user satisfaction.*

Keywords: *quality of management accounting information system, quality of management accounting information, and quality of service unit of information system, user satisfaction*

1. INTRODUCTION

1.1 Research Background

The Republic of Indonesia's Act No.11/2008 on Information and Electronic Transactions states that Indonesia has secured a position as part of the world's information society in order to achieve the development of information technology in which the development of these technologies should be optimal, equitable and spread

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to all the walks of life for educating the nation. Furthermore, the Act defines information system as an integration between humans and machines that include components of hardware, software, procedures, human resources, and the substance of the information in which the utilization involves functions such as input, process, output, storage, and communication.

Bank is a financial intermediary that provides financial services both to those who need funds and those who have the funds. Banks perform some basic functions and run the routines in finance. These banking activities are supported by an information system that facilitates applications used to support operational activities. In the banking world, information systems are needed to run the mechanisms and operating systems of the banks.

Developments in information technology allow the banks to use them to improve the efficiency of operations and services to customers. Information technology is a technology related to computer facilities, telecommunications and other electronic means used in financial data processing and/or banking services. Banking services over electronic media (electronic banking) is a service that allows bank customers to obtain information, communicate, and conduct banking transactions through electronic media, among others, ATMs, phone banking, electronic funds transfer, internet banking, mobile phone.

In reality, however, cases related to the uses of information system in the banking sector have become evidences of the banking service quality which is still below the expectation. For example, attacks against the IT system cause it to stop working in 2015, increased by 33% compared to those in 2014; from this number, as much as 54.5% of the attacks is on the e-commerce sites. Bank Indonesia has even been watching the indication of an increase in criminal activities in the form of network abuses by 66.7% in 2015 compared to those 2014 (Luhut, 2016). Network abuses for crimes on financial transactions are mostly in the cases of financial data thefts and illegal password logins. Other cases of crimes in the banking system, as informed by the Indonesia's Chief of Police, involve cyber criminals hacking into banking systems and state institutions (Badrodin Haiti, 2016). Internet-banking service providers can be potential gap for a cracker to steal customers' data from different banks. These cases may be the challenges that must be anticipated by the banks and should be taken into consideration in using information technology as mandated by the Act No. 11.

1.2 Identification of Problems

1. How much influence does the quality of management accounting information system have on the information system user satisfaction.
2. How much influence does the quality of management accounting information have on the information system user satisfaction.
3. How much influence does the information system services have information system user satisfaction.

2. LITERATURE REVIEW

2.1 Quality of Management Accounting Information System

According to O'Brien and Marakas (2010) "An information system (IS) can be organized combination of people, hardware, software, communications networks, data resources, and policies and procedures that stores, retriever, transforms and disseminates information in an organization". Meanwhile, Hall (2013) defines Accounting Information System (AIS) as "...subsystems [that] process financial transactions and non-financial transaction that directly affect the processing of financial transactions. For example, changes to customers names and addresses are processed by the AIS to keep the customer file current. Although not technically financial transaction, these changes provide vital information for processing future sales to the customer." Hansen *et al.* (2009) divide two major subsystems in organization's accounting information system that include "a management accounting system and a financial accounting system. The two accounting subsystems differ in their objective, the nature of their inputs, and the type of process used to transform inputs into outputs." Hansen *et al.* (2009) also define management accounting as the "...information system [that] provides information needed to satisfy specific management objectives".

Quality is an indicator of how well the final results of the activities in fulfilling the goals set by management (Laudon and Laudon, 2014). Meanwhile, according Heidman (2008) accounting information system of quality management is a reflection of the results of the processing of accounting information system of quality management. Quality is an indicator of how well the results of the activities fulfill the goals set by management (Laudon and Laudon, 2014: 530). Meanwhile, according to Heidman (2008: 80), a qualified management accounting information system is a reflection of the results from processing qualified management accounting information system. Accounting information system components, as defined by Nurhayati and Mulyani (2015), include hardware, software, brainware procedures, database, and communication network.

Nelson, Todd, and Wixom (2005) add an explanation on dimensions of the quality of information system as follows:

1. Accessibility, the degree to which a system and the information it consists can be accessed with relatively low effort.

2. Reliability, the degree to which a system is dependable.

3. Response time, the degree to which a system offers quick (or timely) response to requests for information or action.

4. Flexibility, the degree to which a system can adapt to a variety to user needs and to changing conditions.

5. Integration, the degree to which a system facilities the combination of information from various sources to support business decisions."

Management accounting information system in this study is a formal system designed to provide the necessary information for management to facilitate decision-making process that has the attributes of quality.

2.2 Quality of Management Accounting Information

Wilkinson and Cerullo (2000) define information as "...data that have been processed and are meaningful and useful to customers. The terms "meaningful" and "useful" are value-laden terms and usually subsume other qualities such as timeliness, relevance, reliability, consistency, comparability, etc." Similar to Mulyani (2007), that information is the data that have been processed provided to a person, organization, or any individual in need.

The value of information according to Arnold and Hope (1983) is derived from the fact that enables to allocate efficiently with limited resources, such as time. In addition, the value of information is a "monetary measure of relevance". A piece of information is said to have value if it has a greater benefit than the cost to obtain such information. Affirmed by Fitriati and Mulyani (2015), quality of accounting information is the output of the successful accounting information system. To predict the value of the information, we need to consider who will use this information and for what purpose. Weber (1999) adds that the quality of information produced by the information system has impact on the customers' perception of the usefulness and convenience of the system. Attributes of quality of information include authenticity, accuracy, completeness, uniqueness, timeliness, relevance, comprehensibility, precision, conciseness, and in formativeness.

O'Brien and Marakas (2010) characterize the qualitative characteristics of information produced by the information system into three dimensions:

1. The time dimension is composed of timeliness, currency, frequency and time period.

2. The content dimension: accuracy, relevance, completeness, conciseness, scope, performance.

3. The form dimensions: clarity, detail, order, presentation, and media.

As the similar statement by Fitriani and Mulyani (2015) shows that the quality of information is measured by relevancy, accuracy, timeliness, and completeness

In this study, the quality of information is defined as the information used by managers in carrying out their functions (planning, controlling, and decision-making) which quality attributs are inherent to the information with the dimensions of time, content, and format.

2.3 Quality of Service Unit of Accounting Information System

The information system implemented by the company must be supported with the quality of services provided by the system, in order to continue to use it to realize dependency on the system. The use of information system is one mechanism to have an advantage in competitive ability. According to Kotler (2006), service means any action or activity that can be offered by one party to another, which is essentially intangible and does not result in any ownership. In general, a high level of service that will generate high satisfaction and dependency.

Customer satisfaction on the provided information and improvement of organizational performance are the basis to declare a company's information system as qualified, as stated by Mulyani *et al.* (2016) that "the use of information systems that has been influenced by self-efficacy, personal attitude and objective norms has positive effect on the performance of the organization." This means that the use of information system may be in accordance with the customer expectation that the quality of service can be achieved and organizational performance are also realized.

Zeithaml *et al.* (1985) state that the gap between expectation and reality on the service can be identified as many as five (5), namely: (1) the gap between the consumers' expectations and the management's perception; (2) the gap between the management's perception and the service quality; (3) the gap between the service quality and the service deliver; (4) the gap between the service delivery and communication, and (5) the gap between the rendered services and the expected service. Based on the above statements, the service quality of information system referred to in this research is the degree of correspondence between customer expectations and their perceptions on the information system service performance.

2.4 Information System User Satisfaction

User satisfaction (customer satisfaction) is defined as the customer's response to the evaluation of nonconformities/disconfirmation perceived between prior expectations and actual performance. It can be concluded also that the customer satisfaction on the information system is one measure of success for any development and implementation of information system in a company.

User satisfaction as a measure of successful information system can be used as a substitute measure for the effectiveness of information system. User satisfaction on an information system means how users use the system in real rather than as a technique.

Determinant for user satisfaction is the quality of a system and information as well as the dependence of the system based on the needs and expectations from the users. If the expectations and needs are met, and the quality of provided information

and system is considered positive, it will eventually support the success of an information system. Satisfaction and how often the system is used will have a direct impact on the individual user of the system, whether the user will get a new knowledge and experience or it may change their habits, and it will have an impact on the organization or the company itself (DeLone and McLean: 2010). According to Mulyani (2009), the information generated by the system in the company would be useful if the information could be communicated by every employee in the company.

DeLone and McLean define user satisfaction as a recipient's response to the usability of an output of an information system. When the dependence to an information system is needed, measurements made earlier will diminish its usefulness and success of an interaction by management with information system can be measured using user satisfaction. Eventually, user satisfaction is an important benchmark. There are several attributes that can lead to the success of an information system according to user satisfaction categories, namely:

(a) Individual Impact is the effect of the information on the habits of the recipient. Of all measurements on the other information systems, impact category is very difficult to define the attributes because they are ambiguous. Effects are closely related to performance, so it includes productivity, efficiency, and effectiveness of the performance of the use of information system to the recipient.

(b) Organization Impact is the effect of information on organizational performance. This effect also caused by an information system on the quality of organizational performance includes productivity, efficiency, and effectiveness of performance.

2.5 The Influence of the Quality of Management Accounting Information System (QMAIS), Quality of Management Accounting Information (QMAI), and Quality of Service (QSIS) on the Information System User Satisfaction (ISUS)

The underlying theory to test the significance of QMAIS, QMAI, and QSIS on user satisfaction is by Laudon and Laudon (2014) through the descriptions in the successful implementation of information system, namely:

1. high level of system use;

2. user satisfaction on the system;

3. favorable attitude;

4. Users of the system, achieved objectives, and financial pay-off

Another concept to test the effect of QMAIS, QMAI, and QSIS to the user satisfaction is a model developed by DeLone-McLane as seen in the following figure:
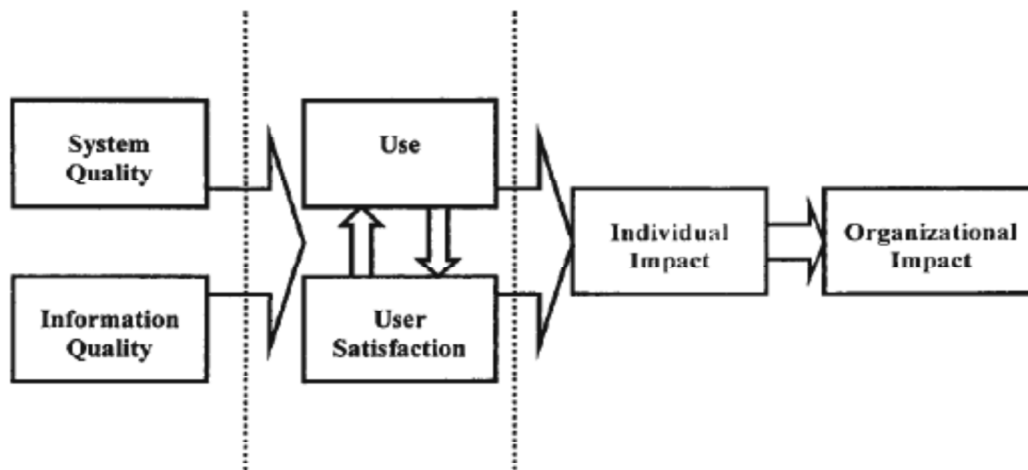
Figure 1. D&M IS Success Model.
Reprinted by permission, W. DeLone and E. McLean, Information Systems Success: The Quest for the Dependent Variable. *Information Systems Research*, 3(1), 1992, pp. 60–95. Copyright 1992, The Institute of Management Sciences (now INFORMS), 901 Elkridge Landing Road, Suite 400, Linthicum, MD 21090 USA.

The implementation of system success model is confronted with two notion, whether the implementation is experiencing a failure or a success. The concept of successful information system is used in a variety of research as the basic criterion for evaluating information system (Rai *et al.,* 2002).

The use of accounting information systems may be futile if there is lack of support from users as presented in a research by Nurhayati and Mulyani (2015) that user participation in the development of information system plays an important role in creating the successful implementation of the accounting information system.

2.6 Research Hypotheses

Based on theory and previous research, hypotheses are drawn, as stated by Sekaran and Bougie (2013) that the *hypothesis can be defined as a tentative, yet testable, statement which predicts what you expect to find in your empirical data.*

Research hypotheses are as follows:

Hypothesis 1: There is influence of QMAIS on ISUS

Hypothesis 2: There is influence of QMAI on ISUS

Hypothesis 3: There is influence of QSIS on ISUS

3. METHODOLOGY

3.1 Research Object

The object of this study is the quality of management accounting information system, the quality of management accounting information, the quality of service of information system, and user satisfaction. The unit of analysis is state-owned commercial banks in Bandung with respondents from operational managers, among others,

1. Bank Rakyat Indonesia;
2. Bank Mandiri;
3. Bank Negara Indonesia, and
4. Bank Tabungan Negara.

3.2 Variable Operationalization

Variable operationalization is a process that operates concept of a variable so that these variables can be measured, which is formulated by basing on the dimensions in the concept and then categorized by the elements that can be measured (Sekaran and Bougie: 2013).

Table 1
Variable Operationalization

Variable	Variable Concept	Dimension	Indicator	Scale
Quality of Management Accounting Information System	Harmonious integration from supporting components	Organization	Organizational structure Job description Coordination Procedure	Ordinal
Laudon and Laudon (2014); O; Brien and Marakas (2008); De Lone and Mc Lean (2003)		Management	Planning Organizing Leadership Control	Ordinal
		Technology	Software quality Data basis adequacy Software compatibility	Ordinal
Quality of Management Accounting Information Brien and Marakas (2008); De Lone and Mc Lean (2003).	The information used by a manager in running their functions (planning, controlling, and decision-making) which quality attributes are inherent to the information	Time	Timely Updated Available when needed Time period	Ordinal
		Content	Relevant Complete Concise Scope Performance	Ordinal
		Format	Clear Detailed	Ordinal

Variable	Variable Concept	Dimension	Indicator	Scale
			Form compatibility Presentation Adequate media	
Quality of Service of Information System Bentley and Whitten (2007); De Lone and Mc Lean (2003).	The degree of ingkat kesesuaian corresp-ondence between user's expectation and perception on the service performance	Accuracy of system output	Accurate data Accurate process Information accuracy	Ordinal
		Ease of use	System is easy to operate System is easy to learn	Ordinal
		Reliability	As needed Consistency between process and result	Ordinal
		Flexibility	Flexible on exception Flexible on change	Ordinal
		Coordination	Integrated with other systems Consistency with other systems	Ordinal
User satisfaction (*Y*) De Lone and Mc Lean (2003); Eunike (2009).	The degree of recipient's response to the use of information system	Helping	Users are assisted Users are facilitated Friendliness	Ordinal
		Useful	Users are facilitated in using data Users are facilitated in making decision	Ordinal
		Considerate	Errors are quickly responded Requests are quickly responded	Ordinal

4. DATA ANALYSIS

Data in this research are analyzed using descriptive and verificative analysis. Descriptive analysis aims to obtain description of the characteristics of each study variable. Verificative analysis aims to determine the relationship between variables by testing the hypothesis using Structural Equation Modeling (SEM) with Partial Least Square (PLS) approach (Hair *et al.,* 2014).

4.1 Research Result and Descriptive Analysis

Questionnaires distributed to the respondents, namely operational managers of government-owned banks, as many as 42 respondents have been collected to be formulated on the observation and then are grouped by every score and percentage in the following manner:

Table 2
Categorization of Respondent Scores

No	Range of value	Category
1.	84.00% - 100%	Very good
2.	68.00% - 83.99%	Good
3.	52.00% - 67.99%	Fairly good
4.	36.00% - 51.99%	Not good
5.	20.00% - 35.99%	Very bad

Table 3
Table Descriptive Analysis

Variable	Dimension	Respondent Score	Category
Quality of Management Accounting Information System (QMAIS)	Organization	86%	Very good
	Management	87%	Very good
	Technology	76%	Good
Quality of Management Accounting Information (QMAI)	Time	81%	Good
	Content	85%	Very good
	Format	83%	Good
Quality of Service of Information System (QSIS)	Accuracy	87%	Very good
	Ease of use	82%	Good
	Reliability	85%	Very good
	Flexibility	85%	Very good
	Coordination	84%	Very good
User satisfaction	Helping	85%	Very good
	Useful	83%	Very good
	Considerate	85%	Very good

Respondents respond to the quality of accounting information system, management accounting information, the quality of service in general into good and excellent categories.

4.2 Evaluation Model PLS-SEM

The hypothesis to be tested is the influence of the quality of management accounting information system, quality of management accounting information, and service quality to user satisfaction. Visually, the diagram of the variable influence is described as follows:

Evaluation of measurement model tests the validity and reliability of data. All composite reliability values are greater than 0.7, while the loading factor values are greater than 0.5 which means that the data are valid and reliable for the further tests (Hair *et al.,* 2014).

Evaluation of structural model connects the exogenous latent variables with the endogenous latent variables or is the correlation between endogenous variables with the other endogenous variables. Here is a summary of the values used in the structural model.
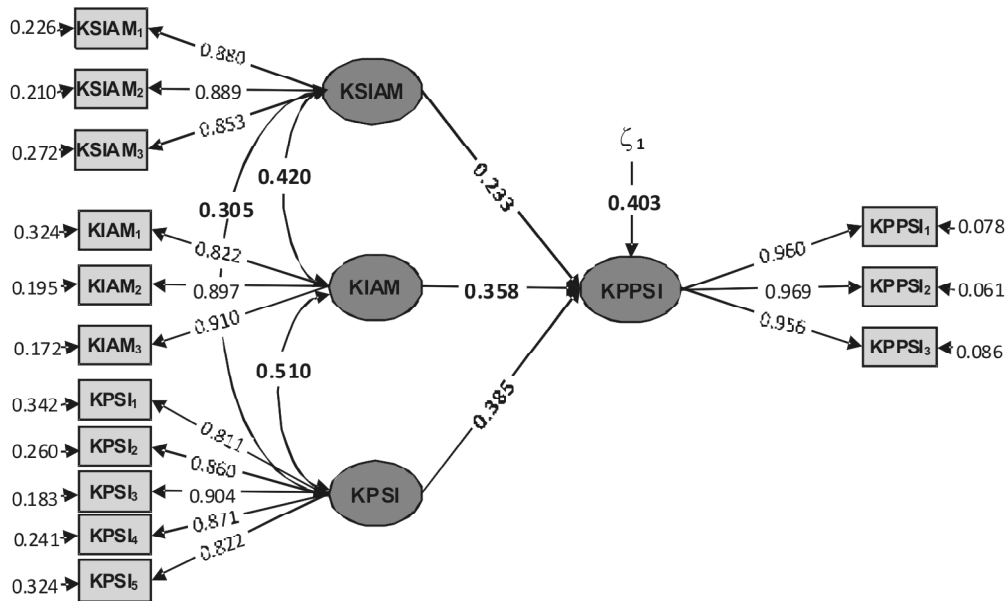
Figure 2: Path Coefficient Analysis

Table 4
Summary of Statistical Test Results

Path	Coefficient	t_{count}*	R-Square
QMAIS-ISUS	0.233	2.013	0.597
QMAI-ISUS	0.358	2.704	
QSIS-ISUS	0.385	2.749	

*t-crisis = 1.96

The quality of management accounting information system, quality of management accounting information, and quality of service of information system together give the effect of 59.7% to the user satisfaction, while the remaining 40.3% is the influence of other unstudied factors.

Based on the statistical results, it can be seen that t-count value is greater than that of t-crisis at the error level of 5%; therefore, the alternative hypothesis (Ha) is accepted, which means:

1. Quality of management accounting information system affects the user satisfaction on the banking system in Bandung.

2. Quality of management accounting information affects the user satisfaction on the banking system in Bandung.

3. Quality of service of information system affects the user satisfaction on the banking system Bandung.

5. DISCUSSIONS

Research on the influence of the quality of management accounting information system, quality of management accounting information, and quality of service of information system performed in state-owned commercial banks in Bandung with the number of respondents of 42 operational managers. The state-owned commercial banks include Bank Mandiri, Bank Negara Indonesia, Bank Rakyat Indonesia, and Bank Tabungan Negara.

Interpretation of the path coefficient value of each research variable is used to determine the correlation between variables used in this study. Guilford's and Fruchter's (1956: 145) criteria provide a standard for the interpretation of the correlation.

Table 5
Categorization of Interpretation Standard of Inter-variables Correlation

No.	Path coefficient value	Correlation criteria
1.	Less than 0.20	Slight correlation, almost negligible relationship
2.	0.20- 0.40	Low correlation, definite but small relationship
3.	0.40-0.70	Moderate correlation, substantial relationship
4.	0.70-0.90	High correlation, marked relationship
5.	0.90-1.00	Very high correlation, very dependable relationship

Based on the categorization by Guilford and Fruchter (1956: 145), the R^2 value obtained from this study is 0.597, in moderate correlation criteria. This means that the user satisfaction variable formed by the variables of QMAIS, QMAI, and QSIS is at a moderate level.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Based on the phenomenon, literature review, and the results of this study, it can be concluded that in state-owned banks in Bandung:

1. there is an influence of QMAIS on user satisfaction

2. there is an influence of QMAI on user satisfaction, and

3. there is an influence of QSIS on user satisfaction.

If connected with the theory that says information flows like blood in the human body; when the blood is not healthy, then the body will be sick. Similar to the importance of information, particularly in banking, if the information is not qualified (in view of the aspects of time, content, and format of the report), it will lead to the decision-making errors, planning errors that may cause fatality to these banks.

Efforts to improve user satisfaction of information system in banking can be done through improving quality of service by increasing the accuracy of data, ease of use, and coordination.

6.2 Limitation and Suggestions

1. Based on the responses from respondents who have an obstacle in the implementation of information system, the researchers advise that management to be more incentive for the dissemination of the use of information system in the form of training or workshop.

2. Researchers advise to carry out several actions ranging from improving the quality of management accounting information, such as timeliness that is still in delays in the delivery of information, resolve through the quality of the software used up to manpower (brain ware) whose role should always be optimized.

3. For the next study, it is suggested to specify which process of user satisfaction will be the object of research. In the management accounting information system, groups, including top management, middle management, or lower management plays their own each role.

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