

Mobile Accounting Version 1

Design of Mobile Costing Application for MSMEs Using Android

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Abstract— The function and component of mobile phone has become variety, smart and intelligent that shows a new era of mobile technology. Progressive researches in the area of smart phone technologies were to support the needs of powerful development platform which contribute to the emergence of Android as software for mobile devices. Accounting tools by means of mobile phone has becoming a new approach towards educating Micro, Small, and Medium enterprises (MSMEs) about various costing components and costing strategies. Mobile Accounting Tools has been getting more importance in business environment as one type of mobile business application. This paper introduces the design of mobile accounting application as well as describing an approach using Android platform for building business application towards mobile technology. The application provides a realizable cost effective solution for MSMEs to simplify the use of accounting tools to calculate costing and determine pricing.

Keywords—MSME; Android; Mobile Application; Accounting Tools.

I. INTRODUCTION

Many kind of applications will be embedded on the mobile phones such as video call, internet surfing, online banking and content sharing, due to increasing demand of the network technology development. Hence, a powerful development platform were in needs to support the needs, therefore, the research and development of operation system for smart phone has become one of the most active areas. Google has design a software platform for mobile devices, which called Android (Google Developers Website). The purpose of this new software platform is to establish an opened ecological system with standardized mobile phone software platform in the mobile industry (Pan.Y.C et al,2010). In business environment, knowledge of estimating cost to operate a business is essential in order to create a pricing system that works. In addition, a system with capability to be accessed from mobile will provide true advantages for a business practitioner. The usage of information and communication technology is now become compulsory in any business area. Financial application such as accounting tool can assist small business owner to easily track key financial data anytime and anywhere and also promoting a dynamic operating environment for Micro, Small and Medium enterprises. (MSMEs)

MSMEs is varies from country to country. The majority of MSMEs type of businesses is not incorporated companies, but are owned and managed by self-employed people either on

their own or in partnership. In Malaysia, the definition of MSMEs is based on two criteria, namely the revenue that it makes or the number of full-time staff the business is employing (Saleh & Ndubisi, 2006). Hence, a business can be specified as MSMEs if it meets either one of the two criteria.

Within the MSMEs itself, there are also terms that are used to describe if an MSMEs is a Micro Enterprise, Small Enterprise or Medium Enterprise, and again this depends on the criteria. In 2005, the National MSMEs Development Council announced the official and standardized definition of MSMEs (SMEInfo Website). An enterprise is considered to be an MSMEs based on the annual turnover or number of full-time employees indicated in Table 1 below.

Table 1. Definition of MSMEs in Malaysia

Enterprise Category	Micro	Small	Medium
Manufacture services and agro-based industries	Sales turnover < RM250,000 Employees < 5 persons	Sales turnover between RM250,000 and RM 10 million Employees between 5 to 50 persons.	Sales turnover between RM10 million and RM 25 million Employees between 51 and 150 person
Services, primary agriculture and information & communication technology (ICT)	Sales turnover < RM200,000 Employees < 5 persons	Sales turnover between RM200,000 and RM 1 million Employees between five and 19 persons	Sales turnover between RM1 million and RM 5 million Employees between 20 and 50 person

Developing sustainable environment for Small Medium and Micro Enterprises (MSMEs) is seen as a priority in Malaysia economic developments. MSMEs are known as a primary driver for job creation and GDP growth toward country. Besides playing important roles for private sector, they also contribute to economic diversification and social stability.

The structure of this paper is organized as follows: Section 1 covers the introduction and general view of mobile applications and accounting tools. Section II describes on general overview of Android platform. Section III discuss about Android system architecture while section IV provide details of the design of Mobile Accounting Version 1for MSMEs. Section V concludes on the paper and future work.

II. ANDROID

Google android is an open source operation system and software mobile equipment integrated platform which does not depend on equipment. It also includes operating system, middleware and some of the main Application. With open architecture and excellent research and development environment, Android makes full use of the handheld devices to any previous block mobile industry innovation of exclusive obstacles. The specialness of this platform is that developers can modify up to the structure level of the application using their own codes or Google Java Library.

Android also has rich graphics system, which makes it easy to develop multimedia application and web browser tools. The openness feature of the Android platform can promote technology innovation, reduce development cost and also help the operators make characteristic product. Hence, it has a large market potential (Pan.Y.C et al,2010).

III. ANDROID SYSTEM STRUCTURE

The Software structure of Android includes operating system, middleware and applications. It can be divided into four level; the Application, Application Framework, Libraries and Android Runtime, and Linux Kernel.

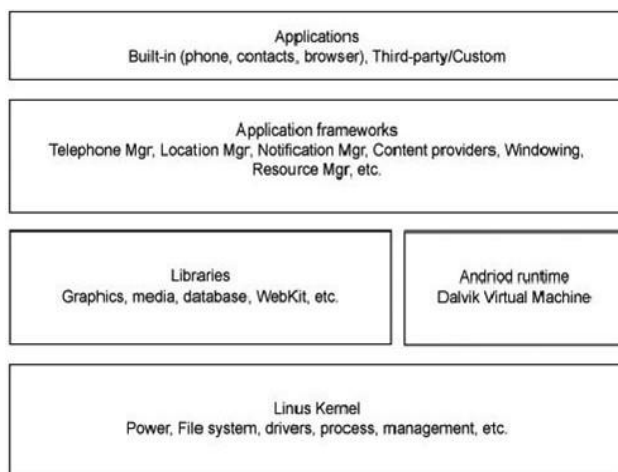


Figure 1. Android System Architecture

A. Application

This level is where all the application gathered. This includes several core applications such as email client, Short Message Service (SMS), calendar, map, browser and phone contact. All the application was written in Java Language and developers can modify the codes freely.

B. Application framework

As a developer, the access to the Application Programming Interface (API) was unlimited. Android was designed so that all application can benefit from its capability. The application framework has a very unique design, by which component can be reuse by user as for their applications and various services can be applied to be used again. Android has larger display and simpler programming which is much easier compared to any other operating system (OS).

C. Libraries and Runtime

A set of C/C++ library that can be used by different component in Android System runs the application. Some of the core libraries include FreeType, SQLite, LibWebCore, SGL and many more. The core library contains the most class which Java need. Each Android application has its own independent process. Android use one Dalvik Virtual Machine (DVM) to perform multiple Android applications, but each Android application has its own Dalvik Virtual machine.

Although Android application is developed by Java language, they do not use Java runtime components but Android runtime component to perform the procedure. Android runtime component include two important parts, one is the core library and the other is Dalvik virtual machine.

Dalvik virtual machine is a general-propose register type of virtual machine, simple called DVM. DVM consider the development with the minimum of memory resources and can also perform multiple VM individual. This design enables the system to save more resources in the optimal way Dalvik virtual machine depend on the operating system as well as the Java virtual machine, different operating system has different Java virtual machine.

D. Linux Kernel

Linux Kernel placed at the bottom of Android architecture structure. Google uses Linux kernel to develop Android system which include memory management, security setting, power management and other hardware drive. Kernel act as an abstract layer between the hardware and software. For example, a device with camera function needs Android Kernel to enable user to send instruction to the camera.

IV. DESIGN OF MOBILE ACCOUNTING APPLICATION

Costing and pricing are the most important element of any successful MSMEs (Aini Aman et. Al.,2001). There are three primary cost factor (labor costs, material costs and overhead costs) that need to be considered by MSMEs when determining the prices they charge for their goods or services (Aman. A et al.,2011). Yet, many MSMEs fail to educate themselves adequately about various costing components and pricing

strategies. The limited literacy on product costing and pricing among MSMEs calls for a simplified design and user friendly applications for costing and pricing of products or services.

Mobile Accounting Application for MSMEs is an application to allow users to calculate cost and price of product or services per unit. This application includes calculation of sales, cost of goods sold and profit on daily, weekly or monthly basis. In addition, the application also allow user to calculate gross margin and breakeven in unit and dollar. MSMEs will only need to key in required data such as unit sold, cost labor, material and overhead, selling and administration expenses to get information on their cost per unit, price per unit, total sales, cost of goods sold and profit margin. Such information will assist them in their daily decision making on how many units that they need to sell in order to achieve certain level of profit.

The Mobile Accounting Application uses Android as the platform were much more advance and well thought out operating system. Moreover, the mobile application for accounting with Android based platform is still very new in the scenario of MSMEs market user. The application can be downloaded from web applications market such as Google Android market. This allows easy access to the application for the users. Currently, the Android platform has in excess of over 5 million local users including Android tablets and smart phones.

This type of Android application operates within smaller and more restrictive screen size then web application. They respond to a number of touch events compared to a single click event and also interact in many more ways via screen transitions. The focus of developing this application mostly concentrate on the most common Android-based platform such as Samsung Tablet and smart phones, HTC, and many more.

The Mobile Accounting Application for MSMEs were designed to have following modules; profit calculator, break even, costing, sell price and setting.

A. Profit Calculator

This module allows users to key in data such as total number of units, total cost and unit sell price hence the application will provide information such as unit cost, total profit, unit profit, profit margin and markup percentage value.

The screenshot shows the 'Profit Calculator' module. It has a title bar 'M-Accounting V1'. Below it, the title 'Profit Calculator' is centered. There are eight input fields with labels: 'Total # of Unit', 'Total Cost', 'Unit Cost', 'Unit Sell Price', 'Total Profit', 'Unit Profit', 'Profit Margin %', and 'Markup %'. A 'Setting' button is located at the bottom right. At the very bottom, there is a navigation bar with four buttons: 'Profit calc', 'Break Even', 'Costing', and 'Sell Price'.

Figure 2. Profit Calculator Module

B. Break Even

This module will provide information for break even from input given by user; total number of unit, total cost, new total cost, unit sells price and new unit sell price.

The screenshot shows the 'Break Even' module. It has a title bar 'M-Accounting V1'. Below it, the title 'Break Even' is centered. There are nine input fields with labels: 'Total # of Unit', 'Total Cost', 'Unit Cost', 'Unit Sell Price', 'Total Profit', 'Unit Profit', 'Profit Margin %', 'Markup %', and 'Break Even Lift %'. A 'Setting' button is located at the bottom right. At the very bottom, there is a navigation bar with four buttons: 'Profit calc', 'Break Even', 'Costing', and 'Sell Price'.

Figure 3. Break Even module

V. METHODOLOGY

A general mobile application development methodology was selected for the development of this mobile accounting application. This involve several phases including getting assessment needs, storyboarding, server or client UML flow, application design, application development, application test, evaluation and maintenance.

VI. CONCLUSION

The significant of this application is to simplify the use of accounting tools to calculate cost and pricing hence giving assistance for MSMEs in their decision making. It is cost effective and efficiently assists the start-up entrepreneurs to use accounting applications with minimal knowledge on accounting and at the small fraction of cost, user friendly and mobile suitable for MSMEs who are always travelling and not in office. This certainly led to bigger interest and application in actual accounting software later in their business. Mobile Accounting Version 1 for MSMEs is a good mobile application for enhancing other desktop accounting software especially for small business practitioners.

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C. Costing

Costing module provide information for users to calculate unit sell price based on percentage of markup given.

Figure 4. Costing module

D. Sell Price

Sell Price module provide information for user to calculate unit cost and total cost based on margin percentage.

Figure 5. Sell Price module

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