

# The Use of Spreadsheet-Based Basic Accounting Practice Applications in Online Learning

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**Abstract**—Learning media is one of the components in online learning as one type of distance learning. The research objectives are to describe the spreadsheet-based basic accounting practice applications with a perpetual method, to test student acceptance of the use of the spreadsheet-based basic accounting practice applications in online learning, and to evaluate the effectiveness of the use of the spreadsheet-based basic accounting practice applications in online learning. The model used is a descriptive study model. The quantitative data used in this study consisted of student acceptance of the use of spreadsheet-based basic accounting practice applications in online-learning, practice completion targets, and student learning results. Student acceptance of the use of applications in online learning is obtained by using an application acceptance questionnaire following the Technology Acceptance Model (TAM). The questionnaire uses 4 Likert scales, from 1 to 4 (strongly disagree-strongly agree). The questionnaire consists of 18 questions covering aspects of usefulness, ease of use, and attitudes towards using the application. The questionnaire was given to 85 students participating in the practice. The descriptive analysis technique used in this study was conducted by describing the percentage of student acceptance of the use of the spreadsheet-based application, the data for practice completion, and student learning results. The results of the study are spreadsheet-based basic accounting practice applications consist of initial setup facilities (users, company information, accounts, suppliers, customers, and inventory), journals, ledgers and subsidiary ledgers, worksheets, financial statements, and other reports. The use of spreadsheet-based basic accounting practice applications could be accepted or highly accepted by students who learn basics accounting practices in online learning. The spreadsheet-based basic accounting practice applications are used effectively in online learning.

**Keywords**— *applications, accounting, spreadsheets, learning*

## I. INTRODUCTION

The recent Corona Virus Disease (Covid-19) pandemic created opportunities for change in pedagogical approaches and the introduction of virtual education at all levels of education. Online/virtual-education is a demand for the current crisis [1]. Ministry of Education and Culture of Indonesia establishes a Learning from home policy through online/distance learning

during the Corona Virus Disease (Covid-19) spread. Online learning is following online learning guidelines that have been established by The Ministry of Education and Culture [2].

Students reveal that online learning online is helpful in COVID-19 pandemic [3]. Online learning methods are effective for improving student learning achievement which is confirmed by the higher posttest results compared to those from the pretest [4]. Most students can understand the lessons given and have the opportunity to participate in learning, but according to students, online learning is no more interesting than conventional learning [5].

The success of online learning depends on the quality of the teaching materials used in the learning process. Teaching materials packaged as a whole and the systematic way can help students master specific learning goals [6]. Teaching materials that are complete and arranged systematically can create effective learning and efficient learning. Teaching materials can provide knowledge, skills, and attitudes as defined in competency standards. Teaching materials including printed materials (handouts, books, modules, worksheets, brochures), audio-visual (video, compact disc digital video), audio (radio, cassette, audio compact disc), visuals (photos, drawings, models), and multi-media (interactive compact disc, computer-based, internet) [6].

The spreadsheet-based teaching material was developed as a computerized simulation of a worksheet [7]. Spreadsheet-based applications are widely used in accounting learning. The spreadsheet-based basic accounting practice applications are teaching materials used in lectures on basic accounting practices [8]. The spreadsheet-based basic accounting practice applications consist of several parts, namely initial setup, journal, ledger, financial statements, and closing [9].

Student acceptance of the use of technology needs to examine to improve the effectiveness of learning [10]. The application's acceptance evaluation using the perception of usefulness and ease of use. Perceptions of usefulness and also ease of use influence user decisions about when and how new software is used [11]. Usefulness and ease of use are the

primary determinants of user decisions on using applications [12].

The use of spreadsheet-based basic accounting practice applications is expected to increase learning effectiveness. In this study, the effectiveness of learning is seen in terms of the learning process and outcomes. In terms of the learning process, the use of spreadsheet-based basic accounting practice applications in online learning is stated to be effective if all or at least 75% of students actively complete practical assignments within the specified time. In terms of results, the use of spreadsheet-based basic accounting practice applications in online learning is stated to be effective if all or at least 75% of students score at least 66.

This study focuses on describing the spreadsheet-based basic accounting practice applications, the student acceptance of the use of its use in online learning, and to evaluate the effectiveness of their use in online learning.

**II. RESEARCH METHODS**

The model used is a descriptive study model. The research procedure consists of describing the spreadsheet-based basic accounting practice applications using a perpetual method, testing the student acceptance of the use of the spreadsheet-based applications in online learning, and evaluating the effectiveness of the use of the spreadsheet-based applications in online learning. The quantitative data used in this study consisted of student acceptance of the use of spreadsheet-based basic accounting practice applications in online-learning, practice completion targets, and student learning results. Student acceptance of the use of applications in online learning is obtained by using an application acceptance questionnaire following the Technology Acceptance Model (TAM) that was introduced by Fred Davis. The questionnaire uses 4 Likert scales, from 1 to 4 (strongly disagree-strongly agree). The questionnaire consists of 18 questions covering aspects of usefulness, ease of use, and attitudes towards using the application. The questionnaire was given to 85 students participating in the practice. The target for practice completion and student learning results were obtained from the control document of practice activities and the value of practical exams. The descriptive analysis technique used in this study was conducted by describing the percentage of student acceptance of the use of the spreadsheet-based application, the data for practice completion, and student learning results. The acceptance level standard is presented as follows in Table I.

TABLE I. STANDARD OF ACCEPTANCE LEVEL

Value	Acceptance Level
75.1-100.0	Very accepted
50.1-75.0	Accepted
25.1-50.0	Not accepted
0-25.0	Very not accepted

**III. RESULTS AND DISCUSSIONS**

The following will describe a description of the spreadsheet-based basic accounting practice applications, student acceptance of the application, and the effectiveness of the application use in online learning.

*A. The Spreadsheet-Based Applications*

Spreadsheet-based applications are used in basic accounting practices learning. The development of this application is tailored to the needs of basic accounting practices to process the accounting cycle for service and trading companies. This application can be used for practical cases using both the physical method and the perpetual method. This application can be used for practice materials with petty cash with fixed or fluctuating systems. Besides, the applications can also be used for the practical case that applies different inventory cost formulas following the provisions of financial accounting standards. The spreadsheet-based basic accounting practice applications consist of several parts, namely files, journals, ledgers, trial balances and worksheets, financial statements, and closing trial balances. The main menu of the application is presented in Fig. 1.

MAIN MENU					
FILE	JOURNAL	LEDGER	TRIAL BALANCE- WORKSHEET	FINANCIAL STATEMENT	CLOSING TRIAL BALANCE
Company Information	Purchase Journal	General Ledger	Opening Balance	Income Statement	Closing Trial Balance
Account	Sales Journal	Account Payable Card	Trial Balance	Other Comprehensive	
Vendor	Cash Payment Journal	Account Receivable Card	Worksheet	Change of Equity	
Customer	Cash Receipt Journal	Inventory Card		Financial Position	
Inventory	Petty Cash Journal	Account Payable List		Cash Flow	
	Memorial Journal	Account Receivable List		Note of Financial Statement	

Fig. 1. The main menu of the application.

The files sub-menu are used to manage user data, company information, accounts, vendors, customers, and inventory. The journal sub-menu consists of purchase journals, sales journals, cash payment journals, cash receipt journals, petty cash journals, and memorial journals. The ledger sub-menu consists of general ledger, account payable card, account receivable card, inventory card, and list of accounts payable, accounts receivable, and inventory. The trial balance and worksheets sub-menu are used in preparing financial reports. The financial statement sub-menu contains statements of profit and loss and other comprehensive income, change of equity, financial position, cash flow, and notes to financial statements. The last sub-menu is the closing trial balance that is used to make a closing trial balance.

Before using spreadsheet-based basic accounting practice applications, students make initial set up by completing user information and general information of the

company. The user form and company information form are shown in Fig. 2 and Fig. 3.

Fig. 2. The user information.

Fig. 3. General company information.

The user form is used by the user to fill in information about the identification number, name, department, and title. The general company information form is used by the user to fill in information about company identity, accounting information, tax information, and additional information.

After completing user information and general information of the company, students enter data about accounts, suppliers, customers, and inventory with their initial balances. The accounts form, suppliers, customers, and inventory form are shown as follows in Fig. 4 to Fig. 7.

Fig. 4. Account information.

Fig. 5. Supplier information.

Fig. 6. Customer information.

Fig. 7. Inventory information.

The account form is used by the user to fill in account number, account name, account number, classification, debit/credit, header/details, opening balance. The supplier form is used by the user to fill in supplier name, supplier

number, address, city, telephone, term, invoice number, invoice date, and opening balance. The customer form is used by the user to fill in the customer name, customer number, address, city, telephone, term, invoice number, invoice date, and opening balance. The inventory form is used by the user to input the item name, item code, size, quantity, and price per unit.

After completing the initial set up, students can continue practicing by recording transactions in journals, posting to ledgers and subsidiary ledger, making trial balances and worksheets, compiling financial reports, and closing trial balances. This process is relatively the same as the accounting cycle process in general.

### *B. Student Acceptance of the Applications*

User experiences that interact with technology are recognized to increase performance [13]. Students answered the acceptance questionnaire of an application after using the spreadsheet-based basic accounting practice applications. The spreadsheet-based basic accounting practice application is considered useful by 22 people (25.9%) and very useful by 63 people (74.1%). The spreadsheet-based basic accounting practice application is easy to use by 54 people (81.61%) and stated as very easy to use by 31 people (36.5%). Students who have a positive attitude to spreadsheet-based accounting application was 37 people (43.5%), and strongly positive attitude to spreadsheet-based accounting application was 48 people (56.5%). Overall, the spreadsheet-based basic accounting practice application is accepted by 42 people (49.4%), and strongly accepted by 43 people (50.6%). After using the spreadsheet-based accounting application, no student stated that spreadsheet-based accounting application was useless, difficult to use. There are no students who have a negative attitude towards the use of the application. There are no students who do not accept the use of the application. User perceptions about usefulness, ease of use, and attitudes towards using applications are shown as follows in Table II.

TABLE II. STUDENT' PERCEPTIONS OF THE USEFULNESS, EASE OF USE, AND ATTITUDE OF USING THE APPLICATION

Description	Usefulness		Ease of Use		Attitude		Overall	
	<i>N</i>	%	<i>n</i>	%	<i>N</i>	%	<i>n</i>	%
Strongly Disagree	0	0	0	0	0	0	0	0
Disagree	0	0	0	0	0	0	0	0
Agree	22	25.9	54	63.5	37	43.5	42	49.4
Strongly Agree	63	74.1	31	36.5	48	56.5	43	50.6
Total	85	100	85	100	85	100	85	100

Experience and the ability of users increased after using the spreadsheet-based basic accounting practice applications. Improved user experience and capabilities have an impact on perceptions of usefulness and ease of use of the basic accounting practice applications based on spreadsheets with a perpetual method. Perceptions of

usefulness and ease of use also influence a positive attitude towards the application. It is in line with the results of previous research. Previous experience in using technology influence perceived usefulness and ease of use [13,14].

The user intention to use technology dominantly determines the perceived usefulness and trust of technology [15]. Perceived usefulness plays a considerable role and to be the strongest predictor of user intention to adopt and use technology [16,17]. Technology is accepted by users not only because it is useful but also because it is easy to use [18]. Positive attitudes to use technology associate with perceived usefulness and ease of use that are the external factors affecting the use of technology prominently [19,20]. The technology acceptance is influenced by behavioral intentions, attitudes, perceived usefulness, the perceived experience of use, and quality factors [21].

### *C. Effectiveness of the Applications Use in Online Learning*

The use of spreadsheet-based basic accounting practice applications is expected to increase student learning activities. In terms of the learning process, the use of spreadsheet-based basic accounting practice applications in online learning is stated to be effective if all or at least 75% of students actively complete practical assignments within the specified time. In terms of results, the use of spreadsheet-based basic accounting practice applications in online learning is stated to be effective if all or at least 75% of students score at least 66.

Evaluation of the effectiveness of spreadsheet-based basic accounting practice applications in online learning uses practical cases. The practice case was designed for 16 meetings (37.5 hours). The practice case solutions consist of 8 stages, namely understanding general company information, understanding transaction evidence handling procedures, initial set up, journaling, posting to ledgers and subsidiary ledger, preparing balance sheets balances and worksheets, preparation of financial statements, and preparation of closing trial balances.

The evaluation of the effectiveness of using the spreadsheet-based basic accounting practice applications in online learning included 85 students. All students have completed this practice according to the target and the average completion time for completion of the practice is faster than the predetermined target. This shows that spreadsheet-based basic accounting practice applications in online learning are effective. The difference between the completion target and the average practice completion is presented in Table III.

When viewed in terms of learning outcomes, the use of spreadsheet-based basic accounting practice applications is effective in online learning. The value obtained by 85 students in practice was between 85 and 88. The learning value of all students had exceeded the minimum passing grade for basic accounting practices (66). Student learning results are presented in Table IV as follows.

TABLE III. COMPLETION TARGET AND THE AVERAGE PRACTICE COMPLETION

Description	Practice Hours		Difference	
	Target (Minutes)	Realization (Minutes)	Amount (Minutes)	%
Understanding company information	150	150	0	0
Understanding of handling transactions evidence	150	150	0	0
Initial setup	300	225	75	25.0
Recording transactions on a journal	450	380	70	15.6
Posting to ledgers and subsidiary ledger	300	180	120	40.0
Preparation of trial balance and worksheets	300	270	30	10.0
Preparation of financial reports	600	450	150	25.0
Closing	150	100	50	33.3
	2,400	1,905	495	20.6

TABLE IV. STUDENT' LEARNING RESULTS

Value Range	Predicates	Amount	%
81 - 100	Excellent (A)	85	100%
76 - 80	Very Good (AB)	-	-
66 - 75	Good (B)	-	-
61 - 65	Good Enough (BC)	-	-
56 - 60	Enough (C)	-	-
41 - 55	Less (D)	-	-
< 40	Very Less (E)	-	-

Based on Tables III and IV, it can be said that the use of spreadsheet-based basic accounting practice applications is effective in online learning. The use of spreadsheet-based basic accounting practice applications in online learning can save practice time. In areas of manual work, such as understanding company information and understanding transaction evidence handling procedures, there is no practical time-saving. Practice time savings occur in areas where tasks are performed equidistant and allow automation with spreadsheet applications. The higher the level of automation that can be done, the more time it will save. Practice time savings occurs in the initial setup stage, recording transactions on a journal, post to ledgers and assistants, preparation of trial balances and worksheets, preparation of financial reports, and closing. Besides, all student learning value has exceeded the minimum passing threshold.

The results of the study are consistent with some of the findings of previous studies. Usefulness and ease of use are the reasons for acceptance and consideration of the use of social networks [22]. The user's ability to use applications and the ability of the application to generate information are the dominant factors affecting user satisfaction [23]. The use of spreadsheets as a learning tool can improve understanding of learning material. The use of spreadsheet-

based accounting applications increases the efficiency and effectiveness of learning [14].

#### IV. CONCLUSION

The research objectives are to describe the spreadsheet-based basic accounting practice applications with a perpetual method, to test student acceptance of the use of the spreadsheet-based basic accounting practice applications in online learning, and to evaluate the effectiveness of the use of the spreadsheet-based basic accounting practice applications in online learning. The results of the study are spreadsheet-based basic accounting practice applications consist of initial setup facilities (users, company information, accounts, suppliers, customers, and inventory), journals, ledgers and subsidiary ledgers, worksheets, financial statements, and other reports. The use of spreadsheet-based basic accounting practice applications could be accepted or highly accepted by students who learn basics accounting practices in online learning. The spreadsheet-based basic accounting practice applications are used effectively in online learning.

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