

Gammu and kalkun for information services and sales based on information technology

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ABSTRACT

The rapid development of information technology forces everything to be done sophisticated, easy, and practical. During the information technology revolution 4.0 which is commonly called the disruptive era, the people need communication to exchange information and data. One of the communication systems that has been found today is handphone technology that can be used to communicate remotely through short message services. It can be ascertained that almost every adult having a handphone can be even more than one number, so it is a top priority for market sharing in business activities by utilizing gammu and kalkun technology. Gammu which is an open source program application was developed to build SMS gateways and or while the kalkun program application is used for web based SMS management system. This paper describes the use of gammu and kalkun in information technology to develop and manufacture and manage SMS SERVER effectively and certainly can save costs. This method is more efficient because it allows companies to easily manage their own information dissemination and sales activities and according transactions to business needs, so that the budget spent by the company can be reduced and more economical.

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1. INTRODUCTION

Information services and sales with base on information technology is one of the driving factors in the business. The information is presented through a short message is very effective and can be saving of marketing costs with the main goal of increasing sales [1]. Indonesia has a population growth of 3.5% of the world's population growth, making it the fourth place in the world population and almost everyone has a cellular phone, even the tendency to have more than one number either from the same provider number or provider or from another provider [2]. The communication is done to exchange or search for information wherever and whenever, one of the communication systems that have been used is short message technology through mobile phones that can be tailored to the needs and able to be used for remote communication [3].

Short message services are currently widely used by companies in business for information dissemination or transaction activities [4]. Short message costs are relatively inexpensive and are privacy, when using short message technology users can be kept secret if they are in a crowd because those who know and can read messages are only users themselves [5]. A short message can be developed to build SMS SERVER by utilizing gammu and kalkun technology [6]. Via SMS SERVER companies can manage themselves through the admin according to the needs of the business and the admin can also send messages

to the destination quickly and precisely [7], as seen in Figure 1. Gammu technology in information technology is used as a means to create an SMS gateway that can direct short messages to customers directly. Kalkun technology is used to manage web-based short messages [6-8]. Combination use of the gammu application programs and kalkun technology can be used to deliver product information in the form of goods and services to customers directly via a short message. This kind of marketing model can save costs and can even be called effective and efficient, so that consumers can feel well served because getting up-to-date information services from companies with the ultimate goal is sales can increase.

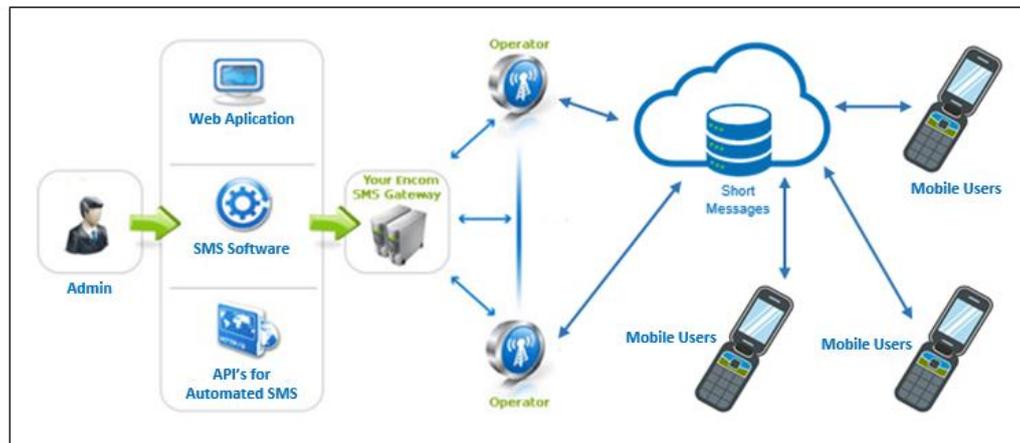


Figure 1. SMS gateway and server

2. RESEARCH METHOD

In order for research to run in detail and thoroughly, in the development of research with gammu and kalkun technology it will be carried out using the research and development method [9]. This method allows directly involving users in this case businessmen or entrepreneurs in the research conducted, so that the company's needs for the system can be fulfilled.

2.1. SMS server and SMS gateway

SMS servers are designed to regulate the exchange of information with customers via short messages and used in information technology created for transaction activities as well as for information services and sales. Distribution of information from SMS servers, questions, suggestions, and requests from business customers can be managed properly. As seen in Figure 2. SMS gateway is an application system that is used to send also receive SMS, and is usually used in business applications, both for broadcast promotion purposes (Bulk SMS), information services to users, dissemination of product content and services, etc [7, 10]. SMSD (SMS daemon) is a program module for receiving and sending SMS that works by using SQL server to store all inboxes and outboxes in the cellular SMS daemon that can support two database modules namely MySQL and PostgreSQL [11].

2.2. Gammu application program

Gammu is an open source application service and contains several command line utilities and is used to control phone functions and in general in the form of mobile phones and modems [6, 12]. Gammu is written using the C programming language and developed using the libGammu library. Gammu can run various accesses to various phone features, one of which is the SMS Gateway application [8, 13]. As seen in Figure 3.

2.3. Kalkun technology

The kalkun is a web based short message management that is an open source. Kalkun is released under the GNU General Public License, the program code for kalkun is free to change and redistribute source code that has changed. Kalkun uses gammu-smsd as a SMS Gateway engine to deliver and retrieve messages from a telephone or modem. Kalkun and gammu is two different things. Kalkun is only manages the database provided by Gammu [6, 14]. Kalkun's architecture can be seen in Figure 4. Kalkun's web based and only need to put this software on one computer as a server.

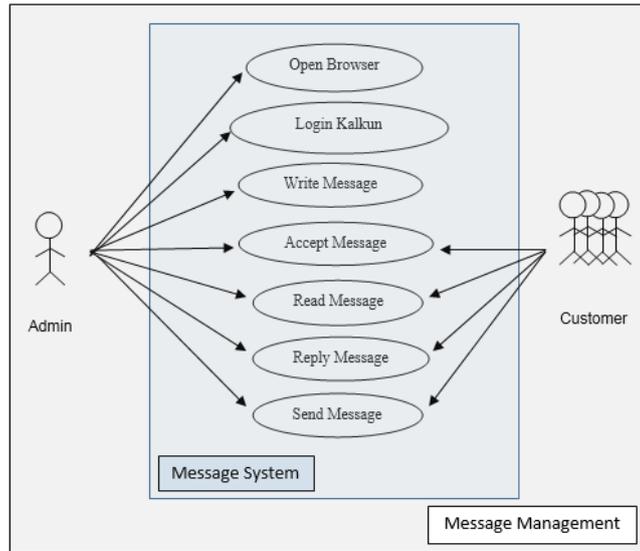


Figure 2. Message management system

```

sudo apt-get install gammu gammu-smsd
Edit /etc/gammurc (use wavcom modem)
vi /etc/gammurc
[gammu]
port = /dev/ttyUSB0
connection = at115200 (at command wavcom modem)
logfile = gammulog
logformat = textall
use_locking = yes
    
```

Figure 3. Gammu command line utility



Figure 4. Kalkun’s Architecture

3. RESULTS AND ANALYSIS

3.1. Information services and sales

Information services and sales are facilities or services regarding specifications or information about goods or services that will be offered and provided by the company for prospective customers so that the goods or services can attract consumer interest [1, 3, 15]. Each customer has a level of demand for different products, so we need a service that can provide information more quickly and accurately and make customers feel satisfied. Submission of information can be done through communication, either face to face or even direct communication conducted through other media, such as phone, chat or even via SMS [4, 16].

3.2. Gammu server installations

Gammu server is a cross-platform application that is used to bridge and communicate between SMS Gateway databases with SMS devices, as shown in Figure 5. The first step in installing gammu server on a Linux operating system is to make sure the modem is available and ready to use on the internet [6, 17].

Applications in Gammu can be daemons that run in the background. Gammu will move the incoming SMS to SMS devices, thus gammu will immediately move it into the inbox in the SMS gateway database. Conversely when the SMS Sending Application enters an SMS into outbox in the SMS gateway database, then your gammu will send it back via SMS devices, and move the SMS to the sentitem in the database.

```
gedit /etc/gammu-smsdrc
[smsd]
PIN =
service = mysql
DeliveryReport = sms
logfile = /etc/smsdlog
debuglevel = 255
# Change this to your mysql config
User = root           (username xampp)
Password =           (password xampp)
PC = localhost
Database = kalkun    (database name)
```

Figure 5. Connection database and device SMS

3.3. Kalkun database settings

The kalkun is a device for the management of SMS, so that it can be used properly, before installation please make sure the kalkun is already installed Gammu [6-8, 18]. Kalkun must be installed on the Linux operating system by extracting the software first, then entering the directory and then creating and managing the database, as shown in Figure 6, after which the kalkun application can be used.

```
sudo tar zxvf kalkun_0.2.9.tar.gz -C /opt/lampp/htdocs/
cd /opt/lampp/htdocs/kalkun
~$mysql -u root -p
mysql> CREATE DATABASE kalkun;
mysql> quit
/opt/lampp/htdocs/kalkun/system/application/config/database.php
$db['default']['hostname'] = "localhost";
$db['default']['username'] = "root";
$db['default']['password'] = "";
$db['default']['database'] = "kalkun";
$db['default']['dbdriver'] = "mysql";
```

Figure 6. Create and setting database

3.4. SMS mangement system

The need to create as well manage the SMS Gateway is very simple and flexible [19], this system can be used simply by using a Personal Computer or Notebook, modem and data cable, of course with regard to the design of the computer network used [20]. The operating system used is Linux with a database server in the form of lampp, while the technology for managing cellular phones and modems is Gammu and for short message management via the web using kalkun. To run this system first to make sure the modem is plugged in and recognized by the Linux operating system as the Figure 7, modems have an important role and function to connect between application systems with global networks or the internet. After the modem is connected, then make sure the Gammu application program is also running on the Linux operating system and there are no error messages, so that the Gammu application program runs optimally as a means of connecting program between the SMS device with the SMS gateway that runs hidden or often called runs in the background, as shown in Figure 8. Then after everything is running smoothly and in accordance with their respective functions and not found errors both hardware and software, the system is ready to use, as shown in Figure 9.



Figure 7. Modem installed

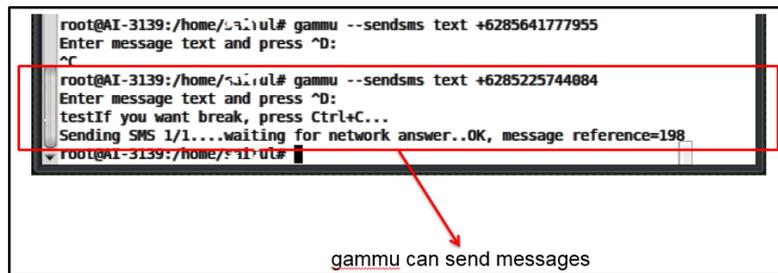


Figure 8. Gammu on linux operating system

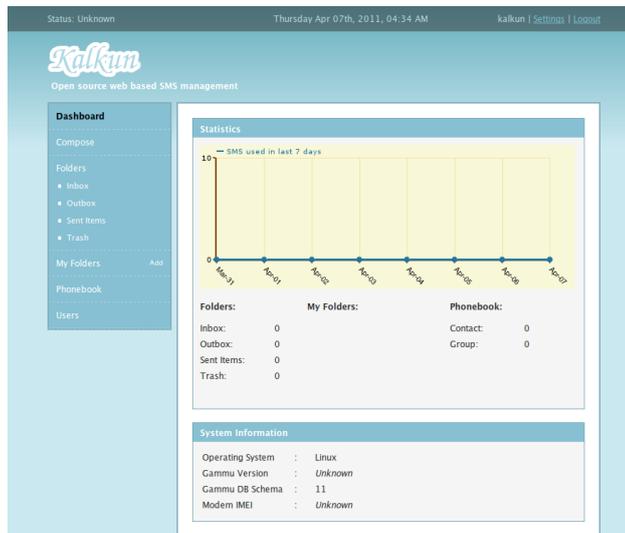


Figure 9. SMS application system

3.5. Transaction increases

Indicators of success in the function and benefit or main goal in the research can be measured after using this application program [21]. The company can send short message to customers in the form of information services about products that can be in the form of goods or services, so that transactions increase. This increase occurred in customers who asked about products and services via telephone by five percent, while for customers who came directly to companies through stores increased by seven percent. The increase in customers who come to companies is greater because customers want to get direct, detailed information and can see or witness the benefits and promotions offered by the company. The total number of purchase transactions made by customers only increased by two percent, this is because not all customers who ask by telephone or who come directly make a purchase transaction.

4. RECOMMENDATIONS

This system still requires an administrator to deliver sales information, in the future it is expected that the system can be developed with the auto reply method so that this application can also automatically send information or answer questions from the consumer. Can be developed using rules in the rule based reasoning method [22], fuzzy logic model [23] or expert system solution [24], managed online with a simple routing system [25], and stored in the cloud database system [26].

5. CONCLUSION

The combination using gammu and kalkun on this system can be used to read and send short messages via a computer by connecting a cellphone and modem under the control of a Linux operating system. This application does not depend on one brand mobile phone or modem, but can be used for various other brands that can support device connection to the internet. This method allows an administrator to manage messages as well as a means to deliver information and sales to consumers, become easier, faster and on target and can reduce budgetary expenditure for marketing costs with the main goal of getting a lot of profits by increasing sales.

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