



Attitudes of Mobile Phone Users toward Multimedia Messaging Service
(MMS) in Thailand : A Case Study of I-Mobile Soft Company

by

Ms. Soirithai Sawatarat

A Final Report of the Six-Credit Course
CE 6998 - CE 6999 Project

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer and Engineering Management
Assumption University

November 2003

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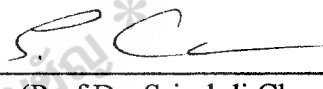
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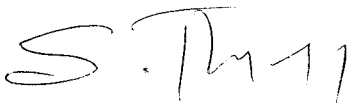
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Academic Year	November 2003

The Graduate School of Assumption University has approved this final report of the six-credit course, CE 6998 – CE 6999 PROJECT, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer and Engineering Management.

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ABSTRACT

This project intends to survey the attitude of mobile phone users toward Multimedia Message Service (MMS) in Thailand. The survey intends to find out the attitude of mobile phone users if they accepted it, or agreed, or are satisfied with Multimedia Message Service (MMS) and to find out the service that they are interested in using it.

Regarding the gathering of information, the survey is used as a research tool with 400 questionnaires sent to the mobile phone users in 10 districts in Bangkok area who know the Multimedia Message Service (MMS) by using cluster sampling method and then purposive sampling method. The researcher uses the SPSS (the Statistical Package for Social Sciences) version 11.0 for Windows, to analyze and deliver the survey result. The survey results were presented in the form of tables and graphs.

From the survey result, it can be concluded that currently the attitude towards Multimedia Message Service (MMS) is quite positive which are agreed level, only price and difficulty in using them are the factors the mobile phone users are still concerned. Most of users are male and they are most interested in the service which provides sport reports. However the services such as sending E-card and video clip are still popular for both male and female. It will be successful if the culture barrier is broken with more market education and smart pricing.

According to the survey result, it has checked reliability analysis: Alpha value = .8976. This means that the result from this research is reliable.

ACKNOWLEDGEMENTS

I am indebted to the following people and organizations for their contributions to me. Without them, this project would not have been possible.

The first and foremost person whom I would like to give my most appreciation and thanks to is Dr. Chamnong Jungthirapanich, my project advisor, who has given his kind attention, suggestion, and advice to me. His patient assistance, guidance, and constant encouragement has led me to the research completion. Without his patient, indulgent cooperation, this project would have been much more difficult.

I would like to express my gratitude to Mr. Sompop Punsri, Mobile phone business development manager of I-mobile Soft Company, for his kindness to give me an opportunity to have interviews and apply their comment in my project.

I would like to express appreciation to my friends for their comments and their encouragement

Special appreciation goes to my husband and my daughter for their fervent and continuous encouragement. Above all, I am forever grateful to my mother whose willingness to inspire me to achieve my education goal.

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I. INTRODUCTION

Nowadays, communication plays many important roles in our lives. Mobile phones have become a communication device which is necessary for our daily lives. We can see that not only business men but also young people use mobile phones. Originally mobile phone was designed to make people communicate with each other with their voice but today non-voice messaging service has emerged and made the mobile service more and more popular among mobile phone users.

Mobile messaging has emerged as a clear leader in non-voice traffic and revenues. SMS (Short Messaging Service) is developed into one of the most important revenue generators for many mobile operators. The number of short messages sent in the market is booming, which brings new challenges to the network operator –capacity, scalability, load sharing, efficient routing and the demand for value added services. Currently, SMS is being utilized to offer lucrative value added services especially smart messaging services which are extended part of the SMS standards. Those popular services of smart messaging are ringing tones, operator logos, and picture messages. Besides pure text messaging, Enhanced Messaging Service (EMS) was introduced to the market. Enhanced Messaging Service (EMS) is an enhanced SMS technology that enables people to change typefaces, format text in bold and italic, and align it as they choose. Additionally, it makes it possible to download and send icons, animations and ringing tones. But EMS brings only limited value to mobile customer, especially since similar services are already available through Smart Messaging.

However, with the limitation of its user interface and technological capabilities, mobile messaging service has been developed to be able to send both pictures and sound, including animations and short video clips. This evolution is

designed to support third generation of mobile network system which will enable data transmission to speed faster. Multimedia Message Service (MMS) is the key application in its entry into the 3G terminal market. It is an end-to-end application for person-to-person mobile messaging, mobile to mobile, mobile to the Internet and the Internet to mobile. It will provide rich multimedia content, including images, audio, video, data and text.

1.1 Company Profile

iMobilesoft Co., Ltd was established in January 2003 as a leader in mobile software development, specializing in creating high quality, technically superior mobile phones. iMobilesoft products were created to diverse new types of mobile contents that can satisfy customer needs..

Model services are as follows:

(1) Mobile download contents

This service is designed to support the new technology such as download ringtone, logo, sending SMS such as lottery, horoscope, and game.

(2) Mobile software

This service is designed to support the mobile software technology such as java games, online games, karaoke, etc.

(3) MMS

This service is designed to support the new messaging technology such as sending E-card, sending motion pictures, and receiving news/sport report, etc

1.2 Statement of the Problem

According to the successful SMS messaging technology, it enables people to communicate with each other without using voice over mobile network and it has

become the hottest technology to increase rapid revenue for mobile operators. The growing business attracts a number of companies to join this market share. In contrast, the latest messaging technology MMS which can provide multimedia content such as E-card, new music video clips and sample of movies to mobile consumers is not as popular as it should be.

In order to maintain the existing market base and increase sales volume of iMobilesoft company under the intense competition in mobile contents business we need to survey mobile phone users' attitude for guide the company to create and improve their services to increase market share and their revenues.

1.3 Research Objectives

The purposes of this research are:

- (1) To survey the attitude of the mobile phone users in Bangkok toward Multimedia Message Service (MMS) in Thailand.
- (2) To survey the attitude of the mobile phone users in Bangkok toward the services of the Multimedia Message Service (MMS) in Thailand.
- (3) To improve the service of Multimedia Message Service (MMS) of I-Mobile Soft Company to satisfy customer's needs.

1.4 Importance of the Study

This research study was mainly concerned with the attitude of mobile phone users toward Multimedia Message Service (MMS) in Thailand. Due to the fact that consumer attitude can give very valuable information about the way to improve the services to satisfy customer needs. And it can give meaningful guidance for the industry improvement and growth. Therefore, the researcher hopes that the findings of this study will be beneficial to all providers who put emphasis on improving their marketing strategies and service standard to meet customers' expectation.

1.5 Scope of the Study

For proper presentation to the public, the real names of the consumers are disguised.

The scopes of this study are as follows:

- (1) The survey covers only the mobile phone users in the Bangkok area.
- (2) The survey focuses on the mobile phone users who have been using short messaging service and know the Multimedia Message Service (MMS).



II. LITERATURE REVIEW

This chapter presents about the topics or issues that are related to the study of the attitude of mobile phone users toward multimedia messaging service (MMS) in Thailand. The related content that must be prioritized as the first one should be about the term of mobile messaging. Therefore, the related contents are divided into 4 main parts. The first part presents the history of mobile messaging which aims to clarify the revolution of mobile messaging technology. The second part presents the history of SMS messaging service which aims to give a better understanding about the short messaging services (SMS). The third part presents the overview of multimedia messaging service (MMS). The last part presents the definition of attitude.

2.1 Understanding mobile messaging (www.gsm.org)

2.1.1 Mobile Messaging technology

Before studying the term Multimedia Messaging Service (MMS), for the better understanding, it is necessary to study the evolution of mobile messaging, which can be called as the traditional messaging concept.

The global mobile communication evolved from voice-driven technology to personal text-driven at the beginning stage of messaging era. Then it becomes a very popular technology in short message communication. Sometimes people would like to talk a few words to their friends such as greetings or expressing their current feelings. When people talk, it has never been a short conversation. Short Messaging Service (SMS) technology was developed to fulfill peoples' needs. It is the system which makes people communicate with each other with text-based sending through cellular stations. The top mobile phone companies such as Nokia, Ericsson, and Motorola try to send their mobile phone products to the market. All mobile operators have to make sure that

they have this kind of service to serve their customers, because not only mobile users will be happy using this messaging service but also mobile operators can enjoy a large number of unpredictable revenues of this service. SMS is not being sent not only within the country, but all over the world.

2.1.2 Messaging history

SMS was an accidental success that took nearly everyone in the mobile industry by surprise. A few people predicted that this hard to use service would take off. There was hardly any promotion for or mentioning of SMS by network operators until after SMS became a success. SMS advertising came from business people in suits inserting text messages to bright pink and yellow advertisements aiming at the youth markets that adopted SMS.

SMS was the triumph of the consumer - every generation needs a technology that it can adopt as its own to communicate with - and the next generation took up SMS. Paradoxically, it was because SMS was so very difficult to use that the young people said that they were going to overcome the man machine interface and other issues and use the service anyway. The fact that the entry barriers to learning the service were so high that it became a disadvantage because it means that parents and teachers and other adults and authority figures were unable, unwilling and unlikely to use the service.

A completely new alphabet emerged because SMS messages took a long time to enter and were quite abrupt as people attempted to say as much as possible with few keystrokes. Abbreviations such as 'C U L8er' for 'See you later' sprung up for timesaving and coolness. The use of smileys to reduce the abruptness of the medium and to help indicate the mood of the person became popular because it was difficult to express vivid emotional expressions in text messages.

The introduction of prepay mobile tariffs in which people could pay for their airtime in advance and thereby control their mobile phone expenditure was the catalyst that accelerated the take up of SMS. The network operators were technically unable to bill prepay customers for the SMS they were using because the links between the prepay platform and the billing system and the SMS Centers were not in place. The network operators responded with silence- the prepay literature did not mention SMS at all even though the prepay phones supported the service. One thing that is certain is that in these days with the Internet revolution to spread information, the young people will identify loopholes like this. And they did. Suddenly, millions more SMS messages were being sent- with some individual mobile phone subscriptions accounting for thousands of SMS per month alone as they set up automated message generators. Network operators worked with their platform suppliers to try and sort this out and implement charging for SMS for prepay customers. Meanwhile SMS incubated and spread and people were using it because it cost nothing whereas carrying out the same transaction using voice clearly did cost. Eventually after a few months the network operators finally got their act together and managed to implement SMS charging for prepay users- so that they could decrement the prepay credit by the cost of an SMS message.

A mass SMS message distribution campaign was then typically sent out- so that everyone that had used SMS received a text message informing them that from a certain date, SMS would be charged for. This led to an immediate and protracted decline in SMS usage to between 25% and 40% of the pre-charging levels as people suddenly stopped using SMS or using it much. Then something interesting happened- the volume of SMS messages started gradually increasing again and soon reached its pre-charging levels. SMS volume growth has continued its upward growth ever since, fueled by simple person to person messaging as people told each other how they were feeling and

what they were doing- Information services and other operator led initiatives failed to interest the user community to any degree and never have done. Whilst it was free, SMS had become an important part of the way that young people communicated with each other in their daily life. SMS would have taken off without this prepay factor because it was already being used before that time- but it would never have taken off quickly.

SMS continued its astonishing growth during the year 2000 in Europe, a period of time when the mobile industry was trying to dictate the deployment of WAP. Despite doing nearly nothing else of any benefit, WAP did at least increase the attention that the mobile Internet received as people tried to work out services that would appeal to the mobile phone users. Those companies that survived the WAP debacle started to realize that it was SMS and not WAP that had the addressable audience of users and the clearer business case. Advertising and other services based on SMS started to be trialed as companies realized that people who could use SMS for person to person messaging would also be able to access SMS based commercial messages.

The next great success for SMS based services was ringtones. Nokia had started its smart messaging protocol that was built on binary SMS rather than the standard text SMS. Nokia had expected this technology to be used for information services and over the air service profiling and it had languished for years, until suddenly in the year 2000, it found its application- ringtones that allow users to change the way their mobile phone rang. Because the network operators were woefully inadequate and unable to offer the ringtone suppliers fair and flexible revenue sharing, the service providers started using premium rate Interactive Voice Response (IVR) voice platforms to trigger the transmission of ringtones. The ringtones market soon became a billion dollar market-

and few of the network operators even offered services- This category was dominated by independent service providers who advertised in newspapers and magazines.

SMS was the triumph of the consumer- a grassroots revolution that the mobile industry had next to nothing to do with and repeatedly reacted to. This is in stark contrast to the top down technology and industry led approaches to other nonvoice services such as WAP. The industry can learn a lot from SMS as it tries to create other nonvoice services- It is no surprise that the only other nonvoice success- i-mode in Japan was also an unprecedented and unexpected success. The mobile industry would do well to realize that success for nonvoice involves setting the right environment to allow services to succeed- ensuring everyone implements the same open standards in the same way, putting the right payment and microbilling technologies in place and recognizing that it takes a while to build a critical mass of usage. The mobile industry needs to realize that it can either delay the mobile Internet revolution by refusing to cede control to the end user and application and service development communities- or this will be taken away from it by the markets by force. Either way, the non voice revolution will arrive- it is not a question of whether, just when.

2.2 Understanding Short Message Service (SMS) (www.gsmworld.com)

2.2.1 Introduction to SMS

The Short Message Service (SMS), as defined within the GSM digital mobile phone standard that is popular in Europe, the Middle East, Asia, Africa and some parts of North America, has several unique features:

A single SMS can be up to 160 characters of text in length. Those 160 characters can comprise of words or numbers or an alphanumeric combination. Non-text based SMS' (for example, in binary format) are also supported.

SMS is a store and forward service, in other words, SMS are not sent directly from sender to recipient, but always via an SMS Center instead. Each mobile telephone network that supports SMS has one or more messaging centers to handle and manage the short messages.

SMS features confirmation of message delivery. This means that unlike paging, users do not simply send an SMS and trust and hope that it gets delivered. Instead the sender of the short message can receive a return message back notifying them whether the SMS has been delivered or not.

SMS can be sent and received simultaneously with GSM voice, Data and Fax calls. This is possible because whereas voice, Data and Fax calls take over a dedicated radio channel for the duration of the call, short messages travel over and above the radio channel using the signaling path. As such, users of SMS rarely ever get a busy or engaged signal as they can do during peak network usage times.

Ways of sending multiple SMS' are available. SMS concatenation (stringing several short messages together) and SMS compression (getting more than 160 characters of information within a single short message) have been defined and incorporated in the GSM SMS standards.

2.2.2 SMS milestones

The Short Message Service (SMS) has the ability to send and receive text messages to and from mobile telephones. The text can comprise of words or numbers or

an alphanumeric combination. SMS was created as part of the GSM Phase 1 standard. The first short message is believed to have been sent in December 1992 from a Personal Computer (PC) to a mobile phone on the Vodafone GSM network in the UK. Each short message is up to 160 characters in length when Latin alphabets are used and 70 characters in length when non-Latin alphabets such as Arabic and Chinese are used.

There is no doubt about the success of the Short Message Service- The market in Europe alone has reached over one billion messages despite little proactive marketing by network operators and phone manufacturers. Key market drivers over the next two years such as the Wireless Application Protocol (WAP) will continue this growth path.

The SMS market in the European Union reached one billion short messages per month in April 1999. The market size thereby doubled in about six months. The approximate market sizes are:

(1) First generation SMS center

The network operator needs to purchase its first generation SMS Center as part of the network commissioning plan. The initial SMS Center may be simply a voice mail platform module or alternatively a standalone SMS Center. It is not possible to make the Short Message Service available without an SMS Center since all short messages pass through the SMS Center.

(2) Voice mail notification and SMS mobile terminate

The network operator sees SMS as a "tick box option"- something to say that it does have its own network. Often SMS Mobile Terminate Services are offered along with voice mail notifications, which account for

the vast majority of SMS traffic on the network- typically over three-quarters.

(3) SMS mobile originate

The network operator launches SMS Mobile Originate to give customer true two-way SMS capability. Customers experiment with the service and work out new uses for it. Addition of SMS Mobile Originate typically leads to 25% increase in overall SMS volumes being handled.

(4) E-mail

Additional of a wireless Internet/ mobile email service often follows, typically with the customer's mobile number becoming part of the email address they are allocated as part of the service. Emails sent to that address are forwarded as a short message to their wireless phone. Such a service tends to be popular with customers, especially in markets where the Internet penetration is low and people do not have an email address yet. This typically leads to 20% increase in overall SMS volumes being handled.

(5) Information Services

Addition of information services. These services typically start with mainstream content such as news, travel, weather and sports and over time, new information providers are sourced that offer lifestyle services such as horoscopes and jokes. Because there is typically a lot of work involved in sourcing and setting up content, these services tend to build up slowly, typically accounting for about a 10% increase in SMS volumes being handled.

(6) Business partners program

The network operator starts to see independent companies experimenting with SMS-based applications and offering these on a regional or company-specific basis. To encourage these developments and assist in their widespread deployment, the network operator hires a person whose sole responsibility is to manage relations with these business partners and help them to get any technical or commercial support they need. The aim is to try to get the business partners to deploy their applications using their network's SMS services rather than those of their competitors. Because vertical market applications can account for high messaging volumes, the introduction of a business partners program can soon lead to a further 20% increase in overall SMS message volumes being handled by the network.

(7) Second generation SMS center

The network operator has seen gradual but significant increases in SMS traffic volumes as these initiatives have been taken and awareness of SMS builds.

They then often find that their SMS Center capacity is starting to be challenged and need to expand the existing platform or purchase an industrial strength SMS Center from another supplier. This then removes any constraints in handling messages, and may lead to corporate customer complaints about service reliability at peak times falling, typically leading to a 10% increase in overall SMS message volumes.

(8) National SMS interworking

The additional interworking between network operators who are competing in the same geographical market gives customers both networks the opportunity to use SMS in the same way as they do voice. Just as they can make a voice call to each other's phones, so they can send short messages to each other. Enabling this capability can rapidly increase the number of available messaging destinations, thereby increasing the value and use of SMS. Such as, adding national SMS interworking can lead to an uplift of 50% in SMS message volumes.

By this time, the total use of SMS on the network has reached "Critical Mass". There are sufficient regular users and awareness and momentum behind the services. SMS has become an integral and important part of many customer's everyday business and personal lives. Facilitating international SMS roaming is also important, particularly in land-locked countries where border crossing is frequent.

(9) SMS for prepayment

The next quantum leap in SMS traffic volumes is caused by the introduction of SMS for prepayment customers. These customers pay for their cellular airtime as they go rather than having contracts. Enabling the prepay customers to send short messages causes large traffic uplifts because the typical young person who is the main user of prepaid services is also ready, willing and able to manipulate the phone keypad and originate short messages. When customers are cost conscious, they tend to use SMS to let

their friends know about changes in meeting arrangements and so on, calculating that this is less expensive than making a voice call to communicate the same information. An increase in SMS traffic of 100% (sometimes more) is not unusual when SMS for prepay is introduced.

For example, as we saw at the start of this guide, whilst Vodafone in the UK had more postpaid customers than prepay (three million postpaid, two million prepaid), the prepay customers sent more than twice as many short messages as the postpaid users.

(10) Predictive text input phones

Because simple person to person messaging is such an important component of total SMS traffic volumes, anything that simplifies message generation is an important enabler of SMS. Predictive text input algorithms such as T9 from Tegic that anticipates which word the user is trying to generate significantly reduce the number of key strokes that need to be made to input a message. Widespread incorporation of such algorithms into the installed base of mobile phones will typically lead to an average uplift in SMS traffic of 25% per enabled user. These predictive text algorithms support multiple languages.

(11) Standardized protocols

The introduction of standardized protocols such as SIM Application Toolkit and the Wireless Application Protocol (WAP) contributes to an increase in messaging usage by providing a standard service development and deployment environment for application developers and business

partners. These protocols also make it easier for users to reply to and otherwise access messaging services through the provision of custom menus on the phone. As such, whilst these protocols are only a means to an end and not new messaging destinations or services in their own right, they are likely to lead to 10-15% uplift in total SMS volumes.

(12) Terminal developments

The introduction of more friendly and easy to use terminals contributes to increases in messaging usage by providing simpler access to messaging services. Terminals such as smart phones make it easier for users to originate, reply to and otherwise access messaging services through the provision of a QWERTY keyboard rather than the limited keypad on standard mobile phones. As such, whilst these terminals are only a means to an end and not new messaging destinations or services in their own right, they are likely to lead to 10-15% uplift in total SMS volumes.

Therefore, there are various steps that mobile carriers can and should take to spur the development of SMS usage. Each of these steps is complementary and useful in making SMS a success. It is the combined effect from these steps that has led to the significant and almost exponential growth in the usage of SMS by many developed network operators in the late 1990s.

2.2.3 Consumer Applications using SMS

The vast majority of SMS usage is accounted for by consumer applications. It is not uncommon to find 90% of a network operator's total SMS traffic being accounted

for by the applications described in this next section. The main consumer applications based on SMS are:

(1) Simple person to person messaging

Mobile phone users to communicate with each other routinely use the Short Message Service. Typically, such person to person messaging is used to say hello or prompt someone for something or arrange a meeting or tell someone something. Such messages are usually originated from the mobile phone keypad.

When the information to be communicated is short or it would take too long to have a full conversation or someone is traveling overseas or not available to take a voice call, SMS is an ideal messaging medium. For example, network operators typically charge the same to send a short message to someone in the same room as they do to someone traveling overseas with their mobile phone. Because short messages are proactively delivered to mobile phones that are typically kept in the user's pocket and can be stored for later reference, SMS is often more convenient than email or Data to communicate amongst distributed and mobile groups of people.

Once users have familiarized themselves with reading and sending short messages, they often find that SMS is a useful way of exchanging information and keeping in touch with friends. This is particularly so when the recipient is also able to reply to messages for two-way communication. If the recipient of the short message is unable to read or reply to it, then clearly the effectiveness of using SMS as the communications media is

much lower. This is one of the reasons why simple person to person messaging is popular with many young people, a group that is generally more willing to learn how to use new technologies such as SMS. Thus, simple person to person messaging generates a high volume of short messages.

(2) Voice and fax mail notification

The most common use of SMS is for notifying mobile phone users that they have new voice or fax mail messages waiting. This is ,therefore, the starting point for most mobile network operators and the first (but hopefully not the last) time that mobile phone users use SMS. Whenever a new message is dispatched into the mailbox, an alert by SMS informs the user of this fact. Because SMS is already routinely used to alert users of new voice mail messages, this application is and will remain one of the largest generators of short messages.

(3) Unified messaging

Unified messaging is an emerging value-added network service that is particularly compelling because it elevates communication above the technology used to communicate. The message takes precedence over the media. Currently, it is difficult to manage all the different kinds of messages that people get- They have to dial in and pick up emails, pick up their faxes from the fax machine, call in and listen to voice mail and so on.

Unified messaging involves providing a single interface for people to access the various different kinds of messaging they use. Be the messages

fax, voice mail, short messages, email or so on, they can be conveniently accessed from a single point in the most actionable form.

The user typically receives a short message notifying them that they have a new message in their unified messaging box. The short message often also includes an indication of the type of new message that has been deposited, such as fax, email or voice mail.

Unified messaging is a convenient application that is likely to become mainstream in the future. It should therefore be a significant generator of short messages as more services are launched.

(4) Internet mail alerts

Upon receiving a new email in their mailbox, most Internet email users do not get notified of this fact. They have to dial in speculatively and periodically to check their mailbox contents. However, by linking Internet email with SMS, users can be notified whenever a new email is received.

The Internet email alert is provided in the form of a short message that typically details the sender of the email, the subject field and first few words of the email message. Most of the mobile Internet email solutions incorporate filtering, such that users are only notified of certain messages with user-defined keywords in the subject field or from certain senders. Users could find it expensive or inconvenient to be alerted about every email they receive (including unsolicited "spam" emails), which would reduce the value of the service.

Because of the high and increasing usage of Internet email to communicate globally, and the benefit from using SMS to notify mobile users about important new email messages, this is likely to be a fast growing and popular application for SMS.

(5) Ringtones

Another emerging SMS-based application is downloading ringtones. Ringtones are the tunes that the phone plays when someone calls it. With the same phone often sold with the same default tune, it is important for phone users to be able to change their ringtone to distinguish it from others. Phones often come with a range of different ringtones built into the phone's memory that the users can choose from. However, it has become popular to download new ringtones from an Internet site to the phone. These phones tend to be popular television or film theme tunes. It is important that network operators consider copyright issues when offering ringtone services, since such commercial tunes must be licensed before they can legally be distributed (the people behind "The Saint" theme tune must be getting rich!). Ringtone composers are also popular because they allow mobile phone users to compose their own unique ringtones and download them to their phones.

Much of the usage is spurred by word of mouth. People hear someone else's phone ringing and ask where they got that particular ringtone.

As mobile phone penetration increases, and everyone has a mobile phone, unique ringtones to help determine just whose phone is ringing will

become increasingly popular. Expect to see this application grow in availability and popularity over time.

(6) Chat

An emerging application for the Short Message Service is chat. In the same way as Internet chat groups have proven a very popular application of the Internet, groups of likeminded people- so called communities of interest- have begun to use SMS as a means to chat and communicate and discuss.

Chat can be distinguished from general information services because the source of the information is a person with chat whereas it tends to be from an Internet site for information services. The "information intensity"- the amount of information transferred per message tends to be lower with chat, where people are more likely to state opinions than factual data.

SMS-based chat services are an emerging application area. It remains to be seen how willing the participants in the chat groups are to pay for EVERY message sent to the chat channel. It is likely that commercial chat services will let participants select which messages they receive on their mobiles according to who the message sender is.

Because SMS chat applications are high volume applications whereby one message submission leads to multiple message deliveries, expect this application to be a significant generator of short messages in the future.

(7) Information services

The Short Message Service can be used to deliver a wide range of information to mobile phone users from share prices, sports scores, weather, flight information, news headlines, lottery results, jokes to horoscopes. Essentially, any information that fits into a short message can be delivered by SMS.

Information services can therefore be configured as push-based and from a public or private source or pull-based and from a public or private source. An information service for an affinity program may combine public information such as share prices with private information from bank databases.

Successful information services should be simple to use, timely, personalized and localized.

2.2.4 Corporate Applications using SMS

Corporate applications that use the Short Message Service are currently few and far between. Most of the SMS messaging volumes are generated by consumer applications. The reasons are the older age of corporate mobile phone users and their lower price sensitivity, particularly since mobile phones bills are usually paid by the company. Corporate users are less willing to learn how to and make the effort to send a short message. They tend to use voice as their primary communications method. The main corporate applications based on SMS are:

- (1) Corporate email

The Short Message Service can be used to extend the use of corporate email systems beyond an employee's desk and office PC. With 40% of

employees typically away from their desks at any one time, it is important for them to keep in touch with the office at all times. Corporate email systems run on Local Area computer Networks (LAN) and include Microsoft Mail, Outlook, Outlook Express, Microsoft Exchange, Lotus Notes and Lotus cc:Mail.

Corporate email notifications are similar to Internet email notifications. Users are given information such as the sender and subject of the email. Any emails of a business or personal nature that are sent to the corporate email address can be sent out over the wireless network.

Because unlike Internet email notifications, corporate email services tend to use the existing corporate infrastructure and email addresses, this kind of email application tends to generate significant average quantities of short messages per user. Very few corporations have so far extended their office email systems out to the wireless environment, leaving a large opportunity for the deployment of such services.

(2) Affinity programs

Some mobile network operators view the development of the Short Message Service as low down in their overall priorities because few users select the mobile network solely or primarily on the basis of SMS. However, affinity programs which are also known as lifestyle packages are a large opportunity for mobile network operators with the potential to secure large numbers of new customers, in which SMS is an integral part of the offering.

Affinity programs are the result of collaboration between mobile carriers and other companies in different industries with large customer groups. Affinity partners include television companies, sports clubs, supermarkets and other retailers, airlines and banks. SMS can be used to provide customers with all kinds of reminders and information such as frequent flyer miles status, overdue videotape rentals, appointment reminders and prescription drug pick-up notifications.

All parties to affinity programs can potentially benefit from the partnership. Mobile network operators gain access to a largely new set of potential customers and affinity partners get to offer their customers new convenient services to their customers offering differentiation possibilities against their competitors.

For affinity programs, the mobile phone may be branded with the affinity partner's logo and may have custom and personalized packaging. The route to market i.e. the sales channel for the affinity product is likely to be different from that of standard mobile phone purchases. Typically, the customized phones are marketed and distributed using direct mail- customers receive information about the affinity program through an insert into their statements or bills and they can then sign up and receive the package containing the mobile phone by post. A single bill, lower rates and easy access to the services are often features of the affinity package.

(3) Mobile banking

The successful implementation of mobile banking programs incorporates several different elements discussed in this guide, such as Information services and SIM Application Toolkit.

Affinity programs and related lifestyle packages are a fast growing area of mobile communications, because as competition between network operators increases, differentiation and customization for specific user groups will be necessary to extend mobile phone penetration and usage. Consequently, they are likely to be a significant generator of short messages.

(4) Electronic commerce

Electronic commerce applications involve using a mobile phone for financial transaction purposes. This usually means making a payment for goods or transferring funds electronically. Transferring money between accounts and paying for purchases are electronic commerce applications.

The convenience of paying for purchases using SMS must be weighed against the related issues of security, integration with the retail and banking hardware and systems, and money transfer issues. However, this area of electronic commerce applications is expected to contribute to growing SMS traffic in the future

(5) Customer service

By providing mobile phone customers with information about their account, the Short Message Service can help to avoid the need for expensive person to person voice calls to customer service centers. In the customer service environment, SMS can help to deliver account status information, new service configuration and so on, in particular when standard SMS is combined with a protocol such as SIM Application Toolkit or Wireless Application Protocol. Some network operators find significant financial justification for deploying a value-added services platform on the basis of what they save in customer service costs alone.

(6) Vehicle positioning

This application integrates satellite positioning systems that tell people where they are with SMS which lets people tell others where they are. The Global Positioning System (GPS) is a free-to-use global network of 24 satellites run by the US Department of Defense. Anyone with a Global Positioning System (GPS) receiver can receive their satellite position and thereby find out where they are.

Many commercial GPS receivers also incorporate support for the Russian equivalent of the Global Positioning System.

The Short Message Service is ideal for sending Global Positioning System (GPS) position information such as longitude, latitude, bearing and altitude. GPS information is typically about 60 characters in length, leaving room for other information such as the vehicle registration details, average

speed from the tachometer and so on to be transmitted as part of the same short message.

Because the position updates are automatically generated, mobile network operators find that vehicle positioning applications are amongst the leading generators of short messages.

(7) Job dispatch

160 characters is sufficient for communicating most delivery addresses such as those needed for a sales, service or some other job dispatch application such as mobile pizza delivery and courier package delivery.

The Short Message Service is used to assign and communicate new jobs from office-based staff to mobile field staff. Customers typically telephone a call center whose staff take the call and categorize it. Those calls requiring a visit by field sales or service representative can then be escalated to those mobile workers using SMS. Job dispatch applications can optionally be combined with vehicle positioning applications- such that the nearest available suitable personnel can be deployed to serve a customer.

SMS can be used not only to send the job out, but also as a means for the service engineer or sales person. They can keep the office informed of progress towards meeting the customer's requirement. The remote worker can send in a short status message such as "Job 1234 complete, on my way to 1235".

Because of the need to communicate with mobile workers and effectively and cost-effectively serve customers, such job dispatch applications are likely to be steady generators of short messages.

(8) Remote point of sales

SMS can also be used in a retail environment for credit card authorization. It is particularly convenient to use mobile technology when making sales from, for example, carts in the middle of isles at shopping malls, at flea markets or at sports stadiums, where it would be inconvenient to trail a fixed telephone wire. A mobile phone is connected to a Point of Sale terminal such as a credit card swipe and keypad. The credit card number is sent to a bank for authorization. The authorization code is then returned as a short message to the Point of Sale terminal.

(9) Over the air

Over the air capability gives mobile network operators, application developers and corporate sales managers some remote control of mobile phones for service and subscription activation, personalization and programming.

Over the air facilitates a number of end user applications such as remote service activation and update book updates.

(10) Remote monitoring

The Short Message Service can be used to manage machines in a remote monitoring environment. This application provides people with

valuable information from a remote location when an important event occurs that they need to know about. The information is automatically delivered electronically without having to constantly employ physical resources locally on the off chance that such an event occurs. Examples of remote monitoring applications include remote meter reading, sending computer system fault information to mobile phones and notifying companies about empty vending machines.

Now that we have looked at the major applications that SMS facilitates, we need to take a closer look at some of the factors that facilitate the achievement of the messaging milestones.

2.2.5 SMS Roaming

(1) National SMS Internetworking

Most network operators around the world recognize the need to allow customers to send short messages to people on network operators competing in the same country as them. Just as you can call using voice, so too should you be able to communicate using the Short Message Service.

To release national SMS interconnects, there are some issues. From a commercial perspective, network operators competing in the same country often charge different prices for the Short Message Service and offer different services.

In such cases, knowledgeable users could benefit from accessing less expensive or more sophisticated Short Message Services by changing SMS Center addresses or sending their messages in a different way. A price has

to be agreed for such inter-network national messaging to discourage or prevent such behavior.

Technically speaking, network operators are reluctant to allow their competitors access to their signaling channels, over which short messages are transmitted.

This is because these channels also handle voice call set up and other mission critical tasks. However, firewalls have resolved many of these technical issues.

For example, about half the countries in Europe had inter-network national roaming by mid-1999 (including Scandinavia, UK, Netherlands) whilst half did not (including Germany, Portugal and France).

(2) International SMS Roaming

Generally, with the GSM Short Message Service, no specific international SMS roaming agreement is needed to use SMS overseas. Instead, international SMS roaming automatically arises whenever the following conditions are met:

- (a) The GSM network operators have a voice roaming agreement
- (b) The mobile network supports SMS. Obviously mobile phone users who are using another mobile network (known as "roamers") cannot use SMS if the mobile network they have roamed onto does NOT support the Short Message Service they are trying to use, and

- (c) Neither of the network operators have taken specific measures to preclude such short messaging activity.

2.3 Multimedia message service (www.gsmworld.com)

2.3.1 Key User Features of GPRS

In order to use multimedia message service (MMS), the mobile terminal must support GPRS connection because MMS needs to have high speed of data transfer over mobile network. The General Packet Radio Service (GPRS) is a new non voice value added service that allows information to be sent and received across a mobile telephone network. It supplements today's Circuit Switched Data and Short Message Service. GPRS is not related to GPS (the Global Positioning System), a similar acronym that is often used in mobile contexts. GPRS has several unique features which can be summarized as:

(1) Speed

Theoretical maximum speeds of up to 171.2 kilobits per second (kbps) are achievable with GPRS using all eight timeslots at the same time. This is about three times as fast as the data transmission speeds possible over today's fixed telecommunications networks and ten times as fast as current Circuit Switched Data services on GSM networks. By allowing information to be transmitted more quickly, immediately and efficiently across the mobile network, GPRS may well be a relatively less costly mobile data service compared to SMS and Circuit Switched Data.

(2) Immediacy

GPRS facilitates instant connections whereby information can be sent or received immediately as the need arises, subject to radio coverage. No dial-up modem connection is necessary. This is why GPRS users are sometimes referred to as being "always connected". Immediacy is one of the advantages of GPRS (and SMS) when compared to Circuit Switched Data. High immediacy is a very important feature for time critical applications such as remote credit card authorization where it would be unacceptable to keep the customer waiting for even thirty extra seconds.

(3) New applications, better applications

GPRS facilitates several new applications that have not previously been available over GSM networks due to the limitations in speed of Circuit Switched Data (9.6 kbps) and message length of the Short Message Service (160 characters). GPRS will fully enable the Internet applications you are used to on your desktop from web browsing to chat over the mobile network. Other new applications for GPRS, profiled later, include file transfer and home automation- the ability to remotely access and control in-house appliances and machines.

(4) Service access

To use GPRS, users specifically need:

- (a) A mobile phone or terminal that supports GPRS (existing GSM phones do NOT support GPRS)

- (b) A subscription to a mobile telephone network that supports GPRS
- (c) Use of GPRS must be enabled for that user. Automatic access to the GPRS may be allowed by some mobile network operators, others will require a specific opt-in
- (d) Knowledge of how to send and/ or receive GPRS information using their specific model of mobile phone, including software and hardware configuration (this creates a customer service requirement)
- (e) A destination to send or receive information through GPRS. Whereas with SMS this was often another mobile phone, in the case of GPRS, it is likely to be an Internet address, since GPRS is designed to make the Internet fully available to mobile users for the first time. From day one, GPRS users can access any web page or other Internet applications providing an immediate critical mass of uses.

2.3.2 Basic of MMS (www.nokia.com)

Multimedia Messaging Service (MMS) is a store and forward messaging service that allows mobile subscribers to exchange multimedia messages with other mobile subscribers. As such it can be seen as an evolution of SMS, with MMS supporting the transmission of additional media types:

- (a) text
- (b) picture
- (c) audio
- (d) video

- (e) combinations of the above

Multimedia Messaging Service (MMS) is an important emerging service, which allows the sending of multiple media in a single message, and the ability to send a message to multiple recipients. The originator can easily create a Multimedia Message, either using a built-in or accessory camera, or can use images and sounds stored previously in the phone (and possibly downloaded from a web site). Even if the recipient phone is not switched on, the Multimedia Message will be stored and sent to the recipient as soon as they switch on their phone. In a non-roaming case, it is expected that the subscriber will allow a Multimedia Message to be downloaded automatically to their phone and then they would be notified and could see the Multimedia Message immediately. A number of Multimedia Messages can be stored in the users' handset and reviewed or forwarded at a later date.

Each Multimedia Message contains a number of pages (think of a PowerPoint slide shown as an analogy). On each page, there can be one image and one set of text. An audio file can also be attached. The time that each "page" is displayed can be specified, so the user experience is somewhat like a slide show.

- (1) How does MMS work? (Buckingham, 2000)

Depending upon the operator, a typical example of how an MMS message can be sent and received between two compatible MMS phones is detailed below:

STEP 1: Using an MMS compatible phone, take a photo.

STEP 2: Use your phone to personalise the message by adding text, sound clip or your own voice.

STEP 3: Send the MMS message

On a **compatible phone**, the MMS message will appear with a new message alert. The picture message will be on the screen, the text will appear below the image and the sound will begin to play automatically.

If the message is sent to a **non-compatible MMS phone**, the user will receive a SMS message along with the lines of:

"You have been sent a picture message!"

They may then be given a website address, and possibly username and password on which they can view the message.

2.4 Consumer Attitudes Theory (Kotler, 1994)

Attitudes are an important influence on consumer behavior because attitude describes a person's enduring favorable or unfavorable cognitive evaluations, emotional feelings, and action tendencies toward some object or idea. Attitudes are learned predispositions to respond to an object or class of objects in a consistently favorable or unfavorable way. An attitude describes a person's enduring favorable or unfavorable cognitive evaluations, emotional feeling, and action tendencies toward some object or idea. People have attitudes toward almost everything: religion, politics, clothes, music, food, and so on. Attitudes put them into a frame of mind of liking or disliking an object, moving toward or away from it.

Attitudes lead people to behave in a fairly consistent way toward similar objects. Attitudes economize on energy and thought. For this reason, attitudes are very difficult to change. A person's attitudes settle into a consistent pattern, and to change a single attitude may require major adjustments in other attitudes.

2.4.1 Attitude components

It is generally accepted that there are three related components that establish consumer attitudes. They are:

Beliefs (the cognitive component);

Brand evaluation (the affective component)

The tendency to act (the behavioral component)

(a) Beliefs (The Cognitive Component)

What consumers believe about a brand becomes the characteristics they ascribe to the brand. There are two types of beliefs: informational beliefs and evaluative beliefs. Informational beliefs are associated with product attributes (e.g., gas mileage or horse power). Evaluative beliefs are associated with product benefits (e.g., economy, roominess). Benefits are a basis for defining opportunity for positioning a new product and for developing advertising strategy.

(b) Brand evaluation (Affective Component)

The second attitude component represents the consumer's overall evaluation of the brand. Beliefs about a brand are multidimensional because they represent the various brand attributes the consumer perceives. In contrast, the affective dimension is one-dimensional. A consumer's overall evaluation of a brand can be measured by rating it from poor to excellent or from prefer least to prefer most.

Ordinarily, when attitudes are referred without further elaboration, it is the effective component that is being referred to.

(c) Tendency to Act (Behavioral Component)

The third attitude component is the consumer's predisposition to act toward an object, and this is generally measured in terms of intention to buy. Measuring buying intent is particularly important in developing marketing strategy.

Marketing managers frequently test the components of the marketing mix – alternative product concepts, ads, packages, or brand names – to determine what most effectively influences purchase behavior. These alternative tests are conducted under artificially controlled circumstances which try to hold all factors constant except the alternative marketing stimuli being tested.



III. RESEARCH METHODOLOGY

3.1 Population

The purpose of this research is to study the attitude of mobile phone users toward Multimedia Message Service (MMS) in Thailand. This research focused on mobile phone users only from Bangkok area who used to use Short Message Service.

3.2 Sample size

It is hard to mention the accurate population of the mobile phone users who used to use Short Message Service (SMS) in Bangkok area. However, by referring to the statistic from mobile phone operator's Advance Info Service (AIS) and DTAC which post on www.thaicybersoft.com, it is estimated that there are 4,000,000 mobile phone users in Bangkok area up to July 2003.

By using the theory of Taro Yamane with the confidential at 95% (0.05), the sampling population can be calculated from the following formula

$$n = \frac{N}{1 + Ne^2}$$

Where

n = Sample size

N = Population

e = Allowed level of sampling error

Then the sample size is equal to

$$\begin{aligned} n &= \frac{4,000,000}{1 + 4,000,000(0.05)^2} \\ &= 399.96 \end{aligned}$$

Then the sample size is 400

3.3 Sampling

The research of “Attitude of Mobile phone users toward Multimedia Message Service in Thailand” is the survey research using the questionnaires as a tool.

The researcher selects sampling method. Firstly cluster sampling method. is used. The researcher divides all districts of Bangkok into ten groups by density of demographic and area proximity.

Group1 is composed of Dusit, Bangsue, Payathai, Dindaeng, Huay Kwang

Group2 is composed of Pranakorn, Sampantawong, Pratumwan, Promprab, Rajtewee

Group3 is composed of Ladprao, Wangthonglang, Bangkapi, Bungkoom, Saphansoong

Group4 is composed of Bangrak, Yannawa, Sathorn, Bangkorlarm, Klongtoey

Group5 is composed of Bangkhen, Donmueng, Laksi, Jattujak, Saimai

Group6 is composed of Wattana, Prakanong, Suanluang, Pravet, Bangna

Group7 is composed of Meanburi, Ladkabang, Klongsamwa, Nongjok, Kannayao

Group8 is composed of Thonburi, klongsan, Bangkoknoi, Bangkokyai, Bangprad

Group9 is composed of Rajburana, Bangkae, Taweewattana, Nongkheam, Talingchan

Group10 is composed of Pasricharoen, Bangkhuntien, Bangbon, Tungku, Jomthong

The researcher uses simple random sampling without replacement. The sample area the researcher gets to collect the questionnaire as follows:

Group1 is Payathai

Group2 is Pratumwan

Group3 is Ladprao

Group4 is Sathorn

Group5 is Jattujak

Group6 is Bangna

Group7 is Meanburi

Group8 is Thonburi

Group9 is Nongkheam

Group10 is Bangkhuntien

From the above ten groups, the researcher collects forty sets of the questionnaire in each group. Secondly, the researcher uses the purposive sampling as a tool by asking the respondents whether they have ever known Multimedia Message Service (MMS). The researcher will continue to collect the data if the respondents have ever known the Multimedia Message Service (MMS). For those who never know the Multimedia Message Service will not be categorized as our sample group.

3.4 Tool of Research

This research uses the questionnaire as a tool and it composes of 2 parts.

The first part: Demographic Data

This part will have 3 questions asking about personal data: sex, age and occupation. All questions are in the form of multiple choices.

The second part: Attitude

This part is divided into 2 sections as follows:

Section 1: Attitude toward Multimedia Message Service

Section 2: Attitude toward the service of Multimedia Message Service

The questions compose of multiple choices, rating scale and open-ended questions. Rating as follows:

Strongly agreed	=	5
Agreed	=	4
Neither agreed nor disagreed	=	3
Disagreed	=	2
Strongly disagreed	=	1

The result of the questions that use the interval scales is obtained by using the following formula

$$\begin{aligned}\text{Interval (I)} &= \frac{\text{Range (R)}}{\text{Class (C)}} \\ &= \frac{5 - 1}{5} \\ &= 0.80\end{aligned}$$

where R is the highest score – lowest score
C is the number of class

Criteria

Mean 4.21 - 5.00 is Strongly agreed

Mean 3.41 – 4.20 is Agreed

Mean 2.61 – 3.40 is Not sure

Mean 1.81 – 2.60 is Disagreed

Mean 1.00 – 1.80 is Strongly disagreed

3.5 Data Collection

400 questionnaires are collected from the mobile phone users in Bangkok area at 10 selected districts in different places such as office buildings, department stores, schools or universities, etc.

3.6 Data Analysis

In this research, the data from all questionnaires have been analyzed by frequency distribution and descriptive statistics, particularly percentage. The researcher uses the SPSS (the Statistical Package for Social Sciences) version 11.0 for Windows, to analyze and deliver the survey result. The survey results were presented in the form of tables, pie charts and bar charts.

IV. RESULTS AND ANALYSES

After collecting and checking all the data, 400 copies of questionnaires were analyzed. The result is shown in the following table:

4.1 The Analysis of the Demographic Characteristics

Table 4.1. Respondents Classified by Gender.

Sex	Frequency	Percent
Male	278	69.50
Female	122	30.50
Total	400	100.00

As can be seen in Table 4.1, there are 400 respondents. 278 are male respondents, which is 69.50 percent followed by female respondents.

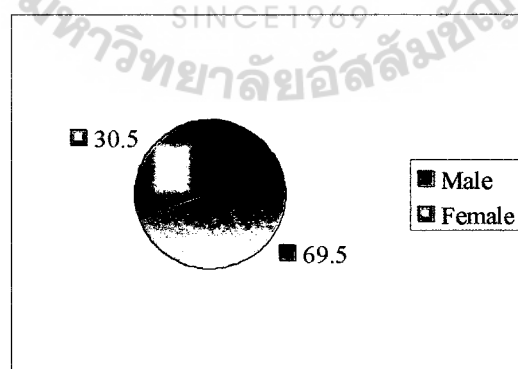


Figure 4.1. Respondents Classified by Gender.

Table 4.2. Respondents Classified by Age.

Age	Frequency	Percent
Under 18 Years	48	12
18 - 23 years	178	44.50
24 - 40 years	152	38
41 - 60 years	22	5.50
Over 60 years	0	0
Total	400	100.00

As can be seen in Table 4.2, the majority of the respondents are 18 – 23 years of age which is 44.5 percent, followed by 24 - 40 years of age which is 38 percent and under 18 is 12 percent respectively.

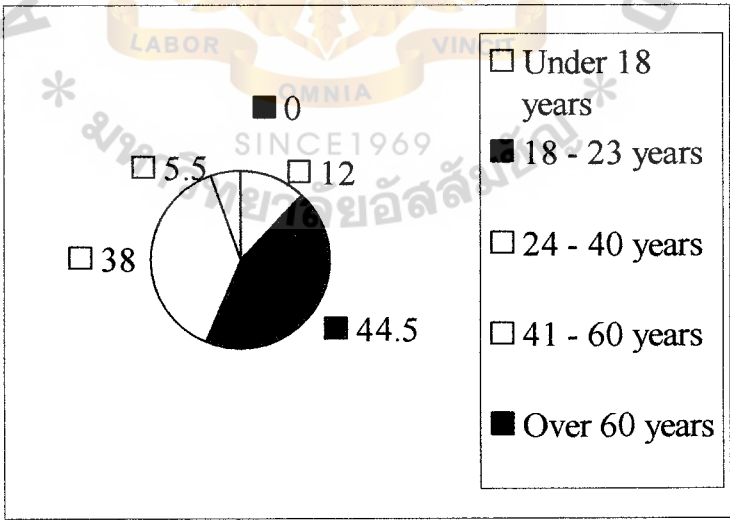


Figure 4.2. Respondents Classified by Age.

Table 4.3. Respondents Classified by Occupation.

Occupation	Frequency	Percent
Unemployed	24	6
Student	180	45
Employee	122	30.50
Government officer	36	9
Business Personnel	38	9.50
Other	0	0
Total	400	100.00

As can be seen in Table 4.3, the major the respondents are students, 180 in number or 45 percent with the highest frequency. Followed by employees with 122 respondents or 30.50 percent. 38 respondents or 9.50 percent are business personnel.

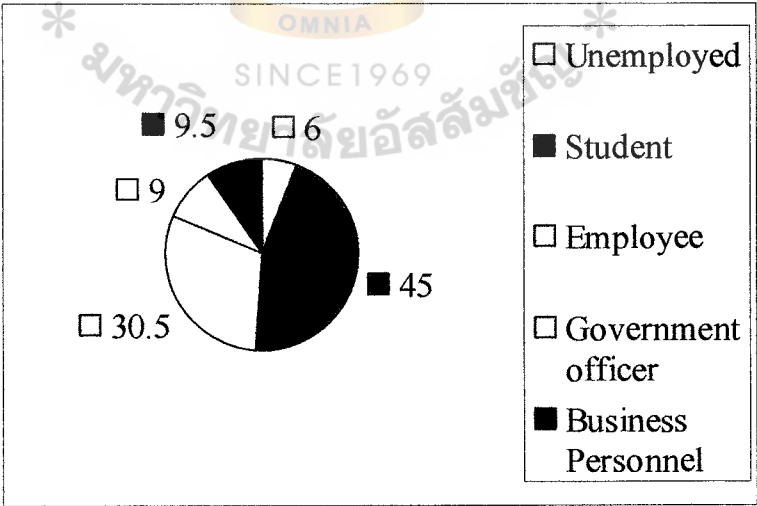


Figure 4.3. Respondents Classified by Occupation.

4.2 The Analysis of the Attitude

4.2.1 The analysis of the attitude toward Multimedia Message Service (MMS)

Table 4.4. Respondents Classified by Attitude toward MMS in the statement “ MMS is interesting because picture describe feelings better than words.”

	Frequency	Percentage (%)
Strongly Disagreed	0	0
Disagreed	13	3.25
Neutral	36	9
Agreed	63	15.75
Strongly Agreed	288	72
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 288 respondents, the majority of Multimedia Message Service (MMS) users strongly agreed to the statement “Multimedia Message Service (MMS) is interesting because picture describe feeling better than text” by 72%. The second highest rank was “Agreed” with the number of 63 respondents representing 15.75%. The third rank was “Neutral” with the number of 36 respondents representing 9%. The fourth rank was “Disagreed” with the number of 13 respondents representing 3.25%.

Table 4.5. Respondents classified by attitude of MMS users toward the statement
 “MMS is convenient to use.”

	Frequency	Percentage (%)
Strongly Disagreed	189	47.25
Disagreed	121	30.25
Neutral	64	16
Agreed	22	5.5
Strongly Agreed	4	1
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 189 respondents, the majority of Multimedia Message Service (MMS) users strongly disagreed to the statement “Multimedia Message Service (MMS) is easy/friendly to use” by 47.25% The second rank was “Disagreed” with the number of 121 respondents representing 30.25%. The third rank was “Neutral” with the number of 64 respondents representing 16%. The fourth rank was “Agreed” with the number of 22 respondents representing 5.5%. The fifth rank was “Strongly Agreed” with the number of 4 respondents representing 1%.

Table 4.6. Respondents classified by attitude of MMS users toward the statement “MMS is interesting because of variety of services such as sending E-card, receiving news and sport report, downloading game, and animated pictures.”

	Frequency	Percentage (%)
Strongly Disagreed	0	0
Disagreed	0	0
Neutral	14	3.50
Agreed	162	40.50
Strongly Agreed	224	56.00
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 224 respondents, the majority of Multimedia Message Service (MMS) users strongly agreed to the statement “ Multimedia Message Service (MMS) is interesting because of variety of services such as sending E-card, receiving news and sport report, downloading game, and animated pictures” by 56%. The second rank was “Agreed” with the number of 162 respondents representing 40.50%. The third rank was “Neutral” with the number of 14 respondents representing 3.50%.

Table 4.7. Respondents classified by attitude of MMS users toward the statement
 “MMS is interesting because of motion/animation of contents.”

	Frequency	Percentage (%)
Strongly Disagreed	0	0
Disagreed	18	4.50
Neutral	46	11.50
Agreed	152	36.00
Strongly Agreed	184	46.00
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 184 respondents, the majority of Multimedia Message Service (MMS) users strong agreed to the statement “Multimedia Message Service (MMS) is interesting because of motion/animation of contents” by 46%. The second rank was “Agreed” with the number of 152 respondents representing 36%. The third rank was “Neutral” with the number of 46 respondents representing 11.50%. The fourth rank was “Disagreed” with the number of 18 respondents representing 4.50%.

Table 4.8. Respondents classified by attitude of MMS users toward the statement
“MMS is interesting because of the colorful of contents.”

	Frequency	Percentage (%)
Strongly Disagreed	0	0
Disagreed	0	0
Neutral	58	14.50
Agreed	144	36.00
Strongly Agreed	198	49.50
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 198 respondents, the majority of Multimedia Message Service (MMS) users strongly agreed to the statement “Multimedia Message Service (MMS) is interesting because of the colorful of contents” by 49.50%. The second rank was “Agreed” with the number of 144 respondents representing 36%. The third rank was “Neutral” with the number of 58 respondents representing 14.50%.

Table 4.9. Respondents classified by attitude of MMS users toward the statement
 “MMS can create modern/hi-technology image to you.”

	Frequency	Percentage (%)
Strongly Disagreed	16	4.00
Disagreed	58	14.50
Neutral	44	11.00
Agreed	168	42.00
Strongly Agreed	114	28.50
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 168 respondents, the majority of Multimedia Message Service (MMS) users agreed to the statement “Multimedia Message Service (MMS) can create modern/hi-technology image to you” by 42%. The second rank was “Strongly Agreed” with the number of 114 respondents representing 28.50%. The third rank was “Disagreed” with the number of 58 respondents representing 14.50%. The fourth rank was “Neutral” with the number of 44 respondents representing 11%. The fifth rank was “Strongly Disagreed” with the number of 16 respondents representing 4%.

Table 4.10. Respondents classified by attitude of MMS users toward the statement
“MMS fee is inexpensive.”

	Frequency	Percentage (%)
Strongly Disagreed	132	33.00
Disagreed	188	47.00
Neutral	66	16.50
Agreed	14	3.50
Strongly Agreed	0	0
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 188 respondents, the majority of Multimedia Message Service (MMS) users disagreed to the statement “Multimedia Message Service (MMS) fee is inexpensive” by 47%. The second rank was “Strongly Disagreed” with the number of 132 respondents representing 33%. The third rank was “Neutral” with the number of 66 respondents representing 16.50%. The fourth rank was “Agreed” with the number of 14 respondents representing 3.50%.

Table 4.11. Respondents classified by attitude toward MMS.

	Number of respondents	Mean/ Average	Level of Decision
Multimedia Message Service (MMS) is interesting because pictures describe feelings better than text	400	4.57	Strongly agreed
Message Service (MMS) is easy/friendly to use	400	1.83	Disagreed
Multimedia Message Service (MMS) is interesting because of varieties of services such as sending E-card, receiving news and sport report, downloading game, and animated pictures	400	4.53	Strongly agreed
Multimedia Message Service (MMS) is interesting because of animated contents	400	4.26	Strongly agreed
Multimedia Message Service (MMS) is interesting because of colorful contents	400	4.35	Strongly agreed
Multimedia Message Service (MMS) can create a modern/hi-technology image for you	400	3.77	Agreed
Multimedia Message Service (MMS) has inexpensive charging fee	400	1.91	Disagreed
Total		3.60	Agreed

4.2.2 The analysis of attitude toward the services of Multimedia Message Service (MMS)

Table 4.12. Respondents classified by attitude toward the service of MMS “sending E-card.”

	Frequency	Percentage (%)
Highly Unsatisfied	0	0
Unsatisfied	19	4.75
Neutral	67	16.75
Satisfied	194	48.50
Highly Satisfied	120	30.00
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 194 respondents, the majority of MMS users were satisfied with the service “Sending E-card” by 48.50%. The second rank was “Highly Satisfied” with the number of 120 respondents representing 30%. The third rank was “Neutral” with the number of 67 respondents representing 16.75%. The fourth rank was “Unsatisfied” with the number of 19 respondents representing 4.75%.

Table 4.13. Respondents classified by attitude toward the service of MMS “sending pictures/ video clip with sound.”

	Frequency	Percentage (%)
Highly Unsatisfied	0	0
Unsatisfied	0	0
Neutral	27	6.75
Satisfied	97	24.25
Highly Satisfied	276	69.00
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 276 respondents, the majority of MMS users were highly satisfied with the service of Multimedia Message Service (MMS) “Sending pictures/ video clip with sound” by 69%. The second rank was “Satisfied” with the number of 97 respondents representing 24.25%. The third rank was “Neutral” with the number of 27 respondents representing 6.75%

Table 4.14. Respondents classified by attitude toward the service of MMS “color background/wallpaper download.”

	Frequency	Percentage (%)
Highly Unsatisfied	39	9.75
Unsatisfied	74	18.50
Neutral	51	12.75
Satisfied	149	37.25
Highly Satisfied	87	21.75
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 149 respondents, the majority of MMS users were satisfied with the service of Multimedia Message Service (MMS) “color background/wallpaper download” by 37.25%. The second rank was “Highly Satisfied” with the number of 87 respondents representing 21.75%. The third rank was “Unsatisfied” with the number of 74 respondents representing 18.50%. The fourth rank was “Neutral” with the number of 51 respondents representing 12.75%. The fifth rank was “Highly Unsatisfied” with the number of 39 respondents representing 9.75%.

Table 4.15. Respondents classified by attitude toward the service of MMS “receiving samples of movie clip.”

	Frequency	Percentage (%)
Highly Unsatisfied	48	12.00
Unsatisfied	64	16.00
Neutral	109	27.25
Satisfied	123	30.75
Highly Satisfied	56	14.00
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 123 respondents, the majority of MMS users were satisfied with the service of Multimedia Message Service (MMS) “receiving sample of movie clip” by 30.75%. The second rank was “Neutral” with the number of 109 respondents representing 27.25%. The third rank was “Unsatisfied” with the number of 64 respondents representing 16%. The fourth rank was “Highly Satisfied” with the number of 56 respondents representing 14%. The fifth rank was “Highly Unsatisfied” with the number of 48 respondents representing 12%.

Table 4.16. Respondents classified by attitude toward the service of MMS “receiving sport report.”

	Frequency	Percentage (%)
Highly Unsatisfied	64	16.00
Unsatisfied	46	11.50
Neutral	62	15.50
Satisfied	58	14.50
Highly Satisfied	170	42.50
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 170 respondents, the majority of MMS users were highly satisfied with the service of Multimedia Message Service (MMS) “Receiving sport report” by 42.5%. The second rank was “Highly Unsatisfied” with the number of 64 respondents representing 16.00%. The third rank was “Neutral” with the number of 62 respondents representing 14.50%. The fourth rank was “Unsatisfied” with the number of 46 respondents representing 11.50%.

Table 4.17. Respondents classified by attitude toward the service of MMS “MMS games.”

	Frequency	Percentage (%)
Highly Unsatisfied	22	5.50
Unsatisfied	54	13.50
Neutral	221	55.25
Satisfied	62	15.50
Highly Satisfied	41	10.25
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 55.25% or 221 respondents, the majority of MMS users had neutral feelings toward the service of Multimedia Message Service (MMS) “MMS game”. The second rank was “Satisfied” with the number of 62 respondents representing 15.50%. The third rank was “Unsatisfied” with the number of 54 respondents representing 13.50%. The fourth rank was “Disagreed/unaccepted/unsatisfied” with the number of 41 respondents representing 10.25%. The fifth rank was “Highly Unsatisfied” with the number of 22 respondents representing 5.50%.

Table 4.18. Respondents classified by attitude toward the service of MMS “Receiving stock alert information.”

	Frequency	Percentage (%)
Highly Unsatisfied	37	9.25
Unsatisfied	55	13.75
Neutral	145	36.25
Satisfied	99	24.75
Highly Satisfied	64	16.00
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 36.25% or 145 respondents, the majority of MMS users had neutral attitude toward the service of Multimedia Message Service (MMS) “receiving stock alert information”. The second rank was “Satisfied” with the number of 99 respondents representing 24.75%. The third rank was “Highly Satisfied” with the number of 64 respondents representing 16%. The fourth rank was “Unsatisfied” with the number of 55 respondents representing 13.75%. The fifth rank was “Highly Unsatisfied” with the number of 37 respondents representing 9.25%.

Table 4.19. Respondents classified by attitude toward the service of MMS “receiving travel information.”

	Frequency	Percentage (%)
Highly Unsatisfied	25	6.25
Unsatisfied	67	16.75
Neutral	98	24.50
Satisfied	137	34.25
Highly Satisfied	73	18.25
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 137 respondents, the majority of MMS users were satisfied with the service of Multimedia Message Service (MMS) “receiving travel information” by 34.25%. The second rank was “Neutral” with the number of 98 respondents representing 24.50%. The third rank was “Highly Satisfied” with the number of 73 respondents representing 18.25%. The fourth rank was “Unsatisfied” with the number of 67 respondents representing 16.75%. The fifth rank was “Highly Unsatisfied” with the number of 25 respondents representing 6.25%.

Table 4.20. Respondents classified by attitude toward the service of MMS “receiving sample of new music video clip.”

	Frequency	Percentage (%)
Highly Unsatisfied	54	13.50
Unsatisfied	88	22.00
Neutral	142	35.50
Satisfied	71	17.75
Highly Satisfied	45	11.25
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 35.5% or 142 respondents, the majority of MMS users had neutral attitude toward the service of Multimedia Message Service (MMS) “receiving travel information (hotel’s pictures)” The second rank was “Unsatisfied” with the number of 88 respondents representing 22%. The third rank was “Satisfied” with the number of 71 respondents representing 17.75%. The fourth rank was “Highly Unsatisfied” with the number of 54 respondents representing 13.50%. The fifth rank was “Highly Satisfied” with the number of 45 respondents representing 11.25%.

Table 4.21. Respondents classified by attitude toward the service of MMS “receiving breaking news report with pictures.”

	Frequency	Percentage (%)
Highly Unsatisfied	78	19.50
Unsatisfied	39	9.75
Neutral	94	23.50
Satisfied	73	18.25
Highly Satisfied	116	29.00
Total	400	100.0

In this research, there was a total of 400 respondents. The result showed that 116 respondents, the majority of MMS users were highly satisfied with the service of Multimedia Message Service (MMS) “receiving breaking news report with pictures” by 29.00%. The second rank was “Neutral” with the number of 94 respondents representing 23.50%. The third rank was “Highly Unsatisfied” with the number of 78 respondents representing 19.50%. The fourth rank was “Satisfied” with the number of 73 respondents representing 18.25%. The fifth rank was “Unsatisfied” with the number of 39 respondents representing 9.75%.

Table 4.22. Respondents classified by attitude toward the services of MMS

	Number of respondents	Mean/ Average	Level of Decision
Sending E-card	400	4.04	Satisfied
Sending pictures/ video clip with sound	400	4.62	Highly Satisfied
Color background/wallpaper download	400	3.43	Satisfied
Receiving sample of movie clip	400	3.19	Neural
Receiving sport report	400	3.56	Satisfied
MMS games (i.e. hangman)	400	3.12	Neural
Receiving stock alert information	400	3.25	Neural
Receiving travel information (hotel's pictures)	400	3.42	Satisfied
Receiving sample of new music video clip	400	2.91	Neural
Receiving breaking news report with pictures	400	3.28	Neural
Total		3.48	Satisfied

In this research, there was a total of 400 respondents. The results showed that the majority were highly satisfied with the service "Sending pictures/ video clip with sound" representing Mean of 4.62. It was following by the services of sending E-card, receiving sport report, color background/wallpaper download, receiving travel information (hotel's pictures) and representing Mean of 4.04, 3.56, 3.43, 3.42 respectively. The results showed that some of the respondents had neutral attitude toward some services. Breaking news services was followed by receiving stock alert information, receiving sample of movie clip, MMS games (i.e. hangman), receiving sample of new music video clip and representing Mean of 3.28, 3.25, 3.19, 3.12, 2.91 respectively.

Table 4.23. The Relationship between demography and attitude toward sending E-card
of MMS

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Sex						
Male	Count		17	53	133	75
	Percent		1.64	11.48	50.00	36.89
Female	Count		2	14	61	45
	Percent		6.12	19.06	47.84	26.98
Age						
Under 18 years	Count				35	13
	Percent				70.00	30.00
18 – 23 years	Count		19	37	80	42
	Percent		10.67	20.79	44.94	23.60
24 – 40 years	Count			30	59	63
	Percent			19.74	38.82	41.45
41 – 60 years	Count				20	2
	Percent				90.91	9.09
Over 60	Count					
	Percent					
Occupation						
Unemployed	Count				20	4
	Percent				83.33	16.67
Student	Count		10	25	100	45
	Percent		5.56	13.89	55.56	25
Employee	Count		9	42	36	35
	Percent		7.388.30	34.43	29.51	28.69
Government Officer	Count				16	20
	Percent				44.44	55.56
Business Personnel	Count				22	16
	Percent				57.89	42.11
Others	Count					
	Percent					

In this research, there was a total of 400 respondents. The result of the attitude toward sending E-card of Multimedia Message Service (MMS) showed that the majority of male respondents agreed to the service by 50% followed by the female respondents by 47.84%.

The majority of under 18 years agreed to the service by 70% followed by the majority of 18-23 years by 44.94%, and the majority of 41- 60 years by 90.91%. The majority of 24-40 years strongly agree by 41.45%.

The majority of unemployed agreed to the service by 83.33% followed by the majority of students by 55.56%. The majority of employees had neutral attitude toward the service by 34.43%. The majority of government officers strongly agreed by 55.56%. The majority of business personnel agreed by 57.89%.

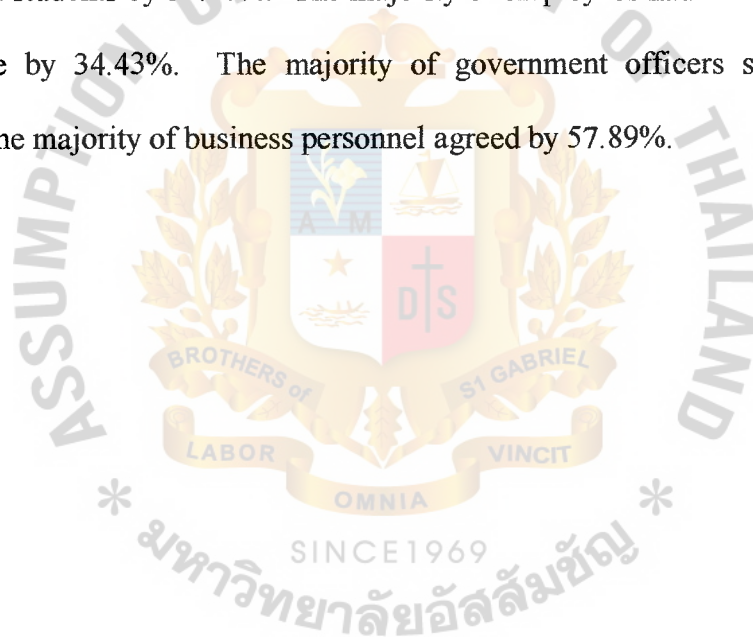


Table 4.24. The Relationship between demography and attitude toward sending pictures/ video clip with sound of MMS

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Sex						
Male	Count			27	53	198
	Percent			9.71	19.06	71.22
Female	Count				44	78
	Percent				36.07	63.93
Age						
Under 18 years	Count				24	24
	Percent				50	50
18 – 23 years	Count			17	65	96
	Percent			9.55	36.52	53.93
24 – 40 years	Count			10	8	134
	Percent			6.58	5.26	88.16
41 – 60 years	Count					22
	Percent					100
Over 60 years	Count					
	Percent					
Occupation						
Unemployed	Count				16	8
	Percent				66.67	33.33
Student	Count			12	56	112
	Percent			6.67	31.11	62.22
Employee	Count			15	5	102
	Percent			12.30	4.10	83.61
Government Officer	Count				8	28
	Percent				22.22	77.78
Business Personnel	Count				12	26
	Percent				31.58	68.42
Other	Count					
	Percent					

In this research, there was a total of 400 respondents. The result of the attitude toward sending pictures/ video clip with sound of Multimedia Message Service (MMS) showed that the majority of male respondents strongly agree by 71.22% followed by the majority of female respondents by 63.93%.

The majority of under 18 years strongly agree by 50% followed by the majority of 18-23 years by 53.93%, the majority of 24-40 years by 88.16% and the majority of 41-60 years by 100%.

The majority of unemployed agreed to the service by 66.67%. The majority of students strongly agree by 62.22% followed by the majority of employees, the majority of government officers and the business personnel by 83.61%, 77.78% and 68.42% respectively.

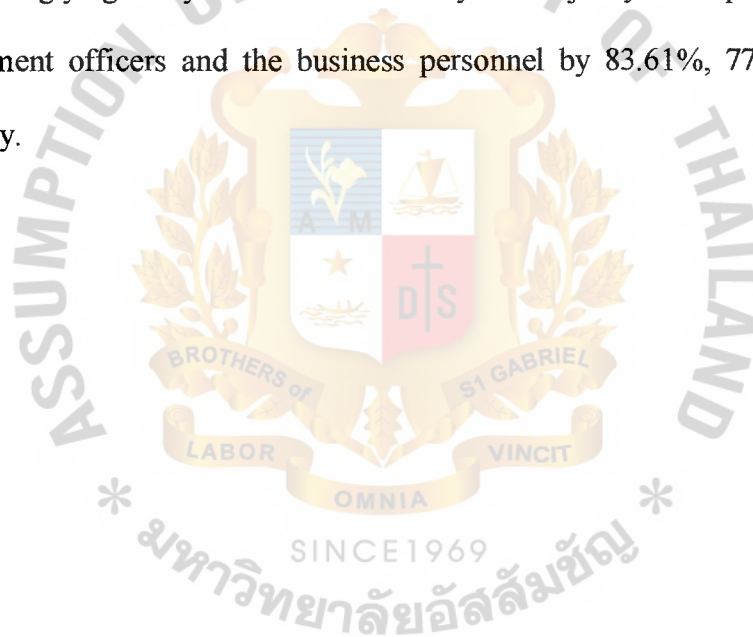


Table 4.25. The Relationship between demography and attitude toward color background/wallpaper download of MMS

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Sex						
Male	Count	29	56	36	110	53
	Percent	10.43	20.14	10.79	39.57	19.06
Female	Count	10	18	21	39	34
	Percent	8.20	14.75	17.21	31.97	28.87
Age						
Under 18 years	Count			2	36	10
	Percent			4.17	75.00	20.83
18 – 23 years	Count	5	35	19	56	63
	Percent	2.81	19.66	10.67	31.46	35.39
24 – 40 years	Count	12	39	30	57	14
	Percent	7.89	25.66	19.74	37.50	9.21
41 – 60 years	Count	22				
	Percent	100.00				
Over 60 years	Count					
	Percent					
Occupation						
Unemployed	Count			10	14	
	Percent			41.67	58.33	
Student	Count	3	21	15	68	73
	Percent	1.67	11.67	8.33	37.78	40.56
Employee	Count	12	33	8	55	14
	Percent	9.84	27.05	6.56	45.08	11.48
Government Officer	Count	2	4	18	12	
	Percent	5.56	11.11	50.00	33.33	
Business Personnel	Count	22	16			
	Percent	57.89	42.11			
Others	Count					
	Percent					

In this research, there was a total of 400 respondents. The result of the attitude toward color background/wallpaper download of Multimedia Message Service (MMS) showed that the majority of male respondents agreed to the service by 39.57% followed by the majority of female respondents by 31.97%.

The majority of under 18 years agreed by 75%. The majority of 18-23 years strong agreed by 35.39%. The majority of 24-40 years agreed by 37.5%. The majority of 41-60 years strongly disagree by 100%.

The majority of unemployed agreed by 58.33% followed by the majority of students by 37.78%, and the majority of employees by 45.08%. The majority of government officers had neutral attitude toward the service by 50%. The majority of business personnel strong disagreed by 57.89%.

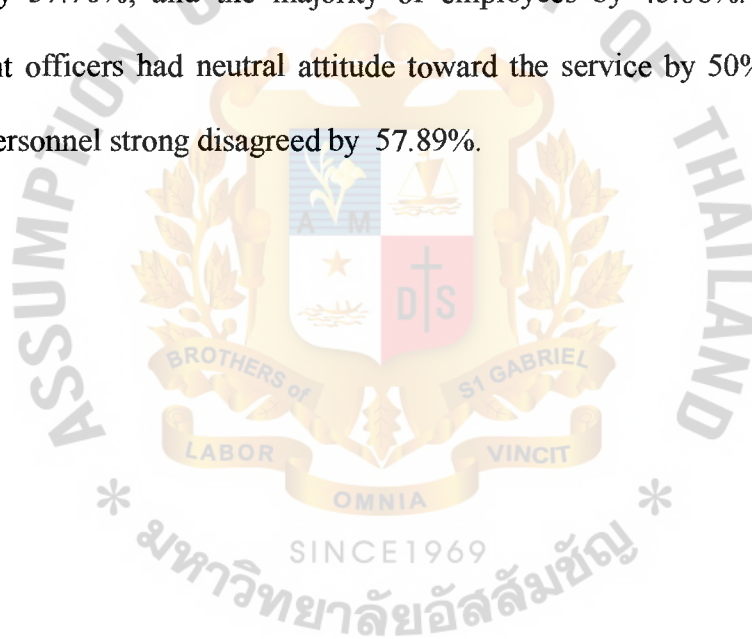


Table 4.26. The Relationship between demography and attitude toward receiving sample of movie clip of MMS

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Sex						
Male	Count	36	39	64	90	49
	Percent	12.95	14.03	23.02	32.37	17.63
Female	Count	12	25	45	33	7
	Percent	9.84	20.49	36.89	27.05	5.74
Age						
Under 18 years	Count			7	25	16
	Percent			14.58	52.08	33.33
18 – 23 years	Count	5	18	52	78	25
	Percent	2.81	10.11	29.21	43.82	14.04
24 – 40 years	Count	18	39	50	30	15
	Percent	11.84	25.66	32.89	19.74	9.87
41 – 60 years	Count	15	7			
	Percent	68.18	31.82			
Over 60 years	Count					
	Percent					
Occupation						
Unemployed	Count	1	5	12	2	4
	Percent	4.17	20.83	50	8.33	16.67
Student	Count	4	22	42	69	43
	Percent	2.22	12.22	23.33	38.33	23.89
Employee	Count	31	19	39	52	9
	Percent	2.46	15.57	31.97	42.62	7.38
Government Officer	Count	12	8	16		
	Percent	33.33	22.22	44.44		
Business Personnel	Count	28	10			
	Percent	73.68	26.32			
Others	Count					
	Percent					

In this research, there was a total of 400 respondents. The result of the attitude toward receiving sample of movie clip of Multimedia Message Service (MMS) showed that the majority of male respondents agreed to the service by 32.37%. The majority of female respondents had neutral attitude toward the service by 36.89%.

The majority of under 18 years agreed by 52.08% followed by the majority of 18-23 years by 43.82%. The majority of 24-40 years had neutral attitude by 32.89%. The majority of 41-60 years strongly disagree by 68.18%.

The majority of unemployed had neutral attitude by 50%. The majority of students agreed by 38.33% followed by the majority of employees by 42.62%. The majority of government officers had neutral attitude by 44.44%. The majority of business personnel strongly disagree by 73.68%.

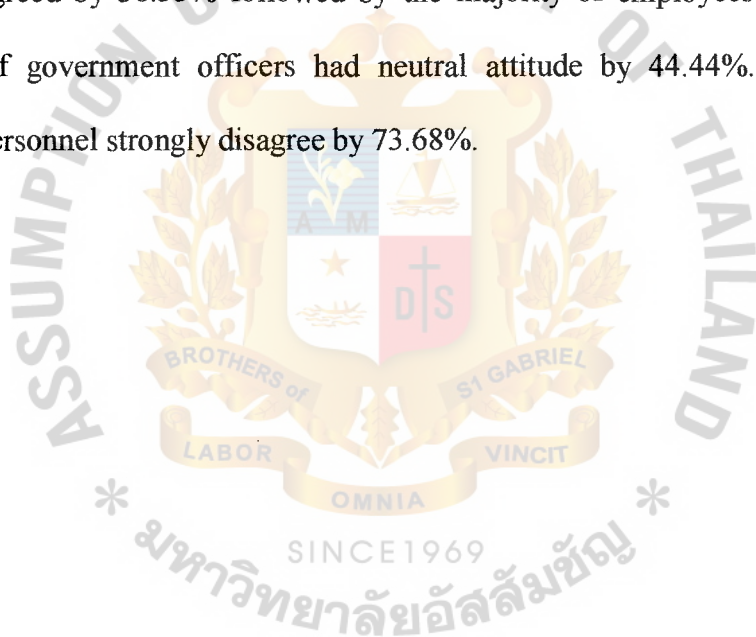


Table 4.27. The Relationship between demography and attitude toward receiving sport report of MMS

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Sex						
Male	Count	16	10	37	52	163
	Percent	5.76	3.60	13.31	18.71	58.63
Female	Count	48	36	25	6	7
	Percent	39.34	29.51	20.49	4.92	5.74
Age						
Under 18 years	Count	8	12	24	4	
	Percent	16.67	25.00	50	8.33	
18 – 23 years	Count	36	11	11	30	90
	Percent	20.22	6.18	6.18	16.85	50.56
24 – 40 years	Count	20	16	12	28	76
	Percent	13.16	10.53	7.89	18.42	50
41 – 60 years	Count		7	15		
	Percent		31.82	68.18		
Over 60 years	Count					
	Percent					
Occupation						
Unemployed	Count		6	8	10	
	Percent		25	33.33	41.67	
Student	Count	24	8	17	17	114
	Percent	13.33	4.44	9.44	9.44	63.33
Employee	Count	35	7	12	12	56
	Percent	28.69	5.74	9.84	9.84	45.90
Government Officer	Count	3	7	15	11	
	Percent	8.33	19.44	41.67	30.56	
Business Personnel	Count	2	18	10	8	
	Percent	5.26	47.37	26.32	21.05	
Others	Count					
	Percent					

In this research, there was a total of 400 respondents. The result of the attitude toward receiving sport report of Multimedia Message Service (MMS) showed that the majority of male respondents strong agreed by 58.63% followed by the majority of female respondents by 39.34%.

The majority of under 18 years had neutral attitude by 50.00%. The majority of 18-23 years strongly agree by 50.56% followed by the majority of 24-40 years by 50%. The majority of 41-60 years had neutral attitude by 68.15%.

The majority of unemployed agree by 41.67%. The majority of students strongly agree by 63.33% followed by the majority of employees by 45.90%. The majority of government officers had neutral attitude by 41.67%. The majority of business personnel disagreed by 47.37%.



Table 4.28. The Relationship between demography and attitude toward MMS games of
MMS

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Sex						
Male	Count	12	20	146	59	41
	Percent	4.32	7.19	52.52	21.22	14.75
Female	Count	10	34	75	3	
	Percent	8.20	27.87	61.48	2.46	
Age						
Under 18 years	Count		6	20	10	12
	Percent		12.50	41.67	20.83	25.00
18 – 23 years	Count	2	24	121	17	14
	Percent	1.12	13.48	67.98	9.55	7.87
24 – 40 years	Count	2	20	80	35	15
	Percent	1.32	13.16	52.63	23.03	9.87
41 – 60 years	Count	18	4			
	Percent	81.82	18.18			
Over 60 years	Count					
	Percent					
Occupation						
Unemployed	Count		14	10		
	Percent		58.33	41.67		
Student	Count		18	95	37	30
	Percent		10.00	52.78	20.56	16.67
Employee	Count		6	80	25	11
	Percent		4.92	65.57	20.49	9.02
Government Officer	Count	8	2	26		
	Percent	22.22	5.56	72.22		
Business Personnel	Count	14	14	10		
	Percent	36.84	36.84	26.32		
Others	Count					
	Percent					

In this research, there was a total of 400 respondents. The result of the attitude toward MMS games of Multimedia Message Service (MMS) showed that the majority of male respondents had neutral attitude by 52.52%. The majority of female respondents had neutral attitude by 61.48%.

The majority of under 18 years had neutral attitude by 41.67% followed by the majority of 18-23 years by 67.98% and the majority of 24-40 years by 52.63%. The majority of 41-60 years strongly disagreed by 81.82%.

The majority of unemployed disagreed by 58.33%. The majority of students had neutral attitude by 52.78% followed by the majority of employees 65.57% and the majority of government officers 72.22%. The majority of business personnel disagreed by 36.84%.



Table 4.29. The Relationship between demography and attitude toward receiving stock alert information of MMS

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Sex						
Male	Count	10	26	123	75	44
	Percent	3.60	9.35	44.24	26.98	15.83
Female	Count	27	29	22	24	20
	Percent	22.13	23.77	18.03	19.67	16.39
Age						
Under 18 years	Count	25	23			
	Percent	52.08	47.92			
18 – 23 years	Count	8	22	111	24	13
	Percent	4.49	12.36	62.36	13.48	7.30
24 – 40 years	Count	2	8	26	70	46
	Percent	1.32	5.26	17.11	46.05	30.26
41 – 60 years	Count	2	2	8	5	5
	Percent	9.09	9.09	36.26	22.73	22.73
Over 60 years	Count					
	Percent					
Occupation						
Unemployed	Count			14	8	2
	Percent			58.33	33.33	8.33
Student	Count	28	45	82	12	13
	Percent	15.56	25.00	45.56	6.67	7.22
Employee	Count	9	10	37	52	14
	Percent	7.38	8.20	30.33	42.62	11.48
Government Officer	Count			12	17	7
	Percent			33.33	47.22	19.44
Business Personnel	Count				10	28
	Percent				26.32	73.68
Others	Count					
	Percent					

In this research, there was a total of 400 respondents. The result of the attitude toward receiving stock alert information of Multimedia Message Service (MMS) showed that the majority of male respondents had neutral attitude to the service by 44.24%. The majority of female respondents disagreed by 23.77%.

The majority of under 18 years strongly disagreed by 52.08%. The majority of 18-23 years had neutral attitude by 62.36%. The majority of 24-40 years agreed to it by 46.05%. The majority of 41-60 years had neutral attitude by 36.26%.

The majority of unemployed had neutral attitude toward the service by 58.33%. The majority of students had neutral attitude by 45.56%. The majority of employees agreed by 42.62% followed by the majority of government officers by 47.22%. The majority of business personnel strong agreed by 73.68%.



Table 4.30. The Relationship between demography and attitude toward receiving travel information of MMS

		Highly Unsatisfied	Unsatisfied	Neutral	Satisfied	Highly Satisfied
Sex						
Male	Count	15	41	63	95	64
	Percent	5.40	14.75	22.66	34.17	23.02
Female	Count	10	26	35	42	9
	Percent	8.20	21.31	28.69	34.43	7.38
Age						
Under 18 years	Count	23	25			
	Percent	47.92	52.08			
18 – 23 years	Count	2	32	82	38	24
	Percent	1.12	17.98	46.07	21.35	13.48
24 – 40 years	Count		10	16	99	27
	Percent		6.58	10.53	65.13	17.76
41 – 60 years	Count					22
	Percent					100
Over 60 years	Count					
	Percent					
Occupation						
Unemployed	Count	8	12	4		
	Percent	33.33	50.00	16.67		
Student	Count	17	22	53	64	24
	Percent	9.44	12.22	29.44	35.56	13.33
Employee	Count		21	16	42	43
	Percent		17.21	13.11	34.43	35.25
Government Officer	Count			10	20	6
	Percent			27.78	55.56	16.67
Business Personnel	Count		12	15	11	
	Percent		31.58	39.47	28.95	
Others	Count					
	Percent					

In this research, there was a total of 400 respondents. The result of the attitude toward receiving travel information of Multimedia Message Service (MMS) showed that the majority of male respondents were satisfied with the service by 34.17%. The majority of female respondents agreed by 34.43%.

The majority of under 18 years strongly disagreed by 52.08%. The majority of 18-23 years had neutral attitude by 46.07%. The majority of 24-40 years agreed by 65.13%. The majority of 41-60 years strongly agreed by 100%.

The majority of unemployed disagreed by 50%. The majority of students agreed by 35.56% followed by the majority of employees by 34.43% and the majority of government officers 55.56% respectively. The majority of business personnel had neutral attitude by 39.47%.

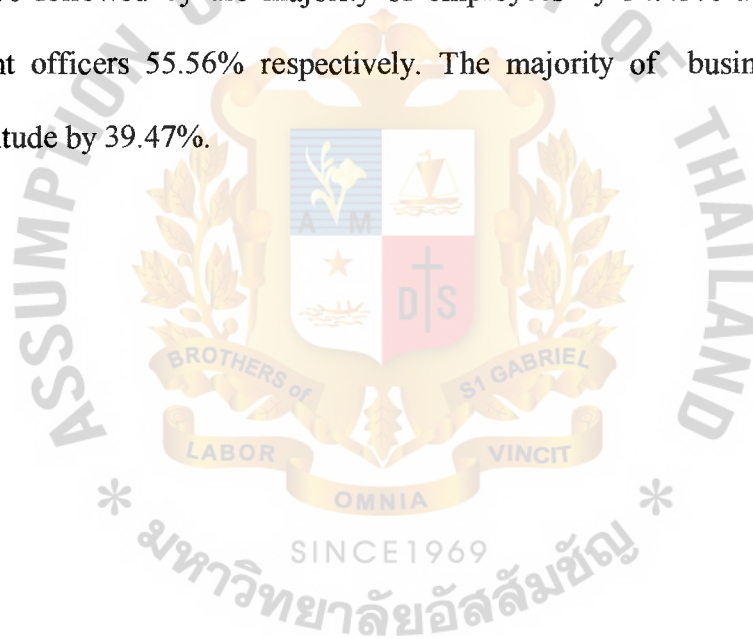


Table 4.31. The Relationship between demography and attitude toward receiving sample of new music video clip of MMS

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Sex						
Male	Count	42	69	110	36	21
	Percent	15.11	24.82	39.57	12.95	7.55
Female	Count	12	19	32	35	24
	Percent	9.84	15.57	26.23	28.69	19.67
Age						
Under 18 years	Count	12	21	4	6	5
	Percent	25.00	43.75	8.33	12.50	10.42
18 – 23 years	Count	11	43	76	22	26
	Percent	6.18	24.16	42.70	12.36	14.61
24 – 40 years	Count	12	21	62	43	14
	Percent	7.89	13.82	40.79	28.29	9.21
41 – 60 years	Count	19	3			
	Percent	86.36	13.64			
Over 60 years	Count					
	Percent					
Occupation						
Unemployed	Count	8	4	12		
	Percent	33.33	16.67	50.00		
Student	Count	43	82	22	33	
	Percent	23.89	45.56	12.22	18.33	
Employee	Count	2	24	36	48	12
	Percent	1.64	19.67	29.51	39.34	9.84
Government Officer	Count	16	7	12	1	
	Percent	44.44	19.44	33.33	2.78	
Business Personnel	Count	28	10			
	Percent	73.68	26.32			
Others	Count					
	Percent					

In this research, there was a total of 400 respondents. The result of the attitude toward receiving new music video clip of Multimedia Message Service (MMS) showed that the majority of male respondents had neutral attitude by 39.57%. The majority of female respondents agreed by 28.69%.

The majority of under 18 years disagreed by 43.75%. The majority of 18-23 years had neutral attitude by 42.70% followed by the majority of 24-40 years by 40.79%. The majority of 41-60 years strongly disagreed by 86.36%.

The majority of unemployed had neutral attitude by 50% followed by the majority of students by 45.56%. The majority of employees agreed by 39.34%. The majority of government officers strongly disagreed by 44.44% The majority of business personnel strongly disagreed by 73.68%.



Table 4.32. The Relationship between demography and attitude toward receiving
breaking news report with pictures of MMS

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Sex						
Male	Count	64	25	60	52	77
	Percent	23.02	8.99	21.58	18.71	27.70
Female	Count	14	14	34	21	39
	Percent	11.48	11.48	27.87	17.21	31.97
Age						
Under 18 years	Count	16	10	13	9	0
	Percent	33.33	20.83	27.08	18.75	0.00
18 – 23 years	Count	39	19	72	15	33
	Percent	21.91	10.67	40.45	8.43	18.54
24 – 40 years	Count	23	10	8	43	68
	Percent	15.13	6.58	5.26	28.29	44.74
41 – 60 years	Count			1	6	15
	Percent			4.55	27.27	68.18
Over 60 years	Count					
	Percent					
Occupation						
Unemployed	Count	8	6	7	1	2
	Percent	33.33	25.00	29.17	4.17	8.33
Student	Count	41	27	51	28	33
	Percent	22.78	15.00	28.33	15.56	18.33
Employee	Count	29	6	19	14	54
	Percent	23.77	4.92	15.57	11.48	44.26
Government Officer	Count			12	15	9
	Percent			33.33	41.67	25.00
Business Personnel	Count			5	15	18
	Percent			13.16	39.47	47.37
Others	Count					
	Percent					

In this research, there was a total of 400 respondents. The result of the attitude toward receiving breaking news report of Multimedia Message Service (MMS) showed that the majority of male respondents strongly agreed by 27.70%. The majority of female respondents strongly agreed by 31.97%.

The majority of under 18 years strongly disagreed by 33.33%. The majority of 18-23 years had neutral attitude by 40.45%. The majority of 24-40 years strongly agreed by 44.74%. The majority of 41-60 years strongly agreed by 68.18%.

The majority of unemployed strongly disagreed by 33.33%. The majority of students had neutral attitude by 28.33%. The majority of employees strongly agreed by 44.26%. The majority of government officers agreed by 41.67%. The majority of business personnel strongly agreed by 47.37%.

Reliability Value of the research

***** Method 1 (space saver) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

Reliability Coefficients

N of Cases = 400 N of Items = 5

Alpha = .8976

That means the result is reliable because it is close to value 1

V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Research Conclusions

Although mobile message service has been widely used and very successful for decades, the evolution of such messaging service as MMS is still slow. Therefore, the main objectives of the research “Attitude toward Multimedia Message Service (MMS)” is to study the attitude of mobile phone users in Bangkok area, and to develop a service which can attract customers to use the service of Multimedia Message Service (MMS).

The questionnaire is a tool for this research which consists of personal data, and the attitude toward Multimedia Message Service (MMS). 400 questionnaires are distributed to the mobile phone users in 10 districts in Bangkok area by using cluster sampling method.

From the sample group of 400 respondents, the female respondents are 69.50% while the male respondents are 30.50%. Most of the respondents are around 18 – 23 year of ages. And most of them are students.

Most respondents have positive attitude toward Multimedia Message Service (MMS) They agreed that picture describe feelings better than words and they are satisfied with the E-card, receiving news and sport report, downloading games and animated pictures.

The services that most respondents are interested to use are sending E-card, pictures/video clip and sound as well as receiving sport report.

The respondents feel that service charge of Multimedia Message Service (MMS) in Thailand is very high and they found the service unaffordable.

5.2 Recommendations

The mobile content business is a new channel of fastest growing business today as the success of messaging service such as sms, ringtone, and logo. Multimedia Message Service (MMS) is highly expected as evolution which will be more success than others. Most respondents are very interested to use MMS due to its colorful and animated contents. However, they feel that it is difficult to use and find it unaffordable because of its high price. The company should launch promotion for initial free service to attract more users to use the service and publish pocket size user friendly manual for users to encourage them to use Multimedia Message Service.

Most of the respondents are male respondents which means that the beginning market segment of Multimedia Message Service (MMS) should be emphasizes on male's need. The company should launch the service such as receiving sport report and breaking news report which most of the male respondents are highly interested in. The company should also start the service such as sending E-card, sending animation clip with sound and color background/wallpaper download in which both male and female respondents are interested.

5.3 Recommendations for further research

- (1) This research focused only on the mobile phone users in Bangkok area. It is recommended that there should be further research which will cover the whole country. By doing so, the whole picture about the attitude towards Multimedia Message Service (MMS) in Thailand will then be obtained. Then we can take the advantages of the picture to find out positive and negative attitude for improvements.
- (2) This research studied only the attitude of the MMS users in Thailand towards Multimedia Message Service (MMS). The next research should focus on the users'

satisfaction and expectation as well. Then we can use the information to improve the quality of the service.





APPENDIX A
FORM OF QUESTIONNAIRE (ENGLISH)

Questionnaire

Objective: This questionnaire was used for the independent study project (CE6998) of a graduate student from Assumption University. The topic is “Attitude of mobile phone users toward Multimedia Message Service in Thailand.”

Remark : The respondents have to be the mobile phone users who live in Bangkok area and used to use Short Message Service (SMS) and know the Multimedia Message Service (MMS)

Part 1 : Personal Data

1. Sex

☐ Male ☐ Female

2. Age

☐ Under 18 years ☐ 18 – 23 years
☐ 24 – 40 years ☐ 41 – 60 years
☐ Over 60 years

3. Occupation

☐ Unemployed ☐ Student
☐ Employee ☐ Government Officer
☐ Business Personnel ☐ Other..... (Please Specify)

Part 2 : Attitude

Please consider to which extent each of the following statement is true. Please mark (x) the number in the boxes that best reflect your true feelings.

5 = Strongly Agreed/Accepted/Satisfied
4 = Agreed/Accepted/Satisfied
3 = Neutral/Moderate

- 2 = Disagreed/Unaccepted/Dissatisfied
- 1 = Strongly Disagreed/Unaccepted/ Dissatisfied

Part 2.1: Attitude toward Multimedia Message Service (MMS)

1. In your opinion, Multimedia Message Service (MMS) is interesting because pictures describe feelings better than words.

5	4	3	2	1
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2. In your opinion, Multimedia Message Service (MMS) is convenient to use.

5	4	3	2	1
---	---	---	---	---

3. In your opinion, Multimedia Message Service (MMS) has a variety type of services such as sending E card, receiving news and sport report, downloading game and pictures.

5	4	3	2	1
---	---	---	---	---

4. In your opinion, Multimedia Message Service (MMS) is interesting because of motion/animated of contents.

5	4	3	2	1
---	---	---	---	---

5. In your opinion, Multimedia Message Service (MMS) is interesting because of colorful contents.

5	4	3	2	1
---	---	---	---	---

6. In your opinion, Multimedia Message Service (MMS) makes you keep abreast of modern/high technology of in trend

5	4	3	2	1
---	---	---	---	---

7. In your opinion, Service charge of Multimedia Message Service (MMS) service charge is reasonable price

5	4	3	2	1
---	---	---	---	---

Part 2.2: Your attitude toward the services of Multimedia Message Service (MMS)

1. In your opinion, what is (are) the MMS services that you are interesting to use

Type of services	Level of response				
- Sending E-card	5	4	3	2	1
- Sending pictures/ video clip with sound	5	4	3	2	1
- Color background/wallpaper download	5	4	3	2	1
- Receiving samples of movie clip	5	4	3	2	1
- Receiving sport report (i.e. video clip of live tennis)	5	4	3	2	1
- MMS games (i.e. hangman)	5	4	3	2	1
- Receiving stock alert information	5	4	3	2	1
- Receiving travel information (hotel's pictures)	5	4	3	2	1
- Receiving sample of new music video clip	5	4	3	2	1
- Receiving breaking news report with pictures	5	4	3	2	1



APPENDIX B

FORM OF QUESTIONNAIRE (THAI)

แบบสอบถาม

เรื่อง : ทักษะการใช้โทรศัพท์มือถือที่มีต่อการส่งข้อความแบบ Multimedia Message Service (MMS) ในประเทศไทย

คำชี้แจง: แบบสอบถามนี้เป็นส่วนหนึ่งของการศึกษาระดับปริญญาโท คณะ Computer and Engineering Management มหาวิทยาลัยอัสสัมชัญ ผู้วิจัยต้องการทราบข้อมูลเพื่อ ประโยชน์ในการศึกษา เท่านั้น ดังนั้นคำตอบของท่านจะไม่มีผลเสียหายต่อท่านแต่ประการใด ดังนั้นจึงขอความ กรุณาในการตอบแบบสอบถาม ตามความคิดเห็นและสิ่งที่ท่านกระทำตามสภาพความเป็นจริงมากที่สุด

หมายเหตุ : ผู้ตอบแบบสอบถามต้องเป็นผู้ใช้โทรศัพท์มือถือที่อาศัยอยู่ในเขตกรุงเทพมหานคร เคยใช้บริการการส่งข้อความแบบ Short Message Service (SMS) และรู้จักการส่ง ข้อความแบบ Multimedia Message Service (MMS)

ส่วนที่ 1 ข้อมูลส่วนตัว

1. เพศ

☐ 1. ชาย ☐ 2. หญิง

2. อายุ

☐ 1. ต่ำกว่า 18 ปี ☐ 2. 18 - 23 ปี
☐ 3. 24 - 40 ปี ☐ 4. 41 - 60 ปี
☐ 5. มากกว่า 60 ปี

3. อาชีพ

☐ 1. ว่างาน ☐ 2. นักเรียน นักศึกษา
☐ 3. ลูกจ้าง ☐ 4. ข้าราชการ
☐ 5. ธุรกิจส่วนตัว ☐ 6. อื่นๆ.....(โปรดระบุ)

ส่วนที่ 2: ทศนคติ

โปรดเลือกตัวเลขเพียงตัวเลขเดียวที่ท่านคิดว่าเหมาะสมกับคำตอบท่านมากที่สุด

- 5 = เห็นด้วยอย่างยิ่ง/ พอใจมากที่สุด
- 4 = เห็นด้วย/ พอใจมาก
- 3 = ปานกลาง
- 2 = ไม่เห็นด้วย/ ไม่พอใจมาก
- 1 = ไม่เห็นด้วยอย่างยิ่ง/ ไม่พอใจมากที่สุด

ส่วนที่ 2.1: ทศนคติของท่านที่มีต่อการส่งข้อความแบบ Multimedia Message Service (MMS)

1. ในความเห็นของท่าน ท่านคิดว่าการส่งข้อความแบบ Multimedia Message Service (MMS) น่าสนใจเพราะ

รูปภาพสามารถบรรยายความรู้สึกได้ดีกว่าคำพูด

5 4 3 2 1

2. ในความเห็นของท่าน การส่งข้อความแบบ Multimedia Message Service (MMS) ง่ายต่อการใช้งาน

5 4 3 2 1

3. ในความเห็นของท่าน การส่งข้อความแบบ Multimedia Message Service (MMS) มีการให้บริการที่หลากหลาย

เช่น การส่งการ์ดอวยพร, การรับข่าว, รายงานสดข่าวกีฬา, การดาวน์โหลดเกมส์และรูปภาพ

5 4 3 2 1

4. ในความเห็นของท่าน การส่งข้อความแบบ Multimedia Message Service (MMS) น่าสนใจเพราะเนื้อหา

สามารถเคลื่อนไหวได้มีชีวิตชีวา

5 4 3 2 1

5. ในความเห็นของท่าน การส่งข้อความแบบ Multimedia Message Service (MMS) น่าสนใจเพราะเนื้อหา

สวยงาม

5 4 3 2 1

6. ในความเห็นของท่าน การส่งข้อความแบบ Multimedia Message Service (MMS) ช่วยส่งเสริมภาพลักษณ์ให้
 เป็นคนทันสมัย

5	4	3	2	1
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7. ในความเห็นของท่าน การส่งข้อความแบบ Multimedia Message Service (MMS) คิดค่าบริการส่งข้อความไม่
 แพง

5	4	3	2	1
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ส่วนที่ 2.2: ทักษะของท่านที่มีต่อแต่ละบริการของการส่งข้อความแบบ Multimedia Message Service (MMS)

1. .ในความเห็นของท่าน ท่านคิดว่าบริการการส่งข้อความแบบ Multimedia Message Service (MMS) แบบไหนที่
 คุณสนใจที่ใช้บริการ

ชนิดของการให้บริการ	ระดับความคิดเห็น				
- การส่งการ์ดอวยพร	5	4	3	2	1
- การส่งรูปภาพ วิดีโอพร้อมเสียง	5	4	3	2	1
- การโหลดคอลเลปเปอร์รี่	5	4	3	2	1
- การรับตัวอย่างหนังสือ	5	4	3	2	1
- การรับข่าวกีฬาที่มีภาพแบบทันเหตุการณ์ (เช่น ภาพการถ่ายทอดสดเทนนิส)	5	4	3	2	1
- เกมส์ MMS (เช่น เกมทายภาพหน้าคน)	5	4	3	2	1
- การรับข้อมูลหุ้น	5	4	3	2	1
- การรับข้อมูลข่าวสารของการท่องเที่ยว (เช่น ภาพ โรงแรมที่พัก)	5	4	3	2	1
- การรับชมตัวอย่างของมิวสิกวิดีโอ	5	4	3	2	1
- การรับข่าวสดพร้อมภาพ	5	4	3	2	1

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