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User Satisfaction on Technical and Operational Performance of Spreadsheet-Based Financial Accounting Application

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Abstract—User satisfaction on technical and operational performance is one of the measures of success in end user application development. The purposes of this study are to analysis the user satisfaction on technical and operational performance of spreadsheet-based financial accounting application, and to find out the dominant aspect of technical and operational performance of spreadsheet-based financial accounting application that affect the user satisfaction. This study evaluates user satisfaction on technical and operational performance of spreadsheet-based financial accounting application. The main steps of study are: 1) describe the application; 2) measure the user satisfaction; 3) analyze the dominant aspect of technical and operational performance that affect the user satisfaction. User of spreadsheet-based financial accounting application in this study consists of 10 lecturers, 50 students, and 25 accounting practitioners. Instruments used in this evaluation are the user satisfaction on technical and operational performance questionnaire. Technical performance consists of include the ability of hardware and operating systems to respond the application, simplicity and ease of use. Operational performance consists of include the ability of user using application, the ability of application generates information, and application control. The instrument uses 4 Likert scale, from 1 (very dissatisfied) to 4 (very satisfied). Data were analyzed using percentage analysis by comparing the number of answers within one (1) item by the number of ideal answers within one (1) item. **The results of this research are:** 1) user very satisfied on technical and operational performance of spreadsheet-based financial accounting application; 2) The dominant aspects of technical performance increase user satisfaction are the simplicity and ease of use. The dominant aspects of operational performance increase user satisfaction are the user ability to use application and ability of application to generate information.

Keywords— satisfaction, performance, accounting, spreadsheet

I. INTRODUCTION

This accounting software is an application that records and processes accounting transactions within functional modules such as accounts payable, accounts receivable, payroll, and trial balance. Accounting software is the heart of company's accounting informations systems. Accounting information systems software to accomplish the functions of accounting, generating accounting reports, and using accounting reports. **The use of accounting software can improve the efficiency of information collection, processing, storing, transformation, and distribution [1, 2, 3].**

Several firms place reliance on **the use of spreadsheets as a standalone and or complimentary tool of their financial reporting and operational processes [4].** Spreadsheets remains entrenched in business processes, largely because it has been a part of the enterprise for so long. It's used as accounting software or only supplement of inadequate accounting software. As accounting software, its used to collect, process, store, transform, and distribute accounting information. As supplement of accounting software, its used with other tools for efficient financial processes [5]. **Spreadsheets, in many firms especially the meagre resource ones, are tools for traditional responsibilities such as planning, budgeting, forecasting as well as newer decision-making responsibilities [4, 6, 7].**

A spreadsheets is an interactive computer application for organization, analysis and storage of data in tabular form. Spreadsheets are popular end-user development tools. Spreadsheets are developed as computerized simulations of paper accounting worksheets. They are used for a myriad of tasks, from project management and financial modeling, to data analysis and scientific calculations [8]. The usage of spreadsheets is widespread, because they are flexible and easy to use [9]. Spreadsheets offer other advantages, including the

ease of use and almost instantaneous numerical modeling possibilities [10].

Spreadsheet-based financial accounting application is spreadsheet-based application for processing of supporting data for financial reporting, and generate financial reports (statement of profit or loss and other comprehensive income, statement of changes in equity, statement of financial position, and statement of cash flows). Spreadsheet-based financial accounting application can be used by lecturers and students in accounting learning, especially on accounting financial practice lesson. It can also be used by accounting practitioners in preparing financial statements.

In addition to financial performance, technical and operational performance are important factor considered in development of spreadsheet-based financial accounting application. Application with good technical and operational performance will be able to increase user satisfaction of application. Technical and operational performance of spreadsheet-based financial accounting application needs to be assessed to gain confidence that application can be used in actual activities. Technical performance includes the ability of hardware and operating systems to respond the application, simplicity and ease of use. Operational performance includes the ability of user using the application, the ability of application to generate information, and the application control [11, 12, 13].

User satisfaction is a measure of success in end user application development. User satisfaction is a measure of the degree application ability to meets the user's expectations. User satisfaction as the affective attitude towards a particular computer application by an end user who interacts with the application directly. User who assess the application developed by others may be more objective than user who assess their own application [14, 15]. In this study, the technical and operational performance of spreadsheet-based financial accounting application are assessed by lecturers, students, and accounting practitioners who have experience using application.

This Study focus on user satisfaction on technical and operational performance of spreadsheet-based financial accounting application. This study aimed to describe the spreadsheet-based financial accounting application, to analysis the user satisfaction on technical and operational performance of spreadsheet-based financial accounting application, and to find out the dominant aspect of technical and operational performance of spreadsheet-based financial accounting application that affect the user satisfaction.

II. RESEARCH METHODS

This study evaluated user satisfaction on technical and operational performance of spreadsheet-based financial accounting application. The main steps of study are: 1) describe the application; 2) measure the user satisfaction; 3) analyze the dominant aspect of technical and operational performance that affect the user satisfaction. User of spreadsheet-based financial accounting application in this study

consists of 10 lecturers, 50 students, and 25 accounting practitioners. Instruments used in this evaluation are the user satisfaction on technical and operational performance questionnaire. Technical performance consists of the ability of hardware and operating systems to respond the application, simplicity and ease of use. Operational performance consists of the ability of user using application, the ability of application to generate information, and application control. The instrument uses 4 Likert scale, from 1 (very dissatisfied) to 4 (very satisfied). Data were analyzed using percentage analysis by comparing the number of answers within one (1) item by the number of ideal answers within one (1) item. Conclusion known by comparing the percentage of votes with level of user satisfaction that can be seen in Table I.

TABLE I LEVEL OF USER SATISFACTION

Values	Level of User Satisfaction
82.3 – 95	Very satisfied, do not need to be revised
69.7 – 82.3	Satisfied, do not need to be revised
44.3 – 69.7	Satisfied enough, needs to be revised
31.7 – 44.3	Not satisfied, need to be revised
19.0 – 31.7	Very dissatisfied, need to be revised

Source: BSNP, 2009

III. RESULTS AND DISCUSSIONS

A. Spreadsheet-Based Financial Accounting Application

Financial accounting is part of the accounting that aims to generate useful financial information of entity for stakeholders as user of financial statements in decision making on investment and credit, understanding of financial position, financial performance, and cash flow [16, 17]. Financial accounting provides useful information to equity investors, lender, and other creditors in their capacity as capital providers [18].

The financial statements are prepared in accordance with financial accounting standards. Financial statements consist of income statement, statement of financial position, statement of changes in equity, and statement of cash flows. The income statement is the report that measures the success of company operations for a given period of time. The statement of financial position reports the assets, liabilities, and equity of company at a specific date. The statement of changes in equity reports changes in equity for a given period of time. The statement of cash flows reports the summary of all the cash inflows and outflows, or sources and uses of cash during the period [18, 19].

Spreadsheet-based financial accounting applications developed are divided into two main sections, namely the supporting and accounting cycle sections. The supporting section of spreadsheet-based financial accounting application developed consist of spreadsheet application for cash, bank, accounts receivable, inventory, investment, fixed assets, intangible assets, liabilities, equity, income and expense, and lease accounts. Spreadsheet application for cash account consists of petty cash application using fixed method and fluctuation method.

The spreadsheet application for bank accounts consists of bank reconciliation application to find out the correct balance, and reconcile the bank balance on the cash balance. The spreadsheet application for accounts receivable consists of application for allowance for bad debts. The spreadsheet application for inventory accounts consists of application for cost formulas and net realized values. The spreadsheet application for investment accounts consists of long-term investment application in stocks and bonds. Spreadsheet application for fixed asset accounts consist of depreciation of property and equipment. The spreadsheet application for intangible asset accounts consists of an application for intangible asset depletion. Spreadsheet application for liability accounts consist of short-term debt application and long-term debt on bonds. Spreadsheet application for equity accounts consist of share capital application and retained earnings. The spreadsheet application for the revenue account consists of long-term contract. The spreadsheet application for the lease account consists of a lease application for the lessee and a lease for the lessor.

The supporting section of spreadsheet-based financial accounting application can be integrated with accounting cycle section that consist of: 1) the initial data which includes company information, chart of account, vendor, customer, and inventory; 2) the transactions cycle 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 work sheet; 6) financial statements, including income statement and other comprehensive income, statement of financial position, statement of changes in equity and cash flows statement; and 7) closing trial balance.

The use of the transaction cycle approach allows easier transaction input. Recording sales transactions in a sales journal e.g., the operator inputs the transaction date, invoice number, tax information, code / name of the item, code / name of the customer, number of items, and price. Operators do not need to input data in sales journal manually, because sales journal have been generated automatically by the application. Other special journals are also not need to be entered manually because special journals are application outputs, not application inputs.

B. User Satisfaction

The technical performance of spreadsheet-based financial accounting application include the ability of hardware and operating system to respond the accounting application, simplicity and ease of use. The result of user satisfaction assessment on technical performance is presented in Table II.

TABLE II USER SATISFACTION OF TECHNICAL PERFORMANCE

Technical Aspects	Score (%)	Rating
Ability of hardware and operating system		
CPU (Central Processing Unit) can	89.81	very satisfied

respond to all requests quickly.		
The operating system supports application used.	87.96	very satisfied
Simplicity and ease of use		
Application is easy to learn.	90.74	very satisfied
Application is easy to use.	92.59	very satisfied
Application provide the dialog guidance that directs the user during data entry.	81.48	very satisfied
Structure of application menu can facilitate user application.	86.11	very satisfied
Average	88.12	very satisfied

Based on Table II, it is known that mean score (%) of each aspect is as follows: CPU (Central Processing Unit) can respond to all requests quickly (89.81%), the operating system supports application used (87.96%), application is easy to learn (90.74%), application is easy to use (92.59%), application provide the dialog guidance that directs the user during data entry (81.48%), structure of application menu can facilitate user application (86.11%). Mean score (%) every aspect of technical performance is greater than 82.3%. These shows that users of application are very satisfied on the technical performance of spreadsheet-based financial accounting application. The ability of the hardware and the operating system is very capable of supporting application. The spreadsheet-based financial accounting application is very simple and easy to use. Ability hardware and operating system can be seen from the ability of CPU (Central Processing Unit) to respond all requests quickly. Simplicity and ease of usage can be seen from ease of learning, ease of use, availability the dialog guidance that directs the user during data entry, and structure of menu can facilitate user application.

The operational performance of spreadsheet-based financial accounting application includes the ability of user using accounting application, the ability of accounting application to generate information, and control application on the spreadsheet-based application. The result of user satisfaction assessment on operational performance is presented in Table III.

TABLE III USER SATISFACTION OF OPERATIONAL PERFORMANCE

Operational Aspects	Score (%)	Rating
The user ability to use application		
User can use the application quickly.	91.67	very satisfied
User can overcome its own difficulties in the use of the application.	87.04	very satisfied
Ability of accounting application to generate information		
Application can generate financial reports.	93.52	very satisfied
Application to generate detailed information.	79.63	Satisfied
Application can generate information that can be displayed on the monitor.	98.15	very satisfied
Application can generate information in hardcopy documentation (print).	93.52	very satisfied

Application Control		
Application include adequate password.	76.85	Satisfied
Application has some controls (validation test, a test of accuracy, fairness, completeness etc.).	87.04	very satisfied
Application has some control output (output reconciled with other parts).	83.33	very satisfied
Average	87.86	very satisfied

Based on Table III, it is known that mean score (%) of each aspect is as follows: user can use the application quickly (91.67%), user can overcome its own difficulties in the use of the application (87.04%), application can generate financial reports (93.52%), application to generate detailed information (79.63%), application can generate information that can be displayed on the monitor (98.15%), application can generate information in hardcopy documentation (print) (93.52%), application include adequate password (76.85%), application has some controls (87.04%), and application has some control output (83.33%). Mean score (%) most aspect of operational performance is greater than 82.3%. These shows that users of application are satisfied on the operational performance of spreadsheet-based financial accounting application. The user have ability to use application, the application able to generate information, and the application has application control. The user ability to use application can be seen from user can quickly use the application, and user can overcome its own difficulties in the use of the application. The ability of accounting application to generate information can be seen from application can generate financial reports, application to generate detailed information, application can generate information that can be displayed on the monitor, and application can generate information in hardcopy documentation (print). The application control can be seen from application include adequate password, application has some controls (validation test, a test of accuracy, fairness, completeness etc.), and application has some control output (output reconciled with other parts).

C. Dominant Aspects Influence User Satisfaction

The dominant aspects of technical performance that increase user satisfaction are the simplicity and ease of use aspect. Application is easy to learn (90.74%) and application is easy to use (92.59%). The end user application developed based on spreadsheets is easy to learn and easy to use. Spreadsheet applications are very popular in the accounting profession as a tool in financial data processing. This findings is consistent with what others have reported that simplicity is one of the usability principles [13], and ease of use is one of the advantages of spreadsheets application [9, 10].

The dominant aspects of operational performance increase user satisfaction are the user ability to use application and ability of accounting application to generate information. This findings is consistent with what others have reported that the ability of the application to generate information is the primary consideration for the user in selecting the application.

Accounting information is useful for investors, lenders, and others creditors [18,19]. The financial and accounting information are related mainly to forecasting, risk management, respectively growth and profitability trends. Accounting information requirements are indeed useful on organizational performance [20]. Implementation of accounting information systems can lead to better decision-making because it can generate reports more efficiently [21, 22].

IV. CONCLUSION

Spreadsheet-based financial accounting application is spreadsheet-based application for processing of supporting data for financial reporting, and generate financial reports. The User very satisfied on technical and operational performance of spreadsheet-based financial accounting application. The dominant aspects of technical performance increase user satisfaction are the simplicity and ease of use. The dominant aspects of operational performance increase user satisfaction are the user ability to use application and ability of application to generate information.

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