

**Development of Accounting Information System
with Rapid Application Development (RAD)
Method for Micro, Small, and Medium Scale
Enterprises**

— *Review of* —
**Integrative
Business &
Economics**
— *Research* —

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ABSTRACT

Presently, micro, small, and medium scale enterprises play an important role in improving the economy of Indonesia in terms of business number, job creation, and growth of the national economy. Micro, small, and medium scale enterprises are one of the keys for this nation to get out of the crisis because in majority the businesses related to the real sectors are the micro, small, and medium enterprises, and most people believe that one of the keys for this nation to get out of the crisis is by driving the real sectors. Presently, many micro, small, and medium enterprises are still in the manual recording process of financial transactions and financial reporting. The objective of this study is to develop an accounting information system with Rapid Application Development (RAD) for SMEs so as to answer whether there is an increased quality of information system in SMEs. The results of this research are as follows: 1) The small business enterprises in Klaten are dominated by young entrepreneurs who run online businesses. The young entrepreneurs in Klaten sprout rapidly to support the economic growth of the region. 2) The human resources lack competencies. Many of the owners of the small business enterprises do not understand the accounting and financial report system well. They operate with manual and conservative descriptions with simple book keeping. They lack knowledge in computerized accounting system and whether it is useful to support their business continuity. 3) Personal expenses and operational expenses are paid from the same sources. As a result, the owners have no idea how much profit they have made, so they do not have a clear and accurate financial report to measure business growth.

Keywords: Accounting Information System, Rapid Application Development, SMEs.

1. INTRODUCTION

The Indonesian economy is experiencing erratic fluctuations, which makes the small and medium scale enterprises become a good vehicle for the creation of

productive employment as the production process of the small and medium scale industries are generally labor-intensive. Until now, the micro, small, and medium scale enterprises play an important role in improving the economy of Indonesia in terms of businesses number, job creation, and national economic growth. The micro, small and medium enterprises is one of the keys for this nation out of the crisis, because in majority the businesses related to the real sectors are the micro, small, and medium scale enterprises, and most people believe that one of the keys for this nation to out of the crisis is by driving the real sectors. According to Bohusova (2015) SMEs are considered as the key factor of economic growth and employment in the economics.

At this many micro, small, and medium scale enterprises are still in the manual recording process of financial transactions and financial reporting. It is not effective and efficient in business operations. The manual system often goes wrong, especially if the transaction data are abundant, which may cause the financial information presented to be not accurate, relevant, and timely.

The development of technology, especially technology information, which is instrumental in all fields is very fast. In the field of business, information technology is very favorable for the survival of companies. The companies rely on information systems to maintain their competitiveness. The development of information technology is expected to improve the enterprises' progress in their business. The small and large scale enterprises need information system immensely as they need a system, which connect between the units there. The system is very important to support the activities of the companies so as to increase their productivity.

The application of information technology in the enterprises has a very large role, especially in the management and processing of data. The information generated by a computer-based information system, will meet the needs of the users. A good information system is a system of mutual support sub-systems, and is equipped with sophisticated computers.

The use of computer technology in accounting information systems or so-called Electronic Data Processing (EDP) will help improve the efficiency and effectiveness of the system itself. However, this condition can be met provided that specially made software or special applications must meet the accurate and true standards of internal control procedures. Computer technology is not only used by large companies, but with the rapid advancement in technology and the need for fast and precise information, the small and medium scale companies also need to improve the effectiveness of the work. The micro, small, and medium scale enterprises in improving their business require a support for the daily operation data processing.

The rapid technological development and the need for accurate, relevant, and timely information are expected by the internal and external users of information of the companies. However, in reality there are still many SMEs which use manual systems in their data processing operation. They require a support of computer technology. The use of manual systems with an emphasis on human power can lead to several problems as follows:

1. The data processing takes long time
2. The calculation contains errors or inaccuracy
3. The results of data processing are not timely reported
4. The data security is improperly guaranteed

2. THEORY AND DEVELOPMENT OF HYPOTHESES

2.1. Contributions Micro, Small, and Medium Scale Enterprises (MSMEs) to Economy

Law No. 2008 regards SMEs as a legal basis and support for the empowerment of SMEs. The statistic shows that the number of units of SMEs approaches 99.98% of the total business units in Indonesia. The contribution of SMEs to economy is clearly shown by its dominance as much as 99.04% to provide jobs. Similarly, its contribution to the Gross Domestic Product (GDP) of non-oil is quite convincing that is 63.11%. The role of SMEs in Indonesia as well as in other countries is the backbone of the national economy.

Table 1: Contribution of Small and Medium Scale Enterprises (SMEs) in Some Countries

No.	Country	Year	The contribution of SMEs to employment	The contribution of SMEs to GDP	The contribution of SMEs to export	SMEs contribution to total business units
1	China	2008	75%	60%	68%	99%
2	India	2012	-	-	40%	90%
3	Japan	2007	69%	53%	-	99.7%
4	South Korea	2009	75%	60%	-	99.9%
5	Singapore	-	70%	60%	-	99%
6	Malaysia	2012	56%	32%	19%	99.2%
7	Thailand	2010	-	37.1%	28.4%	99.8%
8	Philippines	2009	61.2%	35.7%	-	99.6%

The table shows that SMEs have an important role in the economic and industrial system of each country. The efforts to empower SMEs have been made through (1) improved access to funding, (2) increased productivity and competitiveness, and (3) increased exports.

2.2. Development of Accounting Information System

2.2.1. System

System is an entity or a unit which consists of interconnected parts (sub-systems), which is aimed to achieve certain goals (Zaki Baridwan, 1996: 2). Information is output (output) of a data processing. This output usually is in good order and has meanings for those who receive it so that it can be used as a basis for decision-making (Zaki Baridwan, 1996: 4). Information also means significant and useful knowledge to achieve a particular goal or objective (Wilkinson, 1993: 3). Meanwhile, according to Henry C.Lucas, "Information is either visible or invisible fact which is available to reduce uncertainty about some circumstances or events. (Jogiyanto, 2000: 24).

2.2.2. Definition of Accounting Information System

Accounting Information System is a composition of various forms, records, equipment including computers and equipment as well as communications equipment, implementation personnel, and reports which are closely coordinated and which are designed to transform the financial data to information required by the management (Nugroho, 2001: 4).

The accounting system and the accounting information system have the same idea, namely: a series of administrative activities to handle corporate transactions so that they are uniform. They both are equipped with a variety of procedures, documents and journals where their results are financial reports for internal and external uses (Winarno, 1994: 9). The accounting system utilizes the existing resources within the company, namely: employees, automatic machines, computers and other resources. The accounting system can be carried out manually (by utilizing the employees and support automated machines such as copy machines, calculators, and typewriters) or by computerized ones (by using computers).

System Development Process

System development process is a set of activities, methods, best practices, automated delivery process and equipment used by the stakeholders to develop and improve information system and software continuously (Whitten, 2001: 75). The stakeholders here can be defined as ones who are interested in or attracted to the existence of an information system or to a new information system. The stakeholders can be technical or non-technical personnel. In information system, the stakeholders can be the owners, users, analysts, designers, builders, sellers of the system as well as information technology consultants.

Information System Development Method

Rapid Application Development (RAD) is a system development strategy that prioritizes the acceleration in the system development through extensive user involvement in the use of a construction sequence, where the circuit serves as a more effective system model (prototype).

The system development process frequently uses prototyping. This method is best used to solve misunderstanding between the users and analysts, which usually occurs due to the inability of the users to clearly define their needs (Mulyanto, 2009).

Prototyping is the rapid development and the testing of work models (prototypes) of new applications through a repeated interaction process which is frequently used by information system experts and business experts. Prototyping is also called rapid application design (RAD) because it simplifies and accelerates the design of the system (O'Brien, 2005).

Some users are difficult to express their wishes to get applications that fit their needs. These difficulties need to be resolved by the analysts to understand the users' needs and translate them into the form of a model (prototype). This model is further improved continuously to suit the users' needs.

Based on its characteristics, the prototype of a system can include low fidelity and high fidelity. Fidelity refers to the level of detail in a system (Walker et al, 2003).

Low fidelity prototype does not describe the system detailed enough. The characteristics of the low fidelity prototype include the following: having limited

function or interaction; illustrating the concept of design and layout rather than describing the interaction model, not displaying the operation of the system in detail, demonstrating the general feel and look of the users' interface, and simply illustrating the concept of general approach (Walker et al, 2003).

High fidelity prototype describes the system in more detailed. This prototype has a full interaction with the users where the users can enter data and interact with the system, representing the core functions that can simulate most of the functionality of the final system, and it has a very similar appearance to the actual product (Walker et al, 2003).

Features that will be implemented on the prototype system can be restricted with vertical or horizontal technique. Vertical prototype contains functionality detail but only to some selected features, not on the overall features of the system. Horizontal prototype includes all the features of the users' interface, but without its staple function the horizontal prototype is only a simulation and cannot be used to do the actual work (Walker et al, 2003).

The process of prototyping is a process which is interactive and repetitive. It combines the traditional development cycle. The prototype is evaluated several times before the end users state that the prototype is accepted. The figure below illustrates the process of prototyping:

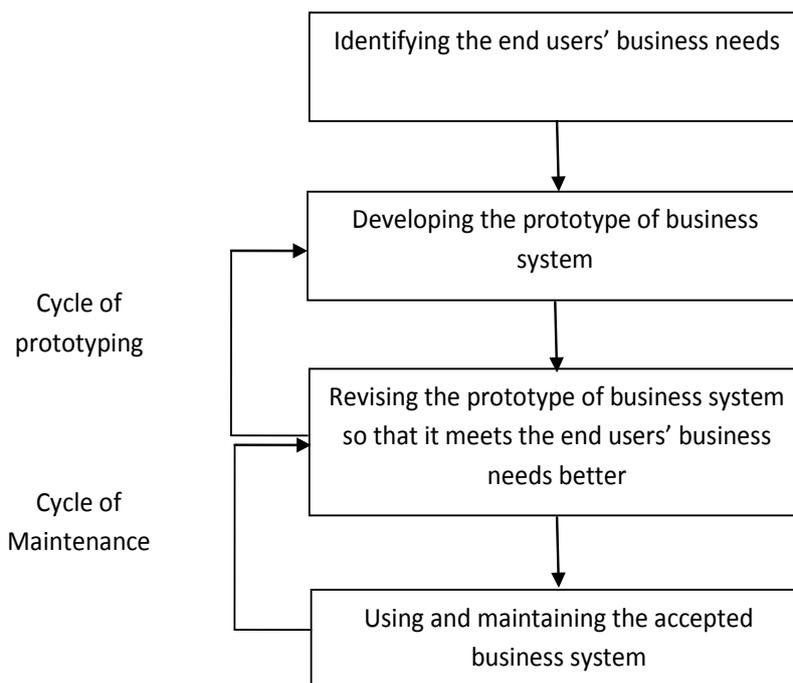


Figure 1. Stages of Prototyping

System Requirements Analysis

The development of information systems requires investigation and analysis of the reasons for the emergence of the idea to build and develop information system. The analysis is conducted to look at the various components used by the running system, which include hardware, software, network and human resources. The analysis also documents the activities of information system which

include input, processing, output, storage and control (O'Brien, 2005). Furthermore, a feasibility study is conducted to formulate the required end-user information, resource requirements, costs, benefits and feasibility of the proposed project (Mulyanto, 2009).

Need analysis phase requires an evaluation system to determine the ability of the system to define what should be done by the system and then to determine the criteria to be met by the system. Several criteria that must be met include goal attainment, speed, cost, quality of information produced, efficiency and productivity, accuracy and validity and reliability (Mulyanto, 2009).

System design

Analysis system describes what the system must do to meet the users' information needs. The system design determines how the system will meet these objectives. The system design consists of design activity that results in a functional specification. The system design can be seen as an interface design, data, and processes with an objective to produce specifications which fit product and method of the users' interface, database structure and processing and control procedures (Ioanna et al., 2007).

The system design will generate a prototype software package. A good product should include seven parts:

- 1) quick and easy menu features
- 2) input and output display
- 3) easily printable report
- 4) data dictionary that stores information on each field including the length of the field, editing in any report and used field format.
- 5) database with optimal key formats and record
- 6) appropriate display of the online query to the data stored in the database.
- 7) a simple structure with a programming language that allows the users to perform special processing, timing, automated procedures and others.

Testing the Systems

The prototype software packages are tested, implemented, evaluated and modified repeatedly until they are acceptable to the users (O'Brien, 2005). The system testing aims at finding errors that occur in the system and revise the system. This stage is important to ensure that the system is free of errors (Mulyanto, 2009).

Sommerville (2001) claimed that the test system includes:

- 1) the testing of unit to test individual components independently without the other components of the system to ensure the correct operating system.
- 2) the testing of module which consists of interconnected-components.
- 3) the testing of sub-system which consists of several modules that have been integrated.
- 4) the testing of the system to find errors resulting from the interaction between sub-systems and interface and to validate functional and non-functional requirements.
- 5) the testing of acceptance with the data entry by the users and not simulation data testing.
- 6) documentation by recording every stage of the work from the beginning to the end of programming.

The web-based information system testing can use the techniques and methods of traditional software testing. The Web application testing includes testing the links, browser testing, usability testing, load testing, stress testing and malar testing (Simarmata, 2009).

The users' acceptance of the system can be evaluated by measuring the satisfaction of users to the system being tested. The satisfaction measurement system includes display, conformity with user needs, and speed and accuracy of the system to produce the desired information user. There are several models of user satisfaction measurement of the system, including the Technology Acceptance Model (TAM), End User Computing (EUC) Satisfaction, Task Technology Fit (TTF) Organizational Analysis and Human Technology (HOT) Fit Model.

One of the measurement models which has been translated into several different languages and does not show a significant difference in the measurement results is End User Computing (EUC) Satisfaction. This model emphasizes the satisfaction of users of the technology aspects which include those of content, accuracy, format, timing and ease of use of the system (Chin & Mathew, 2000).

Implementation

Once the prototype is accepted, the implementation of the system is ready for operation and further the learning process of the new system takes place. Then it is compared with the old system in terms of technical and operational evaluation, user interactions, and information system and technology.

System Design Tools

System design requires equipment such as process design tools and data design tools. The former consist of a data flow diagram and a flow diagram of the system whereas the latter include entity-relationship diagram and data dictionary.

a. Data Flow Diagram

Data flow diagram (data flow diagram / DFD) is a chart documentation tool that uses symbols to explain a process. This chart shows the process flow of the entire system to the user and can be set according to the capability of understanding the details of the user. DFD consists of three elements: environment, processing, data flow and data storage. One advantage of using DFD is easier for users that are less mastered the field of computers to understand the system that is to be done (Ladjamudin, 2005).

b. System Flow Chart

System Flow chart is a device which is to describe the system in detail to illustrate the flow of information system and the system flow chart to illustrate the flow of the program (Ladjamudin, 2005).

3. RESEARCH METHOD

This research employed the action research method as to achieve its objective, namely: the development and the optimization of application of accounting information system with Rapid Application Development (RAD). In the first phase, a study was performed on the developed models. Based on the result of the preliminary research, a model of development of accounting information system with Rapid Application Development (RAD) was formulated. This research used the focused discussion group analysis technique.

4. RESULT

The SMEs in Klaten until recently have adequately thrived, especially those managed by young entrepreneurs who dare to start an independent online business. They have been challenged to create employment opportunities, not just as a job seeker force. Those above 40 years old have started to open SMEs since the provision of formal sector employment begins to shrink, forcing them to dare to open an independent business, in addition to hereditary business reason especially in the field of traditional food business.

The greatest constraint perceived is the limited skills of the human resources, both managers and business owners, especially in the areas of accounting and finance. In terms of accounting and finance, so far, only a manual conventional recording with a simple bookkeeping has been performed, not detailed computerized recording system assisted with detailed and accurate accounting system. Such simple recording cannot provide accurate financial information. Most SMEs do not understand what accounting system is and how to run it for business continuity.

For those aged over 40 years old who run SMEs, the procurement of computer equipment or supporting facilities is still regarded as an onerous burden of investment cost as many of them feel that such support device is not required yet, and they also find it difficult to operate the device due to their educational background. In majority, they feel more comfortable with the conventional recording system as they do today.

There has not been a separation between the operational expenses of the enterprises and the expenses for personal interests. Some owners of SMEs acknowledge that they still pay their personal expenses with the money of their enterprises whenever they need, and they frequently forget to record the expenses. Financial records are still complicated. It is, therefore, difficult to evaluate to what extent the SMEs have experienced business development because the financial records are not clear and accurate. The growth potential of the business is only judged on the basis that the enterprises "can survive and meet their need". This is mainly experienced by SMEs of traditional food.

The development of accounting information system for SMEs meets some challenges and urgencies, namely: (a) the improvement of skills of the human resources of MEs in using the computerization facility, (b) the capital for procurement or investment of computer and accounting system, and (c) The mentoring of the relevant authorities so that the management of SMEs is sustainable, performs smoothly as expected and there is not momentum period.

5. CONCLUSION, IMPLICATION, LIMITATION AND SUGGESTION

5.1. Conclusion and Implication

Based on the results of the research, some conclusions are drawn as follows:

1. The management of micro, small, and medium scale enterprises (SMEs) still uses a manual or conventional system.
2. The skills to conduct a good accounting information system in accordance with the standard are limited.
3. The development of accounting information system for SMEs encounters some challenges and urgencies. They include (a) the improvement of skills of the human resources of MEs in using the computerization facility, (b) the capital for procurement or investment of computer and accounting system, and (c) The mentoring of the relevant authorities so that the management of SMEs is sustainable, performs smoothly as expected and there is not momentum period.

5.2. Limitation

This study has a limitation, that is, the less extensive area of study.

5.3. Suggestion

The Office of Micro, Small, and Medium Scale Enterprises of Klaten and the academia need to unify synergic and integrated ideas in developing the accounting information system for SMEs. This can be done through the involvement of academia and SMEs in the accounting information system design so that the management of micro, small, and medium scale enterprises is more qualified to help the economy of the community and to contribute to the improvement of the country's economy.

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