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Student Acceptance of The Use of Spreadsheet-Based Accounting Applications

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Abstract—Acceptance of new computer technology needs to be evaluated by applying the technology directly. The purpose of the study was to analyze the student acceptance level of the use of spreadsheet-based accounting application for basic accounting practice learning.[17] The research model used is evaluative research using the Technology Acceptance Model (TAM). The types of data used are quantitative data and qualitative data.[14] Quantitative data consisted of the ability of students to use spreadsheet applications and student perceptions of acceptance of the use of a spreadsheet-based accounting application for basic accounting practice learning. Qualitative data consisted of user suggestions about the spreadsheet-based accounting applications for basic accounting practice learning. Qualitative data were analyzed by descriptive qualitative analysis techniques, while quantitative data were analyzed using quantitative analysis techniques. The quantitative analysis technique used is percentage analysis, which is by comparing the number of one item answers with the number of one item ideal answers. The conclusions have determined by comparing assessment percentages with an assessment percentages scale. The results of the study indicate that 83 percent of students who learn basics accounting practice are capable of using spreadsheet applications and 17 percent very capable of using spreadsheet applications.[35] The students who have the ability using spreadsheet applications tend more accepted to use spreadsheet-based accounting applications. The students who have experience using spreadsheet applications tend more accepted to use spreadsheet-based accounting applications. [35] The spreadsheet-based accounting application could be accepted by 80.46 percent of students and highly accepted by 19.54 percent of students.

Keywords—applications, accounting, spreadsheets, TAM

I. INTRODUCTION

Spreadsheets are widely accepted as business applications that are used by many accountants for financial reporting and operational processes even though accounting software is available. Accountants must renew skills through training on the use of spreadsheets [1]. The spreadsheet skills most needed by accountants are data entry, format and calculation, charting, and logic. Accountants must also pay special attention to skills for lookup and pivot table [2]. Skills using spreadsheets can improve the other skills of accountants [3]. Increased knowledge can lead to better productivity, the inability to use of new technology can be lead to anxiety and it will weaken the quality of decisions [4].

The spreadsheet application is widely used in finance and accounting learning. Learning by using spreadsheet applications is more desirable than traditional learning. The use of spreadsheet application can improve student attitudes and motivation [5]. Instructional methods and media attributes of learning can influence accounting learning [6]. Preferences of classes that included in spreadsheets were better than accounting classes based on traditional lecture techniques [7]. Students involved in the spreadsheet class performed much better than their counterparts in the conventional class [8].

The spreadsheet-based accounting application with a transaction cycle approach is an application used for service and trade companies accounting cycles. This application consists of several parts, namely initial setup, transaction input, ledger and financial statements, and closing. The initial set up includes company information, account, customer, supplier, and inventory setting. Transaction input used transaction cycle approach that includes the purchase, sale and cash cycles. Ledgers and financial reports include ledgers and subsidiary ledgers, balance sheets and financial statements. Financial statements consist of comprehensive income statements, changes in equity statements, financial position statements, and cash flow statements. Closing is done to close nominal accounts so that the application is ready to be used to record the next period transactions [5].

The spreadsheet-based accounting application with a transaction cycle approach can be used to prepare the enterprises financial statements. This application can also be used for basic accounting practice learning. This application can be used after fulfilling the technical and operational feasibility requirements. Based on the expert tests results, the spreadsheet-based accounting application with a transaction cycle approach fulfills both technical and operational feasibility requirements [9].

The spreadsheet-based accounting application with a transaction cycle approach should be evaluated to measure the user applications acceptance level. A systematic evaluation of the applications acceptance level has not been done before. Therefore, it is necessary to evaluate the level of acceptance of the application.[14] Lecturers need to examine student acceptance of the use of technology to improve the effectiveness of learning [8].

[14] The acceptance evaluation of the spreadsheet-based accounting application with a transaction cycle approach was carried out using the Technology Acceptance Model (TAM).[17] The main elements of the TAM model are the perception of usefulness and ease of use. This model shows that when

users are given new software packages, perceptions of usefulness and ease of use influence their decisions about how and when they will use new software [10].[27] The TAM assumes that usefulness and ease of use are always the primary determinants of use decisions [11].

II. RESEARCH METHODS

The research model used is an evaluative research model using the Technology Acceptance Model (TAM). The types of data used are quantitative data and qualitative data. Quantitative data consisted of the ability of students to use spreadsheet applications and student perceptions of acceptance of the use of a spreadsheet-based accounting application for basic accounting practice learning. Qualitative data consisted of user suggestions about the spreadsheet-based accounting applications for basic accounting practice learning. The research data was obtained from primary and secondary sources. The instrument used was the TAM questionnaire for users of spreadsheet-based accounting application. The questionnaire uses 4 Likert scales, from 1 (strongly disagree) to 4 (strongly agree). The application test subjects were 87 students. Qualitative data were analyzed using descriptive qualitative analysis techniques, while quantitative data were analyzed using quantitative analysis techniques. The quantitative analysis technique used is percentage analysis, which is by comparing the number of one item answers with the number of one item ideal answers. The conclusions have determined by comparing assessment percentages with an assessment percentages scale. The assessment percentages scale is presented in Table I.

TABLE I. LEVEL OF STUDENT ACCEPTANCE

Value	Level of Acceptance
81.26-100.0	Very accepted, do not need to be revised
62.51-81.25	Accepted, do not need to be revised
43.76-62.50	Not accepted, need to be revised
25.00-43.75	Very not accepted, need to be revised

III. RESULTS AND DISCUSSIONS

A. Spreadsheet-Based Accounting Cycle Applications

Financial accounting is part of the accounting that aims to generate useful financial information of entity for stakeholders as a user of financial statements in decision making on investment and credit, understanding of financial position, financial performance, and cash flow financial accounting provides useful information to equity investors, lender, and other creditors in their capacity as capital providers [12].

The financial statements are prepared in accordance with financial accounting standards. The financial statements of the income statement, the financial position statement, the changes in equity statement, and cash flows statement. The income statement is the report that measures the success of company operations for a given period of time. The financial position reports the assets, liabilities, and equity of the company at a specific date. The changes in equity reports changes in equity for a given period of time. The statement

of cash flows of reports the summary of all the cash inflows and outflows, or sources and uses of cash during the period [12].

The need for reliable financial reports is increasing. Therefore, an approach that can identify and prevent material misstatements in reporting is needed [13]. Spreadsheet-based accounting applications with transaction cycles are used to record transactions in journals, post to ledgers and subsidiary ledgers, prepare worksheet, produce financial reports and trial balance after closing.

Spreadsheets-based accounting application with transaction cycles consists of 1) the initial data which includes company information, accounts, vendors, customers, and inventory, 2) the cycle of transactions, including the purchase cycle, sales cycle, and cash cycle, 3) journals covering special journals (purchasing, sales, cash receipts, cash disbursements), and general journals, 4) ledger and sub-ledger that includes general ledger and sub-ledger of debt, receivables, and inventory, 5) trial balance and the worksheet, 6) financial statements, including income statement and other comprehensive income, statement of financial position, statement of changes in equity and cash flow statement, 7) closing trial balance.

Spreadsheets-based accounting application with transaction cycles is different from the application made by the accounts or journal approach. For more details, the following will be explained the facilities on spreadsheet-based accounting application with transaction cycle approach. Initial data input includes company information, accounts, vendors, customers, and inventory. This initial data input can be done manually or imported from another appropriate file. In this application, the initial data inputted more complete as the accounting application package, to make it easier in case of transfer to a more complex application package.

Transaction cycle includes the purchase cycle, sales cycle, and cash cycle. The purchase cycle is used to record purchases, purchase returns, purchases discount, and cash disbursements to pay the debt. The sales cycle is used to record sales transactions, sales returns, sales discounts, and cash receipts of accounts receivable. The cash cycle is used to record cash transactions of transactions other than cash receipts from the payment of receivables arising from sales on credit, and cash disbursements for the payment of debts arising from purchases on credit.

Journal covering special journals which consist of purchase, sales, cash receipts, cash disbursements journal, and a general journal. The transaction on the journal approach will record in the purchasing journal, sales journal, cash receipts journal, cash disbursements journal or general journal. In the transaction cycle approach, purchasing journal, sales journal, cash receipts journal, and cash disbursements journal are the result of the transaction cycle. Transactions Input manually is only carried out in the general journal.

Ledger and sub-ledger that includes general ledger and sub-ledger of debt, accounts receivable, and inventory. In the journal approach or in the transaction cycle approach, general ledger and sub-ledger automatically generated.

Trial balance, balance sheet, and the worksheet is a facility to facilitate in making the financial statements. In the journal approach or on transaction cycle approach, trial balance, balance sheet, and the worksheet is the result of the automation of application.

The financial statements, including the statements of income and other comprehensive income, statement of financial position, statement of changes in equity and cash flow statement. In this spreadsheet-based accounting application with transaction cycle approach, tailored to the financial statements of financial accounting standards. Subsequently made closing trial balance is the result of automation that has been done.

B. Ability to Use a Spreadsheet Application

The utilization of information resources depends on the ability to use information technology effectively. The inability to demonstrate expertise in this area can lead to resistance to technology. The inability has been acknowledged as the main reason leading to impediment in the use of new technology [4].

The ability to use spreadsheet applications relates to the acceptance of the spreadsheet-based application of accounting cycle. Therefore, it is necessary to obtain an overview of the student's ability who are the subjects in application testing. The ability to use spreadsheet applications relates to the acceptance of the spreadsheet-based application of accounting cycle. Therefore, it is necessary to obtain an overview of the student's ability who are the subjects in application testing. The ability of students to spreadsheet-based applications includes the ability to explain the features or characteristics and the terms of the application. Students can activate and use the application to input, edit, delete, save, and correct data errors. Students can use functions and formulas and can print or print preview data using the application.

The subject of application acceptance testing was the second-semester students who were participants in the accounting basics practice. From the 87 students, there were no students who stated that they were very incapable or incapable to use spreadsheet-based applications, 72 people (82.8%) stated that they were capable to use spreadsheet-based applications, and 15 people (17.2%) stated that they were very capable of using spreadsheet-based applications. It shows that there are no students in basic accounting practice who feel unable to use spreadsheet-based applications. Student ability to use a spreadsheet is presented in Fig. 1.
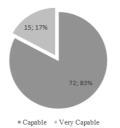

Fig. 1. Student ability to use a spreadsheet application.

Most students feel capable to use spreadsheet-based applications. This condition might be because students have learned about spreadsheet processing programs. Gaps in spreadsheet learning as a computer information technology tool may occur [14].

C. Acceptance of Student on Accounting Application

Students were asked to answer the TAM questionnaire before being taught the practice of using the spreadsheet-based accounting application with a transaction cycle approach. The spreadsheet-based accounting application was stated as useless by 12 people (13.79%), stated useful by 48 people (55.17%) and stated as very useful by 27 people (31.03%). The spreadsheet-based accounting application was stated not easy to use by 30 people (34.48%), stated easy to use by 54 people (62.077%) and stated very easy to use by 3 people (3.45%). Students who have no positive attitude are 17 people (19.54%), have positive attitude 67 people (77.01%), and have very positive attitude 3 people (3.45%) towards the use of spreadsheet-based accounting applications. Overall, 15 people (17.24%) did not accept the spreadsheet-based accounting application, 63 people (72.41%) was accepted the spreadsheet-based accounting application, and 9 people (10.34%) was strongly accepted the spreadsheet-based accounting application. The students' perceptions of usefulness, ease of use and attitude are presented in Table II.

TABLE II. .STUDENT' PERCEPTIONS OF THE TAM DIMENSION BEFORE USING THE APPLICATION

Description	Usefulness		Ease of Use		Attitude		Total	
	n	%	n	%	n	%	n	%
Strongly Disagree	0	0.0	0	0.0	0	0.0	0	0.0
Disagree	12	13.8	30	34.5	17	19.5	15	17.2
Agree	48	55.2	54	62.1	67	77.0	63	72.4
Strongly Agree	27	31.0	3	3.4	3	3.5	9	10.4
Total	87	100	87	100	87	100	87	100

User experiences interact with the technology are recognized increase performance [15]. Students were asked to answer the TAM questionnaire after using the spreadsheet-based accounting application with a transaction cycle approach. The spreadsheet-based accounting application was stated as useful by 51 people (58.62%) and stated as very useful by 36 people (41.38%). The spreadsheet-based accounting application was stated as easy to use by 71 people (81.61%) and stated as very easy to use by 16 people (18.39%). Students who have a positive attitude to spreadsheet-based accounting application were 79 people (90.8%), and Students who have a strongly positive attitude to spreadsheet-based accounting application was 8 people (9.2%). Overall, the spreadsheet-based accounting application was stated as accepted by 70 people (80.46%) and the spreadsheet-based accounting application was stated as strongly accepted by 17 people (19.54%). After using the

spreadsheet-based accounting application, no student stated the application was useless, difficult to use. No student has a negative attitude and does not accept the use of spreadsheet-based accounting applications. The students' perceptions of usefulness, ease of use and attitude are presented in Table III.

TABLE III. STUDENT' PERCEPTIONS OF THE TAM DIMENSION AFTER USING THE APPLICATION

Description	Usefulness		Ease of Use		Attitude		Total	
	n	%	n	%	n	%	n	%
Strongly Disagree	0	0.0	0	0.0	0	-	0	0.0
Disagree	0	0.0	0	0.0	0	-	0	0.0
Agree	51	58.6	71	81.6	79	90.8	70	80.5
Strongly Agree	36	41.4	16	18.4	8	9.2	17	19.5
Total	87	100	87	100	87	100	87	100

When compared before and after using a spreadsheet-based accounting application, there was an increase in the level of acceptance of the spreadsheet-based accounting application. The spreadsheet-based accounting application was initially considered useless, difficult to use, giving rise to a negative attitude towards the spreadsheet-based accounting application.[17] After using the spreadsheet-based accounting cycle application, the usefulness and ease of use of the spreadsheet-based accounting application were increasing, giving rise to a positive attitude towards the spreadsheet-based accounting application.[22] It was in line with the results of previous research.[14] Previous experience in using technology has a very substantial effect on perceived usefulness and perceived ease of use [16].

Perceived usefulness and trustworthiness of technology are important determinants of a user's intention to use technology [17].[17] Perceived usefulness and perceived ease of use were associated with a positive attitude [18],[14] to be the most prominent external factors that influence the use of a technology [19], and use as considerable roles in the adoption of technology [20]. Acceptance of the technology also was affected by many factors.[17] behavioral intention, attitude, perceived usefulness, experience perceived of use and quality factors [21],[29] but the perceived usefulness construct was shown to be the strongest predictor of intention to use technology [22]. Technology is not only useful but also easy to use [23].

[17] The ability and experience of using technology affect the perception of usefulness and ease of use and the intention to use the technology [16]. Before using application, the higher student ability the higher the student acceptance to use the application. Students in the category of capable, the level of acceptance starting from not accepted to accepted. Students in the category of very capable, the level of acceptance starting from accepted to very accepted. The ability to use information technology determines the use of information resources. The inability can cause resistance to technology. Disability is the main reason for obstacles in the use of new technology [4]. The students' perceptions of ability and acceptability before using spreadsheet application are presented in Table IV.

After using application, the higher the student experience the higher the student acceptance to use the application. Students who are able and very capable and have experience using spreadsheet-based accounting applications have a higher acceptance level, which was acceptable, until very acceptable. The students' perceptions of ability and acceptability after using spreadsheet application are presented in Table V.

TABLE IV. STUDENT' PERCEPTIONS OF ABILITY AND ACCEPTABILITY BEFORE USING THE APPLICATION

Level of Capability	Level of Acceptance (%)				Overall Acceptance (%)
	Very Not Accepted	Not Accepted	Accepted	Very Accepted	
Very Incapable	0	0	0	0	0
Incapable	0	0	0	0	0
Capable	0	20.83	79.17	0.00	82.76
Very Capable	0	0.00	40.00	60.00	17.24

TABLE V. STUDENT' PERCEPTIONS OF ABILITY AND ACCEPTABILITY AFTER USING THE APPLICATION

Level of Capability	Level of Acceptance (%)				Overall Acceptance (%)
	Very Not Accepted	Not Accepted	Accepted	Very Accepted	
Very Incapable	0	0	0	0	0
Incapable	0	0	0	0	0
Capable	0	0	88.89	11.11	82.76
Very Capable	0	0	40.00	60.00	17.24

Table IV and Table V show that the ability and experience using the application affects the acceptance of the application. The more capable and experienced students were, the higher the level of acceptance of spreadsheet-based accounting applications.[14] Experience perceived of use was one of factor that affects the acceptance of the technology, beside perceived usefulness and perceived ease of use [21].

IV. CONCLUSION

The purpose of the study was to analyze the student acceptance level of the use of spreadsheet-based accounting application for basic accounting practice learning. The results of the study indicate that 83% of students who learn basics accounting practice are capable of using spreadsheet applications and 17% very capable of using spreadsheet applications. The students who have the ability using spreadsheet applications tend more accepted to use spreadsheet-based accounting applications. The students who have experience using spreadsheet applications tend more accepted to use spreadsheet-based accounting applications. The spreadsheet-based accounting application could be accepted by 80.46% of students and highly accepted by 19.54% of students. Spreadsheet-based accounting

applications are recommended for use in learning basic accounting practice. The use of spreadsheet-based accounting applications is expected to increase the efficiency and effectiveness of learning.

ACKNOWLEDGMENT

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