



## MOBILE-BASED FINANCIAL MANAGEMENT SYSTEM FOR MICRO, SMALL, MEDIUM ENTERPRISES

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### Abstract

Micro, small, and medium enterprises (MSMEs) is a productive economic enterprises owned by individuals or business entity with net worth not more than the provisions in the legislation. The majority of MSMEs conduct financial, purchase and sale transactions, raw materials, finished goods, and the bill records, in the conventional paper-based. This raises a variety of issues such as financial calculation errors, damage or loss of paper records that could be at risk in a loss of information in it, along with the difficulty to process data into information needed in decision-making. In addition, the user's computer literacy, is also a problem in itself, if MSMEs are required to use a computer system. Most users currently use a smartphone easier than to operate a computer. This is what underlies the development of mobile based financial management system for MSMEs. This system is expected to allow users to perform simple financial management process, management of raw materials and finished goods, as well as provide information that is useful in decision making through a smartphone. In the verification phase, the tests performed on the system that has been made, to ensure that the system is free from errors. While in the validation phase, conducted the interviewing process by users who have tried to use this system, to ensure that the systems are in accordance with the needs of the user. Based on test and interview results, it can be concluded that the mobile-based financial management system for micro, small, medium enterprises can simplify the management of financial transactions, raw materials, finished goods, and also be able to present useful information in a report that is useful as a consideration in the decision by the MSMEs.

**Keywords:** finance, raw materials, finished goods, MSMEs, mobile.

### INTRODUCTION

Micro, small, and medium enterprises in Indonesia are productive economic enterprises that stands alone and is owned by individuals or businesses, which is not a subsidiary, branch, or part of another business that has a larger scale, and also has a net worth and total sales are not more than the provisions in the legislation (Ministry of Law and Human Rights Republic of Indonesia, 2008). The focus of this paper is on micro, small, and medium enterprises (MSMEs) in Sidoarjo district, which is one of the districts with the largest number of MSMEs in Indonesia, namely 171,264 MSMEs spread across 18 sub-districts ([diskopumkm.jatimprov.go.id](http://diskopumkm.jatimprov.go.id), 2016).

Sidoarjo district government is very attentive to MSMEs in their region. Development of MSMEs in their region carried out by the Sidoarjo district government through the Department of Cooperatives, MSMEs, Industry, Trade and Energy and Mineral Resources, aimed at helping MSMEs to survive in the face of a flood of foreign products with competitive price and quality. Sidoarjo district government strive to improve the MSMEs sector, conducted through Sidoarjo Digital Society Program that aims to make MSMEs competitive advantage in this district. This is consistent with research that has been done before by Anderson (2011), who found that the development of small and medium enterprises in developing countries will depend on government support, as well as support for non-governmental organizations and business associations. In Indonesia, SMEs has been a key player in the economic activity, where it is shown to the conditions as much as 99.9% of companies in Indonesia, is still included in the category of SMEs, and of that number, SMEs have employment for 96.2% of total existing workforce (Tambunan, 2011).

One key to the success of a company is how it manages its finances, including at the MSMEs. It is based on research which says that finance will still be one of the main factors determining the growth and survival MSMEs in many countries around the world, not least in Indonesia (Abe, Troilo and Batsaikhan, 2015). There's even research that says that a shortage in finances will hinder one's desire to be an entrepreneur (Gohmann, 2012), so it is certainly reinforce the statement that a good financial management will bring in significant business progress.

Financial management can briefly be defined as any activity to make financial arrangements in order to achieve the predetermined company's goal. According to research done by Beck et al. (2008), there is a difference between financial management at large companies with small and medium companies, where the use of external funding sources, especially banks on small and medium companies tend to be rare. Continuing from the research that has been done, it was found that companies in the small to medium scale, often faced difficulty in accessing the information needed, due to data limitations (Daskalakis, Jarvis and Schizas, 2013). In the end, the shortcomings of data, impact on the difficulty or even less precise in decision making by business owners, due to lack of good quality information obtained.

The observations made on the research object in this paper indicate that, there are some problems that lead to poor quality of financial data on the object of research. Research object shows the existence of problems in purchasing raw materials, where the lack of information leads to less precise timing, amount and type of raw material ordered. This information deficiency occurs in the absence of good recording of the transaction ordering raw materials, receiving raw material, and payment of orders to suppliers.

The detailed problem that was found was associated with financial records that include, the purchase process, a record number of invoices that have not been paid off (debt) and due for payment. Nowadays, recording is done manually through books and piles of invoices, as shown in figure 1 and figure 2. In the figure 1 shows a sample of the letter ordering raw materials stored in paper form, in the upper left there is the name of the buyer, while on the right above, contains information ranging from the number of letters, the date, the name of the seller, up to the terms of payment. The bottom of the letter that looks damaged perforated, is a list of the goods ordered, and the last at the bottom, there is a place for the signature of the sender, the courier, and the consignee. The recording on manual and paper-based, making prone to calculation errors due to lost invoices, negligence in recording, as well as the emergence of difficulties in measuring the movement of cash flow and loss profits from the business. In figure 2 shows an example of a sales invoice, where there is a sale date and the identity of the buyer in the upper right corner, and there is also the invoice number in the top left. The table in the middle of figure 2, showing a list of items purchased along with the quantity, name, price, and sub total price. The lower part of the sales invoice indicates the buyer's signature on the bottom left, and signature of the seller in the bottom right.



Figure-1. Collection of raw material purchase orders

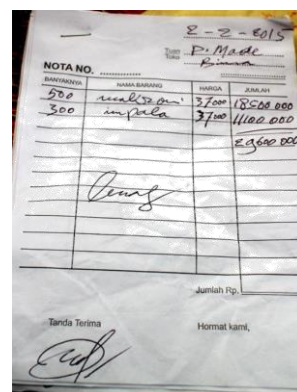


Figure-2. Sales Invoice

Financial accounting is done in weekly, based on the material purchase orders and sales invoices, which have not been paid off, as shown in Figure 1 and Figure 2. The process of buying and selling is done by using the principle of mutual trust. Management pattern of the research object is still centralized at the owner. All activities like, materials ordering, production, marketing, administration, was done by the owner. The research object, found it difficult to estimate the value of the assets they currently have because there is no clear separation between the family finances and MSMEs finance.

Recording like this, led to the difficulty of processing the data into information needed by business owners in determining subsequent ordering of raw material. Besides, other effects of the financial records are not well organized is the difficulty in determining the right price, because raw material prices are always moving, but difficult to track invoices and calculated the cost of capital. The use of information technology solutions, such as by using a software-based desktop

computer, also seems inappropriate because these records need to be updated by the business owner directly, but did not have time to access the computer. Moreover, the lack of user's computer literacy, may become a new burden if the system is desktop-based.

Studies conducted by Kietzmann et al (2013), states that the development of mobile technology, fundamentally changing the way of working and coordinating most of the people in the company to be more flexible. More in-depth, Zheng and Yuan (2007) says that if the office can be made mobile (mobile office), it will greatly support mobile work which can not be supported by traditional information systems. In research conducted by Raguseo et al (2015), stated that one of the impulse that causes a company wants to adopt a mobile work is a necessity in conducting operations in various places without being confined to their computer or laptop. More broadly, the further application of information and communication technology on business, better known as e-business is also able to improve the relationship between the organization and its suppliers and customers more effectively (Buxman, 2007).

Referring to the various research has been conducted on the use of mobile to support the various activities of the company, this paper discusses the development of mobile-based financial management system, to be a solution in overcoming the various problems that exist related financial records. Some of the factors to be the main focus in accelerating the development and implementation of this system is conformity with the needs, behaviors, and habits of potential users, as well as comfort and quality of the software being developed and implemented, in order to increase the confidence of users on the system (Chemingui and Lallouna , 2013). The last factor is related to information security, which is more susceptible to the development of mobile based system on small and medium enterprises, as revealed by Harris and Patten (2014). This is due to an unqualified small and medium enterprises, to allocate funds for the development of information security infrastructures such as large-scale enterprises.

## METHODOLOGY

In this research, objects are MSMEs that produce raw crackers. There are two MSMEs partners involved, namely Partners 1, Mr. Abdul Ghofur, and Partner 2, Mr. Nur M. Rokhim. Both of these partners are in Krembung, Sidoarjo District, East Java. The methodology consists of two parts, where both part will be interlinked and carried out to ensure the expected results can be achieved.

### 1. Solutions Offered

Based on the problems faced by the research objects as expressed in the previous section, several alternative solutions that can be offered are as follows.

- a. Implementation of financial recording system, which is expected to overcome the problems of each object research in expanding the market at low cost, increase the regularity of financial records mainly from the marketing that has been done, generate financial reports, and also reduce the risk of loss caused by the loss of financial history.
- b. Implementation of Android-based client application for use by the research object in accessing financial records online. This situation will have an impact on the efficiency in carrying out its business operations.
- c. Training on the use of the system, including the training in the use of software and hardware that is required to run the system properly.
- d. Assistance in making financial records for financial transactions in one period (1 month), is expected to maintain order and standard preparation of financial statements required by the research object. Assistance also aims to ensure that the research object can use this system independent and sustainable.

The design process of the development of mobile-based financial system will use Phased Development methodology. Using this methodology, the system will be divided into several large modules that will go through phases similar but separately, then combined into a complex system that is tailored to the original purpose of the design, as shown in Figure 3.

### 2. Mechanism of Implementation Activities

The design of the mechanism of implementation of this research, carried out by adopting action research consisting of 4 (four) stages, among others: planning, action, observation and evaluation, and reflection. The activities of each of the stages are as follows.

#### a. Planning

The activities carried out at the planning stage are:

- (1) Establishment of a technical implementation team for the development of the system  
The team was invited to hold a preparatory meeting of execution and then given a briefing on the objectives, mechanism design program, and a number of technical matters relating to the methods of implementation.
- (2) Socialization program on two MSMEs partners  
Socialization is done by, researchers met both SME partners in each location, and provide an understanding of the details of implementation, which will be performed, as well as the expected outputs of this research.
- (3) Analysis of problems at two of MSMEs partners  
The analysis was conducted using interviews and direct observation of the activities of businesses, in all functional areas of partners.

(4) Preparation of the training program

Based on identification, the analysis of the current problems, the results of the analysis of literacy partners, and the results of the needs analysis, then arranged the schedule and the right content, to be used in the training program.

b. Action

Actions in this activity as shown in figure 3, in the form of construction and development of online financial system. The activities carried out in this phase are:

(1) Initial construction

Through the results of the analysis that has been done to both partners, the team will develop four large modules in accordance with the previously planned.

(2) Accommodating a review of both partners

Each module has been developed, will be socialized, as well as tested on a partner. Shortages and mismatches obtained from the interaction with partners, would be a material improvement of the system by a team of technical implementation. Reanalysis, will be done when it needs more in-depth understanding of the problems faced.

(3) Final construction

The unification of modules, which are already finished, carried out after each module has been completely in accordance with the needs of partners, in resolving the financial problems encountered

(4) Training

Training on the use of the system, carried out in order to support the successful implementation of the system being developed. Outcomes of these actions, it would be a manual system

(5) Accompaniment

Assistance in the preparation and recording of financial transactions during the first period (1 month) will be done, in order to ensure the accuracy of the output, in the form of financial reports generated by the system.

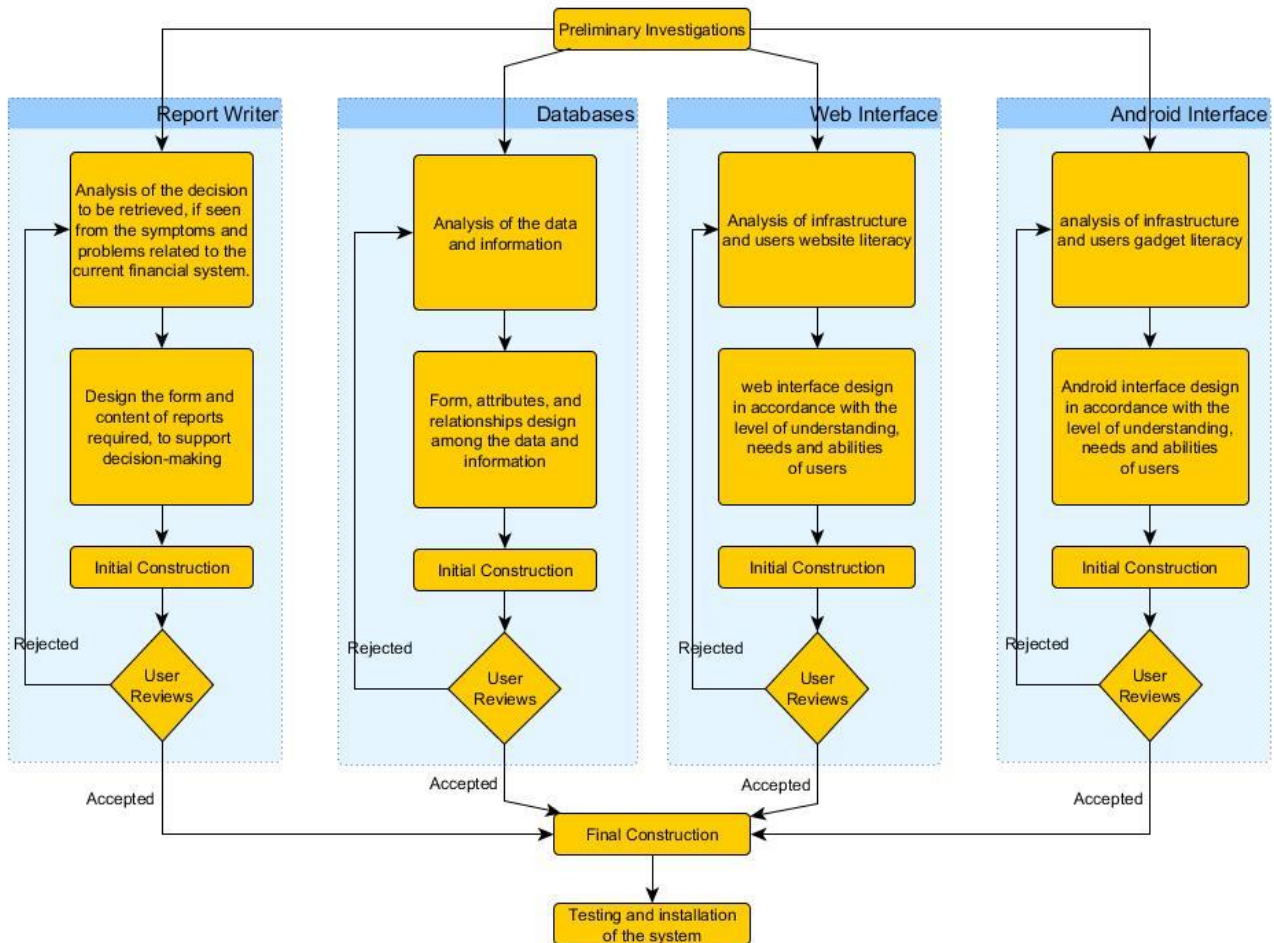


Figure-3. System Development Methods.

c. Observation and evaluation

Observations carried out on the process of entering financial transactions by both partners. Instruments used in the form of field notes. Some of the things observed are obstacles, shortcomings and weaknesses that emerge in the process of adoption and preparation of each item needed. Evaluation will be done on the quality of data entered, and

the quality of the output generated by the system, as well as the degree of usefulness of these outputs for partners. Products produced in this activity is an online financial system that can be used effectively by both partners. The quality of the output, will be seen from the reduced risk of loss of the financial trail of each transaction, as well as improving the ease of decision-making by partners related to financial information obtained.

d. Reflection

Reflection conducted on activities that have been implemented. This is done solely to find out shortcomings or advantages, on the activities that have been carried out in order to establish recommendations on the sustainability or development in subsequent activities.

## RESULT AND DISCUSSION

The factors that determine the success of the activities is the magnitude of the achievements up to now, adapted to the stage, which had been planned. The results can be translated into the following sections:

### 1. Analysis on the needs of partners

Through interviews that have been made directly to the two partners, and with regard to the current conditions, the needs of both partners can be summarized as follows.

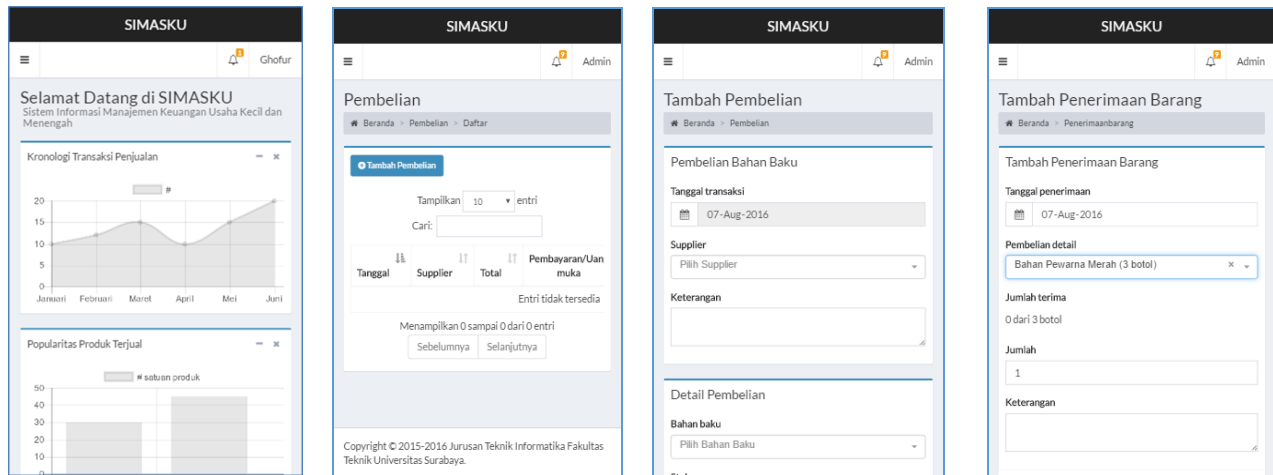
- a. The need for the system to be able to record the cash coming in and out of each MSMEs, because until now, the MSMEs often do not know the substantives
- b. COGS calculation system automatically, based on various data previously entered, is expected to facilitate the calculation of COGS and reduce the risk of loss.
- c. Purchase of raw materials, became one of the main problems, if it is too big or too small. Purchases that are too large, will cause the loss of the storage cost, whereas if it is too small, will cause a loss in terms of greater sales opportunities. Settings purchase of raw materials through the system, is expected to reduce the risk of error in the number of purchases of raw materials.
- d. In any business, including MSMEs, not all sales will receive a cash payment, partly still done by credit. Maturity is often a problem in the payment system, which is made on credit, so that the system created will provide an alert feature for the debt that has been entered into the period of maturity.
- e. The financial condition of SMEs as a whole, needs to be described in a concise way, as this will determine the quality of a decision to be made by the owner of the SME. The financial statements, can be one way to describe the financial condition of the SMEs, so that the system provides an income statement and cash flow to support it.

### 2. Online financial management system design

Design of online financial management system, show some things related to finance, which has been accommodated.

a. Homepage design

The main page of a system should be used, as a means to display summary information about the data that is in the system. Online financial management system, need to show the data about transactions that have occurred on SMEs. Figure 4a shows a detail of the main page of the online financial management system developed. On this page there are three main parts. The first is a notification, where it is shown in the top right corner, symbolized by the bells and small figures at the top. This notification is used to give a warning about a variety of important information that occurred in relation to financial transactions, such as bill due. The second part is a graph showing the chronology of the sales transaction, in which the graph is shown the movement of total sales transactions that occur each month. This is expected to be one source of information for business owners, to make decisions about the right time to make efforts to increase total sales. The last part at the bottom of this page is a graph that shows information on the product, the most widely sold. This course will be very useful for business owners, to determine the purchase of raw materials, so that business owners do not lose the opportunity to perform with greater sales. In addition, through this information, business owners can also stop the production of goods that have been less popular. These three things are immediately visible on the main page of the online financial management system, because these three things is information that can describe the condition of the overall business.



**Figure-4. (a) Homepage, (b) List of the Raw Materials Purchase, (c) Raw material purchase form, (d) Receipt of goods form.**

#### b. Raw Material Purchasing Management

Purchase of raw materials, becoming one of the important processes in SMEs, so the system facilitates this by providing pages to manage the purchase of raw materials as shown in Figure 4b to Figure 4d. The first page of the management of raw material purchases, indicating the page, to perform a search raw material purchasing history has ever done. On this page the user can perform a search based on the date of purchase, the supplier's name, the total purchases, or total advances paid. There is also an option to show the number of rows of data in this search page, where it will be useful when users need to compare more data at once, or otherwise comparing bit by bit the data, depending on the needs at the time. Through these pages, a business owner can also add a new purchase transaction, by pressing the button that has been provided. In addition, if observed, then on this page there are symbols of notifications, such as on the main page. Some things will always appear on every page, and one of them is that notification, and others are menus that are useful as navigation between pages.

The process of adding the purchase of raw materials, shown in Figure 4c, where there is a form to be filled to make the purchase of raw materials. There are several fields that must be filled, including the date of the transaction (this field will contain the default value, in the form of the current date of this form accessible), a list of suppliers and additional information related to the transaction to be carried out. Furthermore, at the bottom, there are some associated data fields to enter the details of the purchase of raw materials, such as the name of the purchased raw materials, supplies that are currently available, as well as the amount of the purchase. Prices of raw materials will automatically appear when the user selects the name of the raw material to be purchased. This is possible because there are features such as master data, which is used to record the various basic attribute of any existing data in this online financial management system.

After making a purchase, then the next thing to do is keep records of receipt of goods that have been ordered for purchase. In this online financial management system, also available the page to search for various data related to the purchase receipt. On page list of receipt of goods, will have the same format as the list of purchases of raw materials, only on the pages of receipt of goods, columns are date of receipt of raw materials, raw material name, amount received, as well as additional information that may be added. The other features are similar to that of the page listing the purchase of such goods, data search, based on each attribute data is displayed, as well as the selection of the number of rows you want displayed in one page.

Each receipt of goods, must be recorded on the form as shown in Figure 4d, so it will be easier to see the items that have been purchased and have been accepted. There are some fields as well as the information that appears on this page. The field consists of, the date of receipt (also has a default value as on the date field of purchase), selection of items that can be accepted, the amount to be received, as well as additional information is needed. While the information shown on this page is the amount of goods that have been received before, and the number of items accrued later.

The last thing that should be known by the seller after making a purchase is the detail of the purchase itself, and this is provided by the system in the form of a purchase detail page. This information is very useful for the user to know the details of the purchase has been done, while knowing well how many items should be received later. On this page also displays details such as, vendor name, number of purchases, discounts obtained, as well as the price after getting a discount. Explanations shown in this paper, still can not cover the whole of the developed system. There are some things, such as master data features, and detail views of various forms to enter the master data. But these things do not appear, because it is not the core of the system being developed, so it is expected that it is already well understood, although without any specific explanation in detail.

## CONCLUSION

The system that has been generated, it appears already to accommodate a variety of important needs of MSMEs, ranging from the purchase of raw materials, finished goods sales, up to calculation and recording of various matters relating to the finances of MSMEs. Additional needs of MSMEs, have also been accommodated through analysis of the data generated from direct interview with MSMEs.

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