



Development of SMS as a Payment Method for Products and Services

by

Mr. Teanaman Rungsubhatanond

A Final Report of the Six-Credit Course
IC 6998 E-Commerce Practicum

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Internet and E-Commerce Technology
Assumption University

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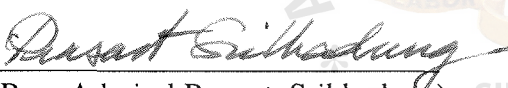
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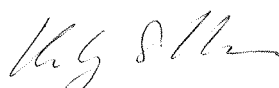
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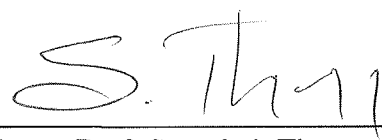
The Graduate School of Assumption University has approved this final report of the three-credit course, IC 6997 E-Commerce Practicum, submitted in partial fulfillment of the requirements for the degree of Master of Science in Internet and E-Commerce Technology.

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March 2004

ABSTRACT

In early 2004 there are 22 millions mobile phone subscribers in Thailand and is expected to be growth at 15 % per year. So, the project in this report will take the opportunity from the growth of mobile phone users.

This report introduces the payment method called SMS-Payment that can be accessed 24 hours a day from any place. With this service, customers can place orders or pay for products or services anywhere and anytime using their mobile phone with SMS capability. The source of income for SMS-Payment system developer are came from revenu sharing from SMS fees from mobile operators and transaction fees from the banks, so from the number of mobile phone users, the revenue is huge.

The report includes a detailed description of the proposed system, its architecture, marketing, and financial analysis.

ACKNOWLEDGEMENTS

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Name	Mr. Thanaman Rungsubhathanond
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I. INTRODUCTION

Payment has evolved from the physical exchange of notes and coins, to writing checks, through to transferring payment card details either in person, over the phone or the Internet. This evolution has involved a shift from the physical transference of tangible tokens of value to an exchange of information between parties. In the case of payment cards, this exchange takes place between the consumer's bank and the merchant's bank over network managed either by regional payment providers or global card organizations.

The emergence of e-commerce has further digitized the payment process, whereby payment details are sent over open networks with no physical contact between the buyer and the seller. The recent development of SMS or short message service of the mobile phone that enables users to download the picture message and ringtone now has been developed to a further step, called "Mobile-Payment". This technology will enable seller and buyer to transfer money anytime anywhere without going to the bank and even not seeing each other. This paper presents the possibility of mobile payment by concentrating on SMS technology.

SMS the new channel for businesses

SMS stands for Short Message Services; it comes with almost every model of mobile phone available today. The first intention of SMS is to provide an alternative communication channel for personal use, such as sending message during meeting, where it is not suitable to make a voice call. It is also used to send a personal feeling which cannot be expressed in a voice call, such as someone may feel reluctant to say "I'm sorry", but they can express their feeling by sending SMS.

Once every mobile phone user gets familiar with SMS, mobile phone operators introduce more multimedia services called picture message, and ring tone. From research GMM Grammy alone gets over 30,000,000 Baht revenue from providing picture message and ring tone loading services. This figure will increase more and more as the number of mobile phone users increases.

This paper will describe a new business model based on SMS called “SMS Payment and SMS-CRM management solution”. SMS Payment is a new payment method for people to pay for utilities and other services bills. It will change the way people shop. And SMS-CRM (Customer Relationship Management) will change the way organizations keep contact with customers.

OBJECTIVES:

- To develop a new and convenient payment method for products and services in Thailand by using SMS.
- To gain revenue from SMS and transaction fees.

SCOPE:

This report describes the marketing mix, system architectures and financial analysis including the case study of using SMS-Payment.

DELIVERABLES:

Project report

II. LITERATURE REVIEW

Short Message Service (SMS) Technology

Definition:

Short message service (SMS) is a globally accepted wireless service that enables the transmission of alphanumeric messages between mobile subscribers and external systems such as electronic mail, paging, and voice mail systems.

Introduction to Short Message Service (SMS):

SMS appeared on the wireless since 1991 in Europe, where digital wireless technology first took root. The European standard for digital wireless, now known as the global standard for mobiles (GSM), included short messaging services from the outset.

The point-to-point SMS provides a mechanism for transmitting short messages to and from wireless handsets. The service makes use of a short message service center (SMSC), which acts as a store-and-forward system for short messages. The wireless network provides for the transport of short messages between the SMSCs and wireless handsets. In contrast to existing text message transmission service such as alphanumeric paging, the service elements are designed to provide guaranteed delivery of text messages to the destination.

A distinguishing characteristic of the service is that an active mobile handset is able to receive or submit a short message at any time, independent of whether or not a voice or data call is in progress. SMS also guarantees delivery of the short message by the network. Temporary failures are identified, and the short message is stored in the network until the destination becomes available.

SMS is characterized by out-of-band packet delivery and low-bandwidth message transfer, initial applications of SMS focused on elimination alphanumeric pagers by permitting two-way general-purpose messaging and notification services, primarily for voice mail. As technology and networks matured, a variety of services were introduced, including electronic mail and fax integration, paging integration, interactive banking, and information services such as stock quotes. Wireless data application includes downloading of subscriber identity module (SIM) cards for activation, debit, and profile-editing purposes.

Benefits of Short Message Service:

In today's competitive world, differentiation is a significant factor in the success of the service provider. Once the basic services, such as voice telephony, are deployed, SMS provides a powerful vehicle for service differentiation.

The benefits of SMS to the service provider are as follows:

- (1) Increased call completion on wireless and wireline networks by leveraging the notification capabilities of SMS.
- (2) An alternative to alphanumeric paging services.
- (3) Enabling wireless data access for corporate users.
- (4) Provision of value-added services such as e-mail, voice mail, and fax mail integration, reminder service, stock and currency quotes, and airline schedules.
- (5) Provision of key administrative services such as advice of charge, over-the-air downloading, and service provisioning.

All of these benefits are attainable quickly with modest incremental cost, and typical investment payback periods are less than six months.

The benefits of SMS to subscribers center around convenience, flexibility, and seamless integration of messaging services and data access. From this perspective, the benefit is to be able to use the handset as an extension of the computer. SMS also eliminates the need for separate devices for messaging, as services can be integrated into a single wireless device—the mobile terminal.

SMS Applications:

SMS was initially designed to support limited-size messages, mostly notifications and numeric or alphanumeric pages. While these applications are and will continue to be widely used, there are more recent niches that SMS still can exploit.

Short bursts of data are at the heart of many applications that were restricted to the world of data networks with fixed terminals attached to a local-area network (LAN) or wide-area network (WAN). However, many of these applications are better served if the data communication capabilities could be added to the mobility of the station. Thus, a waiter who can charge a customer's credit card right at the table, at anytime, instead of going to a fixed POS terminal located by the register will be able to help customers in a faster, more convenient way.

Also, the ability to track the location of a moving asset such as a truck or its load is very valuable for both providers and clients. This application, again, just needs to interchange small amounts of information, such as the longitude and latitude at a current time of the day, and perhaps other parameters like temperature or humidity.

This application does not necessarily require the monitored entity to be in movement. The requirements are basically short, bursty data and a location that has digital network coverage. For example, in a neighborhood, it would be faster, easier, and cheaper

to drive a truck from the local power company, which interrogates intelligent meters to obtain their current readings and then forwards them via short message to a central data processing center to generate the billing. Similarly, delivery trucks could be alerted of the inventory of a customer running low, when the truck is close to the customer's facilities. The truck driver could place a quick phone call to the customer to offer short-time replenishment at a low cost for the distributor.

Entertainment applications are also good drivers of SMS usage. Examples of these are simple short message exchanges between two parties ("texting") or between multiple participants ("chat"). Also, delivery of information that the subscriber can tailor to his or her lifestyle represents an attractive proposition for wireless users.

Wireless Web browsing allows the users to search for information without the physical restrictions of a PC. College-students certainly appreciate not having to go to the computer lab or their dorm to check e-mail or find out what the required book is for the semester that is about to start.

The potential for application is enormous, and new needs appear to arise constantly, demanding a solution that may travel over SMS.

The proposed system:

This report describes the development of SMS as new payment method

Existing Payment Method:

There are two main payment methods available today which are traditional payment method and electronic-based payment method.

Traditional Payment Method:

Traditional payment method includes; monetary documents (cash, check, draft, money order), debit and credit card. In this method it requires physical monetary document which has risk of being lost or stolen. And in this method it requires physical location such as department store, and banks. Buyer and seller or middleman must be shown physically in order for the transaction to be done.

In this method the most convenient way to make a payment is to use the service provided by the middleman, such as Counter-Service, Pay-Point, and Pay-at-Post. But the limitation is: it may not be convenient for customers to go to the pay-point because of several reasons which are: traffic jam, not enough time, the pay-point does not open at the time customers need, or there is no pay-point in the location where the customer lives.

Electronic Payment Method:

The existing electronic payment methods are: ATM machine, media clearing, and Internet Shopping Cart. These electronic channels enable customers to transfer money or pay for products or services virtually; the payer and payee do not need to see each other to make the transaction done. But the limitations are: in some locations the ATM machine may not be available, or the customers do not have a computer with Internet connection, so they can not make the payment.

So, this report will introduce the development of new wireless payment method called SMS-Payment, which can be accessed from anywhere and anytime.

SMS-Payment

SMS-Payment solution will eliminate those problems, since payment can be done anywhere and anytime via mobile phone with SMS capability. SMS-Payment covers: service payment, product payment, and fund transfer.

And for optimum result, CRM solution will be integrated with SMS-Payment solution. The integrated CRM solution will let service or product providers send an alert message to their customers that it is time to pay the bill or renew the subscription. The integrated CRM can also be used as one-to-one marketing tool, such as sending a promotion message or SMS-coupon to a customer instantly.



*Figure 2.1. Cash over the air.

III. THE PROPOSED SYSTEM

3.1 Objectives

- (1) To develop SMS-Payment solution by which customers can pay for goods and services from anywhere and anytime by using SMS.
- (2) To develop SMS-CRM solution which will be used in conjunction with SMS-Payment. The SMS-CRM will be mainly used for marketing purpose.
- (3) To generate revenue from SMS-Payment and SMS-CRM system.

3.2 Goals

- (1) To integrate the system with all major banks; Bangkok Bank, Thai Farmers' Bank, and Krung Thai Bank.
- (2) To integrate the system with popular merchants and service providers, such as; EGV, Major Cineplex, BIG C, Lotus, The Mall Group, Central Plaza, Universal Broadcasting Television (UBC), AIS, DTAC ,Orange, Hutch, etc.
- (3) To gain market share from payment agent services; Counter-Service, Pay-Point, and Pay-at-Post.

In this report the development of SMS-Payment and SMS-CRM will be under the name of Thai-SMS.

3.3 Marketing Mix

This part describes need, want, demand, target groups, SWOT and SPELT analysis for SMS-Payment and SMS-CRM.

Need

- (1) People have to buy products or services to ease their need.
- (2) Sometimes people want to pay for products and want to get the product instantly, such as computer program registration or serial number.
- (3) Sometimes they need to transfer money to the other person very urgently, such as parents want to transfer money to their children that live in another province to pay for tuition fee.
- (4) People want to book for a service and pay instantly to assure that they will get the service, although they reach the service site late, such as booking airline ticket or movie ticket.

Want and Demand

- (1) When people want to book seats for watching a movie, they have to call for booking and have to reach the movie theatre at least 1 hour before the movie is shown to pay for and pick up the movie tickets. In this case if they can pay for the movie ticket once they place a call for booking, they do not need to go to the movie theatre 1 hour ahead since the booked ticket has been paid for. So, in this case they demand the payment solution that can pay for the movie tickets once they book.
- (2) For money transfer in emergency situations, such as money is needed at midnight and the bank is already closed. In this case both transferer and

transferee might demand the money transfer channel that is available 24 hours and can instantly transfer the money once it is confirmed.

From need, want and demand analysis it seems that the most convenient way for customers to make payment anytime and anywhere is by using the mobile phone. Some may ask why don't they use the Internet. It is because there are very few people in Thailand that own computer with Internet connections, but almost everyone has a mobile phone. Below are product, price, place and promotion analysis of SMS-Payment and SMS-CRM.

3.3.1 Products and Services

In this report there are two main services developed which are SMS-Payment and SMS-CRM to suit customer's need and want. SMS-Payment focuses on mobile transactions which include: pay for products or services, and money transfer, and all transactions are done on SMS. SMS-CRM focuses on direct marketing activities which include: one-to-one marketing, promotion announcement, customer information services, and exam result service. The following describes each service in detail.

(1) SMS Payment

The idea of SMS Payment is to let customers pay for the bills, fees, and goods or even transfer funds via SMS from ordinary mobile phone. Below are the functionalities of SMS Payment solutions:

(a) Pay for goods and services:

This service lets customer pay for goods and services using SMS via regular mobile phone with any mobile phone operators. Imagine that the customers want to purchase goods or service but they do not have cash in hand and the ATM machine can not be found, the merchants who provide SMS-Payment method will not lose these customers since the

customer can transfer the money for the cost of goods or services via SMS directly to the merchant's account.

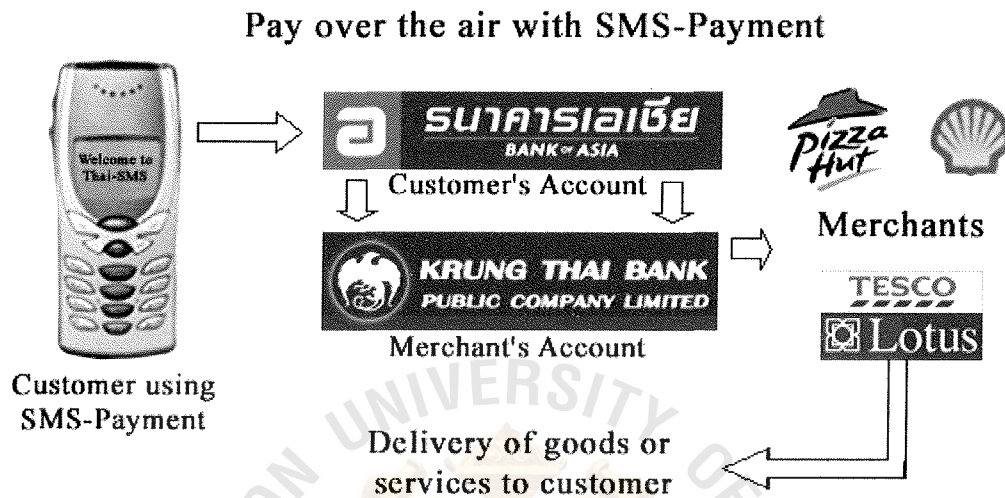


Figure 3.1. SMS-Payment flow (for goods and services)

Benefits to customers

- (1) Able to pay for products or services at anywhere and anytime without going to the bank.
- (2) No risk of carrying cash.
- (3) Able to control the budget, since SMS-Payment can set the maximum payment per month.
- (4) Able to check the balance directly from the mobile phone, so there is no need to go to ATM machine or the bank to check the balance.
- (5) No need for Internet connection to do the transaction.
- (6) No need to have knowledge of computer to do the transaction.

Benefits to businesses

- (1) Higher customer satisfaction and loyalty.

- (2) Provide additional payment channel for customers.
- (3) Get more bills that are paid on time.
- (4) Extension from web based services.
- (5) Get more revenue since it is convenient for customers in paying.

Examples of merchant: Lotus, BIG C, Power Buy

Benefits to banks

- (1) Additional payment channel offered to the customers derives long business relations between banks and merchants.
- (2) Gain more transaction fee.
- (3) Instant increase of electronic branches nationwide without big investment.
- (4) Reduce traffic of customers going to the branches.

Benefits to mobile operators

- (1) Gain more SMS traffic.
- (2) New revenue streams resulting from new value-added services.
- (3) By providing SMS-Payment services, it will become critical for customers to make a decision to choosing the mobile operator.
- (4) By providing this service, it will solicit prospects that never use mobile phone to become interested in using mobile phone.

(b)Pay for bills:

Imagine that customers get the bills but they do not have time to go to the bank or the convenient pay point such as Counter Service at 7-11, it would be nice if service providers allow customers to pay the bill using SMS-Payment. For more customers satisfaction, merchants may integrate SMS alert to their billing system, and the SMS Alert will

automatically send a message to customers that it is time to pay their bill. If customers would like to pay the bill at that time they just need to type a few text to confirm and the transaction is easily done.

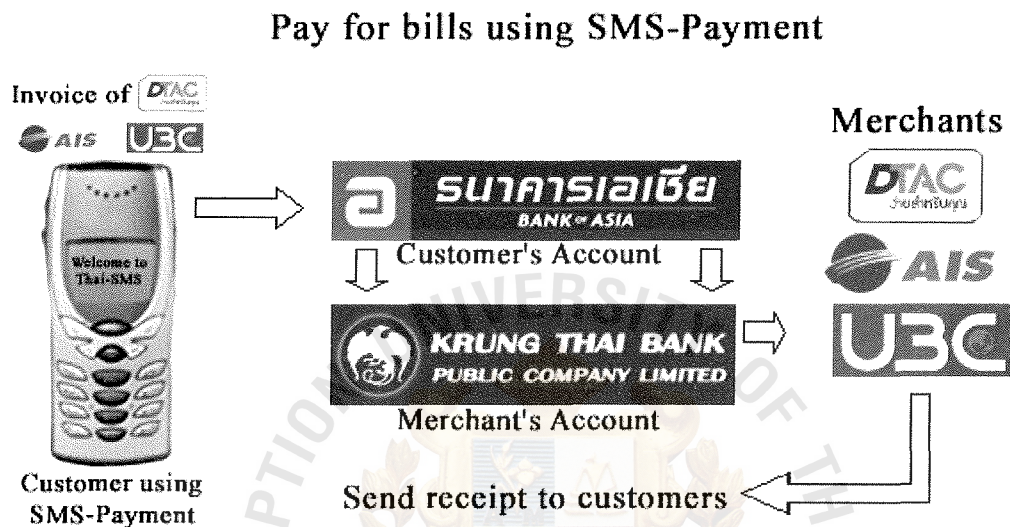


Figure 3.2. SMS-Paymnet (pay for bills flow)

Benefits to customers

- (1) Able to pay for products or services at anywhere and anytime without going to the bank.
- (2) No risk of carrying cash.
- (3) Able to control the budget, since SMS-Payment can set the maximum payment per month.
- (4) Able to check the balance directly from the mobile phone, so there is no need to go to ATM machine or the bank to check the balance.
- (5) No need for Internet connection to do the transaction.
- (6) No need to have knowledge of computer to do the transaction.

Benefits to businesses

- (1) Higher customer satisfaction and loyalty.
- (2) Able to send alert message to customer that it is due date for payment.
- (3) Reduce paper work, especially for general administration department.
- (4) Provide additional payment channel for customers.
- (5) Get more bills that are paid on time.
- (6) Extension from web based services.
- (7) Get more revenue since it is convenient for customers in paying.

Examples of merchants: Credit card company, UBC, ISP

Benefits to banks

- (1) Additional payment channel offered to the customers derives long business relations between banks and merchants.
- (2) Gain more transaction fee.
- (3) Instant increase of electronic branches nationwide without big investment.
- (4) Reduce traffic of customers going to the branches.

Benefits to mobile operators

- (1) New revenue streams resulting from new value-added services.
- (2) Gain more SMS traffic.
- (3) By providing this service, it will solicit prospect that never use mobile phone turn to interesting to use mobile phone.

(c) Transferring of funds:

There will be no more carrying the cash, no more risk from being stolen by thieves, and no more going to the banks since customers can use SMS-Payment as fund

transferring tool. Imagine that customers want to buy a second hand car from a used-car outlet, it is very risky to carry a big amount of cash, and of course there is no way that the used-car outlet will accept a high value cheque from the customer that they do not know if he/she has money in the bank account or not. So, it would be nice for both merchants and customers to have a safe and convenient tool for transferring the funds. SMS Payment (fund transfer) is the best solution, since no one has to carry the cash. Once anyone wants to transfer fund, they just send SMS and the other party will immediately get the funds. Another good example is if the parents want to transfer money to their children immediately for tuition fee, but if it is raining, they cannot go to the bank or ATM machine. So the parents can transfer money by using SMS and their children get the funds immediately.

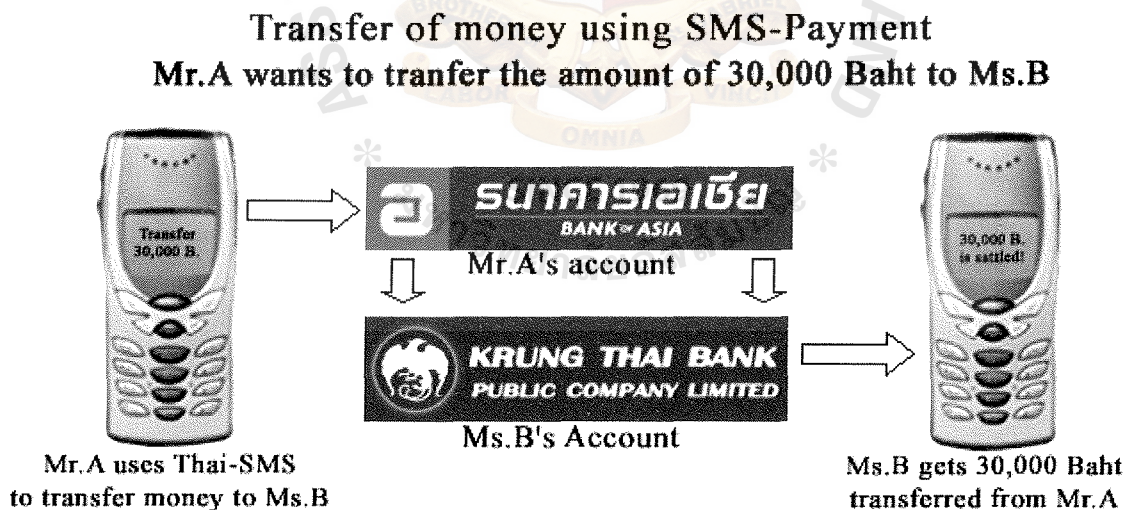


Figure 3.3. Funds transfer using SMS-Payment

Benefits to customers

- (1) Able to transfer the fund 24 hours a day 7 days a week from anywhere.
- (2) Able to transfer money in emergency cases.
- (3) Reduce risk of carrying cash.
- (4) Able to transfer money to multiple banks, like ATM pool
- (5) Able to get acknowledgement when the money already is settled in the account.
- (6) Able to track the records of fund transfer history from the web.

Benefits to businesses

- (1) Able to transfer petty cash to sales forces at anytime.
- (2) Able to transfer money to branches at no time.
- (3) Save time and other costs, since transaction can be done on SMS.
- (4) Able to track the records of fund transfer history from the web.
- (5) Reduce paper work.

Examples of merchant: used car outlet, university, school, intensive tuition center.

Benefits to banks

- (1) Less paper work.
- (2) Immediate expansion of eletronic branches to customers' hands.
- (3) Reduce traffic to the branches, thus reduce operating cost.
- (4) Get more transaction fee, since transactions can be done easily and more transactions will occur.

(d) Pay for me:

“Pay for me” is a feature of SMS-Payment. This feature allows the buyer to ask another person, such as parent or friends to pay for the cost of products or services for them by using SMS.

Imagine that at a red hot festival (special discount event) of a department store, there is a very nice stereo set with a special discount. Mr.Kim would like to have it very much, but sadly he does not have enough money in his account and this is the last day of the grand discount. Luckily, he can use “pay for me” feature to ask his dad to pay for the stereo for him. If his dad agrees he just replies ‘yes’ and the purchasing power will belong to Mr.Kim, and he will be happy with his brand new stereo.

Benefits for customers

- (1) Customers will immediately get the funds once their partners confirm.
- (2) Never miss a dream item caused by not having enough funds.
- (3) Parents can control their children, since everytime the children want to buy something, they need to inform their parents. If the parents do not agree the children will not get the funds.

Benefits for businesses

- (1) Higher customer satisfaction and loyalty.
- (2) Provide additional payment channel for customers.
- (3) Get more revenue since customers get convenience to pay.

Benefits to banks

- (1) Additional payment channel offered to the customers derives long business relations between banks and merchants.

- (2) Gain more transaction fee.
- (3) Instant increase of electronic branches nationwide without big investment.
- (4) Reduce traffic of customers going to the branches.

Benefits to mobile operators

- (1) New revenue streams resulting from new value-added services.
- (2) By providing SMS-Payment services, it will become critical for customers to make a decision in choosing the mobile operator.
- (3) Gain more SMS traffic.
- (4) By providing this service, it will solicit prospect that never use mobile phone turn to interesting to use mobile phone.

(2) SMS-CRM (Customer relationship management)

Nowadays, there are many marketing tools and media to communicate with customers, such as, television advertising, radio spots, and printed materials. Those media are based on one way communication, and have relatively high cost for both production and broadcasting. And the most important thing that those media cannot do is that it is hard to select specific categories of target group, and it takes time to get feed back from target groups. So, to improve the weaknesses of traditional media, electronic advertising channels have become important. The most popular electronic advertising is “advertising banner”, that appears on the web site that customers visit. If they are interested, they can click on the banner to get more information about the goods or services. However, banners are limited only to people who have computers with Internet access. The fact is that there are very few people in Thailand who own computers, but almost everyone owns a mobile phone. With

the SMS capability of mobile phones, Thai-SMS has developed the SMS-CRM solution for better communication with customers.

SMS-CRM can be categorized into two: one-way-communication and two-way-communication, and the details are as follows:

(a) SMS-CRM (One way communication):

This service targets the merchants that would like to broadcast their promotion message to the target group. The target group can be selected in combination of the following databases:

- (1) Gender
- (2) Age range
- (3) Location (geographic)
- (4) Occupation
- (5) Income
- (6) Etc.

Suppose, a car show room would like to promote their new car model to young executive men, they may send an SMS message to men between 30-40 years who have the income per month at 30,000 – 60,000 bath and to those who live at Petchaburi and Ramkhamhaeng road.

As per the above example, one-way-communication SMS-CRM can be applied for various purposes of customer relation management, such as broadcasting goods or services promotion message to prospects, or alerting the customer that it is time to change their engine-oil, and to visit the nearest B-Quick, or Max-Auto service center and get a special discount by showing the SMS.

Broadcast promotion messages to prospects using SMS-CRM

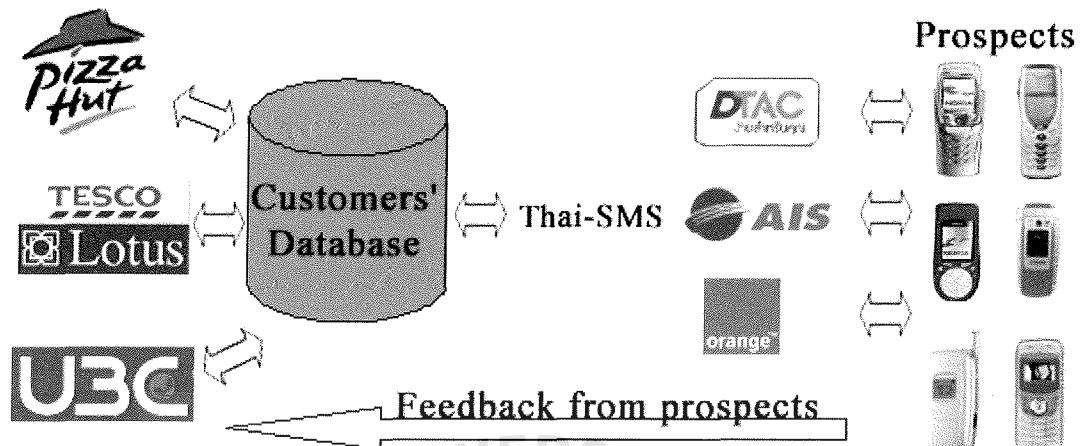


Figure 3.4. SMS-CRM (One way communication – Broadcast Only).

(b) SMS-CRM (two-way-communication)

This service targets on merchants that want to get “real-time” feed back from their promotion message with their customers.

To cite an example, a cosmetic company has just launched a new series of face treatment cosmetic which has the capability of protecting UV for 72 hours after applying. The company would like to educate and test the market about the perception of their new product. So, they send an SMS targeting women aged between 15-35 years. The SMS content says:

“Do you know how long Ultra UV protection can protect you after applying? A. 12 hours, B. 24 hours, C. 48 hours, D. 72 hours, E. 96 hours. The correct answer will be entered in a lucky draw for a gift valued at 1,000 Baht.”

Once the customer answers the questionnaire, the system will check if the answer is correct or not. If the answer is correct, the system will consolidate the correct answer

database for processing the lucky draw. The lucky draw result will also be informed to the customers by SMS.

Another case is information about bank account balance status. Customer can query their account information, due date, amount to pay for the loan, etc. by using SMS. This will reduce the calls to the customer service of the financial institute.

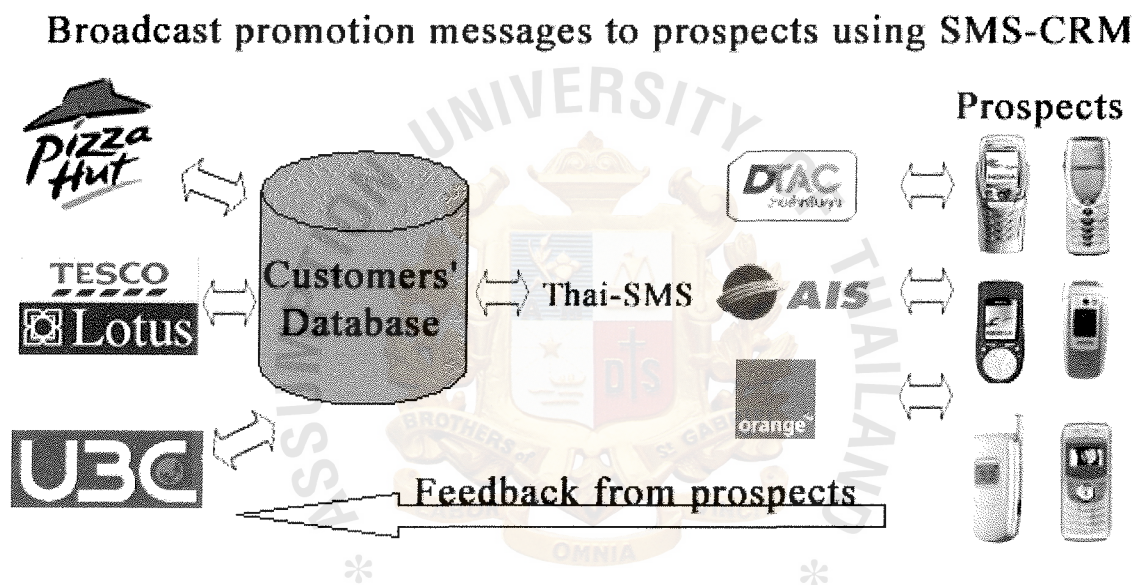


Figure 3.5. SMS-CRM (Two-way communication – broadcast and gets feedback)

Benefits for customers

- (1) Customers are able to get information from merchants regardless of wherever they are.
- (2) Able to interact with merchant.
- (3) Able to query account status or other information from merchants for 24 hours.
- (4) Reduce time in getting information, since it can be accessed through SMS.

Benefits for businesses

- (1) Reduce cost of operating call center, since customers can query for information from SMS.
- (2) Able to broadcast information immediately.
- (3) Able to filter target group or recipients.
- (4) Lower cost of distributing information to prospects.
- (5) Get feedback immediately from prospect or customer by using SMS 2-way communication.

Benefits for mobile operators

- (1) Gain more SMS traffic.
- (2) New revenue streams resulting from new value-added services.

(c) Combination of SMS-Payment and SMS-CRM solution

Actually, businesses can use SMS-Payment and SMS-CRM separately; however, for the best result, integration of both services is recommended. Below is an example for businesses that use both SMS-Payment and SMS-CRM:

ABC Publishing Co., Ltd broadcast a 25% discount promotion to their subscribers by using SMS-CRM. The message says, "If you renew your ABC magazine subscription by this week you will get a special 25% discount from the normal rate. Reply with "renew" to extend your subscription and get special rate." If their customers want to renew, they just type "renew" and send it back to ABC Publishing. Their subscription will be renewed automatically with 25% discount and ABC Publishing will get paid immediately, since the transaction is done with SMS-Payment."

Benefits to customers

- (1) After receiving the promotion news from the merchants, they can immediately pay for the subscription immediately.
- (2) Customers can pay for the bill right away after receiving the reminder via SMS.
- (3) No need to travel to the merchants' outlet, since the subscription can be done on SMS 24 hours a day.

Benefits for businesses

- (1) Able to boost sales volume by using SMS-CRM and SMS-Payment.
- (2) Reduce late payment from customers, since merchants can send a reminder to customers and get paid by SMS.
- (3) Reduce traffic to the outlets.
- (4) Get immediate feedback of the promotion.
- (5) Able to adjust the promotion anytime in case the previous promotion does not impact the market.

Example of merchant: UBC, magazine publishing, ISP, sport club.

Benefits for banks

- (1) Get more transaction fee.
- (2) Reduce traffic to the banks.
- (3) Bank that provides SMS facilities will be able to close sales more easily with corporate customers.

Benefits for mobile operators

- (1) Gain more SMS traffic.
- (2) New revenue streams resulting from new value-added services.

- (3) By providing SMS-CRM and SMS-Payment services, it will become critical for corporate customers to make a decision in choosing the mobile operator.

3.3.2 Price

Since Thai SMS provides two types of services, the prices are separated depending on the services. Below are price structures of each service:

(1) SMS Payment

The main revenue of SMS-Payment service is from revenue sharing as shown in table below:

Table 3.1. Revenue sharing between Thai-SMS and partners.

Channels	Type of revenue	Charge to	Amount Charge	Thai SMS get
Banks	Transaction fees	Merchants	10 Baht/Transaction	1.00 Baht
Mobile Operators	SMS fees	End-Users	10Baht/Transaction	5.00 Baht
Total Thai SMS gets				6.00 Baht

(2) SMS-CRM

The main revenue of SMS-CRM service is from the installation fee and revenue sharing between Thai SMS and mobile operator on the SMS delivery fee. The details please are as follows:

Installation fee (one time charge)

The installation fee depends on the complexity and the size of database of the organization. However the minimum one-time charge starts from 10,000 Baht.

SMS delivery fee

The SMS sending for SMS-CRM depends on the volume discount as described in the following table.

Table 3.2. SMS volume discount for SMS-CRM.

Number of SMS sent	Charge Rate	Mobile Operator get	Thai SMS get
1-1,000 SMS	3.00 Baht/SMS	1.50 Baht/SMS	1.50 Baht/SMS
1,001-5,000 SMS	2.75 Baht/SMS	1.38 Baht/SMS	1.38 Baht/SMS
5,001-10,000 SMS	2.50 Baht/SMS	1.25 Baht/SMS	1.25 Baht/SMS
10,000> SMS	2.25 Baht/SMS	1.13 Baht/SMS	1.13 Baht/SMS

3.3.3 Place

Thai-SMS services are available to every mobile phone with SMS capability; thus it covers almost everyone that uses a mobile phone.

3.3.4 Promotion

At the initial stage Thai-SMS will waive the installation fee and the monthly fee will be waived for 6 months. These waivers will solicit merchants to try the services. Once they try the service and find that it is useful to them, they will be willing to pay the monthly fee for Thai-SMS.

Anyway Thai-SMS will produce and distribute the instruction document on how to use SMS-Payment service together with the list of merchants through the branches of banks that participate in the service.

3.4 Target Groups of Thai-SMS

Target group of Thai-SMS can be divided into 4 groups as shown in the following table.

Table 3.3. Thai-SMS target groups.

Target group of Thai-SMS	Description
Source of Funds	Source of funds include banks, and financial institutes. These are the source of funds for end-users. SMS-Payment services will be linked to these source of funds
Merchant and Public relation agency	Merchants using SMS-Payment service as their new payment channel for their end-customers. Merchants that use this service will provide convenience for their customers to pay for goods or services. The public relation agency can also use SMS-CRM from Thai-SMS as additional PR media to offer their

	customers as directional marketing service.
Mobile Operator	Mobile Operators who join Thai-SMS service can offer new services to their subscribers and most importantly they will gain more SMS traffic, thus more revenue.
End-users	End-user is most important, without the end-user the service cannot survive.

The following describe more detail of each target group:

3.4.1 Mobile Operators:

Mobile operators who join Thai-SMS will get the following benefits:

- (1) Have new value added service for their customers thus increasing the power of competitiveness.
- (2) Generate more SMS traffic, thus more income from SMS.

3.4.2 Source of funds:

Source of funds, such as banks who join Thai-SMS can offer new payment service channel to their customers rather than counter service and automatic teller machine (ATM). And they also get the transaction fee from their customers who use Thai-SMS that integrates with them.

3.4.3 Merchants/ Public relation agencies

Merchants who join Thai-SMS will get very attractive benefit, such as let their customers pay bill via SMS, let their customer book and pay for movie ticket using SMS 24 hours a day.

Public relation agencies who join Thai-SMS will have additional media to deal with their customers without dealing separately one by one with mobile operators, since Thai-SMS already deals with those mobile operators. The public relation agency just needs to plug into Thai-SMS system.

3.4.4 End-users:

Once end-users join Thai-SMS they will get many benefit, such as pay utility bill directly from mobile phone without going out from home or office. Thai-SMS targets teenagers and young workers to be Thai-SMS end-users since these groups have high purchasing power and easily understand the technology of using SMS.

3.5 Customer delivered value:

Customer delivered value is the difference between total customer value and total customer cost. **Total customer value** is the bundle of benefit customers expect from a given product or service. **Total customer cost** is the bundle of costs customers expect to incur in evaluating, obtaining, using, and disposing of the product or service.

Total customer value consists of product value, services value, personnel value, and image value. Thai-SMS has 4 groups of customers which are; mobile operator, source of fund, merchants, and end-users. The following describes the details of total customer value of each group:

3.5.1 Mobile operator:

Product/ Service value:

As mobile operators, the benefits that mobile operators will get are providing new value added services to their customers. And they will also get more SMS traffic and SMS fees by sharing the revenue with Thai-SMS.

Image value:

By adding SMS-Payment and SMS-CRM solution to their existing SMS system, mobile operators can provide value added services to their existing customers. Furthermore, they will get the image of over standard services, and thus can turn the prospects to be loyal customers.

Cost:

The main cost for mobile operator is system integration cost, which consists of:

Leased line: Since by integrating the system with Thai-SMS the Internet leased line is needed to enable data transmission between mobile operator and Thai-SMS servers. But every mobile operator does have their own leased line used for other proposes, so there is no additional cost to install a leased line.

Manpower: The most important part of integrating with Thai-SMS is manpower. Required manpower consists of: information system engineer, network engineer and programmer. Information system engineer (IS) will handle customer database, including billing system. Network engineer (NOC) handles the routing of incoming SMSs that are intended to be the service of SMS-Payment and SMS-CRM to Thai-SMS server for further processes. Programmer is the heart of the system and, he will integrate customer database from IS and filter the SMS that are derived from NOC whether it is in a correct format or not. So, in this part there is no monetary cost for manpower since every mobile operator does have the manpower, but the cost is time cost, since in the system integration phase the manpower has to concentrate especially on this project. However, integration time frame will not exceed 2 weeks, since Thai-SMS will prepare most of the things.

Another cost for mobile operator is public relation cost which consists of making and distributing brochure and other marketing activities.

3.5.2 Source of funds:

Product/ Service value

Being a bank or any other financial institution, the transaction channel is very important. In the past to present the banks that have many branches will get more customers. But now there are new concerns about electronic channel, which has become more important since many customers have no time to visit physical branches due to the traffic jam. The electronic channels that exist today are web site, and ATM machine, but in fact there is a small portion of customers that use e-banking from the web site, since they do not have Internet access, but most of them do have a mobile phone. So, by joining Thai-SMS the banks will get new transaction channel to offer to their customers. If SMS service becomes popular then the banks will no more need to invest in ATM machine, since mobile phones can do all the things. They include payment for goods and services and utility payment, transferring fund to 3rd party, loan payment, and other things that can be on electronic channel. This channel will also let customers do transactions anywhere 24 hours a day.

Image value

By having a new transaction channel like SMS-Payment, the bank will look like M-Bank: Modern-Bank, and Mobile-Bank.

Cost

The main cost for banks is manpower and time cost for integrating the system between bank and Thai-SMS. Another cost for banks is public relation cost which consists of making and distributing of brochure and other marketing activities.

3.5.3 Merchants/ Public relation agencies

Product/ Service value

The benefits that merchants will get by joining SMS-Payment and SMS-CRM solution with Thai-SMS are that they can keep in touch with their customers by using SMS-CRM since SMS-CRM will connect to the merchant's customer database, and merchants will be able to send any promotional message to their customers. For SMS-Payment, merchants will be able to provide 24 hours payment channel for their customer to pay for goods, services or bill payment. With SMS-Payment, the merchants will get paid in time than never before, since their customers do not need to go to the bank or 7-11 to pay the bill. It is proven that for monthly base subscription services, first of all customers will look for the payment channel. If the channel is available at only a few banks, customers will not make the subscription, since it is hard for them to go to the bank for the monthly payment. Now with SMS-Payment solution, barriers like this will be eliminated since customers can pay for the monthly bill anywhere, anytime. Furthermore, merchants can send the SMS alert (a feature from SMS-CRM) to alert customers that it is time to pay the monthly fee or it is time to renew the subscription.

For public relation agencies, they will have more PR channel to offer to their clients. The SMS-CRM also offers one-to-one direct marketing, so the PR agency will have more tools to manage the customers.

Image value

By joining Thai-SMS, customers will see the merchant as hi-tech merchant/ public relation agency, since that merchant provides an unexpected payment channel for them and SMS-CRM will also make customers feel that they are treated specially.

Cost

The main cost for merchants/ public relation agencies are system integration between merchant and Thai-SMS which includes: cost for renting the server and a leased line. However, the program developing cost is free of charge. Another cost is the transaction fee collected by the banks.

3.5.4 End-user:

Value

End-users who use SMS-Payment service will get convenience of payment channel; they do not need to go to the bank, 7-11, ATM machine, or even logon to the web to do monetary transaction. All they need is a mobile phone with SMS capability.

Image

Anyone that uses SMS-Payment will feel that they are the generation x, which always keep up-to-date with the technology. They will feel that they are smarter than others who do not use the service.

Cost

The main cost for customer is the SMS sending and receiving fee, which is the revenue for source of fund and Thai-SMS. The other fee such as transaction fees vary depending on the agreement between the merchant and customer. It is the merchants'

policy whether they will carry the transaction fee which must be paid to the bank themselves or they would like their customer to bear the fee.

3.6 SPELT Analysis

Social:

Nowadays, our society is in a competitive environment, and everyone has very limited time. So, if there is any service that can save time, that service will get a warm welcome. The society has also become a hi-tech society, and a lot of people do have a computer, a mobile phone, especially in the metropolitan area. Thai-SMS sees these opportunities that almost everyone has a mobile phone and most of them have very limited time. So, SMS-Payment is the service that can help them save time by not going to the bank or counter services at 7-11. So, by analyzing the social need, SMS-Payment is one of the right services that serve the society's need.

Politic:

Currently the government encourages every business to have their own electronic channel as additional sales channel. So, it is no doubt that SMS-Payment from Thai-SMS will get a very warm support from government and merchants.

Economic:

If time is money, everyone needs to save their time as much as possible. So doing transactions using SMS-Payment is suitable to the economic situation now. Furthermore, in year 2003, Thailand's economy has grown very fast since the government has paid all IMF loan. So the world sees that Thailand is a nice place to make investment, and the end result is that the number of mobile phone subscribers will grow significantly. That growth will support Thai-SMS's services to grow faster.

Legal:

Thailand has already launched the Electronic Commerce law and SMS is one of the electronic commerce channels which is covered by the law. So, there is no conflict against the law for Thai-SMS's services.

Technology:

Today the SMS technology is growing very fast. The cell sites of mobile phone cover almost every location in Thailand, so people can do transactions anywhere. And most importantly, most users understand how to use the SMS function on the mobile phone very well, so there is no need to educate the market on how to use SMS function.

3.7 SWOT Analysis**Strength**

- (1) Being the first SMS provider solution that bundles both SMS-Payment and SMS-CRM solution in one package.
- (2) Have experienced programmers who are familiar with mobile operator and banks integration.
- (3) Have strong partner in e-commerce web site, such as Thai.com, tohome.com, bask1.com, so Thai-SMS can integrate services to these web sites and gain transactions through SMS-Payment channel.
- (4) Subscribers can do transactions anywhere and anytime as long as the signal is reached.

Weakness

- (1) This is the new service, so it may take time to educate the market. That means the revenue may not come fast.
- (2) The service is new, so it may take time to convince the mobile operator to join, since the mobile operator has to develop their SMS gateway to be more stable.
- (3) It may take time to integrate the system with each party, since there are only 3 programmers.
- (4) Lack of public relation skill, so there is a need for outsourcing.

Opportunities

- (1) At present over 22 million people in Thailand use the mobile phone, and the number of users is still growing fast; that means Thai-SMS services can attract more market.
- (2) A busy society and environment make everyone have very limited time, so the services provided by Thai-SMS can suit their need, especially for SMS-Payment.
- (3) The electronic commerce law is already announced to support this kind of transaction.
- (4) The technology in SMS is developing very fast, and thus increases more stability to Thai-SMS services.

Threats

- (1) As any electronic channel, it may take time for people to accept the new services.
- (2) Need to prevent the system from being penetrated by outsiders. Anyway, at present there is no report that outsiders can damage, or alter the SMS message.

- (3) Natural disasters, such as hard storm, and hard rain may interrupt the delivery of SMS messages, but it rarely happens.

There are 5 major parties involved for the marketing success of ThaiSMS:

- (1) End users
- (2) Banks
- (3) Mobile Operators
- (4) Merchants
- (5) ThaiSMS

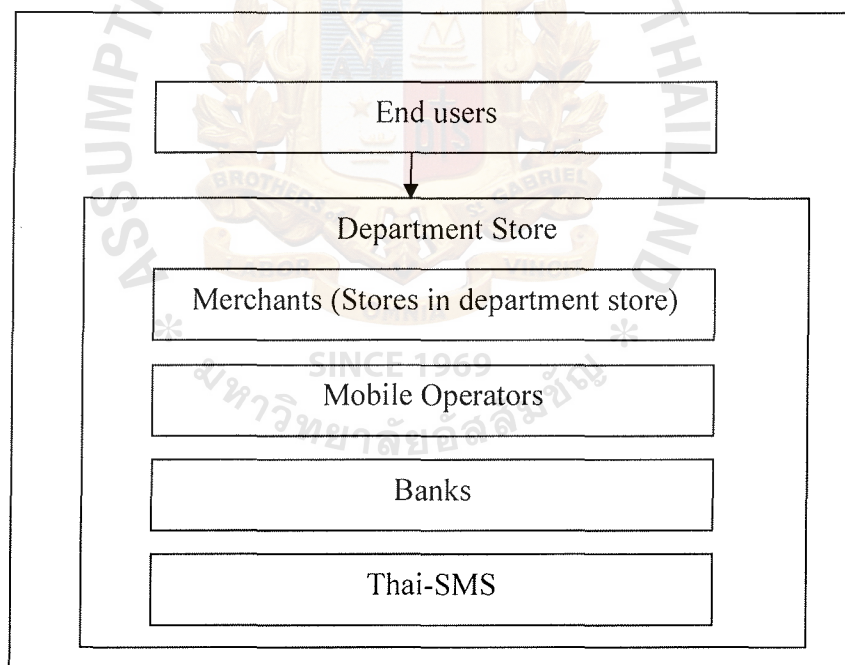


Figure 3.6. Thai-SMS as department store.

From the above figure the core service is the integration of Thai-SMS, banks, and mobile operators, which can be viewed as a department store. In this scenario,

the merchant is like an individual store inside the department store, and end-users are customers looking for something to buy in the department store. The overall system will look like a virtual department store.

3.9 Building the core services:

For the first phase, Thai-SMS will integrate the system with major mobile operators and banks which are AIS, DTAC, Bangkok Bank, Thai Farmers' Bank and Krung Thai Bank. The AIS and DTAC cover over 20 million customers. The other medium and small mobile operators and banks, such as Orange, HUTCH, T-Mobile, Siam Commercial Bank, Bank of Asia will be in the next phase.

Table 3.4. Number of subscribers of each mobile operator.

Mobile Operator	Subscribers
AIS	17,000,000
DTAC	4,000,000
Orange	500,000
Hutch	500,000
Total	22,000,000

3.10 Acquiring merchants:

In parallel with integrating the system with banks and mobile operators, major merchants will be acquired to the services. Thai-SMS will focus on popular merchants to join the services, since these merchants have capability to gain high revenue from SMS channel, and they will be the reference for future phases of acquiring new merchants. The

major merchants are: theatres, airline ticket booking, golf club booking, bowling lane booking, karaoke booking, credit card company, and utilities providers.

3.11 Acquiring end-users:

After acquiring the number of merchants, Thai-SMS will make co-marketing with banks, mobile operators and merchants to educate the market about the new payment channel. In this phase, the merchants will offer special promotion for customers such as, special discount on paying the fee via SMS. In this phase there will be road shows organised by every party.



IV. SYSTEM ARCHITECTURE

4.1 Overview

There are 4 main parties involved in technical issues in this service which are: mobile operators, banks, merchants and Thai-SMS. The diagram below shows the integration of each party.

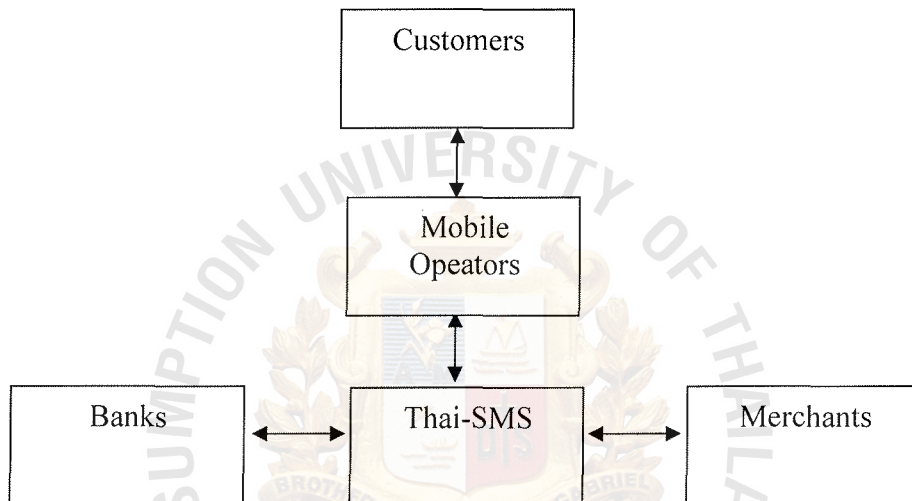


Figure 4.1. Thai-SMS and partners integration diagram

According to the diagram, when a customer places an order for something using SMS, the mobile operator sends the transaction request to Thai-SMS. Then Thai-SMS will look where the transaction belongs to, either to the bank or the merchant. The transaction request is sent to the merchant who checks if the goods or services are in hand or not. If the merchant has goods in hand they will respond that the goods or services are ready to be delivered. Then Thai-SMS will request the bank to deduct the fund from the customer's account and deposit it to the merchant's account. After the funds are transferred, the merchant will immediately deliver the goods or services to the customer.

4.2 Security:

For security reasons, before customers confirm their order they must enter their PIN code (personal identification number). Customers can get the PIN code from their bank. Below are the processes of how customers can get their PIN code by using Thai-SMS.

Processes for customers to get the PIN code:

- (1) Apply for the SMS-Payment service at the bank branches or bank's web site. In the application form, customer has to enter their bank account and mobile phone number which they would like to use with SMS-Payment services. This is to assure that only the mobile phone number entered on the application form can be used with the particular bank account entered on the application form. For example, if a customer entered the bank account as "152-2124-342-1" and mobile phone number as "01-9076299", the bank account number 152-2124-342-1 can be accessed only with mobile phone number 01-9076299, and other numbers will be rejected. That means the third person's phone number can do nothing with account number 152-2124-342-1.

Furthermore for maximum security, customers have to have a PIN to do the transaction. After the bank approves the application form, the bank will send the approval code to customer's mobile phone. The customer has to reply back, and the bank will send the PIN code to the customer via SMS.

That means only the account owner can do the transaction, since the mobile phone number is tied with the account number. Furthermore if the mobile phone is lost, the PIN code still protects the account owner.

4.3 System Flow:

The figure below shows the full transaction flow of Mobile-Payment services. The scenario is based on a customer who wants to pay for a mobile phone bill (AIS).

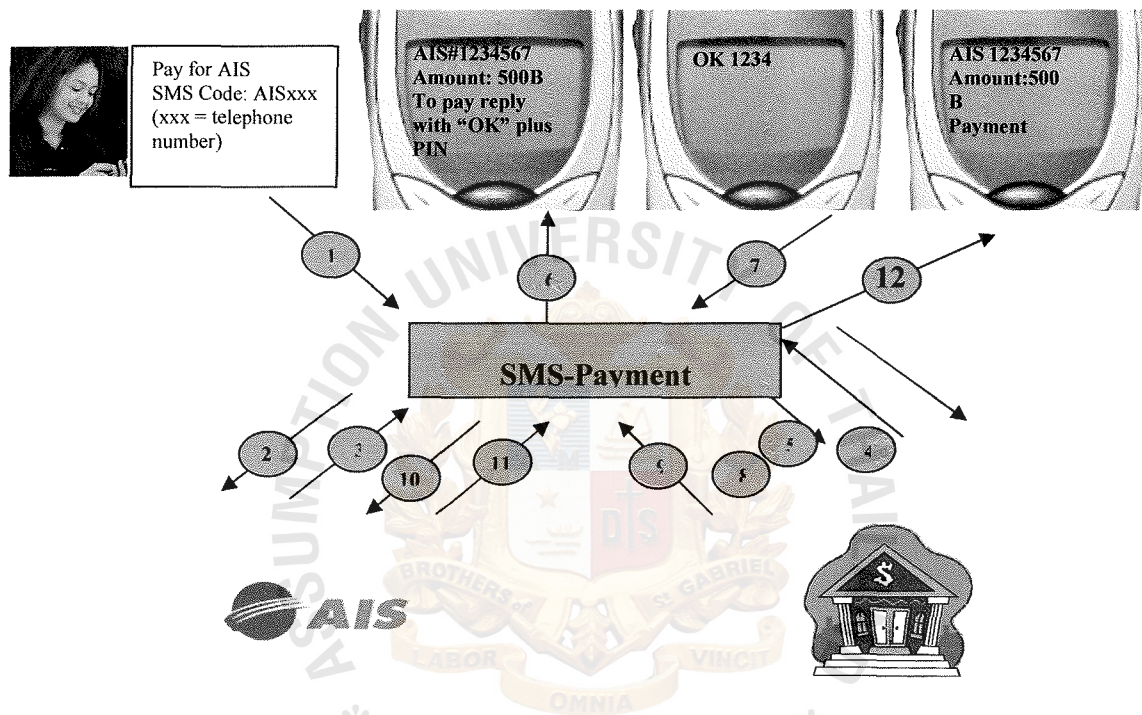


Figure 4.2. Thai-SMS system flow chart

Description of the flow:

- 1 Customer sends SMS to request for AIS bill payment "AIS + mobile number".
- 2 Thai-SMS forwards order to a particular merchant, in this case AIS.
- 3 Merchant (AIS) sends the due amount of customer's mobile phone number back to Thai-SMS.
- 4 Identify customer and check account status.
- 5 Confirm & reserve transaction value

- 6 Request customer confirmation by sending amount due.
- 7 Customer confirms transaction by replying "OK plus PIN"
- 8 Request for transaction
- 9 Confirm charge and issue transaction approval code.
- 10 Confirm to merchant
- 11 AIS accepts the payment
- 12 Confirm the payment to customer.



4.4 System Requirement:

Table 4.1. List of system requirement.

Hardware				
Type of Hardware	Unit	Function	Unit Price	Total
Server	3	Customer Database, Merchant Database, Authentication	200,000	600,000
PC	6	Programming, Documentation	30,000	180,000
Printer	2	General administration	7,000	14,000
Scanner	1	Graphic Design	3,000	3,000
Digital Camera	1	Graphic Design	10,000	10,000
Internet Connection				
Connection	Speed	Function	Unit Price (per month)	Total (per year)
Dial-up Modem	56kbps	General use	200	2,400
ADSL (Inter)	128kbps	General use, Web update	3,700	44,000
Leased Line (Domestic)	512kbps	Communicate data between banks, mobile operators and merchants	10,000	120,000

Software				
Software	Unit	Function	Unit Price	Total
Linux server (free license)	3	Server Operating System	Free	Free
MS-SQL	3	Merchant Database		
Java Runtime	6	Run Java application	Free	Free
Edit Plus	6	Program code editor	1,200	7,200
PlaDao Office	6	Documentation	Free	Free
Adobe Photoshop	2	Graphic Design	15,000	30,000
Adobe Illustrator	2	Graphic Design (Vector)	15,000	30,000
Macro Media Dream Weaver	2	Web Design	10,000	20,000

Technology limitation

Currently the SMS function in mobilephone can support up to only 160 characters, so the message sent must be concise as much as possible.

V. FINANCIAL ANALYSIS

This section describes cost of services, revenue, cash flow, IRR and NPV of Thai-SMS project.

5.1 Cost of services

The cost of services can be categorized in two parts which are: Fixed cost which focuses on initial investment, such as system infrastructure. Variable cost, salary, utilities bills, interest, and office rental fee.

5.1.1 Fixed cost (one time investment)

Hardware, software and office automation

Table 5.1. List of hardware needed.

Hardware			
Type of Hardware	Unit Price	Quantity	Total
Server	200,000	3	600,000
PC	30,000	6	180,000
Printer	14,000	2	28,000
Scanner	3,000	1	3,000
Digital Camera	10,000	1	10,000
Total			821,000

Table 5.2. List of software needed.

Software			
Software	Unit Price	Quantity	Total
Linux Server	0	3	-
PlaDao Office	0	6	-
Java Runtime	0	6	-
MS-SQL	10,000	6	60,000
Edit Plus	1,200	6	7,200
Adobe Photoshop	15,000	2	30,000
Adobe Illustrator	15,000	2	30,000
Dream Weaver	10,000	2	20,000
Total			147,200

Table 5.3. List of office automation needed

Office Automation			
Item	Unit Price	Quantity	Total
Telephone	500	10	5,000
Facsimile	4,990	1	4,990
Copier machine	1	20,000	20,000
		Total	29,990

Total fixed cost = 998,190 Baht.

Depreciation for 5 years (60 months) = 199,638 Baht/ month

5.1.2 Variable Cost (monthly expenses)

Salary, utilities (water, electricity, telephone, rental fee)

Table 5.4. List of expenses (salary).

Salary per month			
Position	Salary	No. of position	Total
General Admin	8,000	2	16,000
Accountant	12,000	1	12,000
Sales & Marketing	12,000	3	36,000
Programmer	15,000	3	45,000
		Total	109,000

Table 5.5. List of expenses (utilities)

Utilities	
Item	Total
Water	1,000
Electricity	5,000
Telephone	5,000
Gasoline	5,000
Rental	10,000
ADSL 256kbps	3,800
	29,800

Total variable cost = 138,800 Baht/ Month

Table 5.6. Cost of Thai-SMS year 1-5.

Cost Items	Year 1	Year 2	Year 3	Year 4	Year 5
Fixed cost (initial investment)					
Hardware					
Server 3 units@200,000	600,000	0	0	0	0
Personal Computer 6 units@30,000	180,000	0	0	0	0
Notebook 3 units@45,000	135,000	0	0	0	0
Printer 2 units@14,000	28,000	0	0	0	0
Scanner 1 unit@3,000	3,000	0	0	0	0
Digital Camera 1 unit@10,000	10,000	0	0	0	0
Software					
Linux Server 3 units@Free	0	0	0	0	0
PlaDao Office 6 units@Free	0	0	0	0	0
Java Runtime 6 units@Free	0	0	0	0	0
MS-SQL 6 units@10,000	60,000	0	0	0	0
Edit Plus 6 units@1,200	7,200	0	0	0	0
Adobe Photoshop 2 units@15,000	30,000	0	0	0	0
Adobe Illustrator 2 units@15,000	30,000	0	0	0	0
Dreamweaver 2 units@10,000	20,000	0	0	0	0
Office Automation					
Telephone 10 units@500	5,000	0	0	0	0
Facsimile 1 unit@5,000	5,000	0	0	0	0
Copier machine 1 unit@20,000	20,000	0	0	0	0
Development cost	2,000,000				
Total fixed cost	3,133,200	0	0	0	0
Operating cost (variable cost)					
Salary Cost (10% raise up per year)					
General Admin 2 persons@8,000	216,000	238,000	262,000	289,000	318,000
Accountant 1 persons@12,000	144,000	159,000	175,000	193,000	212,000
Sales & Marketing 3 persons@12,000	432,000	475,000	523,000	575,000	633,000
Programmer 3 persons@15,000	540,000	594,000	653,000	718,000	790,000
Total annual salary cost	1,332,000	1,466,000	1,613,000	1,775,000	1,953,000
Utilities Cost					
Water 1,000 Baht per month	12,000	12,000	12,000	12,000	12,000
Electricity 5,000 Baht per month	60,000	60,000	60,000	60,000	60,000
Telephone 5,000 Baht per month	60,000	60,000	60,000	60,000	60,000
IDC 50,000 Baht per month	600,000	600,000	600,000	600,000	600,000
Office rental 10,000 Baht per month	120,000	120,000	120,000	120,000	120,000
ADSL 256kbps 3,800 Baht per month	45,600	45,600	45,600	45,600	45,600
Office stationaries 1,500 Baht per month	18,000	18,000	18,000	18,000	18,000
Total annual utilities cost	915,600	915,600	915,600	915,600	915,600
Marketing Cost					
Road Show 10,000 Baht per month	60,000	120,000	120,000	120,000	120,000
Brochure	50,000	150,000	200,000	250,000	300,000
Advertising cost	150,000	500,000	1,000,000	1,500,000	2,000,000
Total annual marketing cost	260,000	770,000	1,320,000	1,870,000	2,420,000
Total operating cost	2,507,600	3,151,600	3,848,600	4,560,600	5,288,600
Total Cost	5,640,800	3,151,600	3,848,600	4,560,600	5,288,600

5.2 Revenue

The revenue for Thai-SMS is based on revenue sharing between banks and mobile operators. The table below shows the revenue sharing per transaction that Thai-SMS gets from banks and mobile operators.

Table 5.7. Thai-SMS revenue per transaction for SMS-Payment service.

Partner	Type of revenue	Charge to	Amount charge	Thai-SMS get
Banks	Transaction fees	Merchants	10 Baht/Transaction	1.00 Baht
Mobile Operators	SMS fees	End-Customers	10 Baht/Transaction	5.00 Baht
			Total Thai-SMS gets	6.00 Baht

The table shows that for every transaction done, Thai-SMS will get 1.00 Baht from banks and 5.00 Baht from mobile operator, a total of 6.00 Baht per transaction.

In this paper, the revenue forecast uses the conservative model, by forecasting just only the revenue obtained from utilities payment done by SMS-Payment.

5.2.1 Revenue forecast:

The number of mobile phone users, both prepaid and postpaid in Thailand is approximately 22,000,000. The table below shows the revenue forecast for Thai-SMS (after sharing the revenue with banks and mobile operators)

Table 5.8. Thai-SMS revenue forecast.

	Year 1	Year 2	Year 3	Year 4	Year 5
Number of users (accumulated)	10,000	110,000	236,500	382,000	550,000
No. of usage per month/user	12	12	12	12	12
Total No. of transaction	120,000	1,320,000	2,838,000	4,584,000	6,600,000
Each transaction Thai-SMS get	6	6	6	6	6
Total Revenue	720,000	7,920,000	17,028,000	27,504,000	39,600,000

5.3 Payback Analysis for Thai-SMS

Table 5.9. Cost and Benefit Analysis for Thai-SMS.

Items	Year 1	Year 2	Year 3	Year 4	Year 5
Total cost	5,640,800	3,151,600	3,848,600	4,560,600	5,288,600
Accumulated Cost	5,640,800	8,792,400	12,641,000	17,201,600	22,490,200
Total Benefits	720,000	7,200,000	17,028,000	27,504,000	39,600,000
Accumulated Benefits	720,000	7,920,000	24,948,000	52,452,000	92,052,000

Table 5.10. Comparison of Accumulated Cost and Accumulated Benefit for Thai-SMS.

Year	Accumulated Cost	Accumulated Benefit	Accumulated (Benefit-Cost)
1	5,640,800	720,000	-4,920,800
2	8,792,400	8,640,000	-152,400
3	12,641,000	25,668,000	13,027,000
4	17,201,600	53,172,000	35,970,400
5	22,490,200	92,772,000	70,281,800

The accumulated (benefit-cost) is negative in the first and second year, but it is positive in the third year. Payback period is therefore between the second year and the third year. Payback period can be calculated as follows:

$$152,400 / (152,400 + 13,027,000) = 0.01 \text{ year} + 2 = 2.01 \text{ year}$$

$$2.01 \times 12 = 24.12 \text{ months or 2 years and 1 month approximately}$$

Therefore, the payback period for Thai-SMS is about 2 years and 1 month in which year 1 is the starting point.

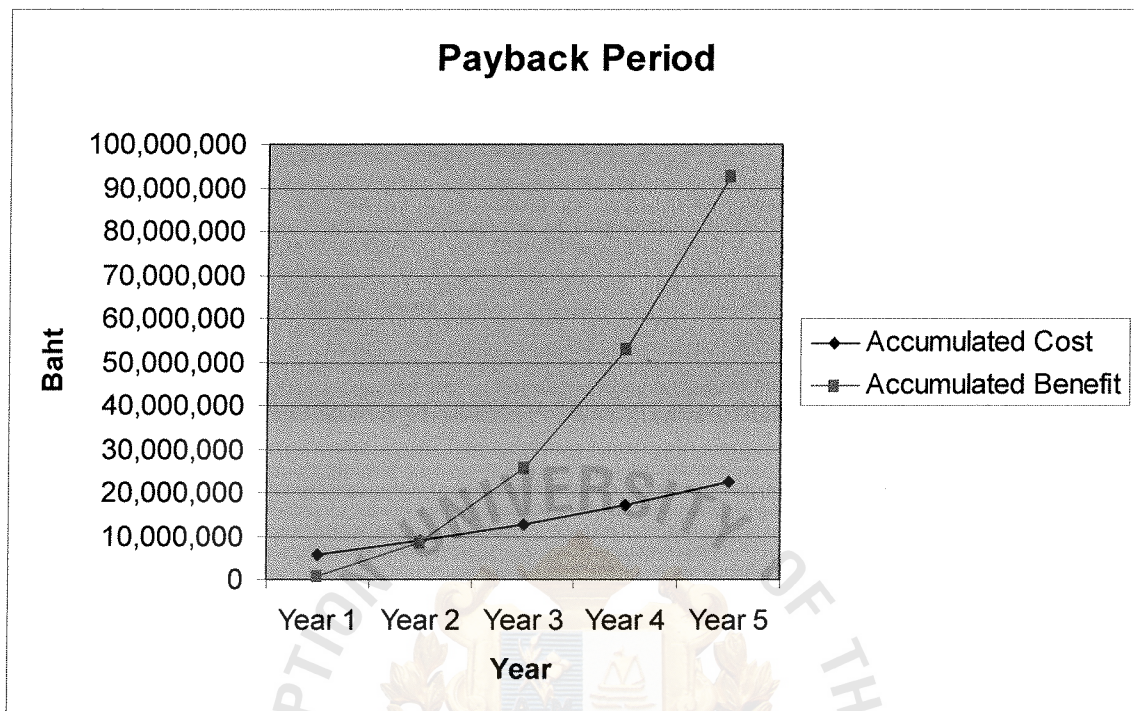


Figure 5.1 Payback Period.

VI. IMPLEMENTATION PLAN

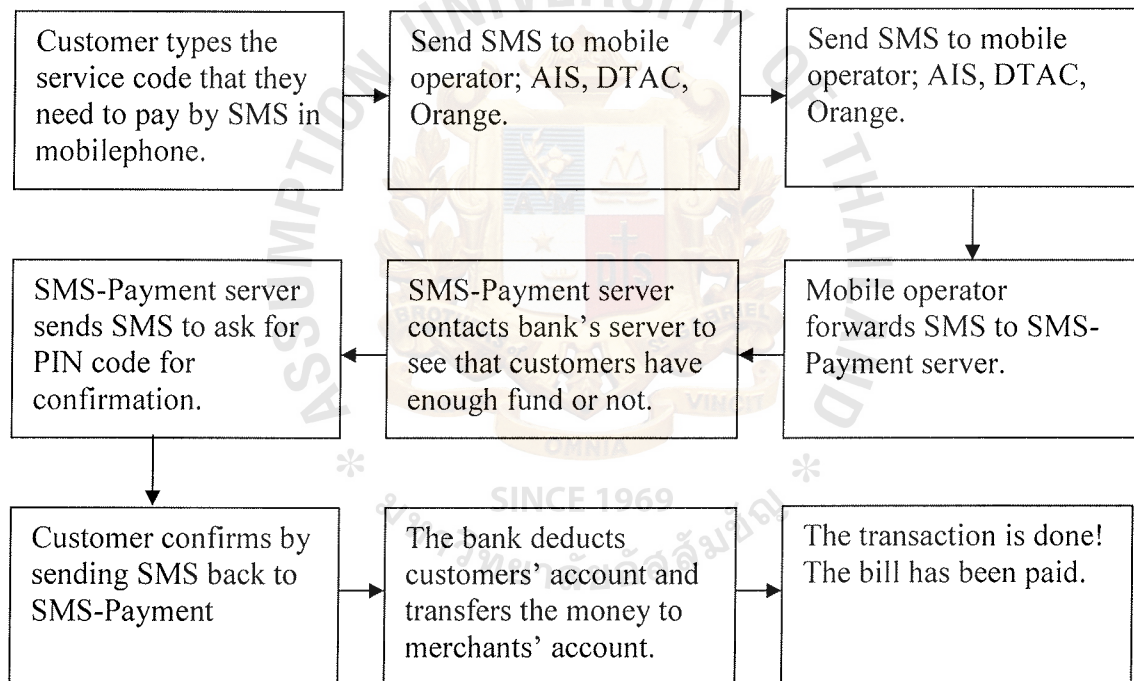
Table 6.1. Gantt Chart

Activities		2004				2005				2006			
		Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
1	Acquire Members												
	Acquire Mobile Operators												
	Acquire Banks												
	Acquire Merchants												
2	Revenue sharing negotiation												
3	System Development												
4	Web Interface												
5	Beta test with selected group												
6	Marketing Activities												
	Road-Show												
	Brochure												
	Press Conference												
	Press Release												
7	Go Commercial												
8	Evaluation (Every end of quator)												
9	New Technology Developing												

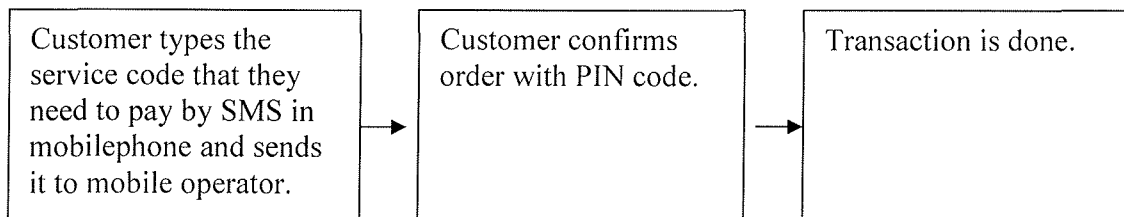
VII. Conclusion and Recommendations

7.1 Conclusion

By developing SMS-Payment method, it is found that the system suits customers' need and want by allowing customers to pay for products and services via their mobilephone. The diagram below shows how customers can pay for products and services using SMS-Payment.



The above diagram is for full system flow. But from customers' point of view, they just need to do a few steps to complete the transaction, and the other steps will be transparent to them. The following diagram is the flow for customers.



The growth of revenue gain from the services depends on the number of mobilephone users, and also on the number of merchants and banks. That means the more merchants that provide SMS-Payment method for their customers, the more revenue from SMS-Payment will be generated.

The other key success of SMS-Payment method is the trust of customers to the services. So, it is necessary to educate customers about the service's reliability which may take time before people have confidence and become familiar with the service.

7.2 Recommendations for Future Plan

(a) The technology

At the first step Thai-SMS will concentrate only on SMS technology since every mobile phone supports this feature. There are not many models that support Java features and it is found that Java enable mobile phone is still expensive and most of the Java features are still hard for ordinary users to understand. However, it is expected that 2 years after this, the Java feature phone will become a standard and at that time Thai-SMS will launch the Java program and bundle it to the mobile phone (also available for over-the-air download). The Java program will work like the m-wallet, and the interface will look more friendly and easy to use.

(b) The services

Thai-SMS will keep researching for new services to serve the market. The nearest plan is to launch the International money transfer by joining with Western Union Money Transfer Servicer, which is the world leader of international money transfer. After that Thai-SMS will launch M-Cheque service (mobile-cheque), and customers can draw their cheque using their mobile phone, or set the payment date on the cheque. This may work only with the new Java application which will be launched soon.






APPENDIX A
WEB INTERFACES

Web Interface

(1) Welcome page

Pay for goods and bills over the air with...



SMS-Payment

a quality service from Thai-SMS

Mobile phone No.

Password:

[Subscribe!](#)

[What is SMS-Payment](#)

[New Promotion](#)

[List of Merchants](#)

[FAQs](#)

[About Us](#)

[Contact Us](#)

Welcome to Thai-SMS


Have you ever faced these problems?

- No time to go to the bank to pay bills.
- Want to transfer money at midnight to your son but the bank is already closed.
- Run out of mobile phone prepaid air-time.
- ... and more problems with payment.


Just subscribe to SMS-Payment service and your problems with emergency payment will be eliminated. You will soon be able to pay for goods and bills using SMS feature on your mobile phone!

Subscribe now, it is free!


Hot Promotion!



12% discount for Thai-SMS members



Free! 2 cans of coke for Thai-SMS members




Get extra 10% for refill done by SMS-Payment

Figure A.1. Thai-SMS's Welcome Page

(2) Subscribe page

Pay for goods and bills over the air with...



SMS-Payment

a quality service from Thai-SMS

Mobile phone No.

Password:

[Subscribe!](#)

[What is SMS-Payment](#)

[New Promotion](#)

[List of Merchants](#)

[FAQs](#)

[About Us](#)




[Contact Us](#)

Sign-up!




Thank you for choosing SMS-Payment service a quality service from Thai-SMS, please fill in the form below:

Name: Surname:

Address:

Mobile phone number:   

Please choose the bank to be used with SMS-Payment:

☐ 
☐ 
☐ 


ATM card No: PIN Code:


Please choose your password: (8-16 characters)

E-mail Address:

Note: Your PIN Code to be used with SMS-Payment will be sent to you by SMS after your application form is approved.

Hot Promotion!

 12% discount for Thai-SMS members

 Free! 2 cans of coke for Thai-SMS members


 Get extra 10% for refill done by SMS-Payment

Figure A.2. Sign-up page

(3) List of Merchants

Pay for goods and bills over the air with...

SMS-Payment
a quality service from Thai-SMS

Mobile phone No.
Password:

[Subscribe!](#)
[What is SMS-Payment](#)
[New Promotion](#)
[List of Merchants](#)
[FAQs](#)
[About Us](#)
[Contact Us](#)

Merchant Lists

Restaurants


Dress


Supermarket


Theater


Mobile Operators



Online Store


more...

Figure A.3. Merchant List page

(4) New Promotions

Pay for goods and bills over the air with...

 **SMS-Payment**
a quality service from Thai-SMS

Mobile phone No.

Password:

[Subscribe!](#)

[What is SMS-Payment](#)

[New Promotion](#)


[List of Merchants](#)


[FAQs](#)


[About Us](#)


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New Promotions

 Get free 2 cans of coke when ordering family size pizza and pay with SMS-Payment

 Get free extra 10% of credit refilled by SMS-Payment

 Get 25 Baht off when booking and paying by SMS-Payment

 Get free 1 set of dimm-sum when ordering for home delivery and paying by SMS-Payment

[more...](#)

Figure A.4. New Promotions page



APPEXDIX B

TRANSACTION SUMMARY REPORT

Transaction Summary Report

Table B.1. Transaction Summary Report

Transaction Summary for Khun Thanaman R.					
Bank: Bank of Asia		Account No. 243-231-243-1			
Mobile Phone: 01-907-6299 (AIS)					
No.	Date	Time	Description	Amount	Status
1	Jan 1, 04	14:07	BIG C Supermaket	1,500	S
2	Jan 1, 04	14:30	MK Resturant	600	S
3	Jan 2, 04	10:14	Home Pro	4,800	S
4	Jan 4, 04	13:09	UBC Bill Payment	1,000	S
5	Jan 5, 04	19:34	Shell Fuel Station	400	S
6	Jan 6, 04	15:00	Transfer fund to A/C 123-343-342 (KTB)	30,000	S
7	Jan 15, 04	20:00	AEON	3,050	S
8	Jan 20, 04	12:00	Pizza Hut	350	S
9	Jan 31, 04	16:00	AIS Bill Payment	750	S
			Total Jan, 2004	42,450	





APPENDIX C

APPLY CASES

APPLY CASES

This section shows how to apply for SMS-Payment service as additional sales channel.

C.1 Selling Internet hours (air time) via SMS

Nowadays, the usage of Internet is growing very rapidly, so the demand of Internet airtime is high. There are many situations when the Internet connection is needed, but sometimes the users run out of Internet airtime, so they can not login to get an important e-mail. And in some situations the Internet airtime cards are hard to find, or it is not convenient to get one; for example, it is about 23:00 o'clock so the shops are already closed, or it is raining. So, by selling Internet airtime through SMS it will be easier for the users to get the airtime. Username and password will be delivered directly to customers' mobile phone via SMS, and ISP will immediately get paid by the customers.

C.2 Top-up prepaid card for mobile phone (refill credit)

There are over 15 million mobile phone users in prepaid card system. The mobile operator will save a lot of production, distribution cost and also volume discount for dealers if they allow their customers to refill their credit using SMS-Payment. It will be very convenient for customers since they do not need to worry about keeping the stock of prepaid card for emergency use since they can always refill by using SMS-Payment.

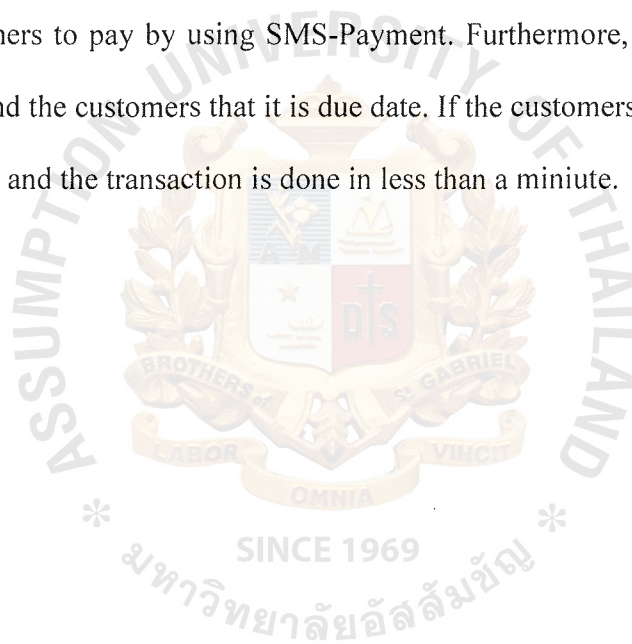
C.3 Booking movie ticket

At present when movie goers place a movie ticket booking, they need to reach the theatre 1 hour before the screen play; otherwise, the booked tickets will be cancelled and sold to others. This is not convenient since the traffic condition in Bangkok is very bad and movie goers who booked the ticket cannot reach the theatre on time. So, if the movie

theatres allow booking for tickets using SMS-Payment, the problem will be solved since the system will deduct the fund and transfer it to the movie theatre immediately on confirmation. When the person who books the ticket reaches the theatre they just need to tell the mobile phone number to the staff; then the staff will immediately print the ticket for them, and they can enjoy the movie.

C.4 Utility bills payment

The utilities that are operated by state-enterprises will reduce the late payment if they allow their customers to pay by using SMS-Payment. Furthermore, suppliers can send an alert SMS to remind the customers that it is due date. If the customers are ready to pay, they just reply the SMS and the transaction is done in less than a minute.



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