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INTERNET ELECTRONIC COMMERCE FOR MULTI-LEVEL MARKETING
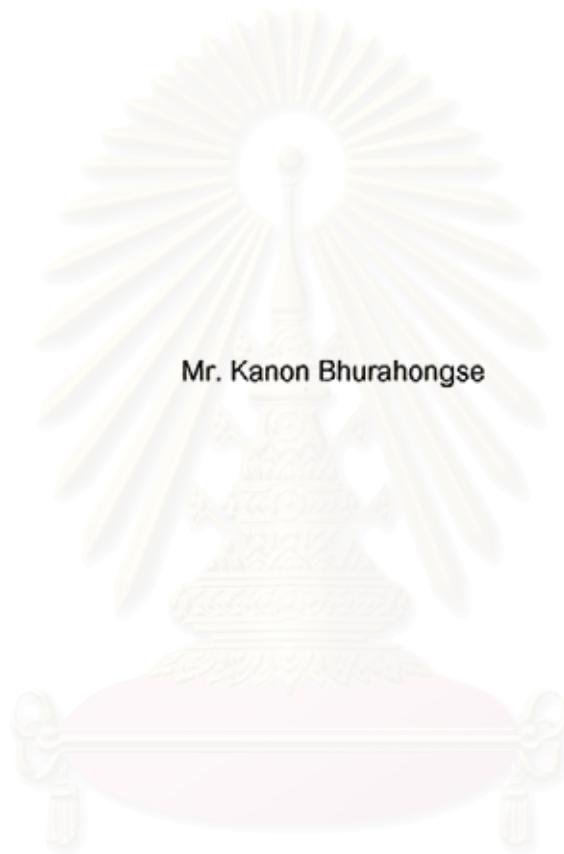
Mr. Kanon Bhurahongse

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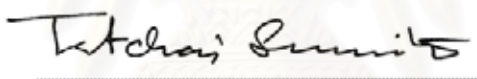Faculty of Engineering
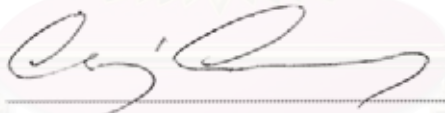Chulalongkorn University
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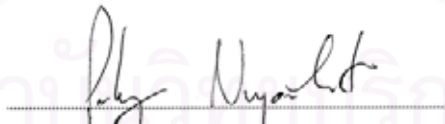|	
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กานน ภู่ระหงษ์ : ระบบพาณิชย์อิเล็กทรอนิกส์บนอินเตอร์เน็ตสำหรับธุรกิจการขายตรง (INTERNET ELECTRONIC COMMERCE FOR MULTI-LEVEL MARKETING) อ. ที่ปรึกษา : รศ. ดร. ฐูเวช ชาญสง่าเวช, อ.ที่ปรึกษาร่วม : นายพันธุ์ทนง นิยมเหตุ, 129 หน้า, ISBN 974-334-753-4

วิทยานิพนธ์ฉบับนี้นำเสนอการพัฒนาต้นแบบของระบบการพาณิชย์อิเล็กทรอนิกส์ เพื่อจะนำระบบนี้เข้ามาช่วยในการดำเนินธุรกิจการขายตรงแบบเครือข่าย

วัตถุประสงค์ของการวิจัยนี้เพื่อที่จะศึกษา คิดค้น พัฒนา และเลือกระบบที่เหมาะสมในการพัฒนาเวปไซต์ที่ประกอบไปด้วยระบบค้นหาข้อมูลส่วนบุคคลของสมาชิกของธุรกิจขายตรงและระบบการจัดการฐานข้อมูลภายในบริษัทและข้อมูลต่างๆที่อยู่บนเวบไซต์

การรวบรวมแนวความคิดและข้อมูลที่เป็นประโยชน์ต่างๆ รวมถึงการสำรวจโครงสร้างพื้นฐานที่เหมาะสมในการพัฒนาระบบการพาณิชย์อิเล็กทรอนิกส์ได้เริ่มขึ้นเพื่อที่จะสนองความต้องการของการใช้อินเตอร์เน็ตที่แท้จริงของสมาชิกของธุรกิจขายตรงนี้ การพัฒนาและการวิจัยต่างๆถูกนำเสนอในรูปของแผนผังของข้อมูลประโยชน์ใช้สอยต่างๆที่อยู่บนเวบไซต์ และแผนผังของการทำงานของระบบการจัดการฐานข้อมูลภายในเพื่อที่จะให้เกิดความเข้าใจอย่างชัดเจนยิ่งขึ้น ซอฟต์แวร์สำเร็จรูปได้ถูกนำมาใช้ในการศึกษาและพัฒนาต้นแบบของระบบจัดการฐานข้อมูลภายใน เพื่อที่จะเป็นแนวทางในการพัฒนาต่อไปในอนาคต ผลที่ได้จากการศึกษาวิจัยครั้งนี้ได้แก่ต้นแบบของระบบการพาณิชย์อิเล็กทรอนิกส์สำหรับการดำเนินธุรกิจการขายตรงแบบเครือข่าย ระบบค้นหาข้อมูลของสมาชิก เช่นการค้นหาจำนวนเครือข่ายและโบนัสของสมาชิก รวมถึงระบบจัดการฐานข้อมูลภายในของการแสดงสินค้าบนเวบไซต์อีกด้วย

การรวมข้อดีของการพาณิชย์อิเล็กทรอนิกส์ และการดำเนินธุรกิจการขายตรงแบบเครือข่ายในครั้งนี้จะเป็นประโยชน์ให้การดำเนินการต่างๆภายในบริษัทตลอดจนการขยายธุรกิจเป็นไปอย่างมีประสิทธิภาพมากขึ้น ทั้งนี้ประโยชน์ที่จะได้รับขึ้นอยู่กับปัจจัยหลายๆด้าน เช่น จำนวนของผู้ใช้อินเตอร์เน็ต และความเชื่อถือของผู้ใช้อินเตอร์เน็ตที่มีต่อระบบ จากความคิดเห็นของผู้บริหารบริษัทพบว่าระบบการพาณิชย์อิเล็กทรอนิกส์นี้จะช่วยให้การทำงานภายในบริษัท มีประสิทธิภาพมากขึ้น และจะช่วยให้บริษัทสามารถขยายธุรกิจไปสู่ตลาดโลกได้ในอนาคต

ภาควิชา ศูนย์ระดับภูมิภาคทางวิศวกรรมระบบการผลิต	ลายมือชื่อนิสิต ....
สาขาวิชา การจัดการทางวิศวกรรม	ลายมือชื่ออาจารย์ที่ปรึกษา ....
ปีการศึกษา 2542	ลายมือชื่ออาจารย์ที่ปรึกษาร่วม ....

This thesis is concerned with the development of an electronic commerce model for a multi-level marketing business operation in order to take advantage of suitable Internet technology. The objective of the research is to develop a web site containing a personal information tracking system for members of the company, an online catalogue and a back office system for updating all the information in the web site.

In order to serve the demand from members, research and development of the web site and back office operations of the system was begun by forming the appropriate concept and surveying the infrastructure of the system. Workflow diagram was created to clearly understand the processes and features in both the web site and back office operations. The software package for the merchant server was used to develop the model of back office operations to serve as guidelines for further development. The outcome of this thesis was a model of electronic commerce system of both web site and back office system consisting of company information, online catalogue, down line and bonus tracking systems, site manager for an online catalogue, and inventory status checking.

The benefits of the web site stems from the merging of the advantages of the Internet technology with the multi-level marketing business, which will be useful for future expansion. This depends on several factors such as the growth of Internet users and the trusts of people with the technology. Based on the expert opinion of the company executives, it was found that the advantages of the Internet electronic commerce technology would assist the operations in the company to expand the business to compete with the competitors and to expand the business to international market in the future.

ภาควิชา ศูนย์ระดับภูมิภาคทางวิศวกรรมระบบการผลิต   ลายมือชื่อนิสิต ....

สาขาวิชา การจัดการทางวิศวกรรม   ลายมือชื่ออาจารย์ที่ปรึกษา ....

ปีการศึกษา 2542   ลายมือชื่ออาจารย์ที่ปรึกษาร่วม ....

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Chapter 1
Introduction

1.1 Background of the Research

In recent years, the electronic communication such as the Internet has a role in the human life not only as convenient and inexpensive channel of communication in terms of showing and communicating the information about the company, but the Internet is also a channel to sell or buy the product as a virtual store or may be called "web-based store".

An example of the successful merchant in the Internet is the currently biggest online bookstore called Amazon.com (http://www.amazon.com). From its opening since 2-3 years ago, the transaction of buying or selling is over two million books have been sold in Amazon online bookstore via the Internet. The business transaction of the products or services over the Internet is known by the term **"electronic commerce or e-commerce"**

E-commerce is now an alternative channel for selling for retail business. In each retail business, there are different types of business such as direct sale, mail order, or multi-level marketing (MLM).

In this research, because of the growth and the return on profit of multi-level marketing, it is of interest to develop and implement an e-commerce system in order to secure the benefits from increasing marketing channel, decreasing overhead expense and handling the databases, including developing back-office management systems for keeping product tracking.

At present, there is a lot of competition and there are large varieties of brands in MLM in Thailand such as Amway, Nu-Life International, Cosway or Gifferine. In MLM businesses, increasing the channel for selling the products, seeking the members and reducing overhead cost are important things to growth

and survive in the market. Therefore, the complete electronic commerce solution needs to be implemented to control the transaction and handle members' accounts.

This research aims to study and develop storefront homepage and address problems when implementing the tools such as displaying and updating product service information, processing orders, and calculating time for shipping for MLM Company.

In multi-level marketing in the world, there are some companies that have developed software for interfacing between existing system and storefront on the web. The existing software shows the performance in managing the transaction occurring when customers buy the product via storefront on the web.

1.2 Problem Statement

Since e-commerce is a new technology in Thailand for buying and selling via the Internet on the computer. It will be very useful to implement electronic commerce in Thailand in order to increase the channel for selling Thai products to the world. In general, selling of products on the web may be classified into two types.

- Business-to-Business (B-to-B)
- Business-to-customer (B-to-C)

Most implementation of e-commerce in Thailand have focused on the B-to-C type and simply shown the storefront on the web site containing the information about the products and services, but not a complete system that can control and handle the back-office system, which includes both inventory system and tracking system. For example; Pharmacy online web site (http://www.onlinepharamcy.com) is a website for selling drugs that is the first retail business in Thailand that use e-commerce to sell their products

In merging e-commerce to any businesses, there are still problems about understanding and integrating an existing system and the e-commerce system into a complete system. Some of the questions and problems that often occur and need to be addressed when implementing any retail business are as follows:

- How compatible is the e-commerce system with the actual infrastructure?
- How to adjust the old system to match the new system?
- What is the cost for improving and adjusting the existing system to support the new system?
- How can a new system reduce the costs of operation?
- How can the Internet help businesses such as MLM to increase the number of members?

1.3 Objectives

The objective of this research is to develop an electronic commerce system to assist in the operation of a multi-level marketing business.

1.4 Scope of Research

In this research, the scope is limited to developing a model of the complete e-commerce system including back-office, which is suitable for the complex retail business such as multi-level marketing.

In addition, studying the existing system such as inventory database for adjusting improving and developing the system to merge with the new system using software available in Thailand is also within the scope of this research. The home page and the database system including storefront and all back-office system will be developed to demonstrate the procedure and operation in the system.

To illustrate the operation from this research in both storefront and back office, the model of e-commerce system will be applied to the system of a multi-level marketing company in Thailand, which is interested in selling the products through the e-commerce system in both Bangkok and other provinces.

1.5 Expected Outcome

The expected result of this research is a solution model of e-commerce for multi-level marketing business that can handle both the storefront and back-office system, which include storefront home page, track checking system. The solution model will be launched with comparison table of cost of development and implementation compared with the existing method.

1.7 Research Procedure

1. Study the existing operation of multi-level marketing business in both marketing term and technical term
2. Address the problems in existing system such as inventory and database system that need to be adjusted
3. Create marketing concept for merging the systems and develop technical operation flow diagram for implementing a new system.
4. Develop the compatible and appropriate application model that can be properly used.
5. Testing the software application and implementing the system
6. Summarize the problems found in implementing in both marketing and technical for further development.
7. Prepare thesis documentation
8. Submit thesis and final examination

1.8 Literature surveys

Forrester Research Company reports that the online retailer business transaction in the US will rapidly increase from year 1997 to year 2001. And it will generate revenue of 4.8 billion US dollars in 1998 and surging 216% to 17 billion US dollars in 2001. The top five online products are travel, entertainment, books & music, gift & flower, and greeting card.

The research shows that customer service and personal content/communication are the important things, which draw customers to repeat their purchasing in 1997. Moreover, the report also show that the Internet application such as email can help the business since the response rate is better than a direct marketing. *(http://www.forrester.com)*

ModelMax is a neutral network modeling software, which is a data modeling technique that has evolved out of the artificial intelligence research community. It is used to develop predictive models in direct and database marketing tasks.

Neural networks are computer models that simulate or mimic biological intelligence in which the computer model takes the form of a network of brain cells and the synaptic links between the cells. The strength and content of the synaptic link give the network its personality and determine its function

This software is run on personal computer and can be used on Windows. The main goal for this software is to forecast and not for supporting a typical research and data modeling tasks that are aimed at understanding the market, the result of a given marketing campaign (most frequently a direct mailing). However, this software can be just an idea and guideline for creating the concept of the Internet electronic commerce for multi-level marketing web site. *(Journal of Marketing Research, 1996)*

Internet Market Secret; e commerce for sucker, Donna Slavitt and Amy Katz of World Packaging have created Web Fuel-very likely the first breath mint of the World Wide Web. Web Fuel (www.webfuel.com) aims to synergize two trends, Internet uses and "intense mints," the booming, near-pain-inducing candy category pioneered by Altoids.

According to the national Confectioners Association, the breath-fresheners category grew 13% over the year ended spring 1998, compared with 2.3% for all candies and gums. *(Times Magazine, December, 1998)*

The Sun Micro system has established the criteria of a good web site. The issues consider for before creating the web site are as follows:

- Purpose. The purpose of the web site has to be clearly discussed in before creating because different types of web sites such as informative web site or portal web site are different looking. The look of the web site will follow the objective.
- Audience. The type of audiences should be defined. It effects to the design. The web site should serve the need of audience.
- Links. Link in each page should be meaningful words. It will be appropriate length for the link text.
- Page length. It is very important to draw audience attentions. The longer page should be avoided. Besides each page should not be longer one and half screen full of text. The important things should not be at the end of the page.
- Graphics. The most effective method to communicate with the audiences. Each page should contain only the vital image. The file size of the picture in each page should not over than 30 K.
- Navigation. In the long page, the navigation should be put in the heading and bottom. Avoid the implied word in the page. The navigation button should be outstanding from the content.

- Security. The registered information from users should not be on the pages. Besides, the limited distribution information should not be on the web without security support.

- Quality. All links should be tested before launching the web site. The web site should be kept updated all links.

- Contents. The level of the content should be limited to the less levels as possible. The text should be reduced in each page because it makes the page long. If possible, context link should be put the on some for helping less knowledgeable audiences.

- Selling. The information of the product should be easily to understand. The purchasing order step should be clearly understood for the audiences who want to make an order.

(http://www.sun.com/styleguide/others/Quick_Referrence.html)

The E-corporation, "E-corporations is not just using the Internet to alter its approach to market and customer, but it's also combining computers, the web, and the massively complex programs knows as enterprise software to change every thing about how it operation. The Internet will empower consumers like nothing else ever has. For example, Schwab Company in San Francisco put it all online. Schwab bet the farm on low-cost web trading and the process invented a new kind of brokerage. Three years ago, Schwab's exposure to the web was zero. But now more than 4 billion US$ worth of securities are traded every week on Schwab's Web site that is over half the company's total trading volume".

This statement shows growth rate of using electronic commerce in the US that rapidly increases and it will effect to other country as well. However, growth of e-commerce depends on behavior of people in each country as well. *(Fortune Magazine, December, 1998)*

Oracle's Electronic Commerce Strategy is to provide a platform, products and services for end-to-end electronic commerce. This platform, built to the standard in Oracle's Network Computing Architecture, is the only solution for

electronic commerce on the market today providing comprehensive support for real-world transaction processing, superior performance and scalability, integration with existing application, and a secure and exciting shopping experience. This plat form is suitable for large-scale of electronic commerce web site. *(Oracle Corporation, 1998)*

In search of the perfect market, The economist surveyed that 73 % of Internet users had used the Internet web site for shopping in one way or another in the past month. According to projections by International Data, a Massachusetts consultancy, by year 2000, 46 million consumers in America alone will be buying online, spending an average of $US 350 a year each. Besides, from the research, the big money is not in consumer shopping, but it is in business-to-business commerce.*(http://www.economist.com)*

IBM Net.Commerce Hosting Server IBM offered a complete solution for building and operating an e-commerce hosting service, which provides comprehensive tools for managing sellers and sites.

This software also supports mall and shared service operations. Besides, it provides automated customer support for sellers and shoppers. Net.Commerce software is available Microsoft WindowsNT, IBM AIX and Sun Solaris. It enables e-commerce Service Provider to setup and operate cost-effective, low maintenance, electronic commerce hosting service for businesses that want to sell their goods and service on the web.

Unlike other e-commerce platforms, the features, tools and documentation of this software are oriented towards running a hosting service for multiple customers, not just running a single e-commerce site. In addition, Net.Commerce hosting server is intended for Commerce Service Providers who want to setup and operate full service, low maintenance e-commerce hosting service for multiple sellers.

However, this software package requires high programming skill to develop and create the web site. Moreover, the price of this software is quite expensive compared to other software. *(IBM, 1998)*

Quixtar "a new company and a new business model developed specifically for the Internet, will be introduced by the De Vos and Van Andel families, who own and operate numerous successful ventures around the world". This business will particularly appeal to those who understand the power of e-commerce but do not necessarily have the expertise to develop their own web site or a high quality line of product to market. Quixtar also provide personalise page for its customer for tracking their personal information through the web.

Microsoft Corp. is a key development partner, providing the technical platform, development tools consulting and direct support for web-based components of the project.

IBM participated in the up-front planning for the Quixstar business venture and will be providing the back-end systems and integration expertise to ensure Quixstar.com has the muscle to handle the high volume of transactions expected.

Fry Mulimedia, a division of Ann Arbor-Mich., based Fry Communications, will help develop many of the interactive and commerce-related aspects of the website.

C-E Communications, digital solution group of Warren., is helping develop the branding, navigation, and overall look and feel of the new web site.

Quixtar will provide a great shopping opportunity for its members, who will enjoy a variety of benefits such as, special price and unique offers. Meanwhile, business owners supported by Quixstar will have access to virtual office on the web site providing personalized business services. However, marketing scheme of Quixtar is different from marketing scheme of the multi-level marketing business.

Quixtar will give the special bonus at the first registration for new member, but multi-level marketing will give more bonus if the members have more their own network or more down-line *(http://www.quixtar.com, 1999)*.

Amway (Thailand) Limited has developed an informative web site that presents the history of the company, benefits for the members or independent business owners who join the business with the company and product information. The web site also shows the product under "Amway" brand both from the USA and the products which the company joined with the local manufacturers. The site includes news, social activities and electronic inquiry form for members and other people who want to have more information regarding the company. However, the company did not provide the online catalogue or tracking system for their members or independent business owner who want to buy the product online or track the personnel record such as down-line or bonus. *(http://www.amway.co.th)*

Nu-Life International Limited. provides people all information regarding company profile, product information and the international markets in South East Asia. The web site has been developed at Head office in Hong Kong. In the product page, the web site shows only details and descriptions of products which are available in the company.

The web site also shows the meeting calendar, which allows their members to track events regarding training courses and entrepreneurs meeting both in the past and in the future. The online catalogue and down-line and bonus tracking system are not available at this web site. *(http://www.nulife.com)*

Chapter 2
Theoretical Consideration

This chapter will discuss the theories concerned with this research. Following the objective and scope of the research in Chapter 1, the theories of concern are the electronic commerce and multi-level marketing business.

2.1 What is Electronic Commerce (EC)?

There are many definitions about electronic commerce (EC). EC is a general concept covering any form of business interaction executed using information and communications technology. This cover interaction between companies, between company and their customer, or between companies and public administrations.

Electronic Commerce includes electronic trading of goods and both material and non-material services, also includes the advertising and promotion of products and services, the facilitation of contacts between traders, the provision of market intelligence, pre and post sales support, and electronic procurement and support for shared business processes.

Kalakota and Whinton (1997) define electronic commerce form these perspectives as follows:

Communication perspective, electronic commerce is the delivery of information products/services, or payment over telephone lines, computer network, or any other electronic means.

Business perspective, electronic commerce is the application of technology toward the automation of business transactions and workflow.

Service perspective, electronic commerce is a tool that addresses the desire of firms, consumers and management to cut service cost while improving the quality of goods and increasing the speed of service delivery.

Online perspective, electronic commerce provides the capability of buying and selling product and information on the Internet and other online service.

2.2 Classification of electronic commerce

We can classify the type of electronic commerce into 2 major types by the nature of transaction.

Business-to-business (B2B), at present, most electronic commerce transaction are of this type. This type of electronic commerce transaction is provided between the organizations.

Business-to-customer (B2C), the transactions of this type of electronic commerce are between retail shops and individual shoppers.

For other types of transactions such as the transactions between individual consumers, between individual consumers and the organizations, or intra-business, these types of transaction are activities occurring in the organization, academic institutions or nonprofit organization.

These transaction activities are performed on both Intranet in the organization involving exchange of goods, service and information and the Internet such as action web site and chat rooms to directly sell their products or service to another.

2.3 The benefits of electronic commerce

Since electronic commerce is a new application running on the Internet application.   The potential benefits of electronic commerce make it rapidly grow during the past few years.

Many business-firms involving electronic commerce as an infrastructure is also rapidly expanding their business.   That means the benefits of electronic commerce are increased significantly as well.   It means that electronic commerce will also benefit organizations, consumers, and society as electronic commerce expands.

We can classify the benefits of electronic commerce into 3 parts: benefits to organizations, benefits to consumers, and benefits to society.   The details of benefits of each part are as follows:

2.3.1 Benefits to Organizations

- It will easily and quickly expand the market to nationwide and worldwide with lower capital outlay.   Finding the best suppliers and seeking more customers is easily and quickly
- It reduces cost of creating, processing, distributing, and storing a paper-based information.
- It also reduces inventories and overhead by facilitating the supply chain management (Just-In-Time management).
- It reduces time between the outlay of capital and the receipt of products and services

Other benefits of electronic commerce include improved image of the company, newfound business partners, increased flexibility, compressed time, expediting access to information, reduced transportation cost.

2.3.2 Benefits to Customers

- Electronic commerce allows customer to do any transactions such as shopping 24 hours a day, all year round from anywhere in the world
- It provides customers to have more alternatives to select the products and services they want from many venders.
- Electronic commerce allows quick delivery to customer, especially with some type of products.
- Electronic commerce provides customers with less expensive products and services by allowing customer the price comparison.

2.3.3 Benefits to Society

- Electronic commerce provides the facility of public information services such as healthcare, education and distribution of government social services at a lower cost and less time used.
- Electronic commerce enables people in faraway places or less developed areas to have an opportunity to obtain distance education and enjoy shopping products and services.
- Electronic commerce enables more people to work and travel in the world at home.
- Electronic commerce allows people to buy some products to increase standards of living.

2.4 The limitations of electronic commerce

The limitation of electronic commerce can be classified into technical and non-technical limitation.

2.4.1 Technical Limitation

The technical limitation of electronic commerce is the lack of proper infrastructures such as insufficient communication bandwidth, lower hardware reliability and specification, un-compatible between hardware and software.

Besides, the development tools are also the limitation to develop the electronic commerce system that developers have to take more time to develop the applications. Integrating the existing application and database with the Internet and electronic commerce software is also a limitation.

2.4.2 Non-technical Limitation

Most of non-technical limitations concern with cost of development, development knowledge, and privacy and security respectively (Internet Week1998).

Due to high investment cost of electronic commerce software development, most of software development is an outsourcing development because it is cheaper than developing in-house. Besides, in some case, in-house developer lacks of experience and makes some mistakes in the software.

For the privacy and security issue, it occurs in only the B2C area. Customers perceive these issue as very important and serious. In electronic commerce industries, it is a very difficult task to convincing customers to use the system, which is not private and secure.

For other issues, customers do not trust the system that cannot see the seller, paperless transaction and electronic money. Some customers still use the physical store instead of using virtual store although the product in virtual store is cheaper. Online trust is not a problem restrict to cyberspace, however. Trust is a social process that inhabits both the virtual and physical realms simultaneously, often in complicate way (David Bollier, Aspect Institute, 1998).

2.5 Infrastructure of electronic commerce

In Figure 2.1 shows the involved application of electronic commerce. Many people understand that electronic commerce is just having a web site, but actually, electronic commerce consists of many applications and organizations acting as an infrastructure supporting the electronic commerce.

Electronic Commerce Applications			
Malls, Online marketing and advertising, Home Shopping, Auctions, Travel, Jobs, Online Banking, Procurement and Purchasing, online Publishing			
People	**Public Policy**	**Technical Standard**	**Organizations**
Buyer, Seller, Intermediaries Service, People and Management	Taxes, Legal, and Private Issues	Documents, Security and Network Protocols, Payment	Partners, Competitors, Associations, Government Services

Infrastructure				
(1)	(2)	(3)	(4)	(5)
Common Business Infrastructure (secure smart card/authentication, electronic payment, catalogues)	*Messaging and Information Distribution Infrastructure* (EDI, email, HTTP)	*Multimedia Content and Network Publishing Infrastructure* (HTML, Java, WWW)	*Network infrastructure* (Telecom, Cable TV, wireless, Internet)	*Interfering Infrastructure* (To database, customers, and applications)

Management				

Figure 2.1 Infrastructure of electronic commerce (Source: Turban et al. 1999)

In Figure 2.1 shows that the electronic commerce applications are supported by the infrastructures such as common business infrastructure, information distribution infrastructure, network infrastructure and interfering infrastructure. However, EC application is dependent on four major areas (shown as

supporting pillars), people, public policy, technical standard, and organizations. The EC management coordinates the applications, infrastructures, and pillars.

2.6 Security consideration

Since this issue is very important to the electronic commerce business because the most common Internet payment method for business-to-customers is credit cards. A concern for customer is the security while sending over the Internet, credit card information including name, card number and expiration date.

Besides, they do not want others to know about their information such as the product they buy or who they are. They also want to assure that no one can change their order or hacking their credit cards information.

At present, SET and SSL are available for the security issue. SET (Secure Electronic Transaction, which Visa and MasterCard have jointly developed is a perfect protocol for the Internet security. It is a perfect security in the theoretical. But it has more complexity to use them. It needs additional software to install in the customer computer. From the survey by Forrest Research, only 1 percent of electronic business plans to change the security system from SSL to SET.

SSL (Secure Socket Layer) is the most popular protocol, which is widely use in the electronic commerce business. This protocol provides both security and privacy. The data that is transferred between users and the site will be encrypted at their PC without any software required because SSL is built into the browser.

2.7 Electronic commerce participants

From the research of Computer Technology Research Corporation 1999, typically, electronic commerce solution providers do not offer the total solution in the large scale for users and implementers of online commerce. The participants of electronic are as follows:

- *Outsourcing consultants,* many companies lack of cost, time and expertise to develop electronic commerce system in-house, outsourcing is a better way to meet the needs

- *Internet Service Providers (ISPs),* expected providing the Internet connection, ISP can actually develop and operate commercial Web site, some of them provide provides transaction service or full system of electronic commerce.

- *Software tools venders,* development services are an important component in the beginners of system development. electronic commerce tools meet many needs such as in the content design or the ordering control system.

- *Commerce server vender,* the full-featured products can support transactional services such as order controlling system, payment and customer fulfillment. Many venders offer products that will achieve these tasks such as Net.Commerce (Websphere) from IBM and Site Server from Microsoft.

2.8 The competitive electronic commerce web site

From researching and experiences in home page development, generally requirements from the Internet user are to find information of the products and services they want to buy in the easiest way. The easiest way means the complete information of each product or service in short message including its picture.

Navigation in Web site is also a key concept of the successful of Internet electronic shopping mall. Each product or service has to be grouped and categorized in the right categories. The good navigation is a weapon to draw electronic shoppers to visit and to keep attracting customers to get then stay longer and spend more money to buy the product as many as possible.

To illustrate the requirement for developing storefront in more details, the relationship and combination of environment, product, service, and services/facilities, "The star of shopping experience" is necessary to find target customers. We will need to test and trail what works and what don't and how each can best interact to serve up a totally shopping satisfaction.

Figure 2.2 "The star of shopping experience"
(Source: Turban et al 1999)

Most of electronic shipping mall developers will want to investigate the opportunities along each if these four dimensions of the star in defining their storefront. In each side of the star, these four environments have to support to each other in equilibrium situation. The four dimensions can be broken-down in details that developers should consider before developing their storefront.

- The level of individual customer service and services that will be suitable for target customer.
- The new initiatives in relationship management, product knowledge, and order-processing system that will be need to ensure customer when making the order.
- The new excitement environment/layout that need to be created
- The sufficient features in the store
- Locals news and meeting room
- Payment and Promotion term
- Products and Services showcase

- Back office for automatic update
- Profitability returns to the developer

In addition, downloading speed is also important issue. Typically, characteristic of graphics contain in each Web site is difference. The more graphics, it will take time for downloading.

Most of e-commerce Web site will try to reduce un-necessary graphics containing in the storefront because they want electronic shopper to get the information faster.

However, trend of storefront is now text-oriented. In the first page, they will show only product categories, promotion package in the week, news for members, advertising ads, or any information the will highly benefit to members. For the sub-page of each category will content all necessary detail of that product.

Like shopping mall or department store, each category looks like to be an each floor in department store that is prepared for customers who are interested in each type of product they want. For example, in the first floor maybe provider women interested product such as perfume, cloth, and jewelry. All environment, product services or facilities are involved women thing.

To motivate user to use this facility and to shopping online, there has to be a clear reason and outstanding benefits to encourage them to use. The benefits of the storefront on the net are not just higher than the advantage of the physical store, but it is also need to have a competitive advantage over other merchant in this business on the Net.

From both general requirement and member requirement above, we can conclude all needs to the simple basic requirements, which survey from our members as follows:

- Creditability
- Price
- Convenience
- After Sale Service (Tracking Services)

2.8.1 Creditability

This first simple basic concerns about two parts. From surveys, members who have a credit card or debit card want to pay either registration fee or purchasing the product by using their card. This issue will concern about the securities on the Web site. The second issue is the persons who do not have both credit or debit card want to have some credit term after statement cycle showing. This issue is concerned with the policy of the company that would allow them to have credit term or not.

2.8.2 Price

Price is one of the strategies to motivate member to facilitate the Internet storefront. This is also a sensitive case to implement. Actually, in MLM business, the price of the products is normally lower than in the department store. The price right above this product value is where it is ideally that we want each product to sit. Besides, the important thing that we have to consider is having lower price product may increase the sales volume, but it's not increase the profit.

Therefore, the alternative of this issue is not just to have lower price than anther. Other feature and Promotions, such as price comparison or campaign are the better way to solve or prevent the problem that may be occur in the future.

2.8.3 Convenience

On the net, convenience means good navigation system, easy to use or to find product or service they want in the easiest way. Moreover, all features in the

Web site should meet the members' requirements. Designer should minimize the amount of chicks between related pages in the site such as product catalogue page and ordering page.

In addition, in the design, the simple design is the best. That does not mean the complex hyperlink or complex graphic map that good very good is always good e-commerce site. The important thing is allowing members to fill-in just only a necessary information.

2.8.4 After sales service

In every product, after sale service or customer service is very important to draw customers come back to visit or to buy the product again in the future. On the net, email is a tool, the primary tool, to answer the question from members or customer.

An important difference between the virtual store and the traditional store is that, in the traditional store, we can convince the customers to become repeat shoppers if the after sell service do not satisfy the customers. However we cannot do that on the net.

Therefore, the cost-effective way, to answer mail from member is setting up an automatic mail responding system. The automatic mail will reply to customer when they submit the questions in the homepage.

The benefits of the electronic mail is to immediately respond to customer after they finish any request on the web site because it is the way to draw member to use this facility without calling the company. That means we can save the labor cost and any cost in the long-term period.

2.8.5 Updating information

It is very important to keep members coming back to look at the web site. The contents and facilities of the web site are the keys. Creating the automatic updating system, intelligent back office system is very helpful to keep the site updating all the time. Other strategies and ideas to ensure that we can encourage our member coming back to the Site time after time are as follows:

- Creating newsletter and send to members about promotions and news
- Weekly specials
- Contests to get the lucky draw
- Advice columns

However, the brief list of idea above can be implemented in the phase 2 or 3 in developing term.

2.8.6 Intelligent back office system

Having the good back office system will reduce cost and time of Web site maintenance and operating cost. Besides, good scheduling together by using the system will help marketing department to reduce time to implement the strategy. In ideal, all updating items can be done with the back office system without changing HTML tag. We just only choose the categories and fill-in either some texts or images they want.

Moreover, the intelligent back office system should interface between Web site and both member database and company database such as member records, down-line, and commission with the enough security environments. The security means all privacy in the web site not only for order page, but also in the member order-tracking page.

2.9 Internet configuration

In a few years ago, most of businesses face the problem of delivering online information and any application to their own partners, customers or employees especially to remote area. Today, it is very easy to deliver information or any applications to any one regardless of location. Many observers say that the Internet now acts as a catalyst for this change.

At present, we use the Internet on a daily basis; few of us have a clear understanding for its basic operation. The basic understanding of physical of the Internet (Efraim Turban, Jae Lee, David King, H. Michael Chng, 2000), is a network of thousands of interconnected networks.

Among the interconnected network, it includes [1]-interconnected backbones that have international reach, [2] a multitude of access/delivery sub-networks, and [3] thousands of private and institutional networks connecting various organizational servers and containing much of the information of interest.

In physical operation of the Internet, when the Internet users sending request on the Internet from their own PC, the request will likely line-across an ISP network move over one or more of the backbones and across another ISP network to the computer containing the information they want.

The response to the request of interest will follow a similar sort of path. Actually, there is no present route. The request and response are each broken into the packets (the unit of data that is routed between an origin and a destination on the Internet network), and the packet can follow different paths.

The paths will be traversed by the packets, which are determined by the special computers called "router". A router is a device or, in some cases, software in a computer, that determines the next network point to which a packet should be forwarded to its destination.

The router is connected to at least two networks and decides which way to send each information packet based on its current understanding of the state of the networks it is connected to. It will automatically update the maps of networks on the Internet that enable them to determine the paths of the packets.

A router is located at any juncture of networks or gateway, including each Internet point-of-presence. A router is often included as part of a network switch.

In addition, A router creates or maintains a table of the available routes and their conditions and uses this information along with distance and cost algorithms to determine the best route for a given a path of packet. Typically, a packet may travel through a number of network points with routers before arriving at its destination.

In Thailand, the network of the Internet is rapidly growing, there is 3 Internet gateways in Thailand, which provided by Communication Authority of Thailand [CAT]. Besides, there are 3 Network Access Points in Thailand, International Internet Gateway [IIG], National Internet Exchange [NIE], and Internet Information Research [IIR] as shown in Figure 2.3

Figure2.3 Internet connectivity map of Thailand

(Source: www.nectec.or.th)
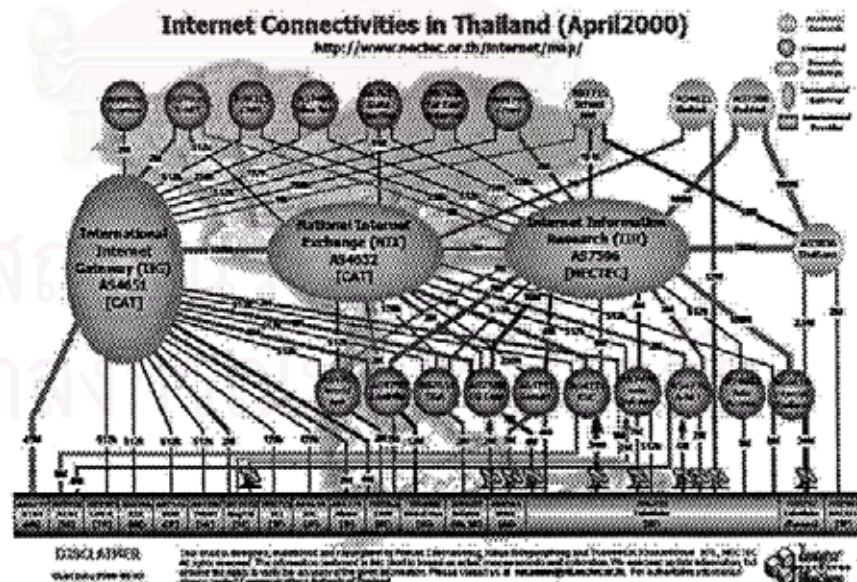
From Internet connectivity map above, it shows the delivery sub-network, which enables ISPs will exchange data with the Network Access Point [NAPs] – IIG, NIX, and IIR. The large ISPs have a back-up link to IIG because it has the higher speed link to International [45MBPS].

Selecting ISPs either to have a space for hosting the Web site or to have an Internet access is very important because it will effect to the speed when user browses our Web site. Because the objective of our Web site will focus on members that are Thai. Therefore, the consideration issues when selecting ISP is as follows:

- Famous ISP including the number of user in that ISP. It will show the reliability.
- International and domestic links both directly to Foreigner NAPs and to Domestic Gateway of each ISP
- Transmission medium of each ISP for both Domestic and International link, satellite or optic fibers because data transfer rate of satellite is lower than optic fiber.
- Target group of each ISP because it will effect to the after sale service. If it focuses on Businessman or customer level A or B, they will emphasis on after sales service.
- Internet provincial access node, in case of our member or staff has to access in up countries.
- Cost of service

However, before selecting an ISP, the objective, target group and future plan of the Web site must be clarified and concluded.

2.9.1 Internet Server

This server is not Hardware. It is software. There are few operation systems, UNIX and Windows NT, that are widely use in Thailand. Actually, at the last count, there were over 75 different Web servers on the market.

The primary function of all of these programs is to service HTTP requests. In addition, they also perform the following functions (Mudry 1995; Pffafenberger 1998)

- Provide access control, determining who can access particular directories or files on the Web server.
- Run script and external programs to either add functionally to Web documents or provide real-time access to database and other dynamic data. This is done through various applications programming interfaces like CGI (Common Gateway Interface).
- Enable management and administration of both the server functions and the contents of the Web site
- Log transactions that the users make. These transaction files provide data that can be statistically analyzed to determine the general character of the users and the c
- Content in which they are interested.

In the present market, there are three dominant servers, Apache server, Microsoft's Internet Information Server (IIS), and Netscape's Enterprise Server. Since 1995, a company called Net craft (www.netcraft.com) has been conducting monthly survey to determine marketing share of web servers. The graph below shows the survey result.
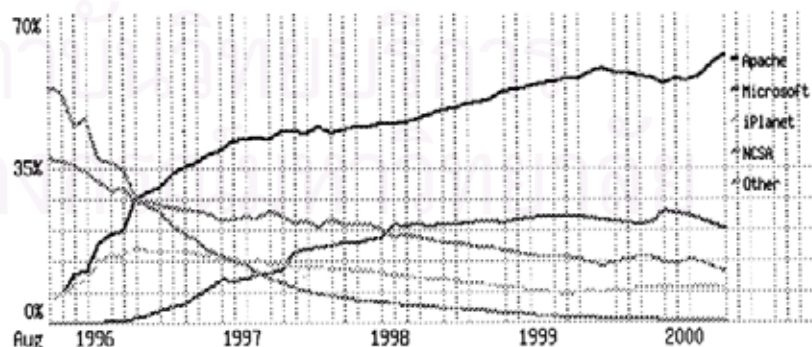

Figure 2.4 Market share for top servers across all domains August 1995 - March 2000

(Source: www.netcraft.com)

Comparing with Apache on UNIX and Microsoft IIS on Windows NT, the survey result shows that the number of web servers has increase substantially over the past with on trend in the near future. It also implies that the Web will continue to proliferate in the foreseeable future.

The UNIX is still the leader of the operation system on the web server instead of Windows NT. Also, Apache is still a leader of the market, although growth rate of Microsoft IIS in the past few years is quite high. Microsoft IIS on Windows NT is perhaps easier to manage than Apache on UNIX. The details of each web server are described as follows:

Apache- a UNIX-base Internet server that is a free software, which can download from http://www.apache.com. This Internet server can run on the variety of both UNIX hardware and operation system such as Linux on the low-end PCs until on an expensive server, which has a number of function and features that are supported by a large number of third party tools. To install this Internet server and administer, this server requires substantial amount of UNIX experience.

Microsoft Internet Information Server [IIS]- this is a free Internet server, which is included with Windows NT server. Alike UNIX-base server, this software is very easy to install and administer. It also offers an application development environment such Active Server Page [ASP] that makes it possible to efficiently develop Internet applications easily.

Netscape Enterprise Server- this server is not free software; it will cost the company approximately 950 US$. This server can run on both UNIX and Windows NT server. To install and administer, it is competitive to MS IIS. It also offers a wide variety of features that is easy to publish and control without the assistance of a Webmaster.

For businesses in Thailand, most users prefer to use Windows NT operation system more than UNIX because it is easy to maintain and administer the system although the cost of software is higher than UNIX.

In a small business, a system engineer is specialized in Windows NT, besides the operation system of existing database server is Windows NT. Therefore, it is better to use Windows NT for both systems. Consequently, Internet server will be Microsoft Internet Information Server because it is included with Windows NT.

In addition, because it is a penetration of new market, the investment of hardware and software should be limited in the first stage of development. The higher performance of hardware will be considered when the number of users increases.

2.9.2 Firewalls

The aim of firewalls is to prevent the possibility of a hacker that can break into the confidential database both inside and outside the company. This set of hardware and software provide the company to assure that the hackers cannot gain access to critical applications by tunneling through the Web site to feat weaknesses in the network system.

Typically, the primary access control means only password protection, but users usually share their password with others or write down their password where others can see them. These are the critical problems or weaknesses that hackers can access to the network. One of the roles of firewall is to make sure that the hackers only has restricted access to the rest of the network.

A firewall is a set of related programs that may consist of hardware and software, located at a network gateway server, which protects the resources of a private network from users from other networks. (The term also implies the security policy that is used with the programs.)

An enterprise with an intranet that allows its workers access to the wider Internet installs a firewall to prevent outsiders from accessing its own private data resources and for controlling what outside resources its own users have access to.

Basically, a firewall, working closely with a router program, filters all network packets to determine whether to forward them toward their destination. A firewall also includes or works with a proxy server that makes network requests on behalf of workstation users.

A firewall is often installed in a specially designated computer separate from the rest of the network so that no incoming request can get directly at private network resources. There are two types of firewall, dual-homed gateway and screen host gateway (Efraim Tuban, 1999). The details of each type of firewall are as follows:

- *Dual-homed Gateway*- it is a server providing connection of internal network to the outside the Internet. This gateway has two gateway card, one for internal and one for external, which are separated to each network. Besides, the proxies, special software, is to controlling inbound and outbound traffic to the outside Internet.
- *Screen-host Gateway*- this type of gateway, which the router are used to control the access, is to ensure that all inbound traffic must pass though the bastion gateway. Ideally, there is no way for outside traffic to gain access into any host in internal network.

2.10 Multi-level marketing business

Multi-level marketing (MLM) is a method of selling goods directly to consumers through a network developed by independent distributors who in turn introduce further distributors. In contrast to chain marketing, MLM is as legitimate and ethical a business as any other.

At present, in the traditional way of selling goods, there is a series of procedures of conveying products from manufacturers to end-users. Each procedure doubtlessly causes expenditure. Here are the samples of those expenditures (Neo Mark 1998),

- Raw material 10 %
- The manufacturer's profit 12 %
- The sales agent fee 3 %
- The wholesaler / distributor 's profit 25 %
- The retailer's profit 35 %
- The advertisement cost 15 % which including the advertisement from manufacturer, wholesaler / distributor and retailer.

The above sample shows that some expenditures are from the wholesaler or distributor. Hence, what will come about if end user take the place of wholesaler/distributor and retailer is that less expenditure will be required. The solution of multi-level marketing definitely answers to a preceding requirement.

The sample of percentage of multi-level marketing's expenditures is as follows: (Neo Mark 1997)

- Raw material 10 %
- The manufacturer's profit 12 %
- Commodities logistics 3 %
- The network organization's expenditure 15 %

- The network organization's profit 10 %
- The network direct marketing member's profit 50 %

In summary, the multi-level marketing's member takes the role of wholesaler/distributor together with retailer at the same time. Consequently, the expenditure, which as occurred in a traditional way is now controlled to a lesser extent or ended.

In addition, word of mouth method is a good reinforced advertisement instead of mass media advertising expenditure. That is why multi-level marketing has a fair price market and gradually replace the traditional marketing.

Table 2.1 Comparison between (legal) multi-level marketing and (illegal) chain marketing

(legal) Multi-level marketing	(illegal) Chain marketing
• The business is proceeded in a moral standard and in a legally manner	• No concern of moral, conduct the business is conducted for the highest profit
• Low initial investment of business (This investment apply only member fee and manual, no merchandise purchase is forced)	• High initial investment of business, member is forced to make a payment of training fee, over- price merchandise
• Variety of high quality merchandise and customer's satisfaction concentration	• Low quality of merchandise but high benefit in return.
• Quality of merchandise guaranteed and refundable	• No policy of refund
• To realize a long-term goal of business	• Short-term goal of business, the company is intent on profit return
• Invest in a computer system of database collect	• No investment in any computer system for the purpose of database evidence
• The punctual and accurate dividend return	• The dividend is lately returned and inaccurate

Also, MLM allows you to create any amount of income that you wish to have. An income of MLM business is generated by retails and wholesales profits supplemented by payments based on the total sales of the group. The three basic factors of MLM, which make it so different from traditional methods of direct marketing are sales force, cost and products sold method.

2.10.1 The Sales Force

Sale force is the most obvious factor that is different from a traditional direct marketing. In the traditional marketing, usually, there are four involved parties, which are the manufacturer, wholesalers/distributors, retailers and consumers. Figure 2.5 represents the route of how the goods are distributed from the manufacturer to consumers.
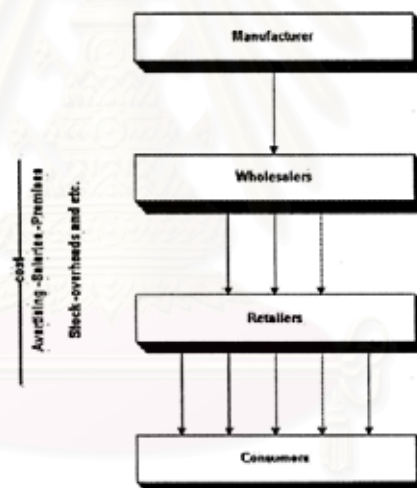
Figure 2 .5 Traditional marketing (source: Clothier, 1997)

Figure 2.5 shows that in a traditional way of marketing, the consumers are supplied at a single level only, which is by the retailers.

In MLM, the wholesalers and retailers are replaced by individual independent distributors. The distributors are the salespersons and self-employed. Each distributor may supply other distributors, consumers, and themselves. Every distributor has been personally introduced to the business by an existing distributor.
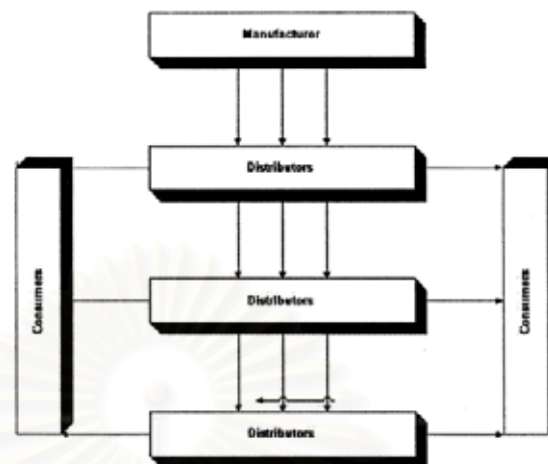
Figure 2.6 Multi-level marketing (source: Clothier, 1997)

Figure 2.6 shows that only the manufacturer is independent. All distributors can sell to consumers and even to the other distributors at every level of the organization.

In MLM business, when the products are launched in the market, it will first choose a core of enthusiastic people for assisting the distributors to sell products by putting on seminars and business opportunity meeting around the country.

2.10.2 Cost

Cost is a factor that different from a traditional marketing. Usually, in a traditional marketing, a large proportion of cost is consisted of advertising, warehousing, administrative, overhead, logistic and sales staff.

On the other hand, in MLM business, most cost is derived from expenditure that paying to the independent distributors in the network and sales aids including incentives, meetings and conference for members. It is obviously seen that salaries for sales staff, cost of advertising or any retail premises are less or disappeared.

2.10.3 Sales method

Normally, sales method of MLM is similar to direct sales which means goods is directly sold to persons in their own places either homes or places of work. Besides, MLM sales are concentrated on the high level of trust relationship between the distributor and customer instead of media advertising.

This relationship makes it easy ease for the distributor to obtain the repeat purchase order and even to introduce the new products.

Moreover, the new technologies such as Internet will have the biggest impact in this business as Peter Clothier says in the multi-level marketing – a practical guide to successful network selling that "The biggest changes will come through the continuing rapid developments in telecommunications and the Internet. As more and more people – customers and potential customers – get connected, and the connection charges get lower, they will start to do more and more of their shopping and browsing on-line. Of course, there is the danger of losing the great benefits of personal contact, but I don't believe this will happen. The distributor will be the person who guides the customer to the added service of on-line information about the products, and he or she will be the one who delivers the order personally. Internet advertising by MLM companies will attract more business for them and their distributors."(Clothier,1997)

From the above factors, it will be apparent that MLM business will continue to rapidly increase since it brings more opportunities for the persons to build alternative ways of doing business.

Chapter 3

Survey and Analysis

The objective of the survey and analysis is to understand the operation of the multi-level marketing company. The survey will show the policy, members, products available, benefits of doing the business and the operations in the company. The result of the survey will be used as a factor in designing the model of the web site and back office.

3.1 The company

The MLM Company is established in early 1998 after the economic crisis in Thailand. All shareholders are Thai people. The objective of the company is to establish and expand the multi-level marketing business in Thailand providing the high quality of products and Services

3.2 Target group of the company

In the plan of the company, the target group of members is the newly graduates. This target will be focused on new working people age range 22-28 years old that would like to do an additional business as a part time job.

3.3 Products in the company

The products that are available in the company are consumer products. The products can be classifies into five categories as follows:

- Health care and beauty care product
- Personal daily use products

- Car care products
- Electronic and novelty products
- Household product

3.4 Down-line structure of the company (NeoMark Company, 1997)

The derivations for revenue of member in multi-level marketing

- From purchasing and using the products by his/her own self.
- From generating the network by acquiring new members.
- From managing and supporting the members in own network.

The revenue that members will get consists of:

- The boundless network
- The travelling special bonus
- The accumulate personal sale volume (APSV) revenue
- The profit from being sub-distribution center

3.4.1 The network

The roughly explanation of the network of member when joining the company is as follows. In the structure of network of member, there are 2 types of group, which are main group and supported group.

3.4.1.1 Main Group of member, the main group is a vertical structure network consisting of three stages of members as follows:

- The first stage is the step of acquiring three new members

- The second stage is the step of assisting each new member to find out another 3 new members.
- The third stage is the step of providing encouragement to all members in network.

The criteria of down-line promotion

A common member. A member is entitled to be a common member after having been enlisted as a member in the company.

A leader member. If a common member is able to acquire 3 new members within 30 days, the title of " leader " will be conferred.

An executive member. If a leader member can assist 3 of common members to be 3 leaders within 60 days of the application date, the leader member will be promoted as an executive member

3.4.1.2 *Support group,* the support group is additional members not including the three members in the first level in the main group of members, which is generated in order to increase the volume of sales. The support group of members will be the most effective network when the prospected member being an executive member.

The recommendations for support group

- An executive member will be able to acquire new members which directly connect to himself/herself without limits on the number of members
- Should support new members in order to establish their own network.

The additional benefits for establishing support group

- Get more bonuses in each month, the more you have supported group, the more you have bonus in each month. Because of bonus is calculated from all support group's sales revenue that you have.
- Increase more control points, for example, if an executive member has 3 support groups with each group reaching the control point, the executive will get more control points from the fourth group onwards.

3.5 Purchase order method of the company

The member can order and purchase the product by the following methods

- Order via the sponsoring member if he/she is not be able to order by himself/herself. Members have to fill out the purchase order form and send it to sponsor member with payment.
- Make a purchase order by himself/herself at the distributing center. The information is required as follows:
  - Name and member's code of purchaser
  - Telephone number of purchaser
  - Specify of payment method
  - Fill out the merchandise code, amount of merchandise and total payment
- By telephone, the information preparation is an important process for making an accurate order via telephone. The required information is name, member's code, payment method, merchandise code, amount of merchandise, total payment and even how to pick up the goods. Keeping

the record of purchase order number help running through the process smoothly and convenient when picking up the goods.

- By postal mailing, fill out the purchase order form and mail to " purchase order division – headquarter "

- By facsimile, fill out the purchase order form and fax to head quarter in case of merchandise shipped by courier. In case of picking up goods by own self, fax to distributing center.

- By voice recording via answering machine, the preparation of necessary information before voice recording is the same as ordering via telephone.

3.6 Payment method for members

- In person at distributing center by cash
- Cashier cheque or bank draft payable to company
- Bank transfer
- Home banking

3.7 The condition of purchasing products

- Purchase order will be cancelled if the payment is not completed within the same day.

- All payment must be exact. Excess amounts or deficients will not be transferred to the next purchase order.

- For the bank transfer method, the copy of bank transfer document should be kept as payment evidence when picking up the goods. Also, the purchase order number is an essential item for the order method by telephone.

- For the up-country member, it necessary to give the notice to company when the merchandise is not shipped as a specified period of time.

- Notification of change of address is required 7 days in advance.

3.8 Product shipment channel

Normally, product is shipped by post. Free delivery charge if order is over 1,500 baht, otherwise the delivery charge is 60 baht. The members have to recheck the amount and type of order product with the receipt whether they are correct since the company is not responsible for the products that have been accepted with member's signature on the document.

3.9 Survey of Internet users

To know the number of Internet user from members, a simple questionnaire is designed for opinion survey. Usually, members will go to the distribution center once a month to purchase the products in order to maintain the membership status.

Besides, every Wednesday and Saturday, the company has training course for new members and existing members to advise members about doing the business. The questionnaires are distributed by staff of the company to members who go to the center. In the questionnaire, the questions in the questionnaire are as follows;

- Do you have Internet access?
- Do you have email address?
- Where do you mostly access the Internet (home or office or Internet café)?
- Which application of the Internet do you regular use?

The objective of the questionnaire is to survey the number of members who use Internet to communicate and to get and information from the web site.

The number of questionnaires returned from members is 420 records. The results of the survey are as follows:

- The number of members who have own Internet access is 72 persons
- The number of members who have an email address is 95 persons
- The location that members access in the Internet is as follows:
    - Home is 72 persons
    - Office is 93 persons
    - Internet café is 14 persons
- The application that members mostly use is email, web browser and chat-room.

The conclusion of this survey is as follows:

- The percentage of members who have the internet access is 17%
- The percentage of members who have an email address is 23%
- The percentage of the location that members access in the Internet is as follows:
    - Home is 17 %
    - Office is 22 %
    - Internet café is 3 %

In addition, an open question in the questionnaire that surveys in the same group of members is: What kind of applications do you need in the web site of the company? Most of members need the applications that can track their records both down-line and their commission at any time. Moreover, some members also want to order and purchase the products via the web site.

Chapter 4
Model Design

The objective of designing in this research is to create the concept of the model of electronic commerce web site. The model of the web site will be submitted to the company to be a guideline for further development.

To create the electronic commerce system in the business not only for MLM business, but for other businesses as well, the implementation procedure should be created after acquiring the enough information from surveys.

Actually, the development procedures and consideration items for the system in this business should concern the following issues.

- Surveys the real demand from members
- Consider the budget available for this system, scale of the system
- Create the purpose and concept of web site, and network configuration synchronously with seeking and researching the appropriate software package to be an idea for developing the online catalogue and back office that available in the market including generating the concept of integrating the new database and existing database.
- Testing the developed web site and software,
- Consider the appropriate hardware and related software using for Internet server and network
- Check the suitability and availability of network providers both Internet Access providers and transmission media providers
- Implement the whole system for the company

The model of electronic commerce system in the research includes the following items:

1. Create the model of the web site, the main features of that web site including model of back office system
2. Seek the appropriate merchant software package and study how to create the merchant.
3. Select hardware and related software
4. Select network equipment
5. Design network configuration
6. Consider the appropriate providers both Internet and transmission media.

To build and create the web site including Internet storefront and back-office system in this business for multi-level marketing does not differ from other businesses in term of selling their products, like a retail shop. One thing that is different is that MLM Company sells the product to members only. Therefore, some features for the web site are especially designed to serve members' requirement.

4.1 The main concept of the model

After surveys from a group of members of the company using the Internet, The following features on the web site are required respectively.

- Records checking on both existing down-line and commission.
- New member online registration
- Online Catalogue for ordering products

In MLM business in Thailand, no one has already launched or implemented their Web site with full features to assist their staff in the company or help members to track their records without calling. They just showed only the company profile and their products.

The consideration items in creating the web site follows the guideline for a good web site in Sun Micro System web site

In practice, to brief the concept of the web site to development team, the easiest way for the team to understand the concept is to create the map of the web site. This map will show all main-features and a rough process diagram as well as the direction flow of the whole web site.

In theory, the data flow chart is a tool for describing the process diagram of the software. Practically, development team is often graphic designer, not a programmer. It is difficult to understand flows of the process. Therefore, in our experiences in developing web sites, the block diagram will be developed to use for describing all main contents of the web site since it is very easy to understand.

Each block will show the topic or main function of that page in the web site. The block is also a click-able link to other page. As for the block number, it will be shown for clarity in discussion.
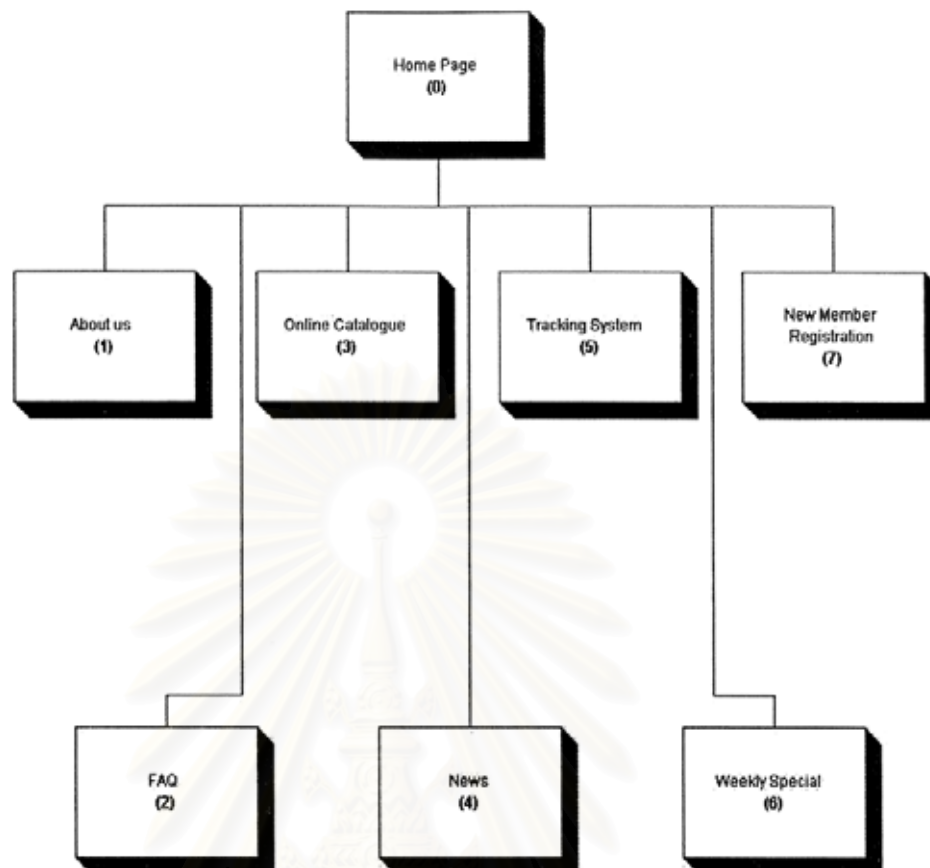
Figure 4.1 Main page in the model of web site

In the home page flow-chart as shown in Figure 4.1, there are 6 main applications, that we plan to have. For Weekly Special, it will be in the center of the home page or at the location in the first screen that can attract members or users who access the Web site.

The weekly special is like a news or promotion of the product of the week. It will be a short description of the news or highlight of the promotion. The short news or promotion will be weekly update to draw people to the web site. For each link in home page , it is a gateway to the information under the related topic. The details are as follows:

- *About us*: this page will give members all information about the company such as history of the company, mission statement, objective of the business, contact address, and map of the company.

- *FAQ*: this page will give an information about doing this business including all frequently asked questions from other members.

- *Online Catalogue*: it will show catalogue of the product in this storefront. It allows only members to buy the product in the storefront. Members can place an order and make a payment using credit cards.

- *News*: all news and events since establishing the company will be concluded in the page. It will show only the last event in the news page. For the history of news and events, members can select the month and year from drop down list to see the previous news.

- *Tracking system*: this facility will make members track their record about down-line and check their monthly commission by filling in member ID and password.

- *New Member Registration*: this page gives the interested people an opportunity to join this business. Terms and conditions for joining this business is provided before users submit application form to the company.

In addition, in the first page of the web site, it may contain the short-cut links to sub page in the web site, for example, link to the categories of the product, link to shopping cart, link to log in page, which located in the online catalogue page before adding desired products to the shopping cart, and link to purchase to fill-in their credit card number or delivery address.

In "about us", Figure 4.2 shows the number of links to sub-page in the about us icon. The fist link in this page is history of the company. This page will show the mission and objective of the company including the management working in the company. The next information is contact address both head-office and branch-office including map of the company.
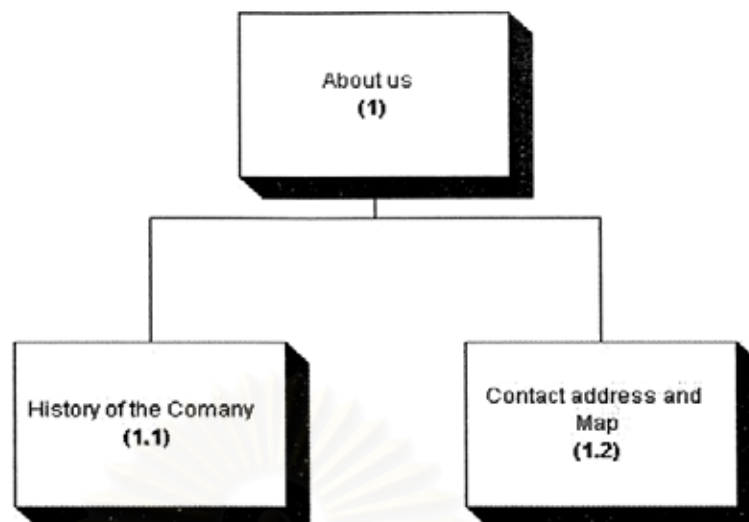
Figure 4.2 About us page in the model of web site

FAQ page in Figure 4.3 is one of important information to help members to do this business. Besides, the feature will benefit both the company and its members because it may reduce the calls that asking the same question from members and interested people who want to join this business. The popular questions and answers will be posted and categorized in the suitable categories.

As for the conclusion from the management, they agree to have this feature in the web site. The diagram of FAQ page is shown in Figure 4.3.
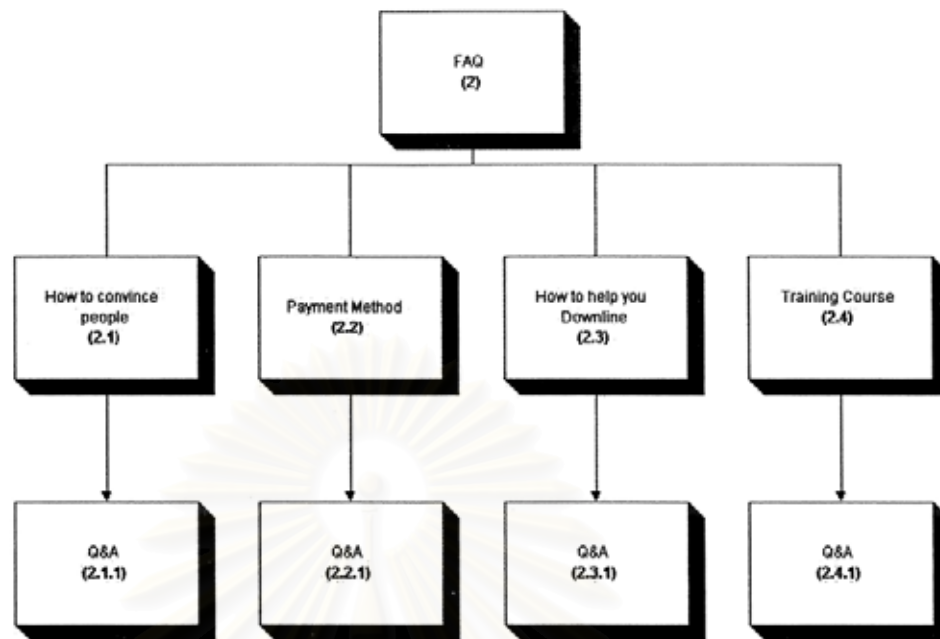
Figure 4.3 FAQ page in the model of the web site

The workflow of online catalogue as shown in Figure 4.4, is concerned with the software that we use, Microsoft Site Server, as an idea of development. Before using this service, the members have to fill-in the member ID as a user name and password.

This user name and password will be used when members want to add the product to shopping cart only. This flow-chart shows only one category because the process flows of the others are the same. Typically, users can see all products in the web site without logging into the system.
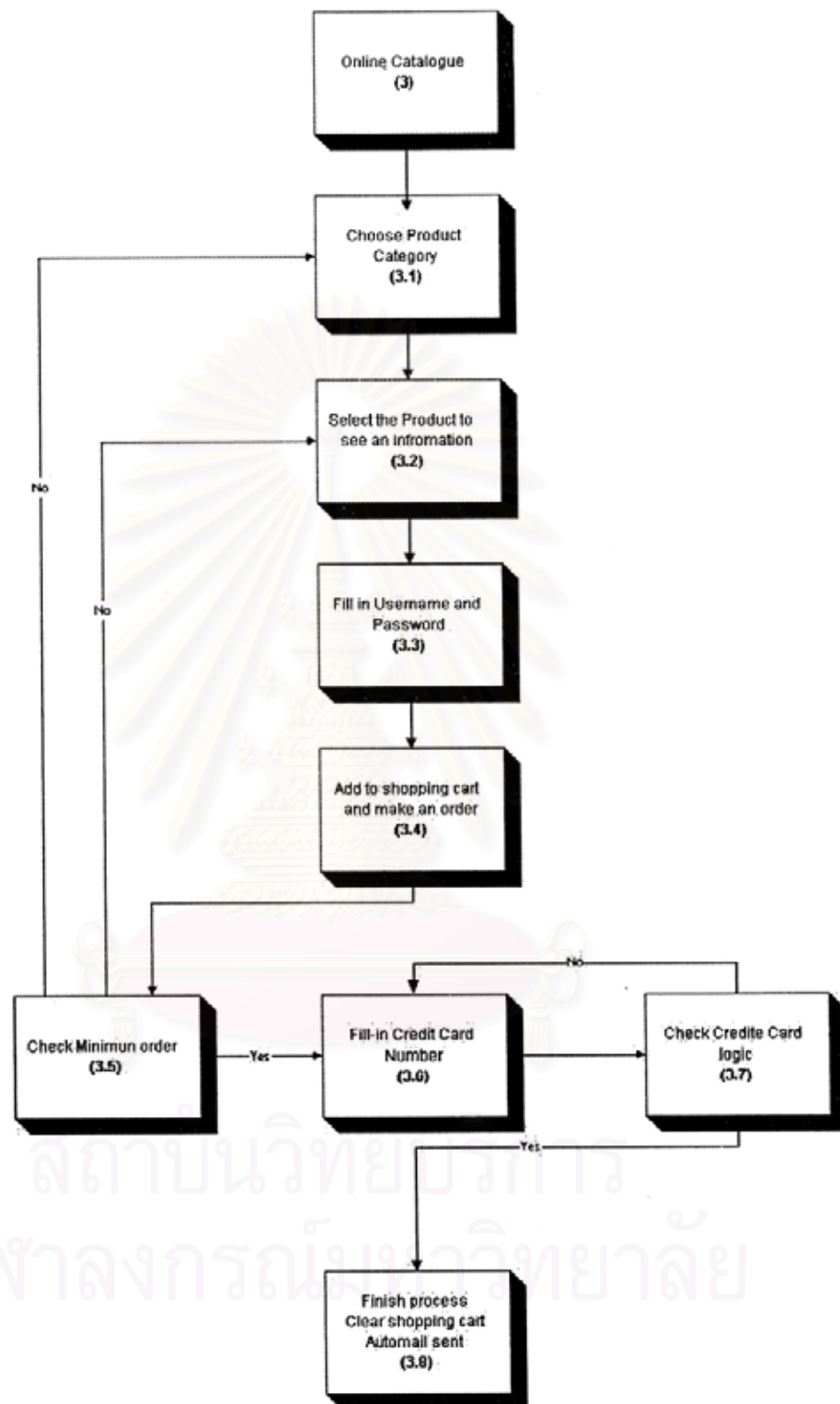
Figure 4.4 Online catalogue and ordering step in the model of web site

One limitation of online shipping concept is to handle the lowest cost of each transaction, which is not worth it when the company will have a shipping cost to send that product. Therefore, we have to develop the electronic shopping cart or basket, which can control the minimum price or minimum volume.

After passing the minimum volume-checking step, users have to fill in their credit card numbers. This page will be a secured page. After the credit card number is approved, an auto-mail will be sent to users in order to confirm their order in this step.

The next feature is the tracking system. Both commission and down-line stream allow member to check their records. The feature is real-time checking. Figure 4.5 shows the procedure of this feature. The first step is to fill-in their member ID. Then, they choose a feature they want, either commission or down-line.
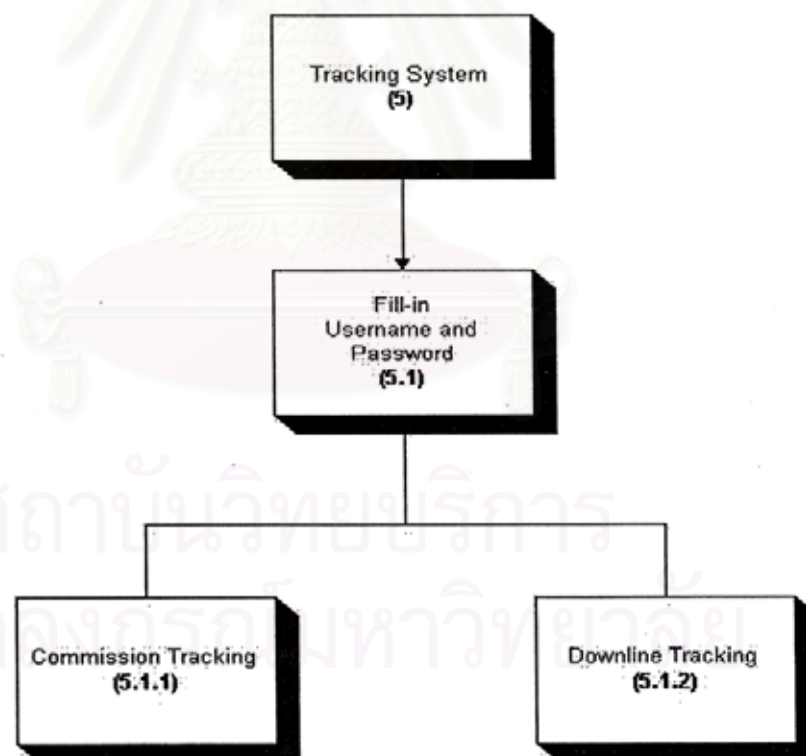
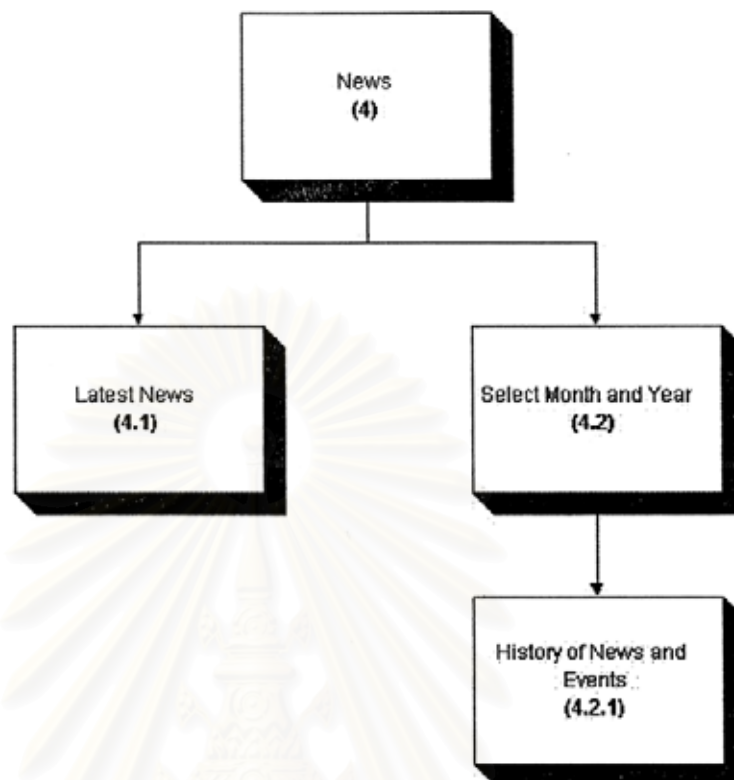**Figure 4.5** Tracking system page in the model of web site

Figure 4.6 News page in the model of the web site

Figure 4.6 shows the workflow of links in the news page. When the user clicks at the news icon at the home page, the latest news will be shown in the first screen. If the user wants to see the history of news and events, he/she can select by the dropdown list both the month and the year to go to the events and news of the month. The dropdown list will be shown in the news page as well.

The last feature of this Web site is new member registration. This feature allows users to apply to join this business. The members of the company using the Internet can invite friends to join this business to be their down-line.
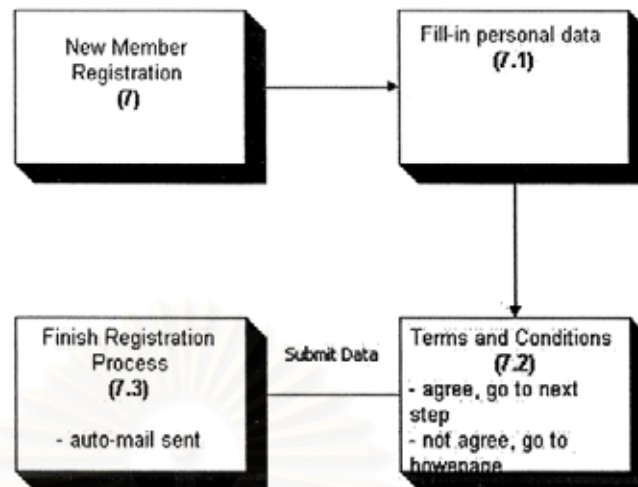
Figure 4.7 New member registration page in the model of web site

The above flow-chart, Figure 4.7, starts from filling in the personnel data especially email address and sponsor ID. After finishing, terms and conditions will be shown before the final step. If the user click "agree" button, the data will be submit to the company, if not, it will be returned to the home page and the data will not be sent to the company.

4.2 The main concept for the model of back office

Any requirement to develop back office system is a core and important to the Web site because it is the way that we can save time and money to manage the site in the long-term. The requirement should be concluded with seriously consideration giving to the internal requirement from involved staff and management, not the requirement from member or customer.

All features in the back-office system were agreed upon by the management and development team, which emphasises the privacy and security of the database. The requirements are as follows:

- Authentication page before entering the site manager
- Product updating page for all products in each category including up-loading products' picture. This page should be designed to serve the function such as adding, deleting and editing all descriptions of product to the site.
- Promotion administration page for the product of the week, the result of updating will be shown on the catalogue.
- Order tracking to see the transaction occurring in weekly and monthly

As for the workflow of the back office, however, it is limited by the software package that we plan to use. However, the main features of the back-office that the management and involved staff agree and want to have are shown in Figure 4.8.
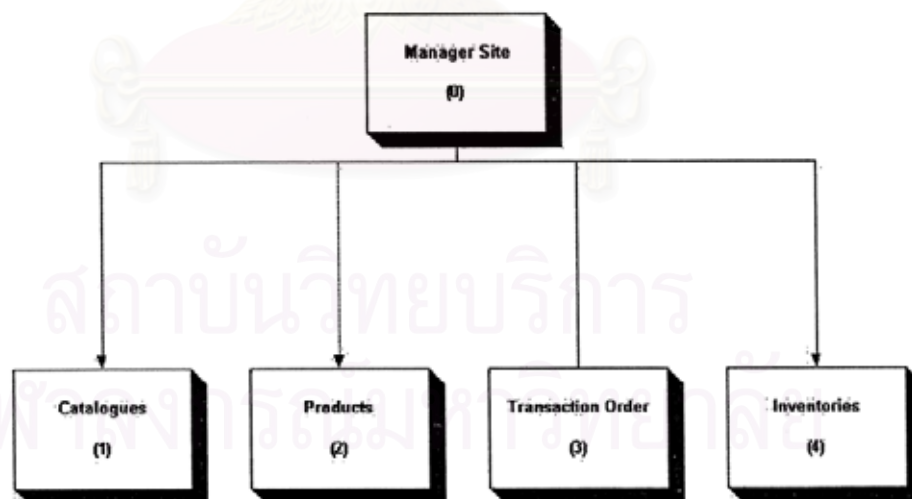

Figure 4.8 Site manager in the model of back office
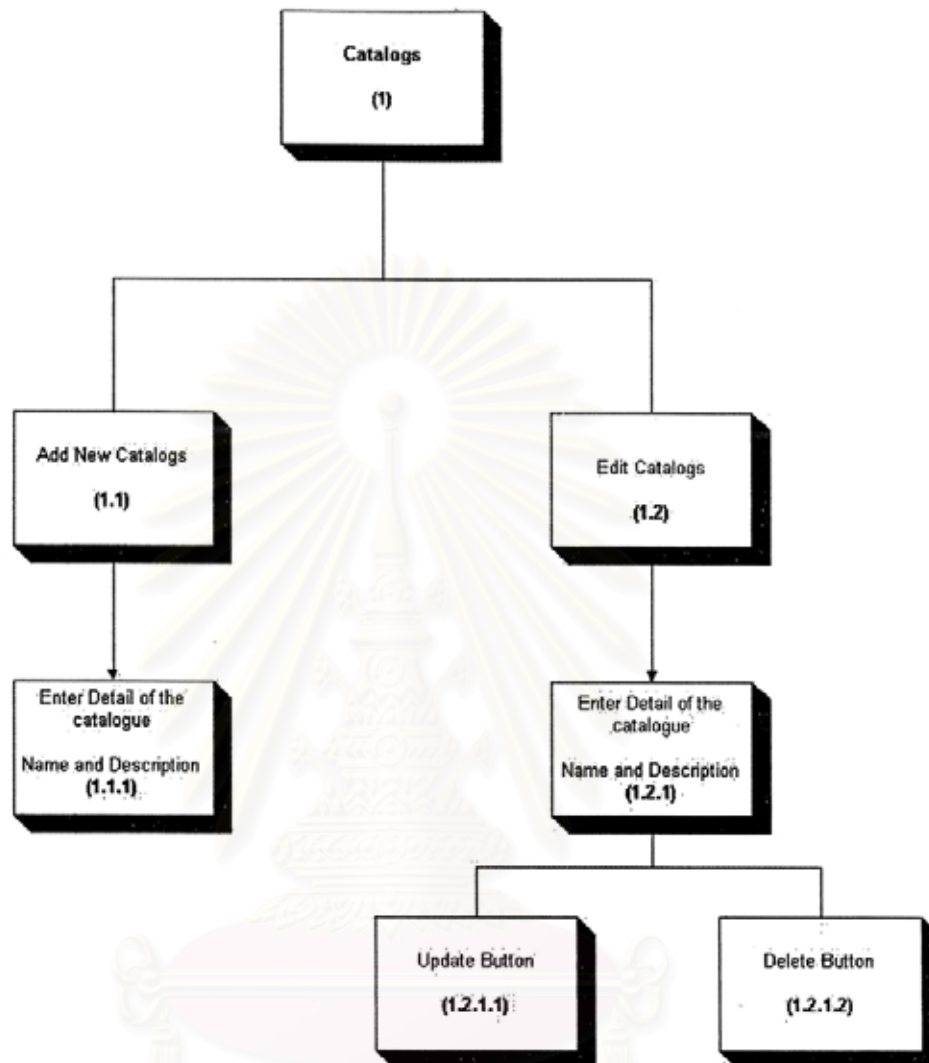
Figure 4.9 Catalogue manager in the model of back office

The first page of the catalogue manager will show the list of catalogue names that the company has in the web site. Site manager can add new product catalogue by clicking at the add button and filling in the name and details of each catalogue.

This page allows the site manager to edit and delete the list of catalogue. Site manager can change the details of the catalogue after clicking at the edit

button. After finishing editing detail, site manager will click at update button to submit the updated information.
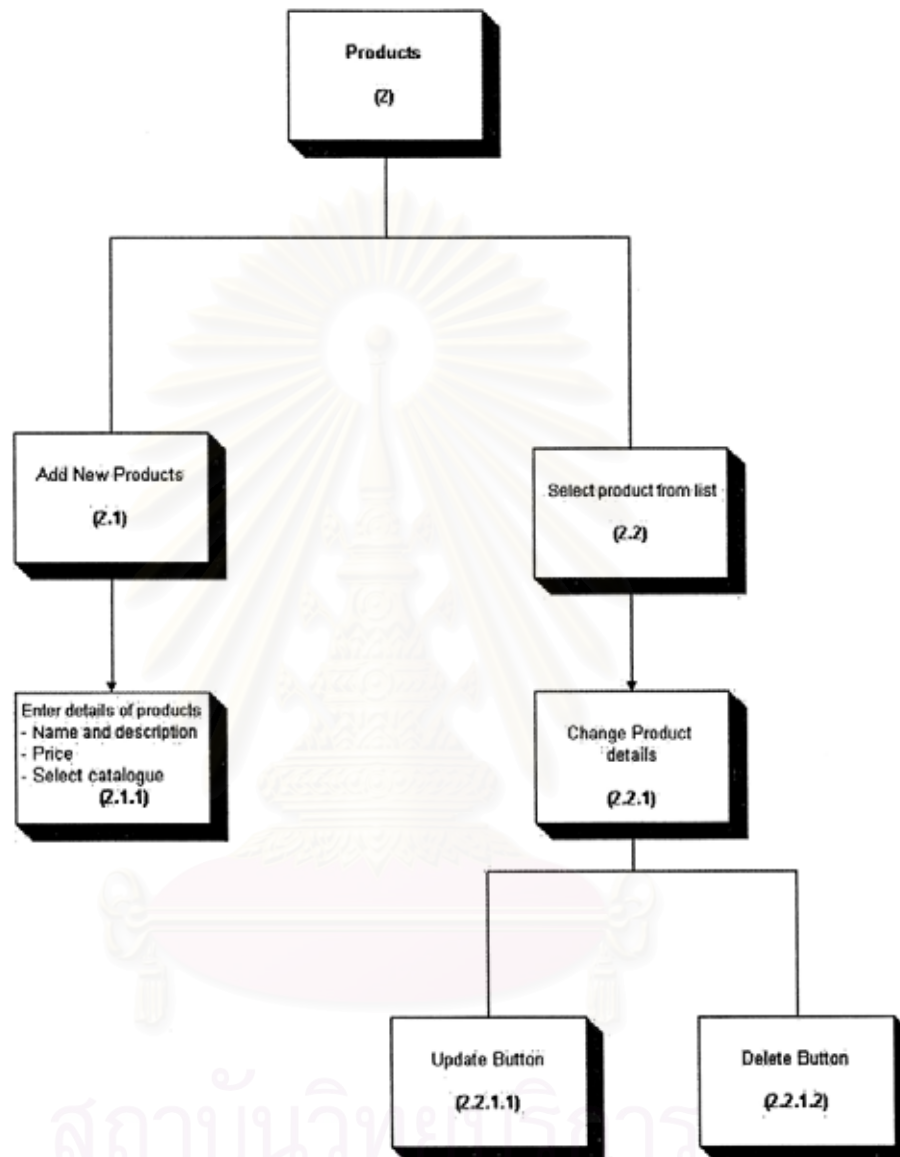
Figure 4.10 Product manager in the model of back office

The functions of this page are similar to the catalogue manager page. The new product can be added to the web site and the information of each product can be changed by clicking at the edit button. Besides, the site manager can delete the product item from the list of product as well.

Figure 4.11 Transaction manager in the model of back office

The transaction order page in Figure 4.11 shows the order list of the sold product by tracking by all list, monthly order and yearly order. It depends on the site

manager how he wants to know or to make the statistic report. The result of this page will show the product ID, date of order and total amount in that time.

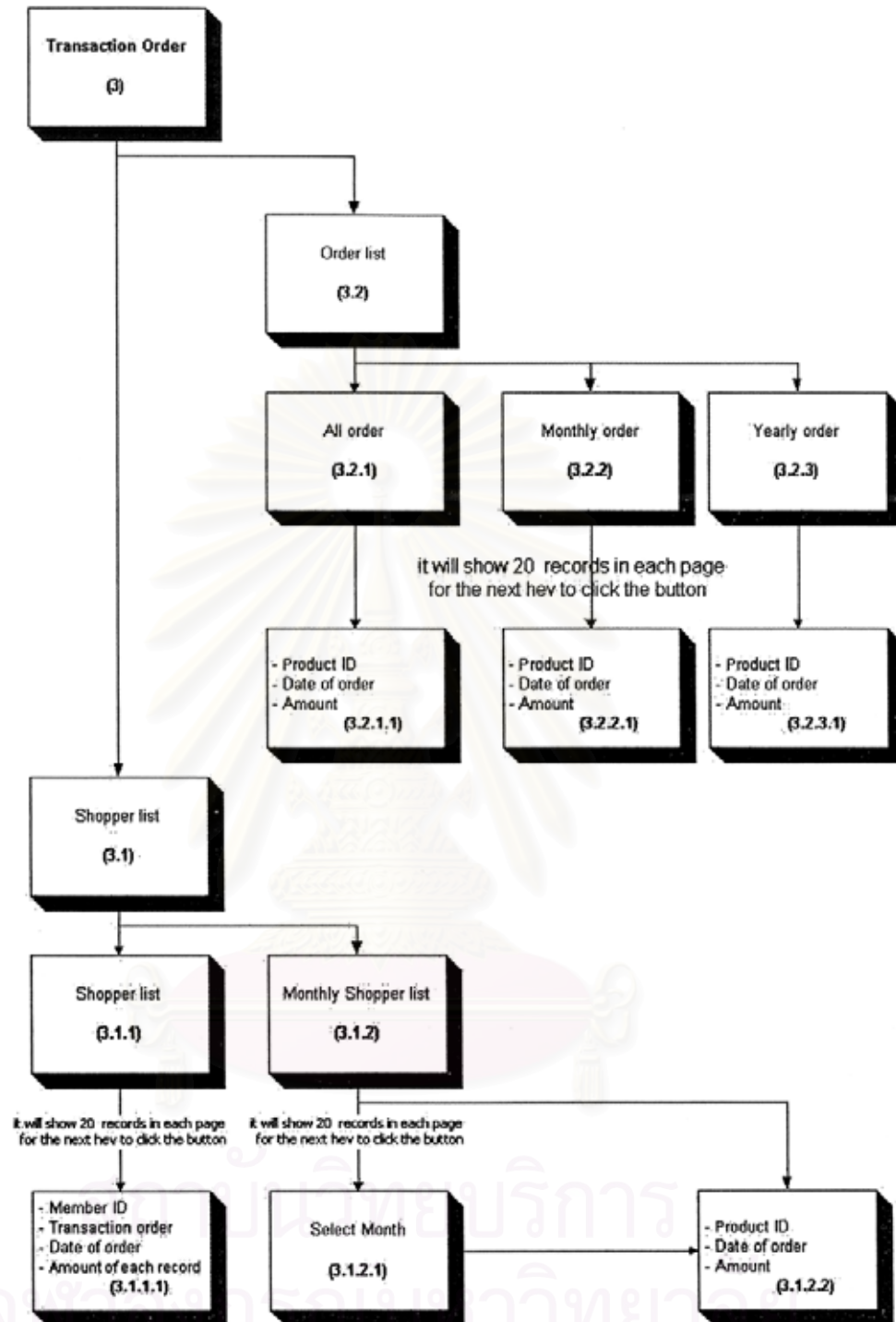Furthermore, site manager can track the shoppers who visit the site by all shoppers and new shoppers in monthly and yearly. An expected outcome on this page is the list of shoppers, details of shoppers such as ID, name, detail of their order and amount of each record.

The last feature of the back office system that the company needs to have is an inventory status checking. The feature is for internal use of the company.

The inventory map in the figure below will show the diagram of checking the status of inventory. Because the inventory is in-house operation, it is only for the persons who are involved with the inventory such as stock manger and management of the company that can access this page. Therefore, authentication for accessing is required.

After passing the authentication step, the list of products in an inventory will be shown, adding or editing the details of can be done by choosing the button on this page. The detail of selected function will be shown on the next page in the web site. After filling in or editing information in this form, the information will be sent to the database after clicking at the submit button.
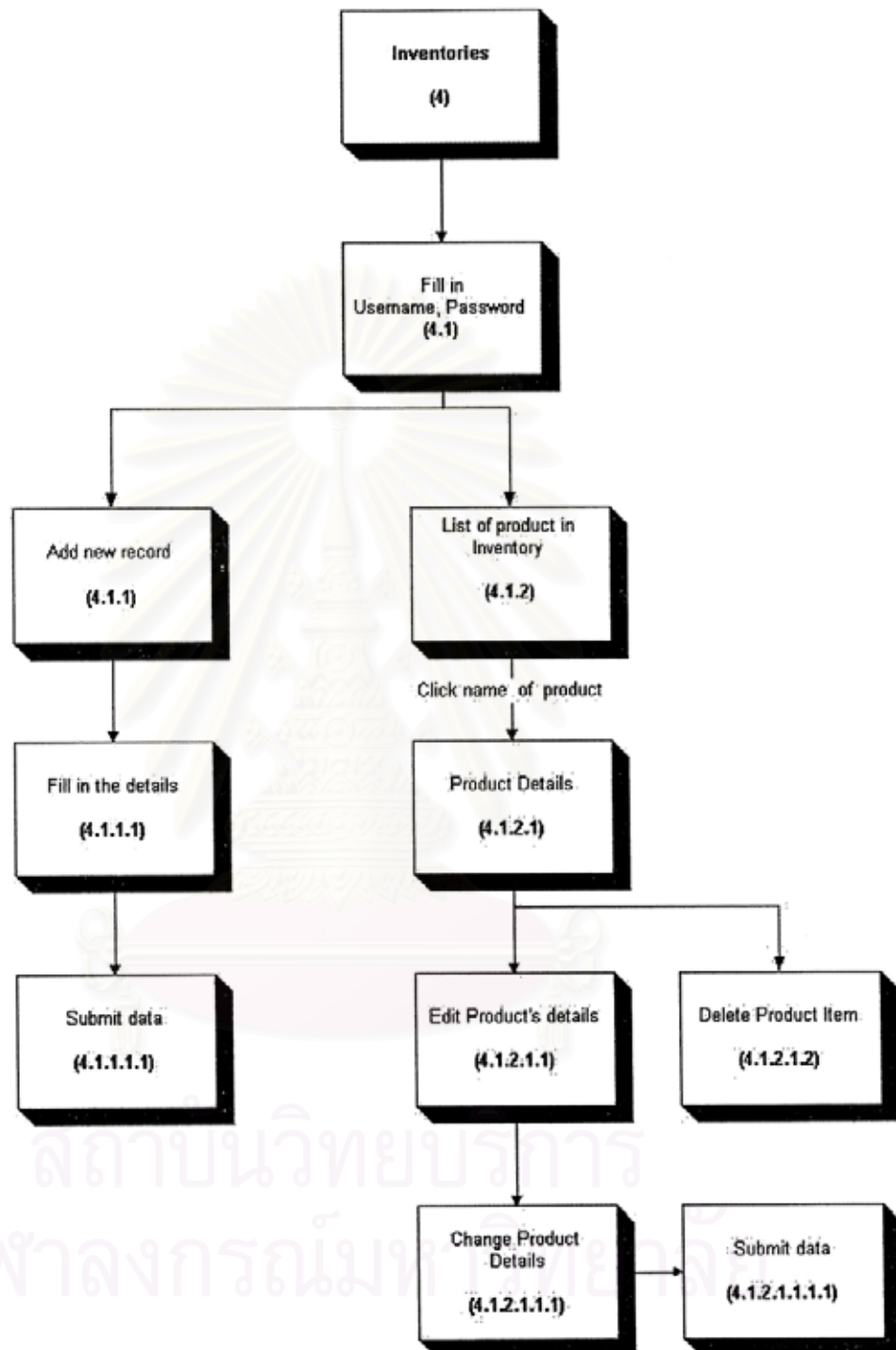
Figure 4.12 Inventory manager in the model of back office

4.3 The concept for database design

To ensure the security of confidential data on the database server, the concept used for updating the database is to duplicate only the necessary data field or table that will not effect other parts of the database. The primary key of the designed table is the main consideration item to design the database. The primary key for both the table to be updated and the existing table should be the same. If not, a new primary key must be created in a new table of database. The primary key for a table is what makes each individual record within the table unique. The primary key is usually a column that uniquely identifies the record. The primary key can be one column, or it can be all the columns with in the table (Hobbs, 1997)

The data that is updated on the web site should be specified by the management and IT staff as to which can be public information. This is to be used in case of security failure. For example of items that can be public information are the field of quantity of each product and the table of members' down-line.

Using the Transaction-SQL script (TSQL) to specify the source and destination for transferring the data can be set in the MS SQL program. The condition such as mathematical logic can be created though this script as well. (Wayline, 1999)

4.4 Internet merchant server consideration

From survey, there are 2 software packages that are available in Thailand, Net.Commerce (Websphere) from IBM and Microsoft Site Server. Both of them already have the intelligent back office systems that have just arrived in the Thailand software market.

Net.Commerce (Websphere), the major features of this software are customer shopping-carts supporting for user names and passwords, and

categorization into various buying groups. These buying groups may be organized by age geographical location, or purchasing profile. This feature is for facilitating targeting product promotions to appropriate users to enhance future marketing.

Net.Commerce can run on Windows NT, Netscape Enterprise Server, Sun Solaris and IBM AS/400, OS/390 and AIX platform, In IBM environment, it works with the Database 2 (DB2) package and IBM's Internet Connection Server. Net.Commerce also supports the SET and SSL protocol or credit card transactions for security and link to EDI via IBM's Global Network EDI capacity.

However, Net.Commerce requires experts for setup and configuring the database for the merchant. The programming language for IBM is a unique language (Net.Data). Besides, the total price of this software is too expensive.

Commerce Server from Microsoft is the commerce server package, which is contained in the Microsoft Site Server. Site Server includes the tools required to build, implement and manage an electronic commerce system. Although it operates only on Windows NT, that limits its variety to merge with other software, it can support an additional design characteristics in the NT platform.

Site server can interface to multiple database because it supports the open database connectivity (ODBC) protocol. Site Server provides many of feature found in Net.Commerce such as shopping carts, usernames and passwords, support for SSL-3 and SET, template and wizards, and the ability to operate multiple stores on the same platform.

For MS Site Server, the software requires a programmer who understands well about MS SQL database and Active Server Page to create the storefront.

After considering both software specification, the development team and management decided to use Microsoft Site Server because of its features contained and its price. The feature of Site server is slightly different from IBM.

From our requirement for back-office, Site server has enough features to support the operation requirement for manage back office in the company. Besides, the programming language of Site Server, which uses Active Server Page (ASP) is widely used in developing the web site. Therefore, the development team can easily create additional features or develop new features that are compatible with this software. That means the company can save cost and time of development.

After the requirements both for the web site and for the back-office are set. The final step of creating the concept of the Web site is to brief the above requirement and all information including the nature of the company to webmaster and software development team to create the web site and the catalogue.

4.5 Payment gateway consideration

Payment gateway is one of the important parts of building electronic commerce web site because it is the way that the company can get the money from the users when they purchase the products. This gateway is strongly concerned with the security of the transaction when users make an order.

At present, banks in Thailand already provide payment gateway, which is directly connect to Web site without using this service through ISP in the case that the catalogue is developed without using the software package. Each transaction will be charged as a transaction fee. The rate of charging normally averages at 5% per transaction.

4.6 Hardware and related software selection

The equipment such as web server, database server and router will be the next issue to consider. There are few famous brands that are available on the market. Also, reliability and after sale service are important consideration items that we have to emphasise when making the decision to purchase.

The management agrees to move database server from branch office to be Web server that can support the number of users that we survey and forecasted in the first phase. For the database server, we still use the existing server that is enough for support the transaction occurring in the future.

As for network equipment, the router, the consideration issues regarding selecting the router are the speed of CPU, the number of memory in the router, configuration software (NAS software, concerning with the number of Internal IP address that can be mapped to real IP), and the number of WAN port, LAN port and others such as VPN support, ISDN support card. The last issue, which is very important, is price.

4.7 Network configuration for the company

At present, the company has a branch at a well-known shopping mall. Only inventory database will be daily synchronised and updated via modems after office hour. In the head office, the Local Area Network is implemented for sharing the data. The internal user cannot access the Internet via this network. They have to use a modem to connect the ISP to the Internet. The old network configuration is shown in Figure 4.13.

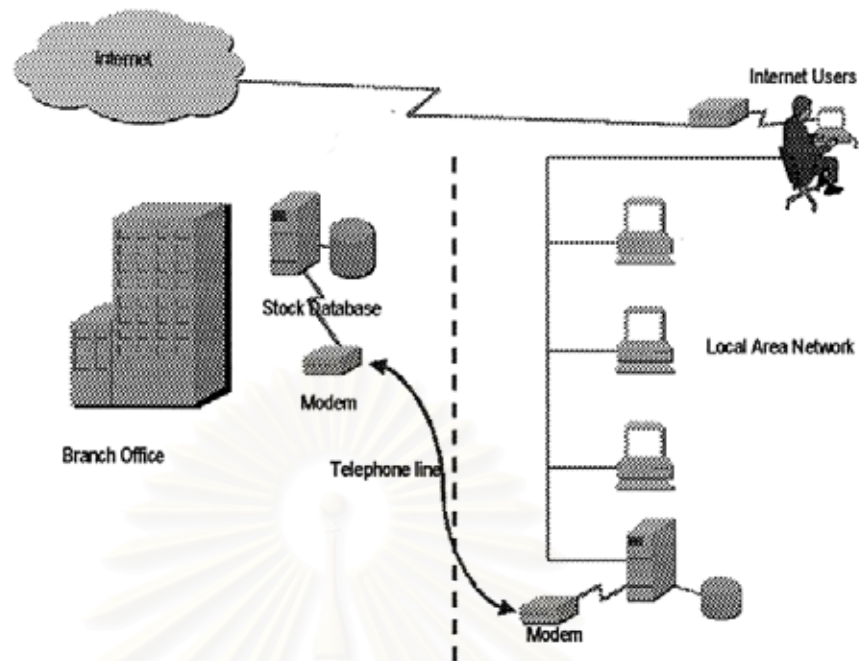**Figure 4.13** Existing network configuration of the company

For the new network configuration that we plan to have for full-feature implementation, the database server at the branch office will be moved to head office to be the web server. The specification of database server is Pentium II 400 MHz, 128 MBRAM, HDD 9GB is expected to be enough to support the transaction occurring through the web site.
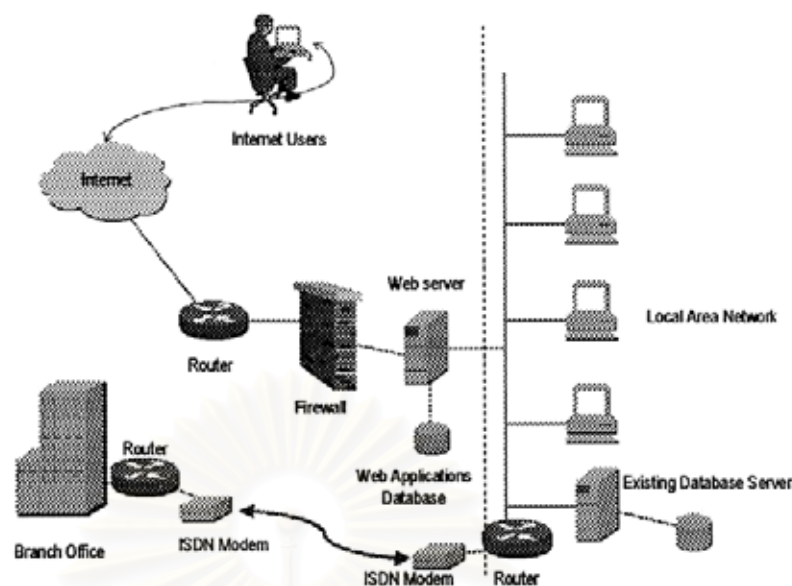
Figure 4.14 New network configuration of the company

Figure 4.14, the equipment, router, and ISDN modem and firewall hardware at the head office are new additional equipment for new network configuration. A new network configuration is designed for security purposes and easy to manage the system.

The web server in a new network configuration is located behind the firewall to prevent anyone from accessing the database without the proper permission. The firewall is configured for distributing an internal IP address for computer both at head office and at branch office.

The router behind the firewall is used for connecting branch office and head office. The objective of locating this router behind the firewall is to make the computers at the branch office in the same internal network as at the head office.

Therefore, the data that staff at the branch office request to check or want to update will be updated to the database at the office via the internal network as if the staff is at the head office. It means that the reliability and accuracy of the data will be in real-time.

If we use the router that is located in front of the firewall to connect to the branch office, the computers at the branch will not use the same LAN as computers at the head office. That means the staff at the branch office cannot access the database server at the head office.

Between head office and branch office, an ISDN line is used for permanently connect to transfer data and to run the web-base application instead of using modem via analogue landline telephone. The reason for using ISDN line is because its pricing is lowest of transmission media.

For firewall applications, there is many firewall software available on the market such as Secure Computing Corporation's Borderware, Firewall-1, or Raptor System Eagle. These types of firewalls are differentiated by the operating systems, protocols and types of packet filtering. The firewall software is more expensive than the new firewall products that merge both hardware and software together such as Cisco Secure PIX Firewall and Sonic Wall.

These types of firewall are ten times cheaper than the firewall software. As for the features that the supplier gives product catalogue to the company, they are quite similar to the firewall software.

Apart from pricing, the advantages of this new firewall hardware are that unlike the firewall software new firewall hardware does not require server to install. Therefore, we will save the cost of servers for this application. Besides, the firewall hardware looks like a router. Installing and setting of the firewall hardware is easier than firewall software.

Therefore, the firewall hardware is the first choice when the firewall is needed in the company. Especially for "Sonic Wall", because it has a same features as "Cisco Secure PIX" firewall at a lower price. Besides, one of top three ISPs in Thailand uses them. It means that the reliability of this product is acceptable.

Therefore, before making decision to select the firewall, system requirement and features of the product are the major issues to consider and its price is a minor issue to consider. However, the price of the firewall will vary with the features they have.

4.8 The suitable Internet solution

In each ISP, they have many alternatives for customer to select the suitable solution of Internet network both disk spaces for hosting web site and Internet access. The suitable Internet solution for this business in terms of web site hosting, based on survey of ISPs in Thailand, is either [1] using web site hosting service or [2] having corporate Internet access service. The corporate Internet access service should emphasise domestic connection.

The MLM business is also like network marketing. The number of members will rapidly. That means Internet server and database have to sufficiently support this requirement in terms of performance of the server and incoming and outgoing traffic.

The first alternative, web hosting service, is to provide secured and environmental controlled center for the server, which is placed in the ISP Company. Besides, this service allows the company to get the highest Internet bandwidth that ISP has. The advantages of this service can be summarised as follows:

- High speed connectivity provided
- 24 hour network connection monitoring same as ISP
- Secured and environmental controlled center provided
- Uninterrupted power supply

On the other hand, there are some disadvantages for this solution. Because the server for both Web site is placed at the ISP, not the case company,

Internet access to ISP for Webmaster and system administrator is required when checking the mail or updating the web site. Moreover, most ISPs in Thailand do not allow user to set mail server in this type of service. Therefore, the cost of Internet access will increase in case of connecting to the Internet to ISP for checking mail and updating the Web site many times a day.

The second alternative Internet solution is to have a permanent Internet Access, leased line service. This service provides 24 hrs a day Internet connection. We can frequently access the Internet more than using the dial-up type of connection. Moreover, we can generate unlimited email address for staff and members in the next step of development. It also allows us to have our own Internet server for unlimited homepage hosting disk space for developing and expanding the Web site in the future.

The suitable type of Internet access service for the Web site is leased line service that does not emphasis on International bandwidth because the target group of the web site is Thai people. From pricing survey of the well-known ISPs in Thailand, the price of leased line service depends on an international bandwidth. It means that the Web site will get the lower price than other alternatives. Price comparison of leased line service from 3 ISPs in Thailand will be shown in the table below:

Table 4.1 Internet access price comparison (survey at March 2000)

Speed	Internet Thailand*	LoxInfo**	KSC***
64k	-	18,000 Baht	35,000
128k	29,000	35,000 Baht	62,000
256k	45,000	45,000 Baht	113,000

*   Full domestic bandwidth, no international link

**   Ratio of domestic bandwidth : international bandwidth = 4:1

***   Ratio of domestic bandwidth : international bandwidth = 2:1

After comparing type of each service, hosting server and Internet leased line service; the decision was made that is based on both investments cost and maintenance cost. The suitable network solution is the service that provides

domestic Internet connection because the objective of the web site is to target on the members who stay in Thailand. Therefore, it is not necessary and too expensive to have a large international.

The services such as web site hosting service and large international bandwidth leased line Internet access services are suitable for the web site that targets foreign users outside Thailand. Both services are not necessary for the site that targets to people in Thailand.

The traffic, both requesting and downloading an information from the site is from domestic users. The suitable domestic bandwidth is 128 KBPS, which allows approximately 30 concurrent users to request and downloading information at the desired downloading speed from the web site.

The criteria of desired downloading speed for users who use the Internet are survey and research from Loxley Information Services Company Limited, a leader of Internet Service Provider in Thailand, in December 1999. The data show that the desired speed that most users satisfy is approximately 3:5-4.0 kilobyte per second. However, downloading speed also depends on the specification of Internet servers and routers.

In general, most users will choose the ISP by considering price of services and the amount of Internet links such as domestic and international bandwidth. From the figure of Internet connectivity map in Chapter 2, it shows that both links to international and domestic link of Internet Thailand is the biggest. For this MLM business that we focus on domestic users, we, therefore, consider only domestic link.

The biggest domestic link is Internet Thailand, with 100Mbps to IIR and 512 KBPS to NIX. Domestic Links of KSC, LoxInfo and CS-Com are 16 MBPS [8+8], 10 MBPS [8+2] and 12 MBPS [10+2] respectively. Mostly, ISP has domestic link to both IIR and NIX. However, their emphasis is on the link to IIR because it is a

community of Thai web sites. However, after discussing with network engineers from LoxInfo, the purpose of domestic link to NIX is to be back up line in case of IIR down.

Therefore, the consideration issues to select the service among ISPs, Internet Thailand, LoxInfo, and KSC will focus on the price, reliability, and after sale services. However, it cannot be measured which ISP is better in reliability and after sale service, except by asking and talking to people who use the service from that ISP as a report from the research company (WWW research Singapore 1999).

Thus, the suitable Internet access service that will be used to implement the project is service from LoxInfo. The reason for selecting this ISP is the price. It is a reasonable price for share international bandwidth leased line that company can afford comparing with domestic only leased line service from Internet Thailand. If we choose the service form Internet Thailand, we cannot contact some of members using web-based mail hosted outsides of Thailand such as Hotmail.com or Yahoo.com.

For transmission media, at present, there are many types of transmission media available in the Thailand such as typical digital leased line, ADSL (Asymmetric Digital Subscriber Line), and ISDN (Integrated Services Digital Network). Each type of media is different to each other regarding pricing, service area, and network modem using for each type of media.

The cheapest medium is ISDN. The most expensive medium is typical leased line because it is available in every area that landline telephone reached. The details of transmission media are in the appendix.

The consideration issues above are major issues in selecting the suitable type of network that the management has to be concerned with in terms of investment cost and maintenance the system after implementation.

In conclusion, these issues for consideration are as follows:

- Internet Access to the company – it is concerned with the objective of using the Internet service and price of the service. The more an international bandwidth, the higher price of service.
- Transmission media, it is concerned with only price of service and lead-time of installation.

Chapter 5
Development Outcome

The objective of the development outcome is the model of web site and back office including inventory status checking. The model will be a guideline for further development.

5.1 The model of web site and the storefront

The model of e-commerce system for multi-level marketing business is created under the requirement and configuration as mention above. The model of the storefront is developed by using the commercial merchant software Microsoft Site Server version 3.0.

This software package is now available in Thailand. This software is used in one of the ISPs that provides their customer to create the shopping mall on the net. The price of this software is approximately 5,600 US$ or about 220,000 baht. It includes software that has to be used when installing MS Site Server such as MS Internet Information Server and The Option pack.

The reason that the model of the storefront is created by this software package is as follows:

- The storefront and its back office that is created by MS Site Server use the same programming language based, ASP, as the program that the company plans to develop.
- This software will show the management of the company an idea of the features of both storefront and back office that is a guideline to self-development.
- This software can be downloaded the trial version from Microsoft Web site (http://www.microsoft.com)

- It is compatible with the existing infrastructure in the company (Microsoft-based software).

- The database application software using both in the MS site server and in the existing database of the company is compatible (MS SQL version 6.5).

Due to the fast changing nature of Internet Technology and its applications, time of development is critical and it is very important to create the new idea of doing business that involve the technology. Therefore, a key to consider is the software that is easy to use and develop new application.

The outcome of development will show only the main pages and main features of the web site.

The web site will start from the home page. Figure 5.1 shows the developed web site with menus that are designed for easy navigating. The menu bar consists of the shortcut to news, weekly special, online catalogue login, tracking system, purchase and search. The left menu that shows the highlight the type of catalogue that most of members want to buy.

Both menus will be shown in every page when users go inside the web site. For this reason, users can go to other pages easily because of the navigation menu.

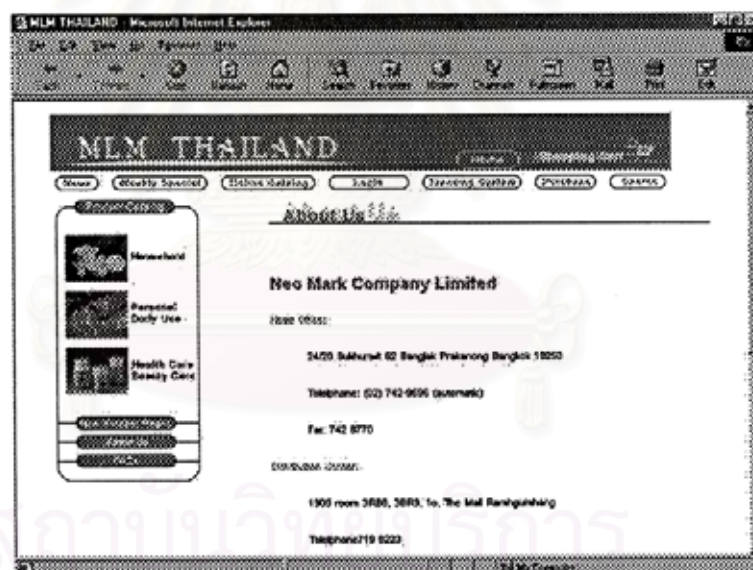**Figure 5.1** Main page in the web site

Figure 5.2 About us page in the web site

About us page in Figure 5.2 shows an information of the company such as address telephone number and other contact information including map of the company. All information should be one page.
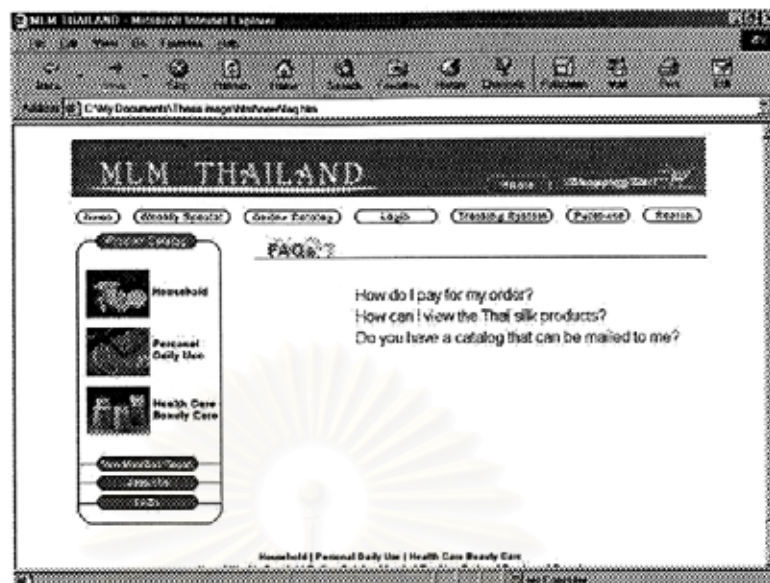
Figure 5.3 FAQ page in the web site

For the FAQ and news page in Figure 5.3, it looks like the same information for the users. The figure below shows the format of both pages. The differentiation of both is the information inside.

Figure 5.4 Online catalogue in the web site

Figure 5.4 shows the first page of the online catalogue will show the name of the catalogue and list of products in the catalogue users logging in.

The details of each product will show when user clicks at the name of each product. The details of the product will show in Figure 5.5.

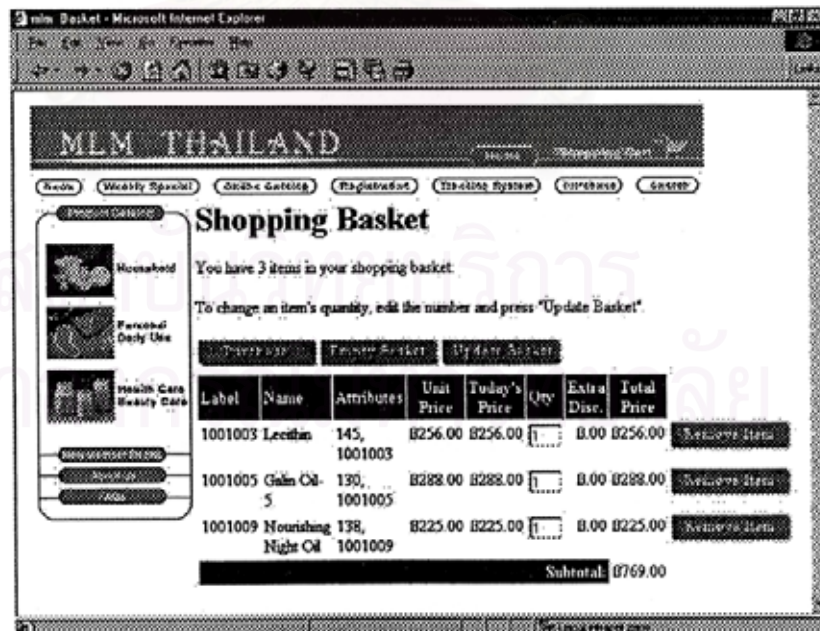**Figure 5.5** Product details in the web site

Figure 5.6 Shopping cart in the web site

In case of user orders the product by click at "add to basket" button showing in the category in the previous figure. The software will add that product to the shopping cart (Figure 5.6). The limitation of capacity of the shopping cart is not over 100 items of product.

The price of the products that the user purchases in the shopping cart will be calculated automatically. The user can remove and empty the product in this cart, as they want.

Besides, the user is able to go back and forth in any designed page as much as they want and even log out. The products are still kept until purchasing is made.

Figure 5.7 Shipping address in the web site

Figure 5.7 shows the shipping address page that will show after user purchase the products in the shopping cart. To confirm and go to the next process, users have to click at the total button.

The next step is the final stop of purchasing the product. The confirmation page shows the total price that the user has to pay. To confirm an order, user have

to fill in an information such as credit card information, and billing address as shown in Figure 5.8.

Figure 5.8: Final purchase approval in the web site

Figure 5.9 shows the tracking system page for tracking the personal record of each member. Before entering this, username and password are required. This system will get information from the existing database in real-time after full-scale implementation.

Figure 5.9 Tracking system in the web site
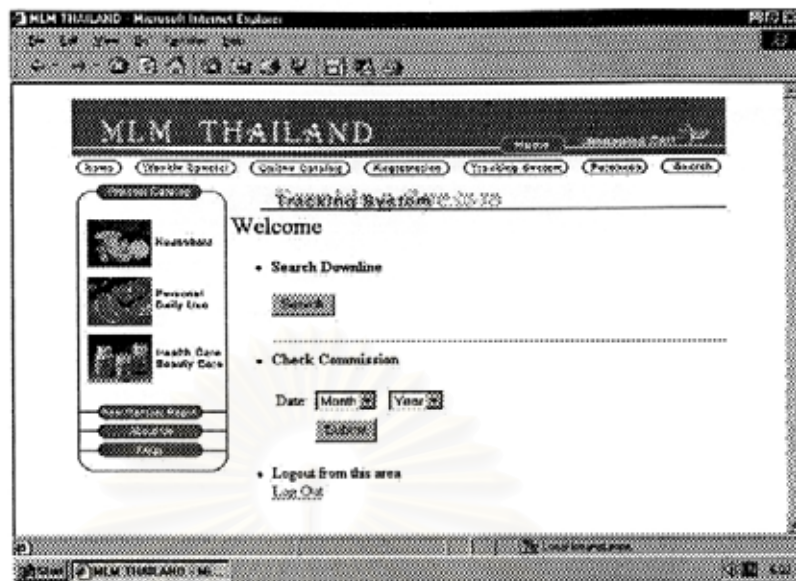
Figure 5.10: Selecting tracking features page in the web site
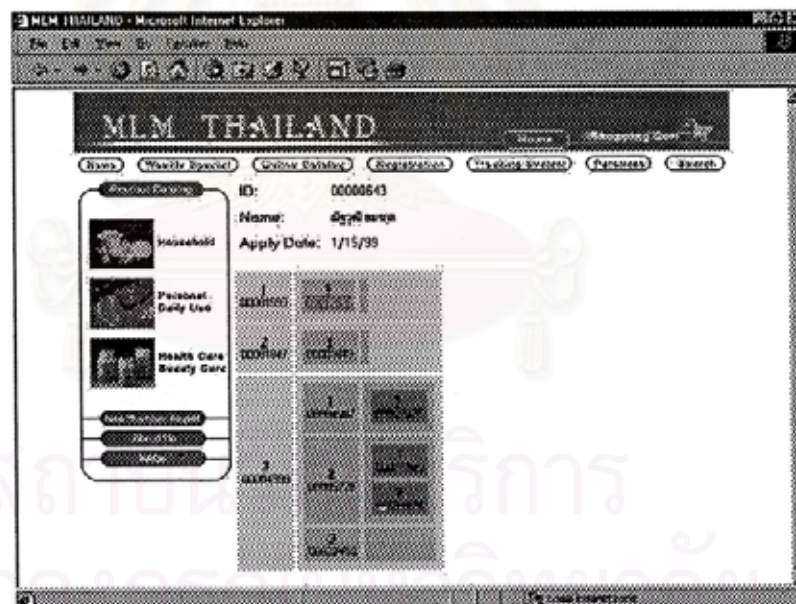
Figure 5.11: Down-line record in the web site

Figure 5.11 shows the down-line record of the member. This page will show personal information of the member and the network of each member. In the figure, the first network level, from left to right, is a main group, the second, third and onwards are members of the main group and supported group of the onwards

network level. Figure 5.12 is the result of commission tracking service. It shows the bonus and net commission in each month of the member.

Figure 5.12 Commission and bonus record page in the web site
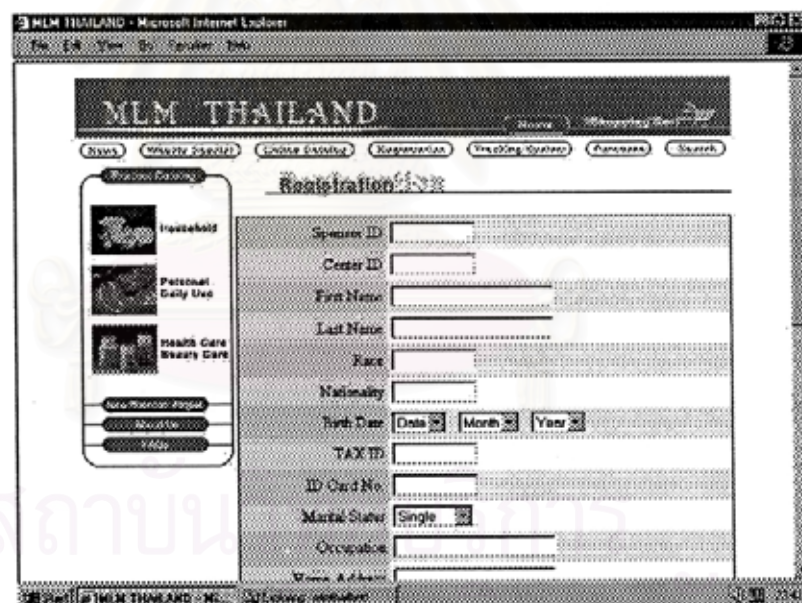
Figure 5.13 New member registration page in the web site

This new member registration page as shown in Figure 5.13 is provided for the new user who wants to join the company. It provides general information that the user has to fill out. All the information will be sent to the company after submitting the form.

5.2 The model of the back office system
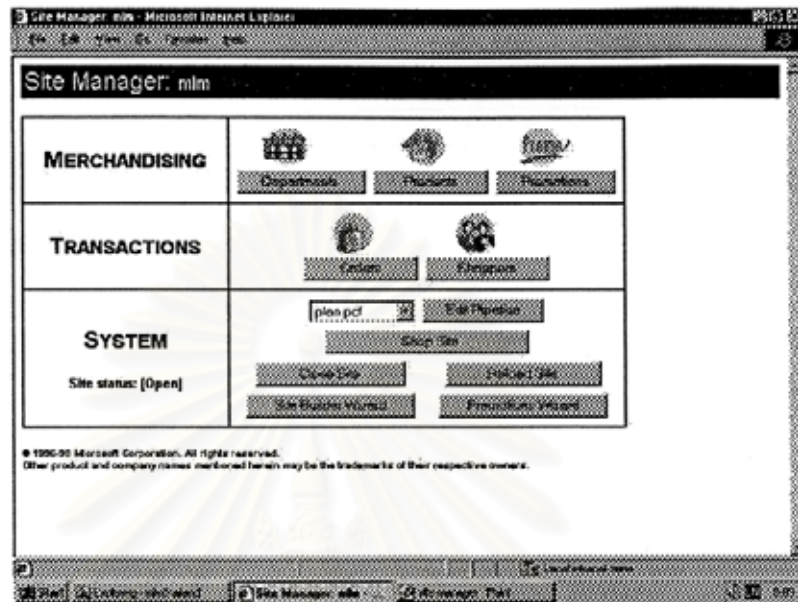
Figure 5.14: Site manager in the back office

Figure 5.14 shows the features inside the back office. This back-office is automatic generate from MS Site Server. The main functions are merchandising section, transactions tracking section and system section (site wizard).

For maintain the storefront, only the first two features are used namely, merchandise and transactions. In merchandise section, there are 3 necessary features, which are department manager, product manager and promotion manager. Each function in each section will be described as follows:
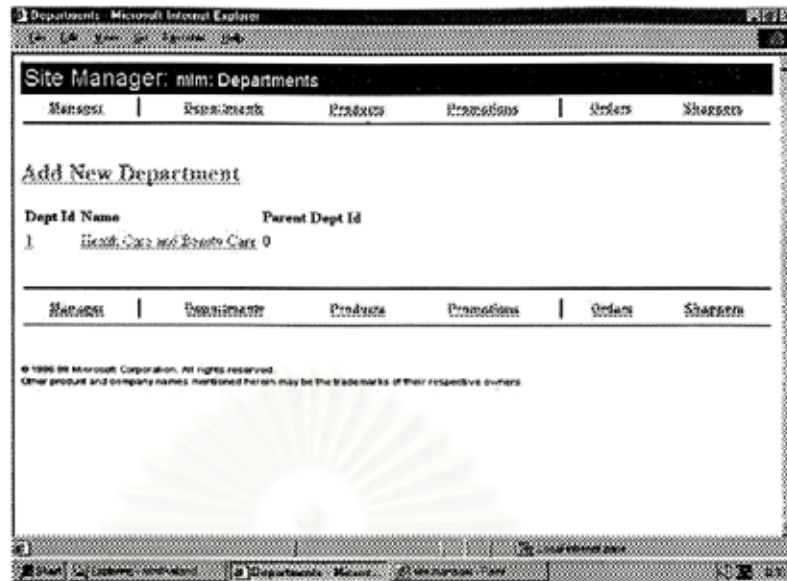
Figure 5.15: Department manager in the back office

In the first page of department (Figure 5.15) the list of the department that is in the storefront is shown. We can add the department by clicking at the text "add new department" and fill in the description text area as shown in the figure below.

The department manager allows administrator to organize and create division in the each department as well.
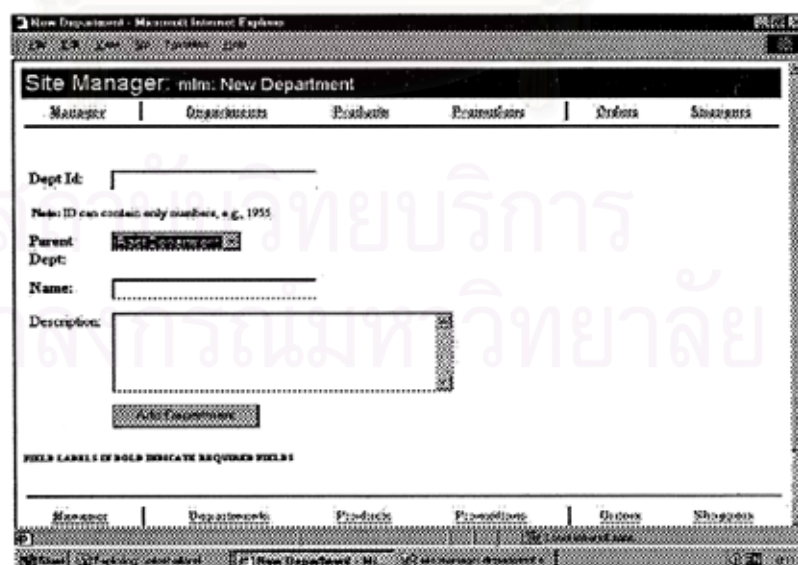
Figure 5.16 Adding page in department manager

In addition, department also allows administrator to edit the description and delete the department that they do not want to show in the storefront as shown in Figure 5.17.
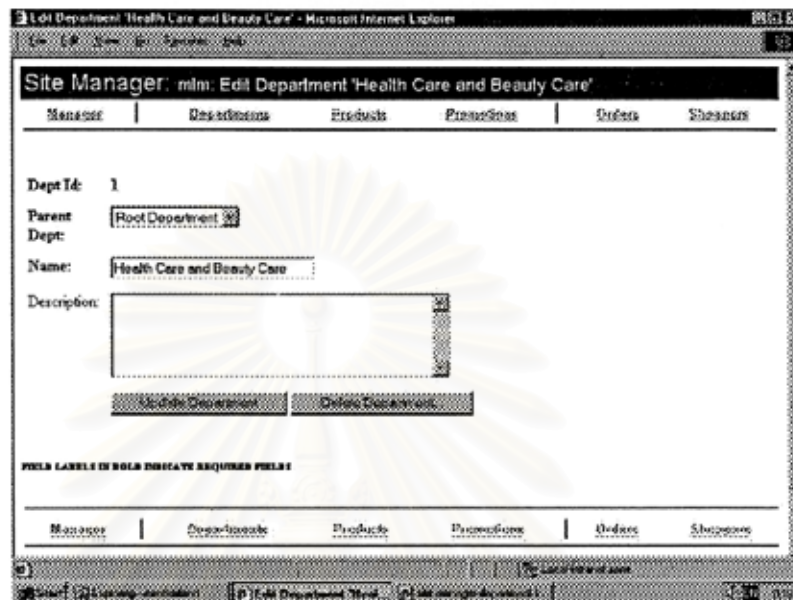
Figure 5.17 Editing page in department manager

The next feature in the merchandize section is the product manager feature as shown in Figure 5.18.

This feature allows administrator to add, edit, or delete the products. The highlight of this feature is that we can show the product which has many sizes in different price for up to 5 attributes per size. For each attribute, up to 5 options can be added.
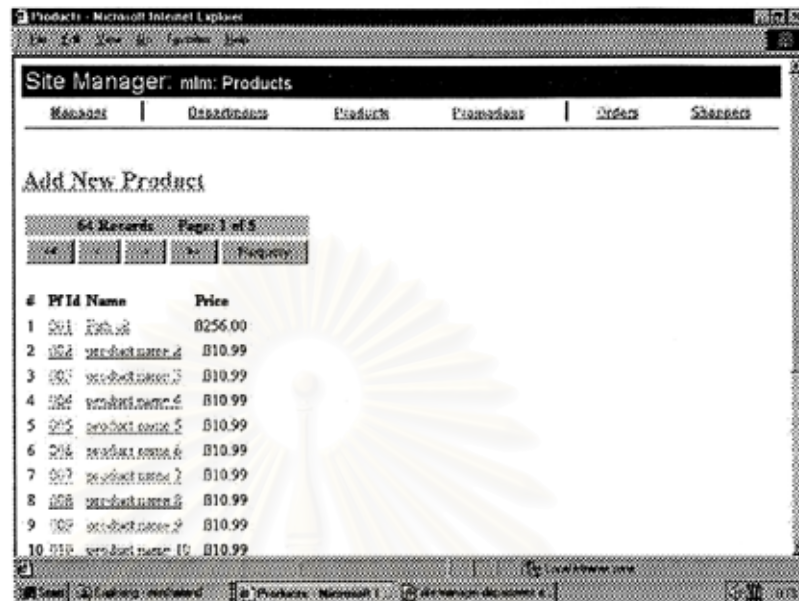
Figure 5.18: Product manager in the back office
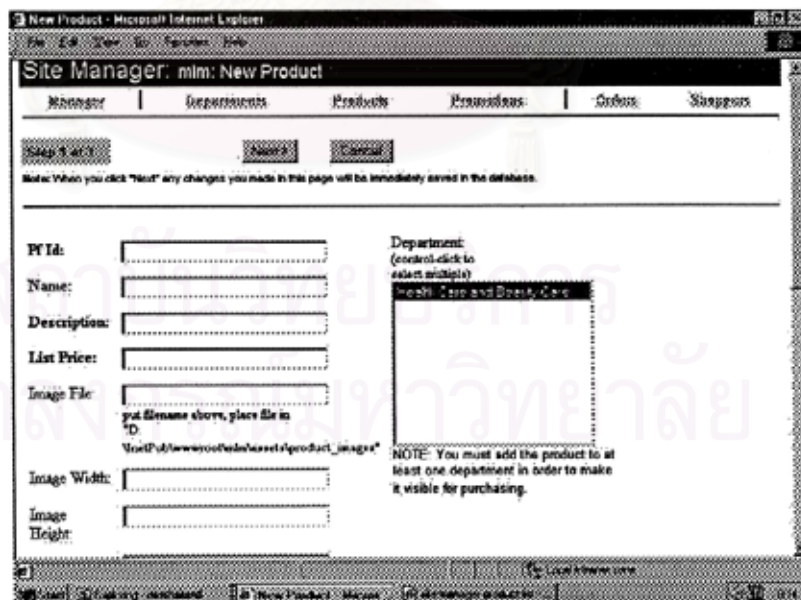
Figure 5.19 Adding page in product manager

Figure 5.20 Deleting page in product manager

This page in Figure 5.20 shows the confirmation to delete the product item. The product item can be changed and erased after clicking at the name of the product in the list of products in the product manger page.
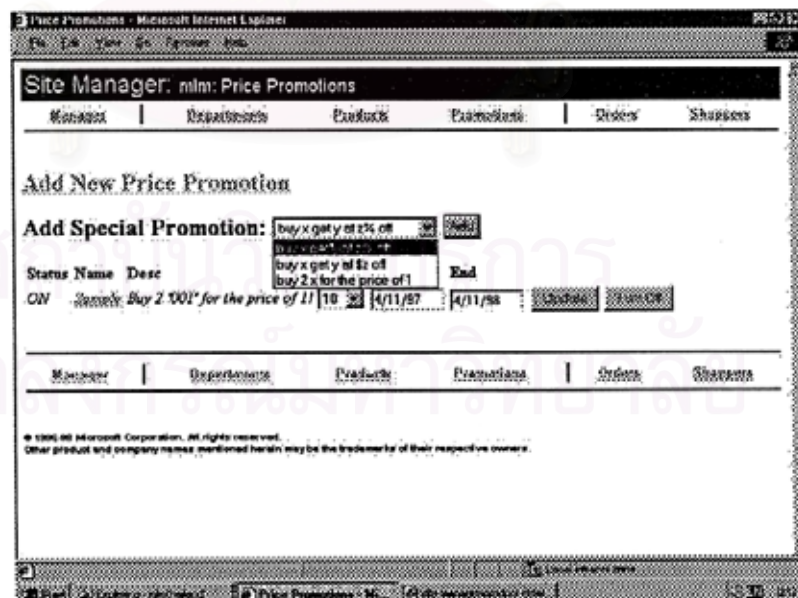
Figure 5.21 Promotion manager in the back office

In the case that the company wants to give some discount to members, promotion manager allows administrator to setup the price promotion. The promotion regarding price such as buy x get y %off. Besides, the software allows administrator to add the new promotion that does not exist in the software. The promotion page is shown in Figure 5.21.
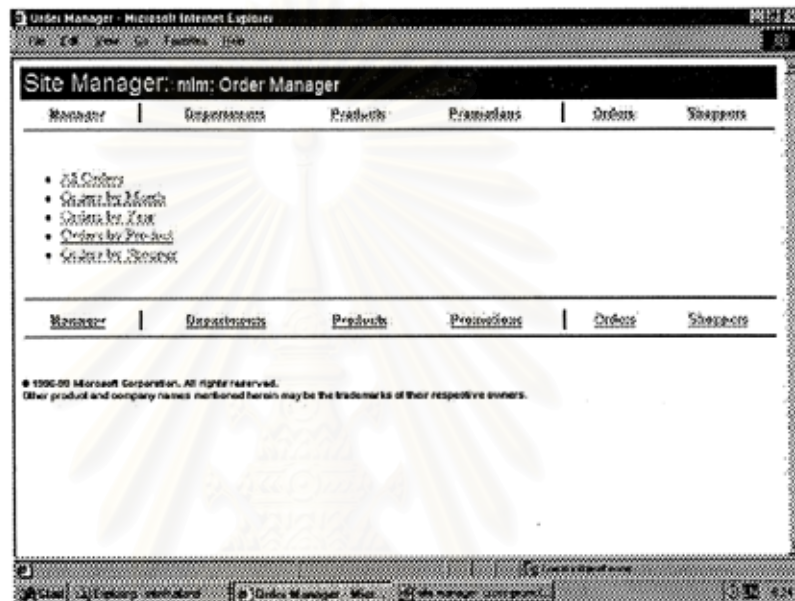
Figure 5.22 Order manager in the back office
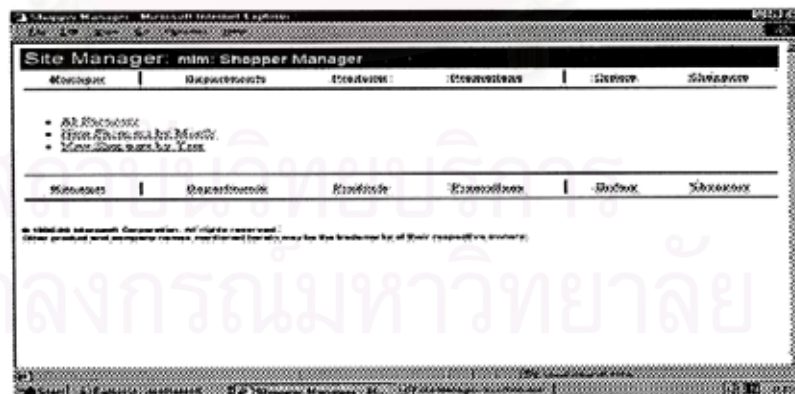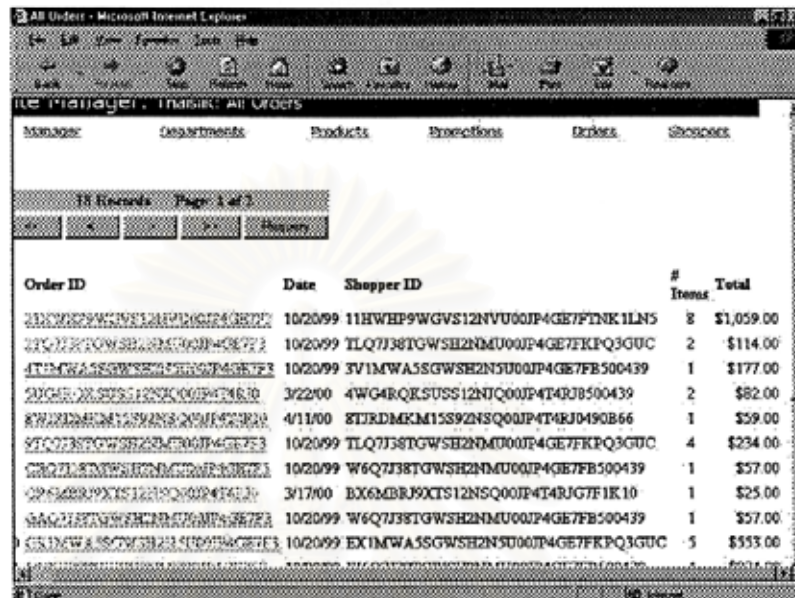
Figure 5.23 Shopper manager page in the back office

Figures 5.22 and 5.23 show the features of the transaction section, which is shopper manager and order manager. The options of each feature are quite similar

to each other. The options that the software allows administrator to track the record of all records, monthly, yearly or by the desired list provided. Figure 5.24 shows the records of all transaction order occurring in the storefront.

Figure 5.24 All orders record in order manager

Order transaction page (Figure 5.24) shows the list of order ID date of transaction, shopper ID, the number of product items in each order and the total amount of each order. Moreover, it allows the administrator to see the details of each transaction by clicking at the order ID. For monthly and yearly order transaction page, it is quite similar. The yearly order page will show only the number of order in each month in the selected year, the amount of order in both maximum and minimum price of order. But in the order page we can track the record by month in the same details as shown in Figure 5.25

Figure 5.25 Monthly order in order manager

Figure 5.26 shows the orders transaction sorted by product that the user orders in the selected month and year. The details of each product are such as volume, the total amount of the sold product in the selected month and year and the number of sold items.

Figure 5.26 Product details page in order manager

The last feature of order manager is the order transaction sorted by shopper. The software allows administrator to see order transaction record in the selected month and year sorting by shopper as shown in Figure 5.27.

Figure 5.27 Order sorted by shopper details in order manager

Figure 5.28 All shoppers list in shopper manager

Figure 5.28 shows the list of all shoppers who order the products in the storefront. The list of shoppers in this page show the shopper ID and name of each shopper. The detail of all products including the number of items, the amount of

each purchased product that each shopper orders will show when we click at the shopper ID in the list. The details of each shopper are shown in Figure 5.29.
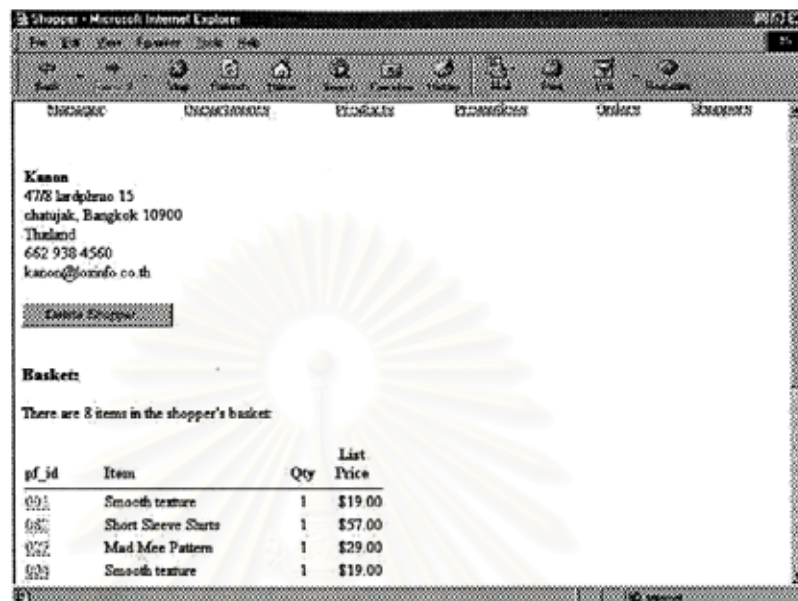
Figure 5.29 Shopper details in shopper manager
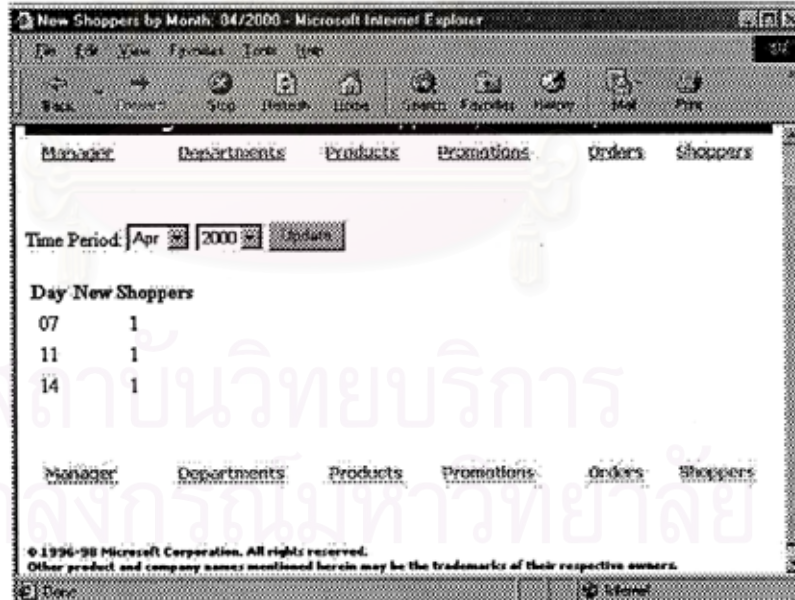
Figure 5.30 Shopper in the month in shopper manager

Figure 5.30 shows the new shopper in the selected month. It will show the date that the new shoppers order the product. Besides, this software allows administrator to see the same record sorted by year as shown in Figure 5.31.
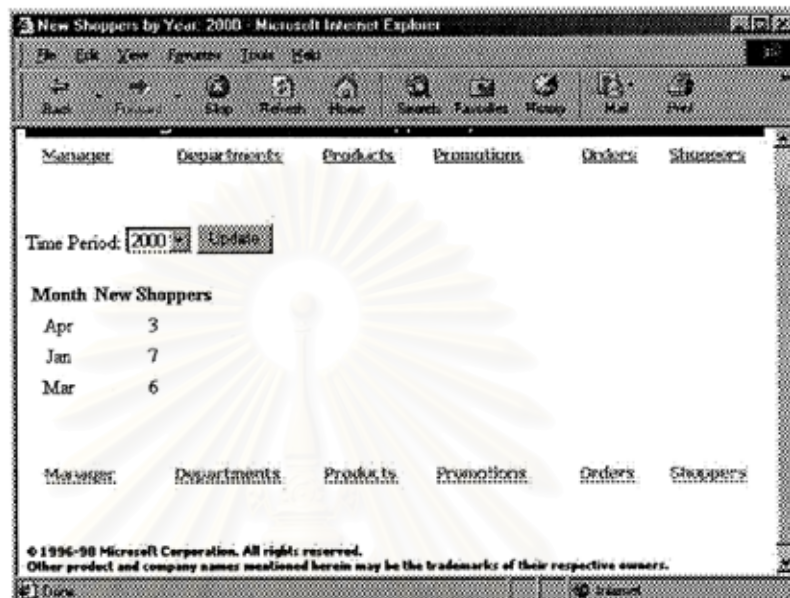
Figure 5.31 New shopper, yearly in shopper manager

Figures 5.14 – 5.31 are the site manager that the software Microsoft Site Server have generated to be the back office for managing the online catalogue in the web site. The software does not have the feature that can interface with the other databases that exist in the system.

The developer has to create and develop the software to interface the existing database with the database of this catalogue. The development programming language used to develop is Active Server Page, which is the same developing program that Site Server generates in creating this storefront.

Aonther feature that the virtual store must be concerned with is the inventory status checking. The following figure shows the result of development of inventory status checking that interface with the existing database in the company.

The list of products in inventory as shown in Figure 5.32 will show after the administrator fills in username and password before entering.

Figure 5.32 Inventory status checking in back office

The details of each product will show after clicking at the desired product as shown in Figure 5.33. Adding and editing the details of products in this feature can be completed after filling in an information in the form as shown in Figure 5.33.
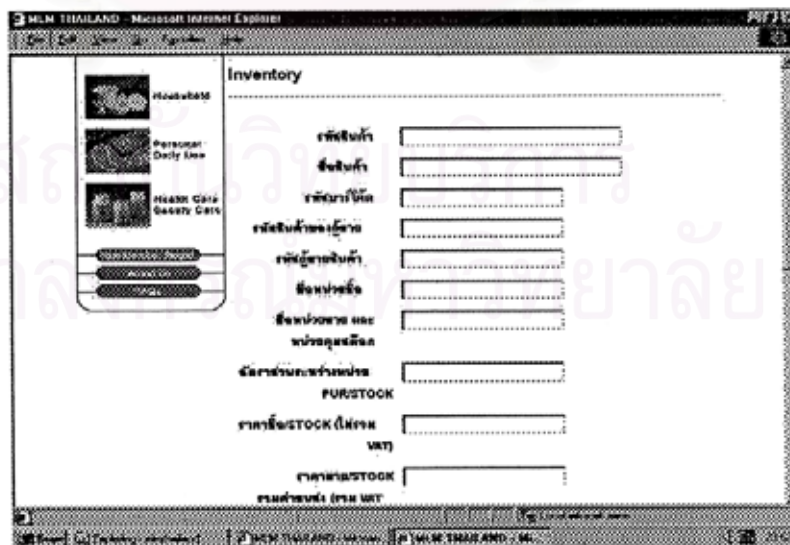
Figure 5.33 Adding page in inventory status checking

Figure 5.34 Editing page in inventory status checking

Chapter 6
Discussion and Conclusion

The objective of this chapter is to show the implementation results, advantages and disadvantages focusing on benefits to the company and its members. The cost and time of development compared with in-house development and the use of software packages as well as the cost of implementation will also be shown both for phase by phase and full implementation.

6.1 Cost of implementation

Since the software package is available in the market, the length of development and model implementation is easier than it was in the past.

Selecting suppliers such as software vender or software house is a very important consideration issue in developing and implementing the business involving the technology.

Like this project, the MLM Company can develop the software by using in-house developer instead of using the software package the available in the market. However, it will take longer time to develop and implement the electronic commerce system.

This means that the cost of development and implementation in the same features will be higher than other software packages compared with the benefits we will get after the implementation.

Table 6.1 shows the estimated time and cost to develop and implement the storefront software by comparing with in-house development and using software package.

The estimated labor cost and time of development is based on cost and time of software development in one of the ISP Companies in Thailand. (Source: a manager, Loxley Information Services co., Ltd)

Table 6.1 Cost comparison between in-house development and using software package

Description	In-house	Software package
Software cost	-	200,000 baht
Research and develop period(month)	6 months	1 month
Overhead cost per month	30,000 baht	30,000 baht
Total	180,000 baht	230,000 baht

Table 6.1 shows that the cost of in-house development is cheaper than using software package. However, the time for in-house development is longer than the time to learn and setup the software packages.

Table 6.2 shows the cost of implementation of the whole system of Internet. The cost of development includes merchant software license, Secure Socket Layer license, back office development, graphic design, Internet access, transmission media network equipment such as routers and setup fee for new network configuration.

Table 6.2 Estimated cost of implementation for the whole system
(Source: Sales and Marketing Department, Loxley Information Services Co., Ltd.)

Description	One time (baht)	Monthly (baht)
Merchant Software license	200,000	-
SSL license	17,500	-
Back office Development fee	100,000	-
Graphic Design	30,000	-
Internet Access	18,000	18,000
Transmission media	20,000	12,000
3 Routers	105,000	-
Setup fee	30,000	-
Total	**474,000**	**30,000**

The first investment cost that the company has to pay at one time is approximately 474,000 baht, and 30,000 baht for monthly expenditure.

On the other hand, the company can separately implement the web site. Based on the survey of members' requirement for the usage of this facility in the first development stage, some features of the web site such as down-line and bonus tracking system can be separately implemented to save the cost of implementation.

The web site will be an informative web site, which shows the members all information about the company, news, tracking system without online catalogue, ordering system and its back office. Therefore, members can order the products via email. By doing this, the operation in the company will not change. The web site becomes a new channel for ordering the product. The cost of separate implementation is shown in Table 6.3.

Table 6.3 Estimated cost of separate implementation

(Source: Sales and Marketing Department, Loxley Information Services Co., Ltd.)

Description	One time (baht)	Monthly (baht)
Software Development fee	30,000	-
Graphic Design	30,000	-
Web site hosting fee (50MB)	2,000	4,000
Domain registration fee	3,500	-
Dial-up Internet access (30hrs/month)	-	1,000
Total	**65,500**	**5,000**

Table 6.3 shows the expenditure of separate implementation, which is lower than the cost of implementation of the whole system. The configuration of the system is changed. The web site will be hosted at the ISP. The Internet access is changed from permanent access to dial-up Internet access for daily usage to check an e-mail. The cost of software development will reduce because the back office is not being implemented. Therefore, the first expenditure for this alternative is approximately 65,500 baht and the monthly expenditure is approximately 5,000 baht.

From the cost of implementation both for the whole system and for separate implementation, the differences of the first investment and monthly expenditure are significant. Therefore, the company should carefully select the alternative of implementation by considering the return on investment.

6.2 Advantages and disadvantages

In this thesis, the concept of merging the Internet technology with multi-level marketing is created. The advantages of the Internet technology will assist the multi-level marketing business to rapidly expand the business not only in the country, but also in the other countries because the Internet is a network that reaches almost every area around the world.

There are many applications running on the web site that will be used as marketing tools to expand the network of the multi-level marketing business instead of using the traditional way. The Internet applications such as chain-emails, ICQ instant messaging application, chat room, Real player, banner advertisements on popular web site and search engine web sites are widely used to promote and attract new members. Therefore, we can promote the business to the many channels with lower cost than the traditional way.

The benefits of the Internet show the power of technologies that can promote and expand businesses in the future and make profits and benefits to the business. By using the Internet technology, the company can easily expand their business to any country in the world. However, in expanding the business to the international market, the company needs to change some operations, types of products, and marketing strategies to draw people into the business.

However, the success of the implementation depends on many factors such as the trust of Internet users regarding the security of the system, user behavior, and legal issues. The disadvantages of implementation of the system are the back office management in the company, which must be able to support the traffic occurring from this application. In addition, the lower barrier of new entry from other

competitors in this business running on the Internet technology is also a disadvantage. It means the company has to create the strategies to compete with the competitors.

6.3 System Implementation

The model of the system was presented to the management including staff to show the main features of the model of electronic commerce system for the company. The objective of the presentation was to get the comments from the attendees. The attendees were executive committee, general managers, and IT officers.

The following open questions were addressed to the company management. The objective of the questions was to know how suitable the system is to implement in the real business. The questions were as follows:

- Can the system assist the operation in the company? Which part of the company specifically?
- How would you like to implement the system? Whole system or separate phases?
- If the system is separately implemented, which features would you like to implement in the first phase?
- Do you need to change the network configuration to support this system?

The storefront and back office is implemented in the company to test the operation of the system. This will provide an idea and act as a guideline for implementing the electronic commerce system in this business.

The management comments that the system and its back office can assist the operation of the company in case Internet user in Thailand has significant growth. The system can assist the operation in the company such as in the marketing department. The objective of the web site normally is to give information to the users.

The management also comments that the first step of implementation will be either [1] to implement the web site with some features such tracking system both commission and down-line tracking record or [2] to implement full features of the storefront, but users have to pay the order in the traditional way. All orders will be sent via email to staff who is responsible for this job.

The above means that the existing operations in the company are not changed yet. The web site will be an information site for members who do not want to go to the company. All requests from members will be sent via email. The integration of a new database will be implemented in the next phase. The database for checking down-line and the commission will be daily transferred to the web site to update the information.

For the back office for the inventory, the company still uses the existing system, but the new back office will be used for updating the storefront only. The network configuration is the same as at the present. The Internet access will be an individual account or dial-up corporate access so that the domain name of an email address can be the name of the company.

Unfortunately, before the system was installed the company faced the crisis of financial situation during the last quarter of the year 1999. The number of members that the management expected did not increase. Therefore, the management decided to stop all operations. Consequently, the company was closed in April 2000.

Nevertheless, the management is confident that this Internet electronic commerce for multi-level system developed in this thesis will assist the company to expand the business and as well as assist the internal operation in the company including reducing the cost of advertisement media to promote the business. Moreover, the management is also confident that the customer behavior in using the new channel for doing business through Internet technology will be changed in the near future by the influence of the customer behavior and the trend in using the Internet facilities in the USA.

6.3 Conclusion

The expected result of this research, which is a model of electronic commerce for multi-level marketing did show the compatibility of the new system with the existing system. The new system can be merged with the existing system for the full scale of the system by slightly adjusting the existing system configuration.

The model of electronic commerce also shows that the system can be separately implemented in the company phase by phase following the requirement of member of the company. The feedback of the first phase of implementation will indicate the success of the system for this type of business.

The first step of the implementation will not change the existing internal operation. But the system will be an alternative way for member to purchase the products and to receive information on the company.

However, the system may help the company to increase the number of members in terms of the boosting of the company image to attract new members to join the business.

As for the cost of development and implementation, the research did show that if the company would like to implement the system in a short development time,

the cost of implementation by using the software package is higher than in-house development.

Although the system was not implemented at the company because the company was closed down, the management is confident that the Internet electronic commerce web site for multi-level marketing can assist the company to expand the business either in Thailand or in other countries in the near future. This is because the growth rate and the trend of using the Internet technology in Thailand and other countries increase rapidly.

Another important aspect to consider is the aversion of people to the use of the technology, this factor may affect to the success of the implementation of the system. However, in Thailand, the growth of using the Internet to communicate among users does increase from the past several years. Based on a survey from one ISP, Loxley Information Services Co., Ltd., the growth of Internet individual users now increase from year 1998 approximately 161 %. This means that the trend of web application usage will also increase by the number of Internet users.

Nevertheless, at present, there are few electronic commerce web sites in Thailand. Thais do not yet believe and rely on the Internet security system. Also the law that will regulate and control is not yet proclaimed. But in the near future, when the Thai consumer behavior changed by the influence of USA, Europe, and Japan and the trust of people in the system and the law increases, The Internet electronic commerce will expand and become more familiar to people in upcountry. Therefore, the web site that is developed will succeed in expanding the multi-level marketing business as well.

Consequently, as mentioned above, the success of the implementation of the electronic commerce system in the case company is dependent on many factors such as user behavior, trend of Internet technology in Thailand, budget of development and implementation of the company.

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Appendices

Appendix A: Microsoft Site Server version 3 – Product description

Microsoft®

Site Server

Commerce Edition

Comprehensive Internet Commerce Server for Conducting Business Online

Microsoft® Site Server Commerce Edition is a comprehensive Internet commerce server, optimized for Microsoft Windows NT® Server, that enables businesses to cost-effectively engage customers and transact business online.

Is your business taking full advantage of the World Wide Web?

The World Wide Web profoundly affects the way companies communicate and transact business. The Internet enables companies to reach customers in new and innovative ways. Businesses can build customer loyalty, create an efficient channel for transactions with distributors and suppliers, and deliver their message in an increasingly global market—cost effectively. Companies can capture the attention of customers and partners with targeted online promotions and advertising, transact high volumes of business securely and reliably, and actively manage and analyze their sites to maximize their return on investment.

Product Overview

Microsoft® Site Server Commerce Edition is a comprehensive Internet commerce server—optimized for Microsoft Windows NT® Server—that enables businesses to cost-effectively engage and transact with customers and partners online for both business-to-consumer and business-to-business applications.

Microsoft Site Server Commerce Edition is a comprehensive Internet commerce server for engaging customers, transacting business, and analyzing eCommerce Web sites. Site Server Commerce Edition helps businesses deploy and manage business-to-consumer, corporate purchasing, and supply chain management applications. By providing a comprehensive set of server components,

management tools, and sample sites, it significantly reduces development time and costs for these applications. Site Server Commerce Edition enables the sale of goods and services to customers and business trading partners. You can promote and merchandise products dynamically, run a more efficient online business, derive revenue from online advertising, and understand and improve your business through comprehensive site analysis.

Site Server Commerce Edition provides a comprehensive set of features that can be easily integrated into existing accounting or order management systems. And software from more than 50 independent application vendors makes it possible to extend the platform—with specialized billing, payment, or accounting systems, for example—with less need for custom development.

Whether you are creating a new site or adding commerce capabilities to an existing one, Microsoft Site Server Commerce Edition enables you to:

Engage customers and partners
Create and manage dynamic promotions, online advertising campaigns, and personalized Web sites to build enduring relationships with customers and maximize sales. Encourage spontaneous purchases with transaction-enabled content. Establish custom catalogs and pricing for business partners. Manage high volumes of online user accounts for self-service applications.

Transact business online
Transact business online with secure and scalable order capture, management, and routing built around your business processes. Streamline your Web business by integrating orders with existing business systems. Route EDI transactions over the Internet directly from your Web application. Provide customers with the highest level of industry-standard security and encryption, ensuring that each transaction meets its proper destination.
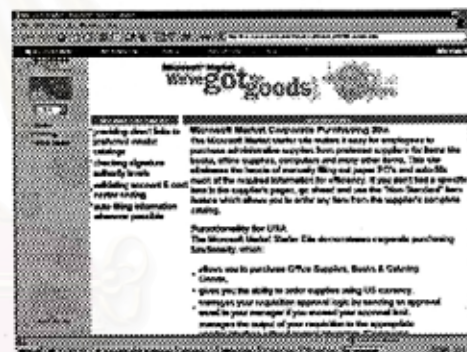
The Microsoft Market corporate purchasing sample site, provides an example of business-to-business commerce based on Microsoft's own internal corporate purchasing solution.
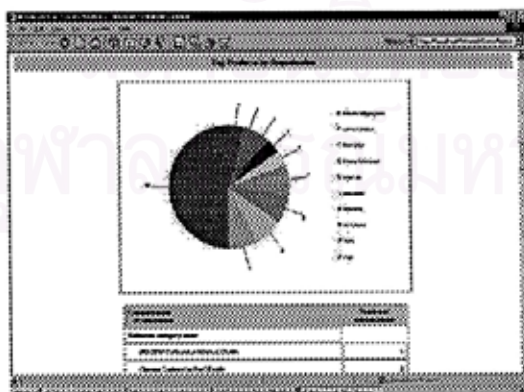
Analyze usage to understand and improve your business
Actively manage Web content and analyze usage data, regardless of the mix of Web servers utilized. Generate preconfigured analysis reports or mine usage data with custom reports to uncover important insights about site activity. Use any remote Web browser to maintain direct access to product purchase data.

Product Highlights

Microsoft Site Server Commerce Edition includes the following features to help you manage the complete life cycle of your Web site:

| Commerce Server | Commerce Server includes a comprehensive set of features, sample sites, and tools that enable you to engage customers and transact business online:

– **Site Builder Wizard and Sample Sites** remove the complexity of database schema editing, scripting, and HTML coding. The simple, step-by-step approach of the Site Builder Wizard dramatically reduces site development time. Sample sites provide examples of business-to-consumer and business-to-business commerce applications.

– **Dynamic merchandising** provides support for easy, real-time administration of product and price promotions from any remote Web browser through the Promotion Wizard. Intelligent CrossSell uses previous shopper trends to automatically make recommendations.

– **Order Processing Pipeline** handles targeted functions—such as product tax, shipping and handling charges, payment authorizations, and inventory checks—according to specific business rules. It can be integrated with existing systems and can also be extended with many products from independent software vendors.

– **Commerce Interchange Pipeline** enables applications to exchange information using the Internet or an existing EDI system. Because the Commerce Interchange Pipeline is data format-independent and transport-independent, businesses of all sizes can communicate securely. The Commerce Interchange Pipeline supports native Web formats such as XML and HTTP as well as those from numerous independent EDI software vendors.

– **Integration with Microsoft Transaction Server**—a transaction processing system included with the Windows NT Option Pack—allows Site Server to provide site and application developers a business-critical solution that offers significantly higher reliability in business transactions.

– **Dynamic catalog generation** creates custom Web catalog pages on the fly using Active Server Pages to directly address the needs, qualifications, and interests of visiting customers.

– **Rich object model** manages products, users, and orders. It supports schema and database independence, enabling businesses to integrate their existing business rules and data with their online presence.

– **Buy Now**, a powerful online marketing solution, lets you embed product information and order forms in most online contexts—such as online banner ads—for quick, spontaneous purchase by consumers.

– **Commerce Host Administrator**, a control center for site administrators and Internet hosting service providers, enables the centralized administration of multiple commerce sites while allowing individual |

	site managers to update their sites remotely
	– **Built-in Microsoft Wallet** support helps businesses provide customers with the most convenient and secure online payment experience.
	– **Industry-standard security** creates a secure environment for customers, partners, and site/application administrators with strong, integrated HTTP Authentication and Windows Challenge Response. Site Server Commerce Edition supports real-time credit authorization with secure transaction protocols such as SSL and Secure Electronic Transaction (SET).
	– **Commerce Server Software Developer's Kit (SDK),** a set of open application programming interfaces (APIs), allows full extensibility across the entire Order Processing and Commerce Interchange Pipelines.
Personalization and Membership	**Membership** lets you easily manage users and user profiles for high-volume sites. Secure access to any area of the site, supporting subscription or "members only" applications. Personalization enables the delivery of custom content based on the site visitor's personal profile and supports targeted promotions and one-to-one marketing.
	Direct Mailer is an easy-to-use tool for creating a personalized direct e-mail marketing campaign based on Web visitor profiles and preferences.
	Membership Server provides the software infrastructure for efficiently managing secure access to Web sites and site content, with the ability to scale to support millions of visitors. Authentication can be based on cookies, Basic and HTML forms, challenge/response, and certificates.

Ad Server	Ad Server manages ad schedules, customers, and campaigns through a centralized, Web-based management tool. Target advertising to site visitors based on interest, time of day or week, and content. In addition to providing a potential source of revenue, ads can be integrated directly into Commerce Server for direct selling or lead generation.
Site Server Analysis	The Site Server Analysis tools let you create custom reports for in-depth analysis of site usage data. Create industry-standard advertising reports to meet site advertiser requirements. Classify and integrate other information with Web site usage data to get a more complete and meaningful profile of your visitors and their behavior. Enterprise management capabilities enable the central administration of complex, multihomed, or distributed server environments. Supports 28 Web server log file formats on Windows NT, UNIX, and Macintosh operating systems, including those from Microsoft, Netscape, Apache, and O'Reilly. **Commerce Order Manager** gives direct access to real-time sales data on your site. Analyze sales by product or by customer to provide insight into current sales trends or manage customer service. Allow customers to view their order history online.

Appendix B the steps required to install Site Sever 3.0, Commerce

System Requirements

Before you install Microsoft Site Serve version 3.0, you must verify that your computer meets certain hardware, software, and connectivity requirements. This section describes the system requirements for installing all of Site Server on a single server.

Hardware Requirements

- Either an Intel Pentium 100 MHz or faster processor or a Digital Equipment Corporation (DEC) Alpha processor (Intel Pentium 166 MHz recommended)*
- 64 MB of RAM (128 MB recommended)*
- 1 GB of available hard disk space (2 GB recommended)*
- CD-ROM drive
- Network adapter card
- VGA or Super VGA monitor compatible with Microsoft Windows NT Server 4.0 set to 1024 x 768
- Microsoft Mouse or compatible pointing device

Note : In a production environment, the actual requirements will vary based on the volume of traffic at your Web site.

Software Requirements

- Windows NT Server version 4.0
- Windows NT Server 4.0 Service Pack 3 or higher
- Windows NT Server 4.0 Option Pack (which requires Microsoft Internet Explorer version 4.01)

Site Server, Commerce Edition also requires an ODBC – compliant, ANSI – standard SQL – based database management system. For the purpose of this guide, we recommend Microsoft SQL Server 6.5 and the SQL Server Service Pack

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

4. An evaluation copy of SQL Server 6.5 is included on the Windows NT 4.0 Option Pack compact disc.

Installing Prerequisite Software

To set up your platform to prepare for installing Microsoft Site Server on a single server, you need to install the following software in the order listed below:

- Install Microsoft Windows NT Server version 4.0
- Install Widows NT Service Pack 3
- Install Windows NT 4.0 Option Pack (which requires Microsoft Internet Explorer version 4.01)

Windows NT Server 4.0

If you plan on exploring the commerce functionality described in this guide, you will also need to install any ODBC database. In this guide, SQL Server 6.5 is used as an example of a database.

Installing Windows NT Server

The first step in setting up your computer is to install Windows NT Server version 4.0. Windows NT provides security and networking services that are essential for running Site Server.

To install Windows NT Server

- Insert the Windows NT Server 4.0 compact disc into the appropriate disk drive.
- Run the Windows NT Server 4.0 Setup program and follow the online instructions. Observe the following requirements:
  - Insert the Windows NT Server 4.0 only as a standalone server, or primary domain controller.

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

- Use only alphanumeric characters in the computer name because SQL Sever supports a limited character set in server computer names.
- Format the partition with Windows NT File System (NTFS) to allow the setting of access controls (permissions) for security purposes.
- Do not install Microsoft Internet Information Server (IIS) 2.0.

For information about installing Windows NT Server and formatting the partition with NTFS, see the Windows NT Server Documentation.

Installing Windows NT Service Pack 3

After Windows NT Server is installed, install the Windows NT Service Pack 3 or higher. The service pack provides useful updates to Windows NT Server version 4.0, such as new security features. Use the following steps to install the Windows NT Service Pack 3.

To install Windows NT Service Pack 3

1. Insert the Windows NT 4.0 Option Pack compact disc into the appropriate drive.
- Run the Windows NT Option Pack setup program and follow the online instructions.
- Restart your computer.

Installing Internet Explorer

Before you install Microsoft Internet Information Server (IIS) from the Windows NT Option Pack compact disc, you must install Microsoft Internet Explore version 4001 or higher. Note that any Web browser can be used to administer Site Server or be user along with Site Server. IE 4.01 is required to install IIS 4.0.

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

When you install Internet Explorer 4.01, you also get Microsoft Outlook Express. Outlook Express provides a Windows Messaging API (MAPI), which is required for sending e-mail messages using Site Server features. IF you choose to use Microsoft Exchange instead of Outlook Express, you will also get the MAPI client.

Important : Regardless of whether you use Outlook Express or Exchange Server for your mail messaging, you must install the messaging application before you install Site Server.

To install Internet Explorer 4.01

- Insert the Windows NT 4.0 Option Pack compact disc into the appropriate drive.
- Run the setup program to install Internet Explorer 4.01
- When prompted, restart your computer. The setup program finishes installing Internet Explorer.
- On the **Start** menu, click **Settings**, click **Control Panel**, and then double-click the Display icon. The **Display Properties** dialog box appears.
- Click the **Settings** tab.
- In the **Color Palette** box, select **256 Colors**, and then click **OK**.

Installing Windows NT Option Pack

The Windows NT Option Pack provides you with several applications that are used by Site Server, including Internet Information Server 4.0 (IIS), Microsoft Index Server, and Microsoft Transaction Server.

To install Windows NT 4.0 Option Pack

- Insert the Windows NT 4.0 Option Pack compact disc into the appropriate drive.

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

- Run the Windows NT 4.0 Option Pack setup program and follow the online instructions to perform a Typical install.
- Restart you computer.

Important: Do not remove or reinstall Internet Explore 4.01 after IIS is installed. If you do, IIS will not function properly and you will have to remove and reinstall both IIS and Internet Explorer 4.01.

For Information about Windows NT 4.0 Option Pack, see the Windows NT 4.0 Option Pack documentation.

Installing Site Server

You must install the Standard Edition of Microsoft Site Server before you can install the Commerce Edition.

1. On the Microsoft Soft Server Standard Edition CD, run the Setup.exe program, located in either the \ x86 or \ Alpha directly , depending on you platform. Setup instructions are located on the CD.
2. When asked for the CD-key, use 111-1111111.
3. Select the Complete installation option.
4. At the Configure User Accounts screen, click on Set User Account. Enter Administrator as the user name. Enter and confirm your Administrator account password. For domain, enter the name of your server.

At this point, you can run the features in Site Server. To run the commerce features, proceed with the installation instructions below.

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

Commerce features installation

Installing Microsoft SQL Server

The following steps describe how to install Microsoft SQL Server. An evaluation copy of SQL Sever 6.5 is included on the Windows NT 4.0 Option Pack CD.

To install Microsoft SQL Server

1. Insert the Microsoft Windows NT Server 4.0 Option Pack compact disc into the appropriate disc drive.
2. Runt the SQL Server 6.5 Evaluation Copy Setup Program located in the \ MSSq1 folder, and follow the online instructions to install SQL Server and Utilities. When asked leave the Product ID box blank.
3. When the Master Device Creation dialog box appears, type 50 in the Master Device Size box.
4. When the Installation Options dialog box appears, perform the following steps:
5. Click Sets, verify that ISO Character Set (Default) is selected, and then click OK.
6. Click Orders, verify that Dictionary order, case-insensitive is selected, and then click OK.
7. Click Networks, verify that Named Pipes is selected, select TCP/IP Sockets, and then click OK.
8. Select the AutoStart SQL Server check box and the AutoStart SQL Executive check box, and then click Continue.
9. When the SQL Executive Log On Account dialog box appears, verify the Install the SQL Executive service to log on to Windows NT as box is selected.. In the Account box, type your login name, and then type your password twice. The login name you type must be a member of the Windows Administrators group on you computer.

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

For a complete description of all set up options, see the SQL Server version 6.5 documentation.

Installing Microsoft SQL Server Service Pack 4

If you use SQL Server version 6.5, you must also install SQL Server Service Pack 4 and the up dated executable file SQLSERVR.EXE, both of which are provided on the Site Server 3.0 CD. Note that SQL Server version 6.5 must already be installed before you can install Service Pack 4.

To install Microsoft SQL Server Service Pack 4

1. Exit SQL Enterprise Manager if it is running.
2. Insert the Site Server 3.0 CD into the appropriate disc drive.
3. User Windows NT Explorer to navigate to the \Support\QFE\sql65sp4 folder, and then run the setup program. Follow the online instructions.
4. When the SA Password dialog box appears, leave both password boxes blank, and then click Continue.

Note: In a production environment, you would protect the system administrator (SA) account with a password, but for this installation, leave it blank for easy access.

After you have installed SQL Server and SQL Server Service Pack 4, you must install the SQL Server updated executable file SQLSERVR.EXE to ensure compatibility between Site Server and SQL Server version 6.5.

The following procedure assumes that MSSQL Server is stopped. To verify that MSSQL Server is stopped, on the Start menu, point to Programs, point to SQL Server 6.5, and then click SQL Service Manager. The stoplight should be red. If it is not, double-click Stop to stop your server now.

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

1. Use Windows NT Explorer to navigate to the \Support\QFE\Sql291 folder on the Site server 3.0 CD.

2. Select SQLSERVR.EXE and copy it to the \Mssql\Binn folder on the computer that is running SQL Server. IT should overwrite the existing SQLSEVR>EXE file on your computer.

3. Close Window NT Explorer and restart your computer.

Configuring SQL Server

Before you install SiteServe, you need to configure certain settings for SQL Server. The configuration recommendations in this section are for installing Site Server on one computer. If you have multiple computers in your production environment, SQL Server may be configured differently, depending on how you plan to use it.

Each configuration step is described in the following section:

- Registering Microsoft SQL Server
- Creating The Databases
- Setting ODBC System Data Sources

For Information about optimizing SQL Server performance, see Optimizing the Performance of the SQL Server Database.

Registering Microsoft SQL Server

After you install SQL Server, you must register it, using SQL Enterprise Manger. When your server is registered, its name appears in the Server Manager window and you can change options and complete tasks on that server. Use the following steps to register and start SQL Server.

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

To register Microsoft SQL Server

1. Select the Start menu, select Programs, select Microsoft SQL Server 6.5, and then select SQL Enterprise Manager.
2. When SQL Enterprise manger starts for the first time, it automatically displays the Register Server dialog box. In the Server box, enter your computer name.
3. Verify that User Standard Security is already selected.
4. In the Login ID box, type SA. Leave the Password box blank.

Note: When you set up SQL Sever for your production environment, you must use a different account with a password for security reasons. However, for your initial installation of Site Server, you can use SA and no password so you have easy access to your databases.

5. Click Register, and then click Close.
6. The Server Manager window appears and it displays the new server you registered. If the icon next to the server name is not a green stoplight, then right-mouse click the new server and then click Start. The stoplight icon next to the server will turn green to indicate that SQL Server is running.

Creating the Database

Creating the Database Devices

In this step, you will create three database devices: one large device to hold two Site Serve databases, one to hold the logs, and another large device for increasing the size of the Tempdb database.

A database device is a file used to store databases and transaction logs.. SQL Server uses the database device to store an entire database, including the transaction lg. Before you can create the Site Server databases, you must create

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

devices in which to store the databases and the transaction logs as well as the Tempdb database.

When you install SQL Server, the setup program creates the Master database device. The Tempdb database is one of the databases it creates and places on that device. This database provides a storage area for temporary tables and other temporary working storage needs and is shard by all of the databases on you SQL Server computer. You have to create a new device specifically for the Tempdb database because there is not enough space in the Master device to increase the size of the Tempdb database.

To create a database device

1. In the Server Manager window in the SQL Server Enterprise Manager, click your server.
2. On the Manage menu, click Database Devices. The Manage Database Devices dialog box appears.
3. On the Manage Database Devices toolbar, click the New Device icon. The New Database Device dialog box appears.
4. In the Name box, type a descriptive name for the database device, for example, Site Server DATA.
5. In the Size box, type 25.
6. Verify that the Default Device check box is not selected, and then click Create Now.
7. The device is created. The Manage Database Devices dialog box appears.
8. Repeat steps 3 through 6 to create two more devices, one for the database logs and one for the expansion of the Tempdb databases. Use the following table to create the devices.

Device	Size
SiteServer_LOGS	10MB
SiteServer_TEMPDB	23MB

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

9. Double-click in the margin of the Manage Database Devices dialog box. The Edit Database Device dialog box appears.

10. Clear the Default Device check box to prevent other databases or transaction logs from using the master device by default and then click Change Now. The manage Database Devices dialog box appears.

11. Close the Manage Database Devices dialog box. The Server Manager window appears. Do not close SQL Enterprise Manager.

Setting up the Databases

The following installation procedure assumes that your are using Microsoft SQL Server and that you are setting up a non-production system. The recommendation to use the system administrator (sa) account with no password is to facilitate easy access while you familiarize yourself with the system. The recommendation to set the Truncate log on checkpoint option may conflict with policy of your database administrator, so be sure you verify settings before going live with a site.

Each configuration step in the following list is described in detail in the following section:

- Set up two databases on your SQL Serve :

  - A 15 MB database for Commerce Server sample site data, and
  - A 10 MB database for Ad Server sample ad data.

- Increase the size of the tempdb database and select the Truncate log on checkpoint option.

This section covers only a portion SQL Server configuration and maintenance procedures.

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

If you need more detailed information, see SQL Server Books Online or SQL Server Online Help.

Create the Databases

Before you run the Site Server Setup program to install Commerce Server and Ad Server, you must create two databases:

- A 15 MB database for Commerce Server sample site data, and
- A 10 MB database for Ad Server sample ad data.

Creating a database in SQL Server involves creating two devices (one for the database and one for its log) and then creating the database and the log on the devices.

To create a database

1. In SQL Enterprise Manager, make sure that SQL Server is running (the icon in the Server Manager window displays a green light). If it is not running, right-mouse click the name of the SQL Server computer and then click Start on the shortcut menu.
2. Click the plus sign (+) beside the name of the SQL Server computer.
3. Right-mouse click Database and then click New Database on the shortcut menu. The New Database dialog box is displayed.
4. Make sure that the Data Device list box displays SiteServer_DATA. Name the database Commerce. Make sure that the Create For Load check box is cleared. For Size (listed in MB), type 15. For Log Device, select SiteServer_LOGS. For Size(listed in MB) Type 5. Click Create Now.
5. Right-click the database you just created and on the shortcut menu, click Edit. Click the Options tab and select the Truncate Log On Checkpoint check box. Click OK.

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

6. Repeat Steps 3 through 5 to create a database for the Ad Server sample data. Name the database Ads and set the size to 10 MBs.

Increasing the Size of the Tempdb Database

When you created your database devices, you created a large device for increasing the soze of the Tempdb database. In this step, you increase the size of the Tempdb database.

To increase the size of the Tempdb database

1. In the Server Manage window, click the plus sign (+) next to the name of your server to view the contents of the server.
2. Click the plus sign (+) next to Databases to display all your SQL databases.
3. Right-mouse click Tempdb and then click Edit. The Edit Database dialog box appears.
4. Verify that the Database tab is displayed and then click Expand. The Expand Database dialog box appears.
5. In the Data Device box, select SiteServer_Tempdb.
6. In the Size box, type 23 and then click Expand Now. The database is expanded, the Expand Database dialog box is closed, and the Edit Database dialog box appears.
7. Click the Options tab and then verify that the Select Into / Bulk Copy check box is selected.
8. Click the Truncate Log on Checkpoint check box and then click OK. Truncating the log is recommended to avoid problems during Site Server setup. This step is recommended but not required. If you manage a large number of log files, you might not want to truncate the log (see the SQL Server documentation).
9. Exit SQL Enterprise Manager.

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

Creating DSNs for the Databases

To connect to the database, Setup requires at least one system data source name (DSN). You should create two system DSNs – one for the Commerce database and one for the Ad database.

When you set up a production system, if your sites' databases are distributed over different computers, you must set up a different DSN for each computer. You may also want to set up separate DSNs to restrict database access.

To set up a system data source for a SQL

Server Database

1. Select the Start menu, select Settings and select Control Panel. Double-click the ODBC icon.
2. Click the System DSN tab and then click Add. The Create New Data Source wizard is displayed.
3. Select the database driver for which you want to set up a DSN. The following procedure is for configuring a DSN for a SQL Server database, and therefore assumes that you select SQL Server. Click Finish to proceed.
4. For Data Source Name, type "AdServer". This is the name that you will use to identify this DSN.
5. For Server, enter the name of the SQL server on which your sample site's database is located. To find out the name of the SQL Server, select the Start menu, select Programs, select Microsoft SQL Server and select SQL service Manager. The server name is displayed in the dialog box. Click Next.
6. Click the SQL Server authentication option. The fields at the bottom of the dialog box become available. Make sure the Connect to SQL Server check box is selected, and then type the name and password that will be used to access the database. You will be asked to provide this name and password when you

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

run Site Server setup. This must be a valid login ID for the database. If you set up the database as described in Create the Databases, you can use the system administrator (sa) login ID with no password. Click Next.

7. Select the check box for Change the Default Database To, and enter Ads as the name fo the database. Use the default settings for the other check boxes and then click Next.

8. Keep the default settings for the character set and regional options and then click Next.

9. Keep the default settings for the log file options (which is that neither option is selected0 and then click Finish.

10. In the ODBC Microsoft SQL Server Setup configuration dialog box, click Test Data Source. If the test was not successful, go back and correct you settings. If a message is displayed confirming " Tests Completed Successfully, " click OK in the configuration dialog box, the wizard closes.

11. Repeat Steps 2 through 11 to create a DSN named Commerce with a Database Name " Commerce" in step 7.

12. Click OK to close the ODBC Data Source Administrator dialog box.

Installing Site Server 3.0, Commerce Edition

The Setup program detects the presence of Windows NT Server 4.0 and IIS 4.0. If these components are not present, Setup will prompt you to exit and install missing software.

Setup also checks for file system type (FAT or NTFS) and configures Commerce Server accordingly.

Before you run Setup, check the following:

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

- Make sure your login account is a member of the Windows NT Administrators group on the computer where you are installing Site Server. To do this, select the Start menu, select Programs, select Administrative Tools (Common) and select User Manager for Domains. In the User Manager, double click the Administrators group in the lower pane. See whether you are listed in the Local Group Properties dialog box as having administrator rights. If not, add yourself by following the steps below:

1. Click Add in the Local Group Properties dialog box.

2. In the Add Users and Groups dialog box, select your domain or computer name from the List Names From box. In the Names box, select the user account that you want to add and then click Add. Click OK to exit. Click OK again to close the dialog box and then exit the User Manager.

3. Restart your machine and select Close all programs and log on as a different user and log in under your own user account.

- Make sure that you have already set up the databases and system DSNs for the sample sites that you want to install (see Set Up the Databases and Create DSNs for the Databases).

- Make sure that the SQL Server service is running.

To install Site Server 3.0, Commerce Edition

1. On the Microsoft Site Server, commerce Edition CD, run the Serup.exe program, located in either the \x86 or \Alpha directory, depending on your platform.

2. When the Welcome dialog box appears, read the instructions and then click Next.

3. Read the Software License Agreement, and then click Yes to indicate that you agree to the terms of the agreement. If you do no agree, click No and Setup will terminate.

4. On the User Information screen, type your Name, Company. For Serial number enter 111-1111111. Click Next.

Appendix B the steps required to install Site Sever 3.0, Commerce (cont.)

5. Verify the directory into which the files will be installed. Click Next to install files in the default location, \Microsoft Site Server. (To change the directory, click Browse.)

6. On the Installation Choice screen, select Typical for the type of installation.

7. At the Database Configuration dialog select the AdServer site. Click Select DSN. Select AdServer and click OK. For DB Login, enter sa. Click OK.

8. Select the remaining sites by clicking the first site, holding down the Shift key and clicking the last site. Click Select DSN. Select Commerce and click OK. For "DB Login" enter sa Click OK.

9. Click Next. Follow the prompts to complete the installation.

10. At this point, Setup will proceed with the installation. After a few minutes Site Server, Commerce Edition will be installed.

11. Restart the computer.

Biography

Mr. Kanon Bhurahongse was born on May 1st, 1970 in Bangkok, Thailand. He graduated from King Mongkut Institute of Technology North Bangkok in 1992 with a Bachelor degree in Industrial Chemistry in the Faculty of Applied Science. He has joined Loxley Information Services Company Limited as Product Executive in the Business Development Department since 1996. In 1997, He started his graduate study at the Regional Centre for Manufacturing Systems Engineering of Chulalongkorn University in the Engineering Business Management joint program between Chulalongkorn University and Warwick Manufacturing Groups of the University of Warwick. At present, he is Senior Sales Engineer in the Sales and Marketing Department, Loxley Information Services Company Limited.