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碩士論文

南郵政通訊公司(VNPT)的新興移動商務生態系統--以DOCOMO I-MODE為標竿研究



**EMERGING M-COMMERCE ECOSYSTEM OF VIETNAM POST AND
TELECOMMUNICATION COPORATION (VNPT) – USING DOCOMO I-MODE AS
THE BENCHMARK STUDY**

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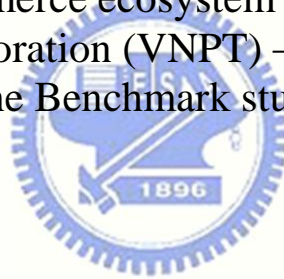
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Thesis

南郵政通訊公司(VNPT)的新興移動商務生態系統--以 DoCoMo i-
Mode 為標竿研究

Emerging M-Commerce ecosystem of Vietnam Post and
Telecommunication Corporation (VNPT) – using DoCoMo i-Mode as
the Benchmark study



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摘要

移動電話的普及和移動通信的快速發展帶動移動電話的電子商務（E-Commerce）的進化。現今，人們已不用一直坐在電腦前面，透過移動電話既能自由移動，亦可同時隨時隨地進行多項交易。日本的 DoCoMo 公司就是一個大膽實行電子商務之成功案例，變成後來讓人模仿的標竿範例。

越南是一個還在發展中的國家，其技術和市場趨勢還落伍他國。自 2010 年加入世貿後，而且在此時其國內移動技術又升級到 3G。就在這樣的條件下給越南造就一個新的機會，不僅加強接近其他國家在這方面的快速技術，而且更將其帶入到移動商務空間。利用新科技在越南現今的移動環境建造一個可持續的市場對許多越南企業來說都是艱鉅的任務。作為第一個在越南市場發展 3G 方向的企業，越南電信集團（Vietnam Posts and Telecommunications Group，以下簡稱 VNPT）很快就意識到這些，其既是機遇又是障礙。

本研究探討理想情況下 DoCoMo 公司的 imode，以為 VNTP 建立一個類似的移動電子商務生態系統舉出一些提示或建議。本研究將通過他們在不同時期、不同環境：越南—日本的情況下來作比較分析。

建議 VNTP 對商業價值的訂製。以 DoCoMo 的基準，針對一些服務內容提供過程與順序作分析方向。建議 VNTP 將移動銀行、娛樂排列於數據庫、信息類之前，將其放於發展的第一方位。指出以 VNTP 的資源如何建立一個類似的生態系統的結構與適當的地點。為建議今後的研究劃出了定量方向，最後希望將來會有其他研究者對此議題進一步探討。

ABSTRACT

The rapid development of mobile communications technology with the popularity of mobile phones has led an evolution of electronic commerce (E-Commerce) to the mobile commerce (M-Commerce). Nowadays, instead of being in front of PC, one can freely be mobile while able to make many kinds of transaction at anywhere by any time with a mobile phone. DoCoMo Japan is the first bold but successful volunteer company in M-Commerce trend. It has made DoCoMo the ideal case for the followers.

Vietnam is a developing country and sometime behind in technology and market trend. In 2010, upgrading to 3G mobile technology after being WTO member, Vietnam has an opportunity not only to be closer with other country in rapid technology pace but also to enter to the M-Commerce space. Utilizing new technology to make a sustainable market is a challenging task for any Vietnam Corporation in the current Vietnam moving environment. Viet Nam Posts and Telecommunications Group (VNPT), a state-owned group, soon realized both those opportunities and obstacle when being the first one participating in 3G direction.

This research examines the ideal case DoCoMo i-mode in order to draw some hints or suggestions for VNPT in building a similar M-commerce ecosystem. This is done by comparing two companies but analyzing them in different situation in Japan and Vietnam at different periods.

Suggestions of VNPT's centric role in commerce value chain have been drawn. After benchmarking DoCoMo, some elements of services offered and their process order are pinpointed. The suggestion for putting mobile banking, entertainment categories first then database, information classes later in action were also recommended for VNPT. Structure of resources for VNPT to setup a similar ecosystem was also pointed out and arranged in proper places. Recommendations for quantitative future researches were put in the end of this thesis with hope for other further study about these open topics.

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The fulfillment of the Master's degree is always a great personal achievement but it would not have been possible without the support of other people. From starting point to the end of writing process writing thesis always faced challenges and obstacles, therefore it needed countless guidance, ideas, and encouragement to be completed. I was lucky person to receive this kind of help from many sources.

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I. BACKGROUND AND ISSUES

1.1 Background

In the past, Vietnam's telecommunications market was closed, protected and regulated by Vietnam's government. As a result, Vietnam Post and Telecommunication Corporation (thereinafter called the VNPT) which is a state-owned corporation had controlled the whole market during 1990s. Taking advantage of monopoly position, VNPT as the only-one market player at that time has built a very good brand image. It also acquired a huge capital from profit and as well gained very strong resource capability. Since Vietnam issued market-opening policy in 2002, the telecommunications market in Vietnam has become more open and competitive.

In addition, Vietnam joined in World Trade Organization in the end of 2006. Under the WTO commitment, it has to fully open the Telecommunications market in 2012. Vietnam is obliged to enact a law on telecommunications that follow international practices and integration. It is considered as a step further with implementing the commitment. In this law, Vietnam will also allow foreign owned businesses to buy, transfer telecoms license and provide telecom services. In other words, this telecommunications law allows all businesses freely enter the telecoms market. So far has existed in the Vietnam telecom market many leading international telecoms companies, such as SK Telecom, Motorola, Ericsson, Nokia Siemens, Hutchison, Vimpelcom, AT&T and Cisco. The market is getting hot with the participation of big players in the world. The privatization of some state-owned company also offers a chance for foreign firms to create their early spot in this market.

Along with the movement of market, 3G infrastructure implementation was started in Vietnam at Q4 2009 by three network operators. Two of them are VNPT's key subsidiaries, which are Vinaphone and Mobifone. Vietnam Ministry of Information and Communications (thereinafter called the MIC) has strategically decided the technology 3G standard following European WCDMA standard. However, the cost of buying a license and investing infrastructure are about

carried out by network operators who won the 3G bidding competition. This huge cost of the license put a burden on network operators such as Vinaphone and Mobifone.

Coming with new advanced network of 3G mobile, the mobile commerce becomes more visible. It opens both opportunity and challenges for these network operators who are volunteers in this market.

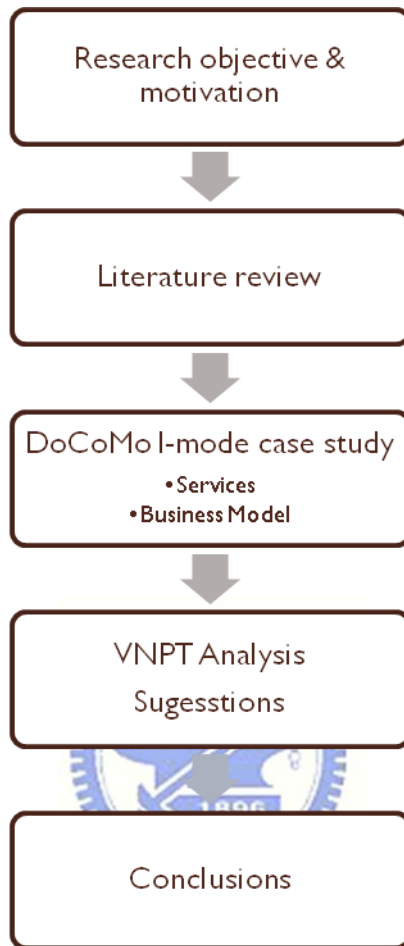
1.2 Issues, motivation and research methodology

When Vietnam fully opens its telecom market, progressive competition is inevitable. Such a situation presents several questions for VNPT to answer quickly and thoroughly since the market gradually opens up to foreign companies such as:

- How can VNPT still be a market player in a more intensively competitive mobile commerce market with emerging 3G technology?
- Can it follow any lesson from other companies in other countries as example of DoCoMo with i-Mode?
- What is the chance for VNPT to build platform or ecosystem for mobile commerce around its key competence of network operator such as Vinaphone & Mobifone companies?

The purpose of this thesis is

- Firstly to study one successful i-mode case in Japan as benchmark for VNPT
- Secondly to address issues favoring and challenging to VNPT in Vietnam new opening market
- Thirdly to evaluate the advantage and limitation of VNPT with such scenario
- Finally to break down each factor to build up the VNPT's ecosystem from its resource regarding to the benchmark



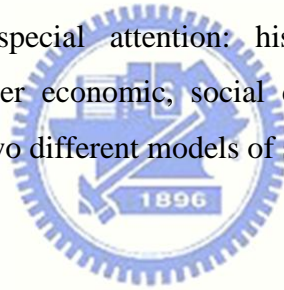
Research methodology:

- Conduct investigation the most successful case for developing ecosystem model in Japan (DoCoMo with i-Mode)
- Study current situation of VNPT in Vietnam mobile market
- Then benchmark VNPT with that ideal case
- According to Harvard writing center[1], the thesis will do the benchmarking as a comparative analysis. The process is as followed
 - Choose *frame of reference* - It will be: **Service and Revenue model** in which this research places two companies to compare and contract.

- Explain *grounds for comparison* – this thesis will show rationale behind the choice and make argument on difference or similarity between two companies
- Follow one *organizational scheme: text-by-text*, discuss all of DoCoMo with i-Mode, then all of VNPT.
- Link VNPT and DoCoMo to build a proposal for VNPT ecosystem like DoCoMo I-mode

Frame of Reference factors

- The research will go through all analysis part which was discussed in i-mode case, then places the two things DoCoMo with i-mode and VNPT with future “i-mode like” with an intention to compare and contrast; it is the umbrella under which this research groups them. The frame of reference consists of a group of similar or different things from which investigation extracts for special attention: historical information, capability and technology are alike however economic, social condition in Vietnam and Japan are different. They will lead to two different models of service provided and revenue.



Grounds for Comparison

- The ground for comparison is that both VNPT and DoCoMo developed from a government-owned and existed long time in monopoly status. When facing more intensive competition from existing companies and new entrance they need to evolve to adapt with a new situation to stay at top. When comparing services using different technology, the research does not compare the separate technologies that are elements of each; it looks at the service as a final value bringing to users and evaluates. In other words, services will be analyzed in the specific conditions regarding to economic, social and future demand. Hence this research will show how to build them to put together in one proposal for VNPT.
- Each characteristic of DoCoMo with i-mode this research will compare and contract with that of VNPT. This research will organize them in “text by text” scheme first discuss DoCoMo with i-mode above then VNPT to help realize the similarity and difference between them in order to construct an appropriate model for VNPT in terms of service

and revenue. Following this scheme will help a reader be able to see how logical and systematic in the research argument.

The expecting result of the thesis is to come up with

- Critical factors in setting up mobile commerce ecosystem in term of service and Revenue model
- Proposal of ecosystem for mobile commerce for VNPT in term of services and revenue model



II. INDUSTRY OVERVIEW

2.1 The 3G mobile technology and mobile commerce trend in the world

According to Morgan Standley, 3G technology is one of most important factors of infrastructures encouraging mobile commerce to develeop. In the Mobile Internet Report which Morgan Stanley released on December 15, 2009, the 3G mobile market over the world has recently been developed at a fast pace. This report showed a quick emerging and changing mobile Internet market. If there were only 273 million 3G mobile users three years ago with a growth rate of eight percent per year, last year this figure was 688 million subscriptions and developed with rate to fifteen percent per year. This year is considered the “sweet spot” of the market when the 3G penetration rate reach to twenty one percent, and it is expected with over 1 billion 3G user milestone. In 2014 the world has 2.776 billion 3G users (see figure 1)

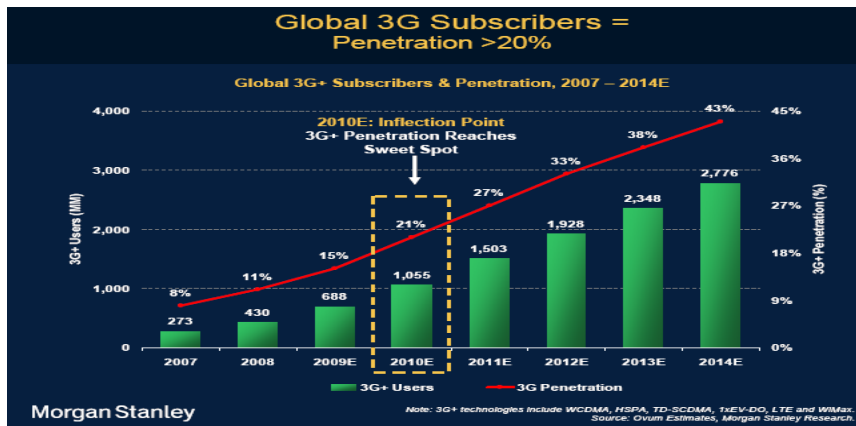


Figure 1 Global 3G subscribes
Source: Morgan Stanley Mobile Internet Report Dec, 2009

In this report, Morgan Stanley also drew a more detail the picture of development for several regions and areas. Japan now is the leading country in this technology trend with very high growth of penetration above ninety percent a year. Western Europe and USA are now also at steady growing with more than thirty percent of penetration each year meanwhile Asia and Pacific countries show themselves as the emerging market for thirteen to nineteen percent growth in the next two years.

In addition, another recent report of Morgan Stanley reveals that impressive mobile devices equipped with high bandwidth (3G/4G) mobile technology have led much quicker adoption rate of mobile internet via phone(see figure 2) and caused an increased willingness to pay for content.

This happens due to it permit users to conveniently participate further in mobile commerce activities such as game, apps, movie, music, GPS, trading and so forth (table 1)

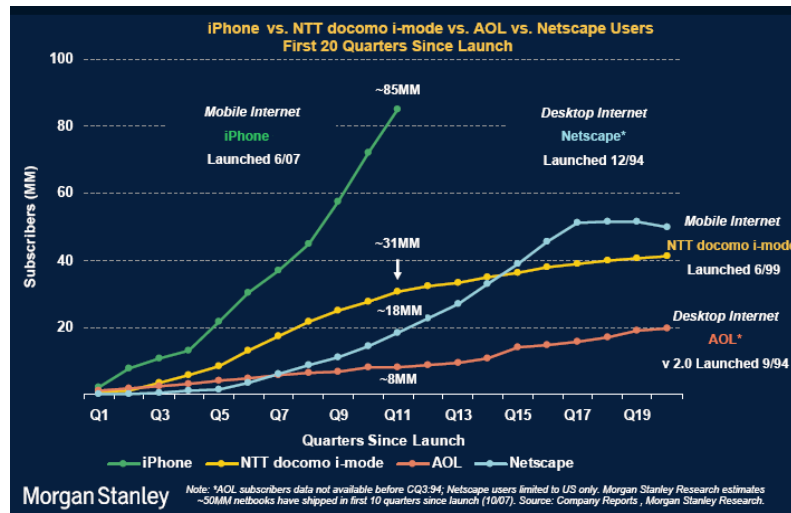


Figure 2 Mobile Internet vs. PC internet adaption rate
Source: Morgan Stanley Mobile Internet Report Dec, 2009

| Users Are Willing to Pay for Content On Mobile Internet | Users are LESS Willing to Pay for Content On Desktop Internet |
|--|--|
| <ul style="list-style-type: none"> • Easy-to-Use / Secure Payment Systems – ‘Embedded’ systems like carrier billing allows real-time payments; • Small Price Tags – Most content / subscriptions carry small price tags • Walled Gardens Reduce Piracy – Content exists in proprietary environments, difficult to get pirated content onto mobile devices • Established Store Fronts – Carrier decks / iTunes store allow easy discovery / purchase • Personalization – More important on mobiles than desktops | <ul style="list-style-type: none"> • Difficult-to-Use / Fragmented Payment Mechanisms That Are More Susceptible to Security Issues – Too many payment options for vendors / consumers + widespread fraud • Often Expensive + Cumbersome to Purchase Legal Content – DRM protection limits usage • Open Internet + Piracy – Most content in digital formats is available for free (newspaper / pictures) or for illegal download (music / video / applications) • Lack of Centralized / Large-Scale Marketplace for Legal Content Discovery / Purchase – Few players beyond iTunes + Amazon.com |

Table 1 User’s buying behavior on mobile internet vs. that on desktop
Source: Morgan Stanley Mobile Internet Report Dec, 2009

Sine new technologies offer more capabilities, users can utilize on mobile phone, the market for mobile commerce is expected to boom in next few years. According to ABI Research, mobile is going to get a lot bigger in the ecommerce market.

In 2009, ABI Research's report shows mobile commerce tripled in the United States, made up a US\$1.2billions market from US\$396 million in 2008. In Japan, which has one of the brightest mobile markets, mobile commerce surpassed \$10 billion in last year.

Asian consumers are also increasingly using their mobiles for financial transactions, and users are expected to spend \$1.6 billion via mobile commerce in 2010. This growth is primarily being driven by SMS, mobile Internet, and mobile application forms of payment. By 2013, more than \$12 billion in revenue will be generated through mobile sources. The total value of mobile commerce in the world in 2009 accumulated over 14.4 billion. The research firm is projecting that \$119 billion worth of goods and services will be purchased via a mobile phone in 2015.

Another research from Juniper also shows that robust growth of mobile payment transaction value is expected in the next few years. According to an even bolder prediction from Juniper Research, the global m-commerce market will reach an almost US\$300 billion industry by 2013. Juniper also believes digital goods such as mobile entertainment – ringtones, games, wallpaper, gambling – will continue to be the largest application for trading via the mobile phone, but that ticket purchases will also emerge as a major application area by 2007, and make up over 44% of global m-commerce market next year.

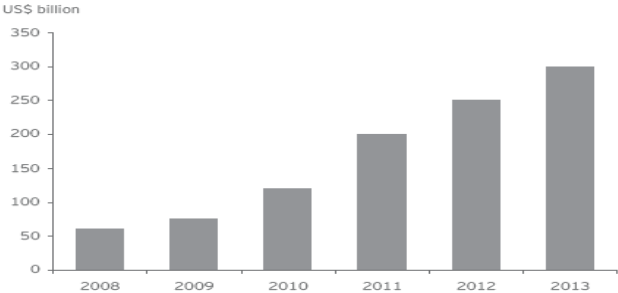


Figure 3 World mobile payment transaction value
Source: Juniper research 2009

2.2 Vietnam mobile industry overview

2.2.1 Vietnam mobile network history

Vietnam mobile market was established in 1994 when Vietnam Post and Telecommunication Corporations (VNPT) unit- VMC signed one US\$324 million business cooperation contract (BCC) with Sweden's telco Comvik International to form Mobilphone Company. BCC is a form of benefit-sharing concession that enables restricted market entry for a fixed period of time. The second VNPT's subsidiary – Vinaphone came into operation in 1999.

During 1995–2003, the mobile telecoms services sector had only one state-owned telecoms company firm—Vietnam Post and Telecommunications Corporation (VNPT). Vietnam signed a Bilateral Trade Agreement with the US in 2001 considered as major step for Vietnam joining to WTO five years later. This step also puts transition stage for private ownership of telecoms network and services. Foreign investment at transitional phase could change to joint venture form.

In 2003, another competitor (S-Phone) entered the market in the form of a BCC between Vietnamese companies Hanoi Telecom with a Korean partner(SK-Telecom). Local competition was more significant also in this year when two stated-owned companies directed by the electrical utility sector (EVN) and military (Viettel) received the licenses to compete with national monopoly VNPT.

Before Vietnam's WTO accession in late 2006, Foreign firms can only own up to 49% of the shares in Vietnamese telecoms firms and this limit will gradually rise to 51% by 2007 and up to 65% by 2010. Ministry of Information and Communications (MIC) reformed mobile market by setting up the pricing control regulations in 2002. In addition, Vietnam will pass The Telecom Law in July 1, 2010 to carry out its commitments to the WTO. Under this law foreign investor can run business with partner's license, buy, and sale shares in telecommunication firm or increase the share-owned percentage in local company.

2.2.2 Vietnam participating the world trend

On February 18, 2009, Vietnam Ministry of Information and Communication (MIC) received 3G applications from seven mobile telecom companies. After two months of reviewing all

application, MIC awarded *four* Vietnamese mobile firms for 3G licenses including: Vinaphone, Mobifone, Viettel and EVN Telecom.

Vinaphone, and MobiFone, both run by state-owned telecoms group VNPT, the military-owned Viettel, the joint venture EVN Telecom (state electricity owned) and Hanoi Telecom (Hutchison joint venture firm) have pledged to invest nearly US\$2 billion within the next three years to develop 3G infrastructure. All are secured 15-year licenses

In November 2009, Vinaphone already run the 3G network while Mobifone and Vietel launched their network at the beginning of year 2010. The EVN Telecom and Hanoi Telecom expect to come out soon in mid 2010.

From statistic data of Information and Communications (MIC), Vietnam in Q1 2009 is one country whose penetration level is more than 80% with 72.3 million mobile users. This current figure will increase dramatically to total 120 million by 2014 in Pyramid Research Projection.

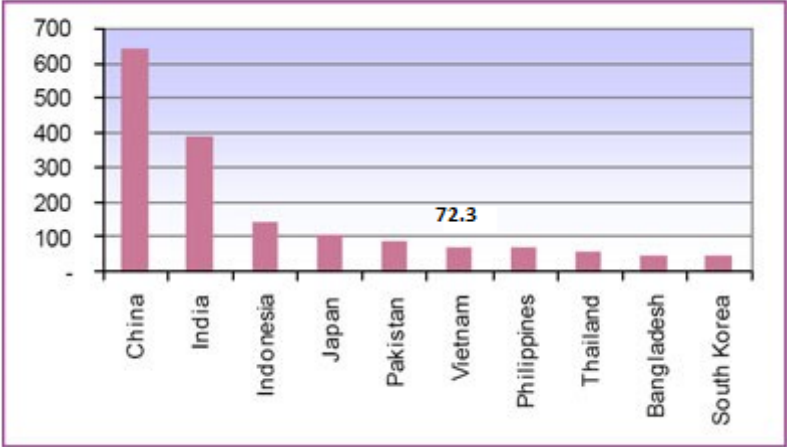


Figure 4 Largest Asia Pacific mobile markets, Q1 2009 (millions)
Source: Ministry of Information and Communications (MIC)

Pyramid Research one company study about Vietnam mobile market forecast that there will be 43 million 3G subscribers by 2014, or 36% of total subscriptions at that time.

Vinaphone - Vietnam's second largest mobile operator came first as one telecoms firm launching the 3G network at the end of 2009. The upgrade phase, which took just two months, enabled Vinaphone to launch the country's first mobile broadband services.

In the end of year 2009, the 3G network first covers important spots in the country; such as big cities and commercial areas. The final phase will be finished in 2020 with 98% coverage of all country in 2020. First phase will be introduced with basic 3G services such as video call, music download then advances services will come later from the second phase such as mobile banking, mobile TV in this year.



Figure 5 Vinaphone - Road map for implementation 3G network
 Source: Ministry of Information and Communications (MIC)

Vinaphone expects that the development will differentiate its services in Vietnam’s dynamic mobile market as demand for mobile data services grows fast.

Based on 3G infrastructure, according to KPMG Singapore, Vietnam is now showing strong adoption in a few areas such as top-up and gaming, but a slightly hesitated adoption in the more traditional areas of m-banking[2].

Along with this trend, there also exists a new fast growing digital content industry along with software industry in Vietnam in recent years

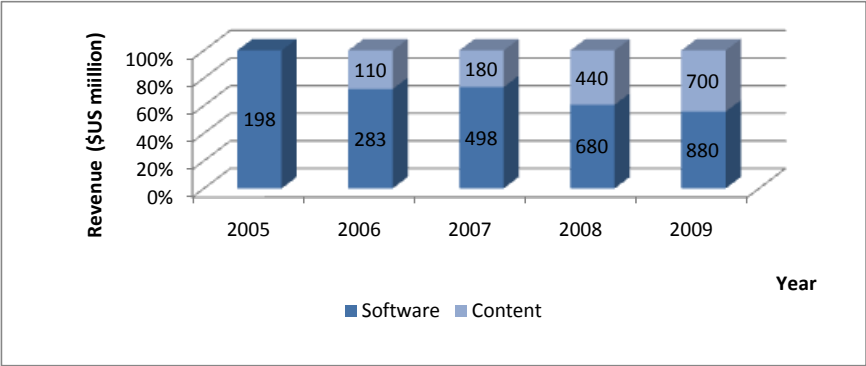


Figure 6 Vietnam software and digital content industry revenue
 Source: Ministry of Information and Communications (MIC)

III. LITERATURE REVIEW

3.1 Mobile Commerce

The early description of mobile commerce was first pointed out by Muller Veerse in 1999[3]. In his explanation, mobile commerce is a subset of electronic commerce, and any transaction made via mobile communication network or involved with monetary values is regard as mobile commerce. In later years, Tsalgatidou and Veijalainen[4], Clarke[5], and Barnes[6] approached with a perspective of transactions. They considered any kind and economic values transactions managed through at least one kind of mobile terminal equipments on the mobile network, as a part of mobile commerce. In 2001, Mackintosh[7] and Kannan et al[8] referred mobile commerce as an extension of electronic commerce on the Internet. Mylonopoulos and Doukidis had a systematic definition in 2003. It refers to an interactive ecology system of corporations and individuals, and this ecology system is built on the social economic background and various previous technologies [9].



The mobile market has seen significant growth in the past few years. Global m-commerce revenues expected to \$88 billion by the end of 2009. It enables a new opportunity for the growth of m-commerce. M-commerce is attractive for research because of its relative rapid growth, and prospective applications [10]. According to Varshney and Vetter, M-commerce covers a broad applications[11]. There are twelve m-commerce applications identified and classified. Naming several important categories of m-commerce applications are mobile financial applications, mobile advertising, mobile inventory management, locating and shopping for products, proactive service management, wireless re-engineering, mobile auctions or reverse auctions, mobile entertainment services and games, mobile offices, mobile distance education, and wireless data centers. They then explained detail for each application and networking requirement. This gave systematic approach for those who want to develop mobile commerce application based on mobile network.

3.2 Mobile commerce value chain

In 1985, Michael Porter defined value chain as the linkage and integration of a series of activities in which enterprises deliver the created and valued products or services to customers[12]. He also indicated that the value chain of any company is included in a larger value hierarchy. This value system is created from the value chains between the many firms from its upstream to its downstream organizations. In this perspective, value chain concept both is analyzed in term of the enterprise's internal value activities, and the external entire industry to compare the cost with competitors. Mobile commerce comprises products and services. According to Barnes [6] in 2002, the practice of adding values to the ultimate users also relates many possible members, largely including bank, mobile network operator, customer, and other value providers [13]. This process of value creating activities both draws in more members such as content supplier and mobile service suppliers, enabling them an opportunity to join in the activities and also changes the value system of the traditional mobile communication [4]. When the new technologies came out such as 3G technology with new services offering, the number of providers is increasing. As Ying-Feng Kuo and Ching-Wen Yu classified in 2005[14] there are total of 11 identities involving mobile commerce value chain such as Technology platform vendors; Infrastructure and mobile equipment vendors; Infrastructure and mobile equipment vendors; Application developers; Content developers; Content aggregators; Mobile portal providers; 3G mobile network operators; Mobile service providers; Mobile equipment retailers; Customers. While each of them has own role, responsibility and value adding to the whole value chain they could merge with each other to be a bigger identity which has more capabilities. In the value chain, network operator has several advantages over the peer providers. They can act the any role in value chain so they also could fit in several types of business model.

3.3 M-Commerce ecosystem

In nature, an ecosystem consists of a world of plants and animal – herbivores, carnivores, insects and plants of all kind which are in balance. In 2003, Takeshi Natsuno defined ecosystem model includes mobile phone manufactures, content providers, carriers such as DoCoMo, server manufacturers, customers coexist, compete and prosper together[15]. M-commerce services require real-time delivery or service quality, security, location management, transactions support,

and wireless network reliability. Wireless LANs (WLANs), cellular networks, and satellite-based networks can support one or multi m-commerce services such as mobile auctions, interactive game, mobile finance service, mobile advertising, mobile entertainment services, proactive service management, and mobile inventory management[16]. Content of the service is made and integrated by one or many providers among Technology platform vendors; Infrastructure and mobile equipment vendors; Infrastructure and mobile equipment vendors; Application developers; Content developers; Content aggregators; Mobile portal providers; 3G mobile network operators; Mobile service providers; Mobile equipment retailers in the M-Mobile value chain. All coexist and cooperate base on mobile networks infrastructure creating M-commerce ecosystem.

3.4 Business models for M-Commerce

In the past few years, some interesting case of mobile commerce was conducted. Xianjun Geng and Andrew B. Whinston in 2001 pointed out that network operator could gain benefit from usage-based pricing or prepaid flat-rate plans[17]. In 2002 Mitsuru Kodama studied the market expansion and global strategy of DoCoMo [18]. He pointed out that one factor helped DoCoMo and i-Mode successful was building up “portal community”. It gives users “one stop shop for all”. DoCoMo took advantage as dominated player in supply chain creating and enforcing an exclusive group of service providers. With this power Japan’ DoCoMo had built profound ecosystem for its 48 million customers around i-Mode. Users pay in usage-based. On the contrary, Vodafone[19] does not control third-party providers that its customers can access. News services and content are included in Vodafone’s subscription charge for second-generation (2G) to 3G services. It offers flat rates for data services and event-based or per-minute charges for games, live TV and concerts. South Korea (SK) Telecom’s created one business model to charge a fixed monthly subscription rate (around US\$6) for voice, data, and SMS services. In 2008, still from control rights point of view, Upkar Varshney sum up two kind of business model for network operators [16]. They are centric business model and managed one. Their differentiation is the way network operation controlling network access and content like DoCoMo. In centric approach operators strictly take over both but in managed way they let user free to choose content

providers such as Vodafone. Decision upon each way also setup benefit sharing mechanism among partners. He finally came up with a hybrid model of these two.

| Model | Attributes | Example |
|------------------------|---|----------|
| Centric Business Model | Network operators control both network access and content creating and enforcing an exclusive set of service providers then redistributing benefit along partners | DoCoMo |
| Managed model | Network operators control network access only let users free to access to third parties for content | Vodafone |
| Hybrid model | The control right of network operators could vary depending on its capabilities and market power | |

Table 2 Business model for mobile network commerce

Source: U. Varshney, "Business Models for Mobile Commerce Services: Requirements, Design, and the Future," *IT Professional*, vol. Vol. 10, No. 6., pp. 48-55., 2008.



IV. BENCHMARK

4.1 NTT DoCoMo with I-mode analysis

4.1.1 NTT Coporation and NTT DoCoMo brief history

Nippon Telegraph & Telephone Corporation (NTT Corp) was originated in 1869 when the telegraph was first introduced in Japan. NTT used to be a monopoly government-owned. In 1985 TT was privatized. After that it have formed new subsidiaries, invested heavily and developed cutting-edge technologies. In 2009, NTT Corp. is a worldwide brand name ranked 44th in Fortune's Global 500. It has operating revenues of more than \$103,684.4 million with 196,300 employees worldwide. Following are some millstones of NTT Corp

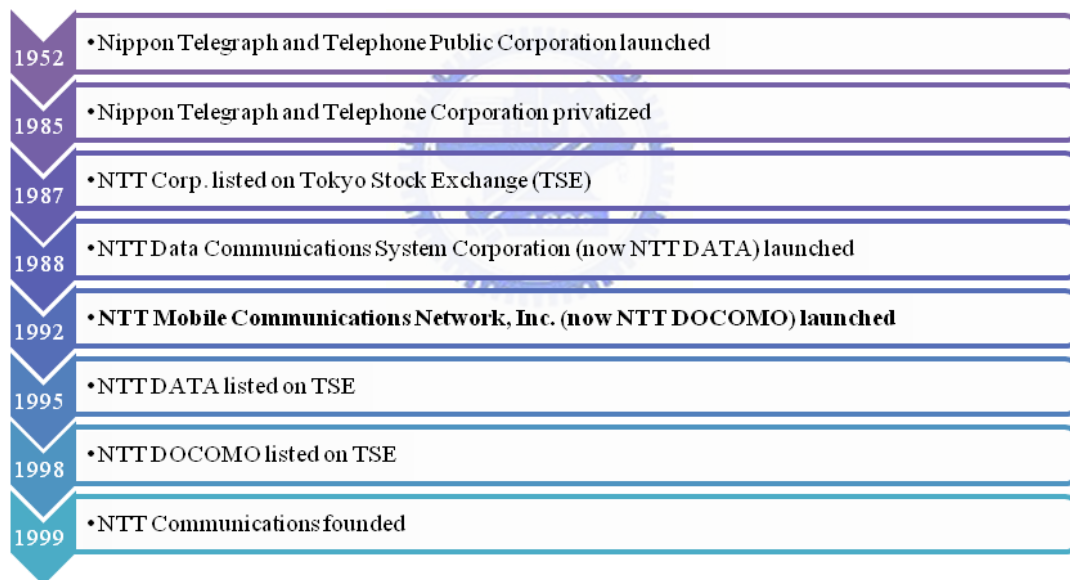


Figure 7 NTT Corporation Milestones

Source: NTT website

The NTT Group led by NTT Corporation includes five major subgroups, (see figure 8)

- NTT Communications (Global data, IP, Voice and IT)
- NTT East (local carrier)
- NTT West (local carrier)
- NTT DOCOMO (mobile carrier)
- NTT Data (systems integration)



Figure 8 Details of NTT Group

Source: NTT website

NTT DoCoMo (or DoCoMo hereinafter) is subsidiary of NTT Group. It was established in July 1992 when NTT Mobile Communications Network, Inc took over NTT Corp's mobile communications business. NTT DoCoMo focuses mainly mobile phone services. ,

4.1.2 I-Mode Overview

4.1.2.1. What is I-Mode?



Back to January 1997, recognizing that future of wireless network lays on non-voice data, Koji Oboshi, president of DoCoMo charged Keiichi Enoki with setting up a new organization that would concentrate on non-voice communications for retail consumers. Named as Gateway Business, it was working on a new service, called i-mode. I-mode would offer a mobile Internet service to customers over their mobile phones. It was considered as *an ecosystem for mobile Internet services* including browsing, downloading, e-mail, and other applications. By the middle of 2001, i-mode had comprised around 20 million users approximately 20 per cent of the total Japanese population. In 2001, DOCOMO also introduced i-Mode on FOMA™, the world's first 3G commercial mobile service based on W-CDMA. It made the NTT DOCOMO more significant global brand. In 2001, DoCoMo also became the most widely used mobile Internet service in the world. Up to 2010 there are over 48 million subscribers using i-mode. It rapidly grew up and expanded into many services from the initial. The brief i-mode descriptions are listed in table 3 and milestones for i-mode history of development are followed, see figure 9.

| i-mode | Characteristic |
|---------------------------------|--|
| Mode | “always on” i.e. charged on packet but time |
| Fee | <ul style="list-style-type: none"> • Fixed : 300 Yen / Month • Traffic based: 0.3 Yen / 1 packet of 128bytes |
| Physical access on phone | <ul style="list-style-type: none"> • “i” button through “i-menu” • Key URLs |
| Fundamental services | <ul style="list-style-type: none"> • i-mode mail (compatible with internet mail) • Official websites in portal • Unofficial sites |
| Standard | Internet standard |
| User define | Programmable in c/i-html code (cHTML) |
| Exchange capability | Mail/ URLs between phone and PCs |

Table 3 i-mode main characteristic
Source: T. Natsuno, "i-Mode Strategy," 2003

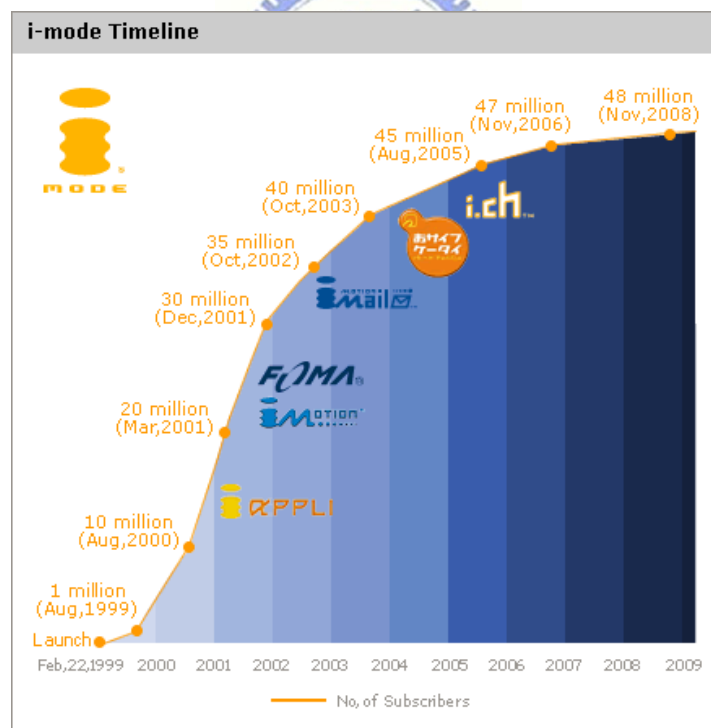


Figure 9 i-mode Timeline

Source: NTT DoCoMo Website

The significance of i-mode is the way offering “always-on” functionality. This allows users to keep their devices on but pay only for actual traffic because of the capacity of packet network[10]. Exchangeable data between phone and PCs also provides convenience for users. In one step DoCoMo at that time could make a mobile as pocket PC in narrow sense.

Customers use i-mode through the network carrier (DoCoMo) to access content provided by official or unofficial providers. Content providers provide content in form of data or application to users also via DoCoMo network. The process is depicted in Figure 11

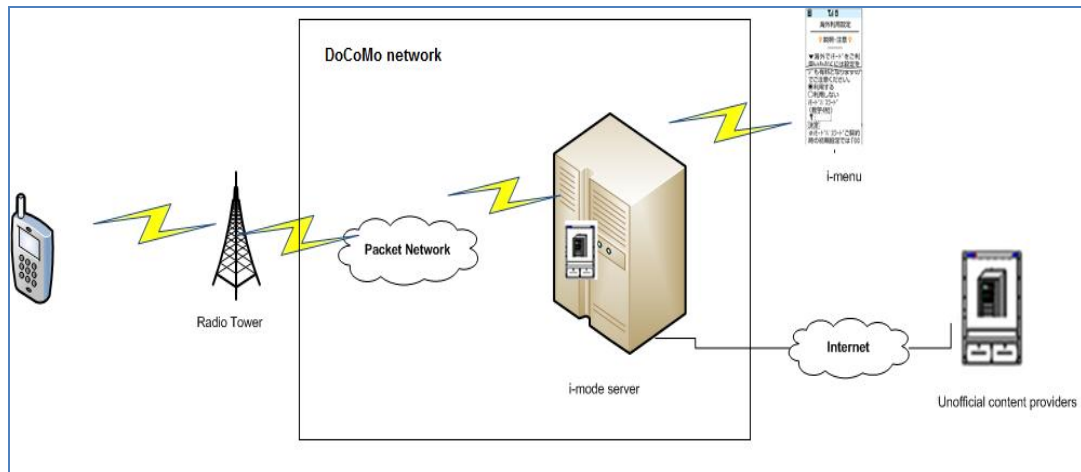


Figure 10 i-mode network
Source: T. Natsuno, "i-Mode Strategy," 2003

4.1.2.2. What are i-Mode services?

From i-menu of i-mode are provided numerous services to customer. Even though i-mode menu is in Japanese however users can also access content provided by content provider through English interface. Summary of i-mode service are listed in the table below

| Service | Launched | Remark | Description |
|--|----------|---------------------------|---|
| i-mode | 02/1999 | mobile data service | Mail and Information retrieve |
| i-appli  | 01/2000 | i-mode with Java | The software (programs) to automatically update weather forecast displays, news and to play new games as well |
| i-area  | 07/ 2001 | Location Based Service | Application helps the user to check the traffic and store information, other convenient information and the weather forecast for local areas, as well as the map information to the user's current location |
| i-motion  | 10/ 2001 | Dynamic Video Content | This function related to video distribution programs for i-mode mobile phone terminals and the contents. The high-speed communication service of FOMA (3G) offers customers with the latest movie theater information and details of the sports highlights available in video |
| i-shot  | 06/ 2002 | Digital Camera Capability | A feature that provides transfer of still images captured with an i-mode compatible phone. The images could also be sent to phones of other carriers or PCs |
| i-motion mail  | 01/ 2003 | Video captured via email | This service transfers video captured with an i-motion compatible mobile phone via e-mail. It features a transmission speed of up to 15 frames/sec, thus permitting smooth motion video to be enjoyed with a mobile phone |
| "OsaiFu-Keitai"  | 07/ 2004 | wallet functions | "OsaiFu-Keitai" refers to mobile phones equipped with contactless IC card, as well as its useful function/services enabled by the IC card. With this function, mobile phones can be utilized as electronic money, credit card, electronic ticket, membership card, airline ticket, and more |
| i-channel  | 09/ 2005 | News and related | This service distributes the latest news, weather forecasts and other information to i-channel compatible i-mode phones. The information is displayed on a standby screen without any special operation and users can access to more detailed information with a press of a button |
| "ToruCa"  | 10/ 2005 | info-capture function | The ToruCa service enables users to capture information into their mobile phone with ease, using the mobile phones various interfaces (FeliCa, Mailer, and Infrared etc.). With the captured information you can perform an in-phone search, manage contents simply and easily with the sort function and exchange information hassle free with fellow ToruCa compatible mobile phones. Also, by pushing the "Details button", even more detailed information could be captured |

Table 4 i-Mode services
Source: NTT website

4.1.2.3. What is I-Mode revenue model?

Upkar Varshney classed the DoCoMo with i-Mode revenue model into the centric business model. The network operator (DoCoMo) controls both network access and content. It initiated and welcomed an exclusive set of service providers to join then redistributed benefit along partners [16]. In other words, the business model DoCoMo build on i-mode can be named as a supportive business model in which company shares high revenue with for official content providers [20]. The points of revenue model and benefit sharing mechanism

1. Company keeps a low monthly fee of normally 300 yen (200 yen fee for packet transmission and 100 yen fee for iMode service). Fee for other services are also cheap depending on traffic, for example - e-mail: 1 to 4 yen upon email size, ring tone: 20 yen downloading of still image: about 7 yen (see table 4 for more about services)
2. DoCoMo does the billing integration, extracts the commission of handling bill. DoCoMo hold 9% revenue from all sites for providing integrated billing service to customers then pay the rest of the money to content providers or aggregators (see fig 12).

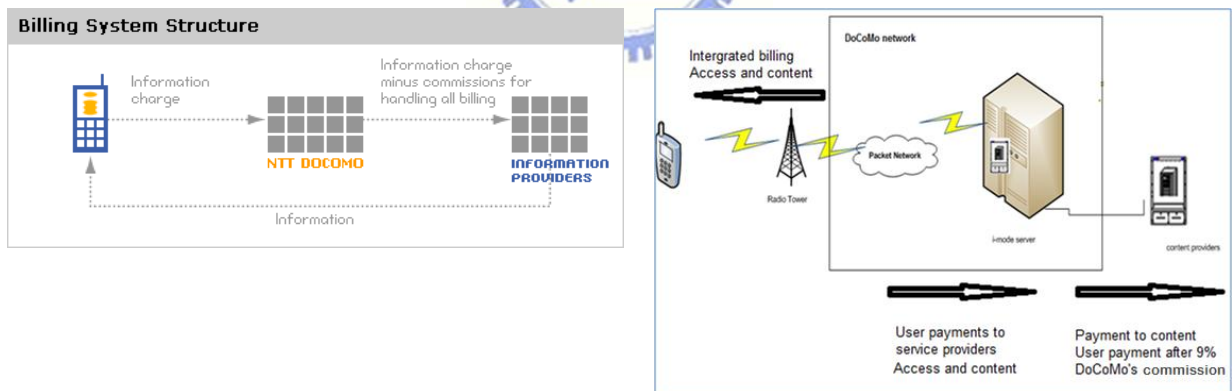


Figure 11 DoCoMo's billing structure and revenue sharing mechanism
Source: NTT DoCoMo

| Service name | Information provider | Summary description | Monthly subscription |
|-----------------|---|--|----------------------|
| Weathernews | Weathernews, Inc. | Daily and weekly forecasts; forecasts around the world | free |
| CNN | CNN | 24-hour news and information | ¥300 |
| Asahi Shimbun | The Asahi Shimbun | News and opinion | ¥100 |
| The Chosun Ilbo | The Chosun Ilbo | South Korean news | free |
| People's Daily | People's Daily | Chinese news | free |
| Nikkei News | Nihon Keizai Shimbun, | Nikkei English Inc.news | free |
| Bloomberg | Bloomberg LP | Latest news stories, market data, stock quotes, personal watch list | ¥300 |
| Dow Jones | Dow Jones | News about global financial markets | ¥300 |
| TMTDW | Tokyo-Mitsubishi TD Waterhouse Securities | Latest financial market news; US equity trading service | free |
| Disney-i | Disney | Download your favourite Disney character; Disney ring tones; games; Disney information | ¥100 |
| Pokemolo JOY | XING | Download ring tones | ¥300 |
| MiracleGP | HUDSON | Racing car game | ¥300 |
| imahima! | ImaHima, Inc. | Check the status of your friends; contact and plan things; create personal pages | ¥100 |
| Cooking Japan | Osaka Gas | Recipes and cooking hints | free |
| TokyoFoodPage | Nokia Japan | Guide to eating and dining | free |
| i-Townpage | NTT | English version of Japanese Yellow Pages | free |
| Fedex | Federal Express | Track the status of your package anywhere, anytime | free |

Table 5 i-mode service fee
Source: T. Natsuno, "i-Mode Strategy," 2003

4.1.3 Why I-mode?

I-mode came to reality because of combination of many factors but there were some strategic points they are combined and listed here:

4.1.3.1 *The saturation of voice service or second S-Curve of growing*

When CEO of DoCoMo was initiating i-mode project, he had realized that DoCoMo's growth curve might be moving into "a second S-curve" and proposed the a management policy forward to 'Shifting from Volume to Value'. At that time, Ohboshi already knew market well when he predicted the sign for first S-curve started when the number of subscribers began soaring. There was a first time in telecommunications industry history three years in row; mobile phone industry acquired 10 million new subscribers per year from 1996 to 1998. However it was not either sustained nor never be staturated. When all the consumers want to use mobile phone signed up, the first S'growth might reach the end. At that time, the total number of mobile phone subscribers was around 40 million as the total market could reach about 80 million. The limit of 60 millions mobile phone subscribers to reach was possible while 60 million fixed-line phone subscribers were taken into the consideration. There was another 20 million, before hitting the upper limit of 60 million. Ohboshi pointed out that next curve for grow lies in data-transmission growth (see figure 12).

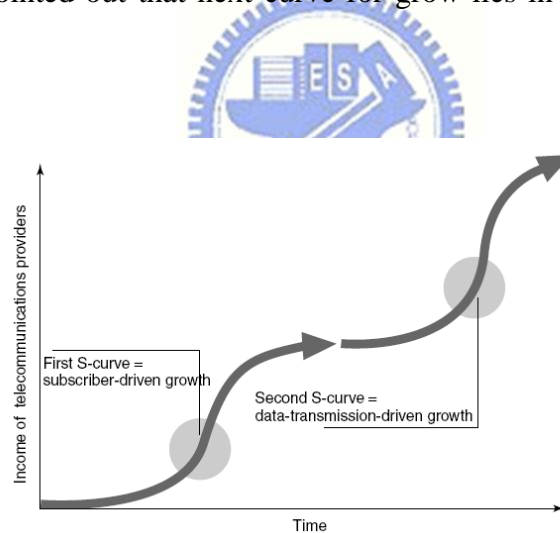


Figure 12 Ohboshi' proposal S-Curves of mobile industry' s growth
Source: DoCoMo

4.1.3.2 *Stand out of intensive competition by ecosystem*

Before the existence of i-mode, there was a severe competition between big market players as KDDI, J-Phone and DoCoMo and a threat of big comer like Motorola. Even though DoCoMo dominated market and have great market power in whole supply chain it also saw the need of distinguished characteristic to stand out from crowd and remained at the peak. Using its power to

build i-Mode ecosystem was very smart strategic move of DoCoMo ahead its strong completion. Hence its market share bounded back in years after launched i-Mode, each month it hits around 80%

4.1.3.3 *Text or e-mail culture emerges*

In 1996, young Japanese people liked send text from mobile phone to pager. This is one way communication but not the way around. PHS (Personal Handyphone) came to exist in 1997 allowing people to send text between mobile phone but within same provider's system or PHS system, in other words it was still a closed system. Open system (i-mode) for sending email or message between mobile phones or between phone and PCs which was not limited in the same providers' network had chance for bringing into existence.

4.1.3.4 *Content packet- New Services Emerge*

Everyone likes the abundance or pool of information on internet but people confused about how good source of information is and which mean to access it. In Japan, PCs and Internet use are not yet as common but everyone has a mobile phone. That gave DoCoMo a considerably large base of users and an untapped market. In addition, the idea bring internet content such as email, website, finance, navigation to mobile phone was a new approach to bolster for i-mode idea. There was a need of one initiation step as i-mode ground, so then came to the mobile phone for many internet based contents.

4.1.4 How to build I-Mode?

4.1.4.1 *Identify the roles*

In order to build i-Mode and execute the centric business model as mentioned above some conditions DoCoMo must meet. The key steps and elements for building I-mode ecosystem would be also addressed as basis for the benchmark.

DoCoMo plays a central role in value chain. It cooperate closely with equipment manufacturers, content providers, and other platforms to guarantee that wireless technology, content quality, and

user experience evolve jointly. This synchronization ensures that customers, partners and shareholders share interests with end-user's, thus enabling all parties to maximize value and to continue to improve the quality of products and services connected with i-mode.

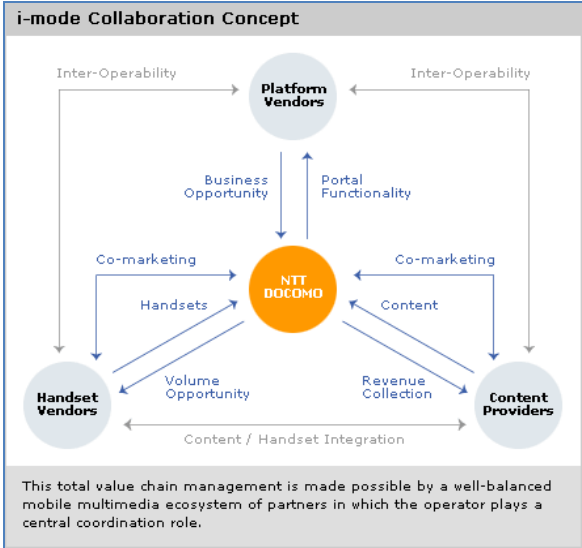


Figure 13 Value chain management
Source: DoCoMo website



4.1.4.2 Identify the concepts

Becoming a coordinator for a system as a whole, DoCoMo try to fulfill four concepts to build one complex system as i-mode (see Table 6). DoCoMo had to carefully plan steps and chose right approach to take into action all concept and vision, which helped i-mode got off the ground and avoid the negative feedback loop. It designed the content portfolio and picked the stimulus to attract users to those. In the i-mode content portfolio, all content is divided into four categories (see summary in Table 6, 7 & figure 15)

| Concept | Definition |
|---------------------------|---|
| <i>Positive feedback</i> | A virtual circle of subscribers, service providers and new development i.e. increase in subscribers leads more service providers to take part in, which then appeals more subscribers and thus generates new positive development |
| <i>Increasing returns</i> | Positive feedback will lead one side in a competitive relationship obtain an overwhelming victory |
| <i>Emergence</i> | Emergence is evolution at the level of individual components which create new technologies and methodologies |
| <i>Self-organization</i> | Evolution of the organization as a whole |

Table 6 Core concept of complex system
Source: "i-Mode Strategy" book - 2003.

| Category | Characteristic | Requirement | |
|---------------|---|---------------|----------------------------|
| Information | Time-sensitive information – news and weather | Freshness | Keep the positive feedback |
| e-commerce | Banking, securities transactions, and ticket reservations | Depth | |
| Databases | Restaurant guides, dictionaries and other information, available in database form | Continuity | |
| Entertainment | Fun | Clear benefit | |

Table 7 i-mode content portfolio characteristic and requirement
Source: T. Natsuno, "i-Mode Strategy," 2003

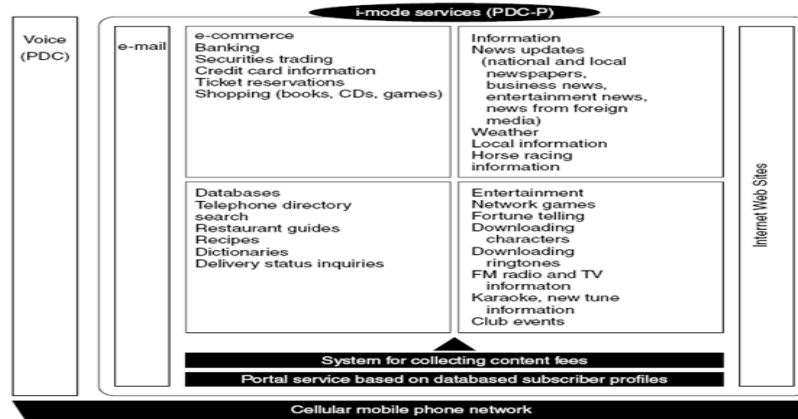


Figure 14 The i-mode content portfolio
 Source: T. Natsuno, "i-Mode Strategy," 2003

4.1.4.1 Identify the organization's structure

In detail, to execute and follow the strategic concept of value chain as above, Gateway division in DoCoMo organized the structure to execute and follow the strategic concept of value chain (see figure 15).

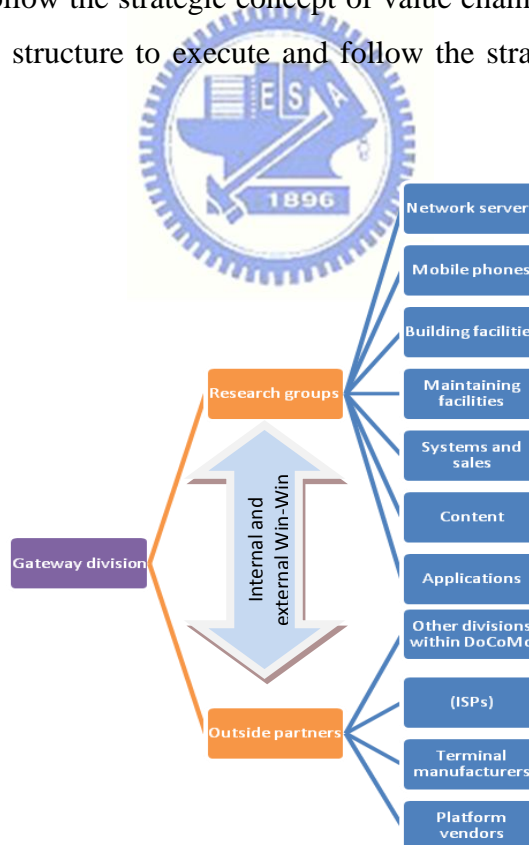


Figure 15 Organization structure
 Source: DoCoMo website

4.1.4.2 Identify the actions

From viewpoint of roles and relationship between DoCoMo and other identities in Value chain management DoCoMo had done some courses of action (see figure 16)

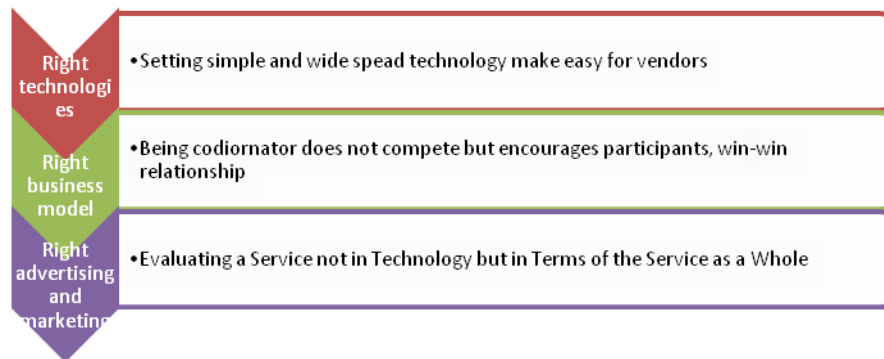


Figure 16 Actions in building i-mode

- First, it selected right technologies or *De Facto* Standard such as cHTML(compact HTML) which is a subset of HTML, a common language on internet as the language for i-mode sites. Even it was considered less efficient for wireless than WAP(Europe) or WML(USA) but its commonness required minor effort from partners which welcomed more partners.
- Second it build centric but supportive business model in which DoCoMO processes the billing system, handles the hard word of collecting money while letting partners focus on their job that encourages more outside associates. In other words, DoCoMo was in charge of tedious job but charge a small portion of money (9% for commission) that motivate partners come even from the scratch(see appendix 3)
- Third, it marketed i-mode services as service bringing convenient for customer rather than technology which build on. It became more easily understood and engaged.

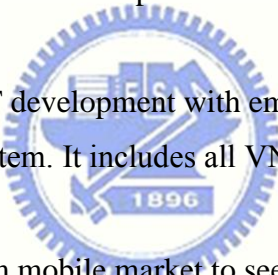
4.1.5 Why I-Mode successful and lesson learnt?

In this part this research will sum up key factors which contribute to the success of DoCoMo's ecosystem i-Mode which might focuses on service offered and business model point of view regarding to all research findings in the past. It will later lead to the framework to benchmark VNPT

In short, the main factors for DoCoMo successful in Japan are

- Low fees of content and data [20],[21],[22], [23], [24]
- Services offered not only for business customer but for the wide-ranging population, in particular youth and women (e.g., entertainment) [21], [25], [24].
- Content provided by companies rather than the operator, welcome for unofficial sites[20, 21, 23],[24], [25], DoCoMo did not compete with content provider but motivated competition between content providers [26]
- Harmony of the whole value chain, with ease of use, and appropriate handsets [21] [25].
- Appropriate and supportive business model, i.e. with high revenue shares for official content providers [16],[20].
- Service not marketed as “internet” [20], [24], [27]
- Domination of operator over equipment manufacturers[20], [24], [26],[28]

The next part, the research will follow the same pattern of DoCoMo with i-mode analysis:

- 
- Firstly, take a glance at VNPT development with emphasis on area of its growth favoring to build an i-mode like ecosystem. It includes all VNPT’s internal factors toward M-Commerce.
 - Secondly, explore the Vietnam mobile market to see whether the current status of VNPT especially its two subsidiaries in that market favor for building M-Commerce or not. It comprises VNPT’s external factors toward M-Commerce in term of market position.
 - Lastly, examine other external favor factors for setting up M-Commerce system such as Vietnam technology trend, social economic to have a complete look the chances of VNPT’s internal factors toward M-Commerce

4.2 Why “I-mode” VNPT analysis – Internal factors

4.2.1 VNPT brief history of development

Vietnam Post and Telecommunications Corp (VNPT) – is the state-owned cooperation. It comprise of many sub companies and resources. According to General Statistics Office of

Vietnam, VNPT contributed \$USD 1.53 billion accounting for 75% of National telecoms revenue contribute to GDP during the first 6 months of 2009.

Establish and restructured from Vietnam Posts and Telecommunications Corporation on January 9, 2006 - VNPT Group has a vision in diversified of posts, IT and telecommunications market. Acquiring great capital and resource when being only monopoly-dominated, state-owned corporation in the past, VNPT now have to gather together all economic sectors to joint its process of development with a mixed ownership structure and flexible business model in order to achieve its vision. Here are some milestones of VNPT development.

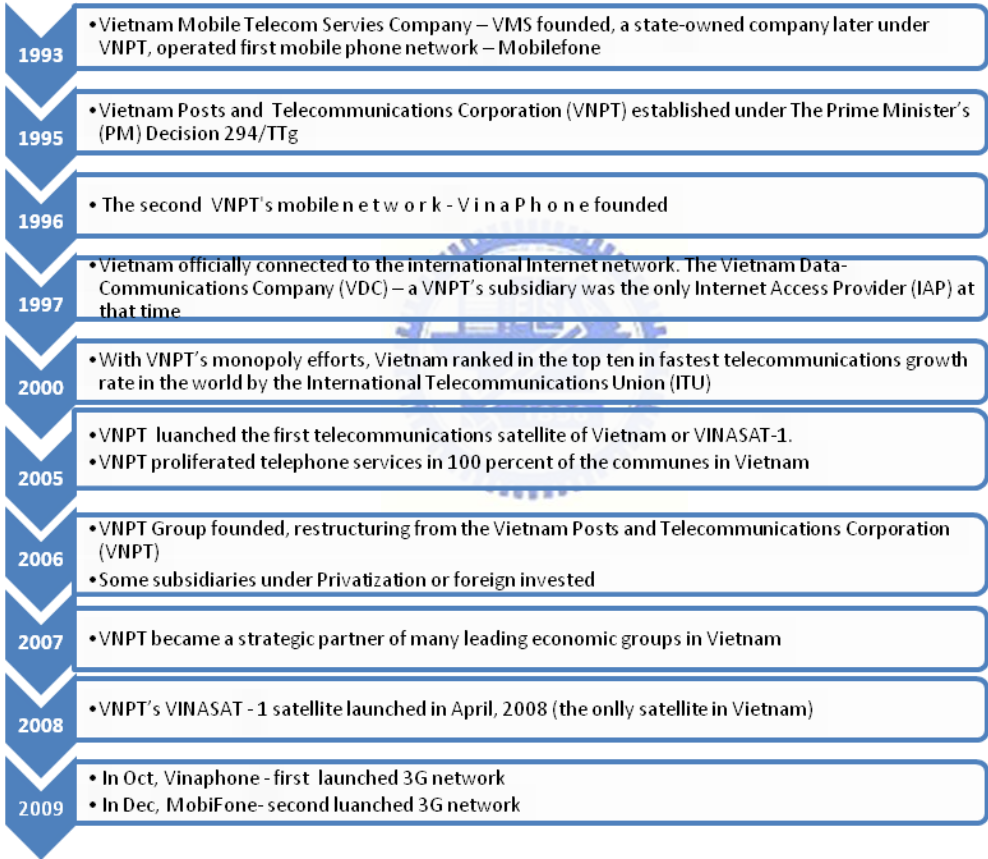


Figure 17 VNPT landmark
Source: VNPT website

VNPT's organizational structure includes (see figure 18)

- 4 units of management and corporate executive
- 39 subsidiary units

- Associated companies

The VNPT group combines systematically supportive companies ranging from service, manufacture, banking, finance units to invest, strategic ones. This corporation owns company running national and international business level such as Vietnam Telecom National (VTN) and Vietnam Telecom International (VTI). It has almost components in hand to build ecosystem for mobile commerce

- Internet infrastructure provider such as Vietnam Data communications Company (VDC) Media & software Development (VASC), Optical companies
- Mobile network providers such as Mobifone and Vinaphone
- Hospital, education Institute
- Consulting, finance companies
- Telecommunications equipments, contractions companies and other joint venture companies etc

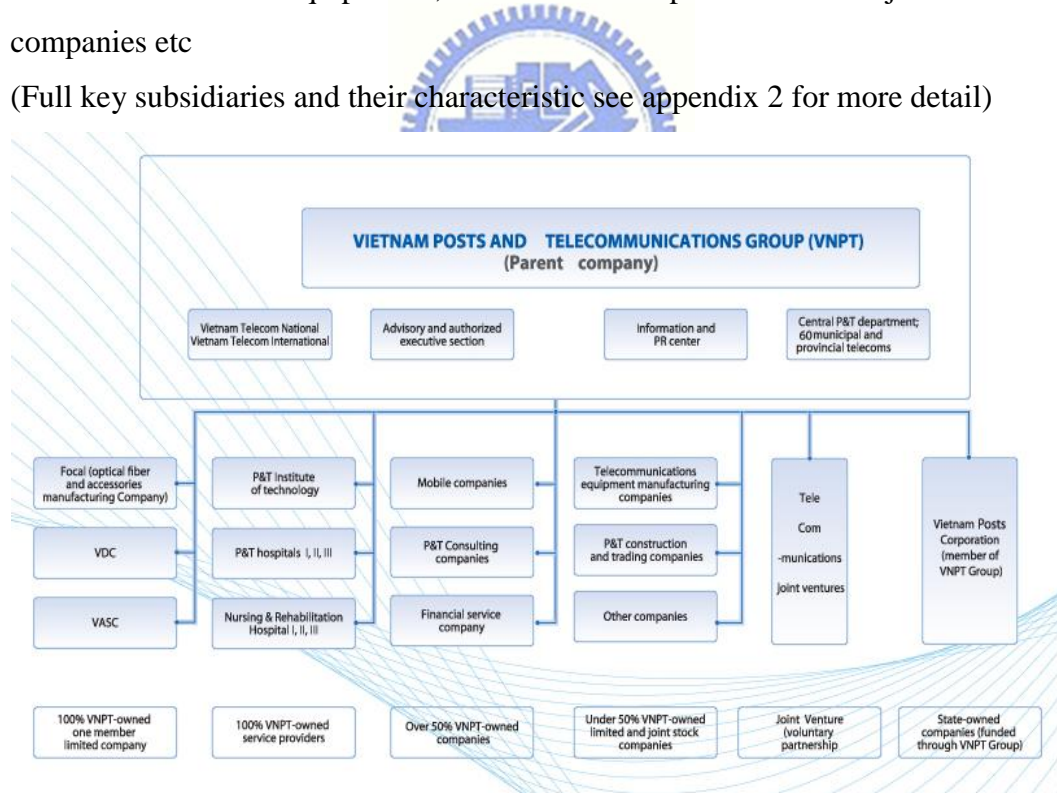


Figure 18 VNPT Group structure
Source VNPT website

With its state-owned monopoly position VNPT has involved and grown its power in many Information & Communications Technology (ICT) sectors in Vietnam. Following part will examined its evolvments

4.2.2 VNPT -Vietnam internet market leader

From 1997 when internet came to exist in Vietnam, Vietnam had only four Internet service provider VNPT, FPT, SPT and Netnam. Up to now Vietnam has 16 ISP, however taking lead in developing internet in Vietnam, VNPT is always the leader of internet infrastructure and internet service provider. It booted the number of internet user from 300 people in 1997 to 21.430.463 in QI 2010. VNPT has increased market share and hold three quarter of Vietnam internet market after 13 year development from 1997.

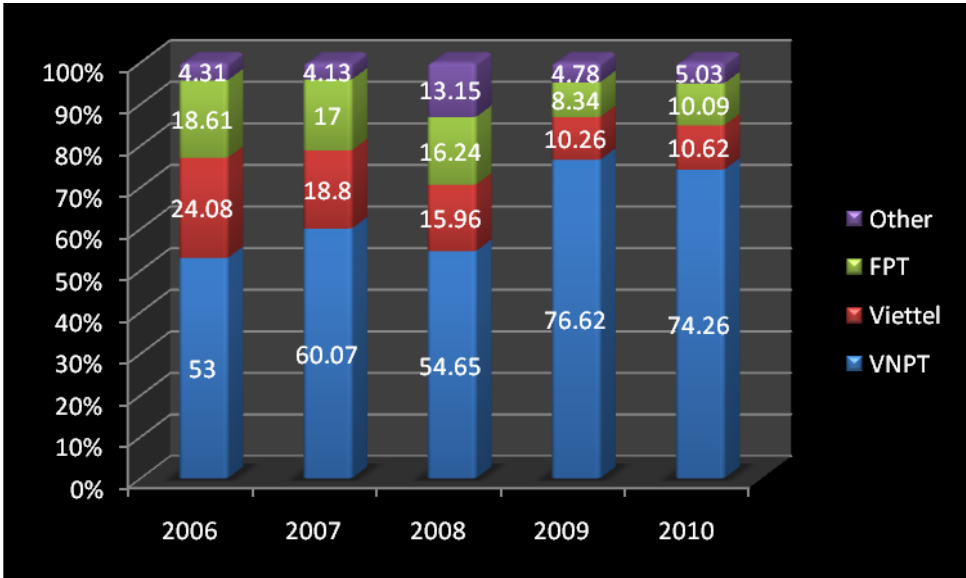


Figure 19 Internet market share of VNPT
 Source: Ministry of Information and Communications (MIC)

VNPT has connected the biggest regional and international optical fiber cable links, joining Vietnam to 240 countries worldwide. Via the T-V-H, CSC, SEA-ME-WE3 and satellite links connected directly to 37 countries with over 5,000 communications circuits, the outgoing international traffic capacity has exceeded 800 Mbps.

In order to be the dominator in Internet domain, VNPT have an advantage when running two VNPT’s key sub companies are

- Vietnam Data communications Company (VDC)
- Media & software Development (VASC)

| | VDC | VASC |
|-----------------|---|---|
| Functions | ISP/IAP Software, Internet Solutions | Mobile Telecommunications Software/Solution |
| Service/Product | <ul style="list-style-type: none"> - MegaVNN (ADSL) - VNN / Internet Leased Line - VNN/VPN-MPLS - Frame Relay - iFone-VNN -Telehosting (Dedicated, Colocation, VPS) - Webhosting - Mail SMD - Mail Offline - Software solutions for enterprises - Online services - Solution Consulting.... | <ul style="list-style-type: none"> - Services on mobile networks - Internet Services - TV on mobile - Software solutions - Media Services - License business - VOIP Services - Other Services |
| Market share | 75% market share of ISP | 60% market of value added services on telecommunication network |

Figure 20 Two key VNPT’s internet companies
 Source: Ministry of Information and Communications (MIC) & VNPT

4.2.3 VNPT - a big player in Vietnam mobile market

In this part, this research creates a glance at Vietnam mobile market, and then thoroughly analyzes the current competition in that market in order to pinpoint advantage as well as

disadvantage of VNPT. A brief of related Vietnam's conditions will be covered such as the technology, social economic situations in Vietnam. All factors are used as the ground for the proposal of services and revenue model for VNPT

In the end of 2009, Vietnam mobile market has total seven mobile telecom service providers. Among them there are five 3G service providers with four 3G licenses granted as shown in the table 8. The significantly high mobile penetration rate in Vietnam has built up the subscriber growth over recent years. At the middle of 2008, with a penetration level of around 76% of the population there were about 66.3 million mobile subscribers in Vietnam. However the number of mobile subscriptions in the country has been surpassed the Vietnam population of 86 million at the end of 2009 by reaching 94 million. According to Vietnam Ministry of Information and Communications (MIC) the real number of people using mobile phone is around 70 to 76 millions. In other words, the number of users needs to serve left around 10 to 16 millions in 2010. Announcing plan of acquiring new mobile subscriptions for three big players- Viettel, Mobifone, Vinaphone this year will archive more 18 million users. It means that in 2010 Vietnam mobile market will go to the saturated status.

| Company name (Commercial brand) | Characteristic | |
|------------------------------------|--|---------|
| | Owned | Network |
| Viettel | Military-based | 2G/3G |
| Mobifone | VNPT's subsidiary | 2G/3G |
| Vinaphone | | 2G/3G |
| EVN Telecom (E-mobile) | State-owned utility Electricity of Vietnam | 3G |
| Hanoi Telecom(Vietmobile) | Associated with Hong Kong's Hutchison | |
| STelecom(Sphone) | joint venture between SPT with Korean SK Telecom | 2G/2.5G |
| Gtel Mobile (Beeline) | Russia's VimpelCom owned | 2G |

Table 8 Vietnam mobile companies
Source: Ministry of Information and Communications (MIC)

High growth rate of mobile using from beginning up to now is mainly encouraged by three first comers such as Viettel Vinaphone and Mobilfone (see table 9).

| Network(Company) | 2006 | 2007 | 2008 | 2009 | Q1 2010 |
|----------------------------|------------|------------|------------|------------|-------------|
| Mobifone (VNPT) | 6,272,303 | 14,951,304 | 21,712,970 | 12,320,000 | 29,186,824 |
| Vinaphone (VNPT) | 7,500,315 | 13,104,908 | 21,188,864 | 32,148,000 | 27,784,841 |
| Viettel Telecom | 4,307,485 | 12,159,193 | 26,130,436 | 37,299,200 | 39,188,264 |
| S-Fone (S-Telecom) | 812,377 | 3,782,860 | 4,866,700 | 4,705,000 | 10,150,433 |
| Vietnamobile (Hutchison) | | 225,170 | 598,978 | 940,000 | 3,336,272 |
| E-Mobile (EVNTelecom) | | 810,613 | 973,340 | 1,052,800 | 1,389,880 |
| Beeline (GTEL-Mobile) | | | | 5,640,201 | 1,244,383 |
| Total mobile subscriptions | 18,892,480 | 45,034,048 | 74,872,310 | 94,105,201 | 112,280,897 |

Table 9 Mobile subscriptions of Vietnam mobile companies
Source: Ministry of Information and Communications (MIC)

Even though there are new entrants in recent years, Viettel (military-owned) and 2 VNPT' s subsidiaries Vinaphone and Mobifone still control around 90% market share. VNPT always dominate and control over 50% of this market.

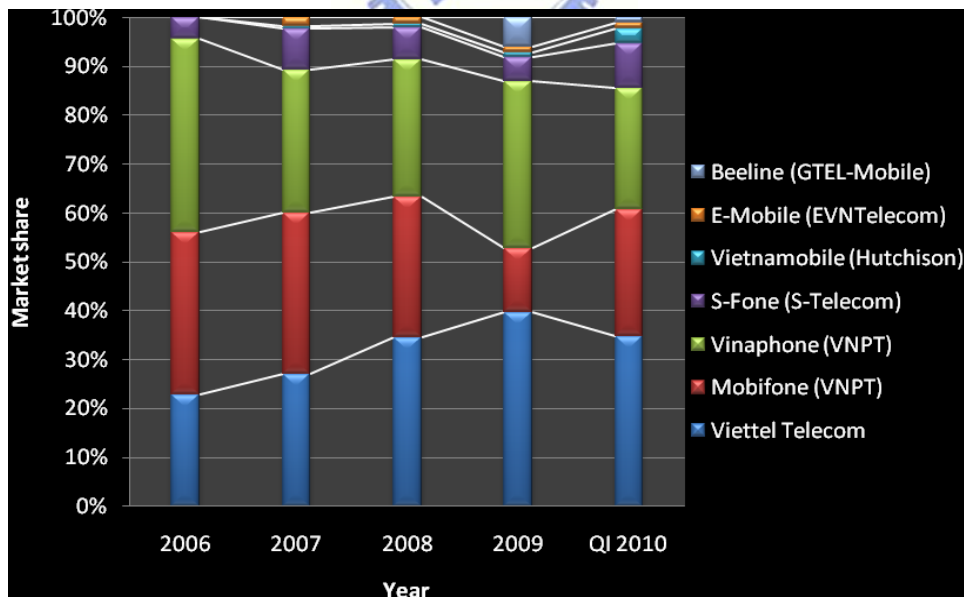


Figure 21 Vietnam's mobile share market change over years
Source: MIC, VNGOS

To have insight of current situation of Vietnam mobile market this part of research will analyze mobile competition and mobile competitors in Vietnam. The analysis of ongoing competition will lie in seven domains which try to follow the frame work of “Seven Rs Rule” in supply chain strategies: having the Right product, in the Right quantity, in the Right condition, at the Right place, at the Right time, for the Right customer, at the Right cost[29]. Some of them could overlap when examined but they can be accordingly arranged as below

| Seven Rs Rule | Analysis domain |
|----------------------|---|
| Right product | Competition in Brand |
| Right quantity | Competition in Customer Care |
| Right condition | Competition in Quality of Service (QoS) |
| Right place | Competition in Distribution |
| Right time | Competition in Time |
| Right customer | Competition in Customer Attraction |
| Right cost | Competition in Price |

The Vietnam mobile market has its own characteristic due to low household income, slow fixed phone penetrate and pre-WTO closed and monopoly market therefore to draw out the complete picture of competition some elements will be combine to analyze together to see the connection and linkage in the next part.

The recent distinguished 5th Vietnam Mobile Award sponsored by the Ministry of Information and Communications in 2009 announced results for network operators as below.

- The operator with the most popular brand recognition system: Viettel
- The operator with the most attractive service package: Beeline
- The most favorite mobile network: MobiFone
- The operator with the best customer care service: MobiFone
- The operator with the most potential 3G services: Vinaphone

It will be addressed as a starting point to discuss further the current situation in Vietnam mobile market

In Vietnam mobile market: Right product to Right customer at Right cost or Completion in Brand to Attract Customer at Appropriate Price – Big gain for Viettel as well the later comers but great consequences

When the third network operators Viettel have not existed in market before 2003, the whole market was served by two subsidiaries of VNPT. Mobifone and Vinaphone. The high demand was a simple voice service with no competitors which let Mobifone and Vinaphone enjoy the monopoly status. They so charged high price for whole market and focus only considerably benefit customers. Viettel saw market potential then came to exist in 2003. Being a new entrance, it targeted to low income user such as student, farmer and countryside resident while Mobifone focused on high income one and Vinaphone aimed middle and urban habitants. As a result after three year, Viettel was quickly noticed and surpassed both VNPT’s subsidiaries in term of mobile subscriptions in 2006. It gradually acquired more market share as shown in figure 19 above. Viettel are so successful in identifying potential demand for mobile services of very large customer segments from low-income level which account for the majority of Vietnam population. Knowing exact needs of the market is the source for success in the development of Viettel. It can establish the number one position on the market today and its subscriber number grew quickly.

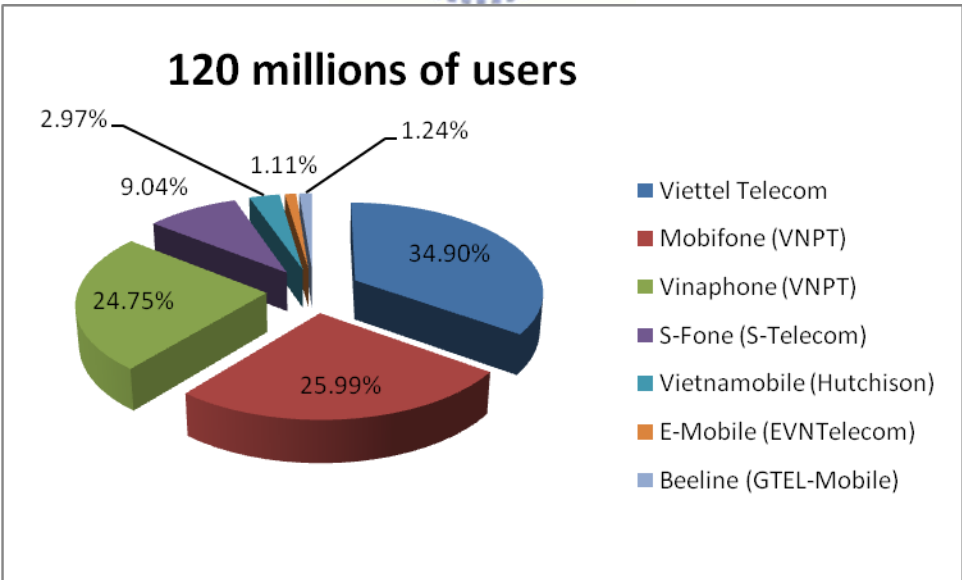


Figure 22 Mobile market share Q1/2010
Source: Ministry of Information and Communications (MIC)

As seen in any market, price competition is a basic method of competition in the telecommunications sector. Telecommunications market in Vietnam has a severe price war similar to many other developing countries.

Recently the completion of price is more intensive. In May 2009 Viettel announced the largest fee reduction of over 30 percent of any charges, the two rivals mainly Mobifone and Vinaphone immediately discounted as well. The first time during seven year price of charge of VNPT's companies was lower than Viettel. Using price as mean to acquire market GTel which owns Beeline network released shock package - BigZero. This package gave Beeline 1 million subscribers after just two months of service announced which also started the free inter-call trend.

Viettel has recently proposed Ministry of Information and Communications (MIC) for mobile floor charge fee to avoid "dumping." Propose a plan for that particular pressure floor price of 800 VND per minute. But soon it broke down the floor price by giving discount to all pre-paid mobile packages and contract ones lower than 800 VND per minute. Vinaphone also offer package "VNPT - Free talk" down from 990 VND to 790 VND per minute for calls between fixed lines VNPT and postpaid mobile subscribers in the same register group. Vinaphone and Mobifone also proposed MIC the plan to reduce charges further. Beeline re-release package Big and Cool prepaid package downgrade pre-paid price to similar levels of other mobile network contract user. Price has been still the key tool to gain market by network operators so far. It will lead to bad consequences such as:

- Minimize the profit which reduces reinvestment causing lower quality of service, it is not sustainable business, it requires another way to compete that benefit both providers and users
- Lower price which create "virtual" users who only use phone number for discount that wastes number resource and complicate the user profile management
- Focus reducing price only on voice service which prevents extension to other service like content service

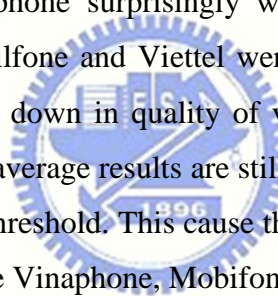
Reducing price is a good but not optimized way. Market will gradually reach saturated point the same as DoCoMo case analysis with voice saturated service. At that point there are only few big players whose control most of market share. There exists a need to develop an ecosystem to

deliver the value-added to users rather than price benefit to achieve sustainable growth. in Vietnam, VNPT now need to see market in that way to build up an ecosystem of M-commerce rather than competing by price.

In Vietnam mobile market: Right quantity, in the Right condition, at the Right place, at the Right time or Competition in Quality of Service (QoS), Customer Care, Distribution and Time; Bigger players did better and be noticed

QoS

The measurement result of quality of mobile network reflects the quality of service of each mobile network operator in Vietnam market. In quarter II of year 2009 Directorate of Information Communication Technology Quality Control (ICTQ) announced the test result of April and May in 2009. In this assessment, Vinaphone surprisingly was the number one with the highest successful setting up call rate. Mobilfone and Viettel were followed. Every networks operators increase the quality but Viettel was down in quality of voice. S-Fone and EVN Telecom also exceeded industry standards but the average results are still lower than other networks, it signaled an alert when index just passed the threshold. This cause the trend that customers leave the worse network to move in the best ones like Vinaphone, Mobilfone, Viettel



| | Vinaphone | MobiFone | Viettel | Sfone | EVN Telecom | Hanoi Telecom |
|---|------------------|-----------------|---------|-------|-------------|---------------|
| Service quality overall assessment index (≥ 3.0 required) | 3.52 | 3, 54 | 3.47 | 3.45 | 3.02 | 3.1 |

Figure 23 Quality of Service index results for Vietnam mobile companies
Source: Ministry of Information and Communications (MIC)

Customer Care

It was not coincident when Mobilfone won the prestigious awards of “The mobile network with the best customer service” in four consecutive years at the end of year 2008 and “The most favorite mobile network” in 2009. Customer service center of Mobilfone always gained the highest score among all mobile networks.

MobiFone always does the most proactive customer care program. Ten years ago there was only MobiFone program offering flowers or gifts to the contract customers for their birthday.

Distribution

Customer service space is where operator interacts with its customers. Considering this aspect Mobifone and Viettel Mobile created the competitive advantage by building up a system of its own branch everywhere. It so can actively control the quality of this d system. EVN Telecom and Vinaphone faced many disadvantages due to the distribution system based on the provincial electricity offices and postal branches. The lack of specialization and having heavy administrative units cause inconvenient for customers.

Time

Besides improving service quality, distribution network, Viettel showed itself very active and flexible in strategies such as coming first at discount price, enabling prepaid users roaming, allowing push mail, and catching fever of Black Bery and iPhone handset. It already created equipment production of its own handsets. It is now the first and only network operator implementing the network abroad in Cambodia.

Optimizing the production process ultimately shorten customer service. On this criterion, Viettel used military network, discipline and the advantage in bureaucratic procedure to deploy very quick infrastructure.

In brief, all things above create the whole picture of Vietnam mobile competition. It can be both as advantageous as well challenging for VNPT to stay as key market player in this market as it did in the past. In other words, it is advanced to have in hand many resources over other competitors but it is also not easy to efficiently control and systematically organize them to build an appropriate ecosystem to server right target customer in Vietnam. Fortunately, Mobilfone and Vinaphone still have much strength and few weaknesses to back up VNPT in more future competitive market. The external reasons for building ecosystem like i-mode will be discussed further in the next part.

4.3 Why “I-mode” Vietnam analysis – External factors

This research lists here some Vietnam economy indicators that show development of the industry service sectors in general and that of telecommunication in specific. These indicators shows favor for VNPT to develop new its ecosystem with appropriate kind of services.

4.3.1 Favor economic and social indicators of Vietnam

According to CIA World Fact Book and UN report, Vietnam economics grew stable at 7.5 to 8.0 percent annually from 2008 to 2010. The important sectors of economics such as industry and services expanded to 40% of GDP in 2009

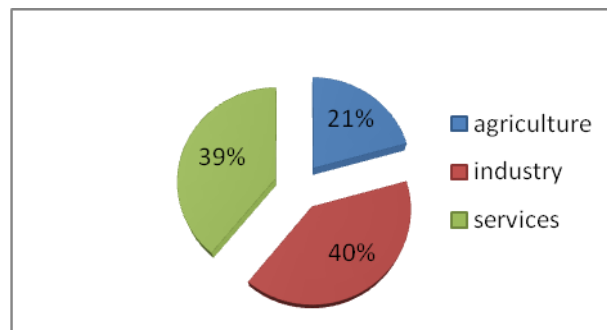


Figure 24 GDP - composition by sectors -2009
Source: UNDP

In addition, Vietnam has young population, over two third of population is in working age. This group will more be sensitive with new way of technologies such as internet or mobile commerce application

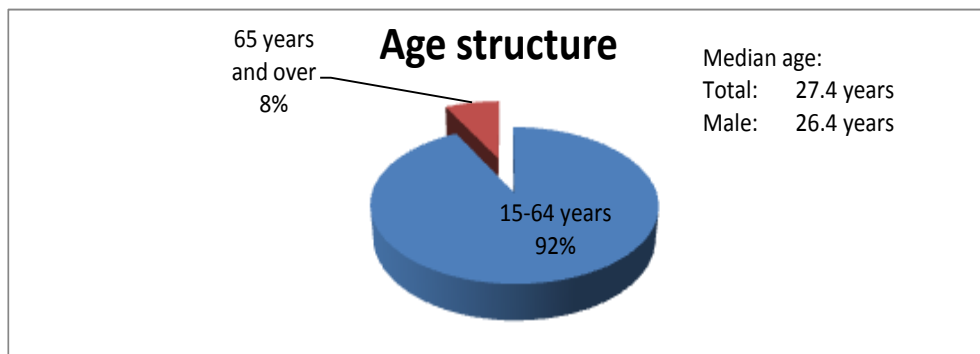


Figure 25 Vietnam age structure 2009
Source CIA World fact book

Age statistic indicators shows that age median is under 30. Young people who are tech savvy will be another favor factor for any high tech service to serve

4.3.2 The saturation of voice service but non-data service

Vietnam telecoms market is booming with growth of mobile communication market. There are more and more promotion and discount campaigns of mobile network operator to attract customer. This trend combined with a decline of mobile handset price let number of mobile phone user increase spectacularly. To the end of year 2009 Vietnam had total of mobile network users surpassed the population. In other words, number of subscriber per 100 inhabitants reaches over 130.

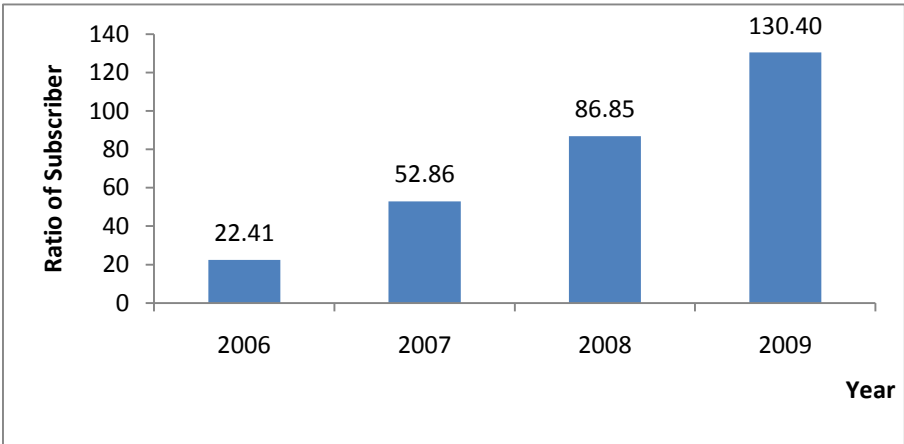


Figure 26 Mobile phone subscribers per 100 inhabitants
Source MIC

According to Ministry of Information and Communications (MIC) the voice service market has oversupplied at middle of the year 2009 when Vietnam population is at 85.79 million. Therefore mobile market will approach the S-curve of voice communication and turn to the second S-curve of non voice or content communication similar with analysis of DoCoMo i-mode case

4.3.3 Low wired internet market penetration

Internet Access has a potential in Vietnam but it is still in early stage of development. There are total around 6.7 million internet subscribers for population of over 86 million. Only 24.87% of

population use the internet for work, information, entertain or business. It is due to the low possession of personal desktop and laptop (see table 10). While young Vietnamese people with large portion in population love to keep updated with internet, they do not have the PC to connect to the web. In other words, the internet participation is going high while the portion of population owing PC is very low (5.19:100) but mobile phone is much bigger. Therefore it could be considered as another factor favoring for VNPT to create great market for mobile internet by using its great existing customer base.

| | |
|---|------------|
| Total number of internet users | 21.430.463 |
| Internet users per 100 inhabitant | 24.87 |
| Total number of desktop, laptop computers | 4.478.543* |
| Personal computer per 100 inhabitant | 5.19* |

Table 10 Statistics on Internet development up to 3/2010

Source: The Vietnam Internet Network Information Center (VNNIC)

Note *: 2008 estimated

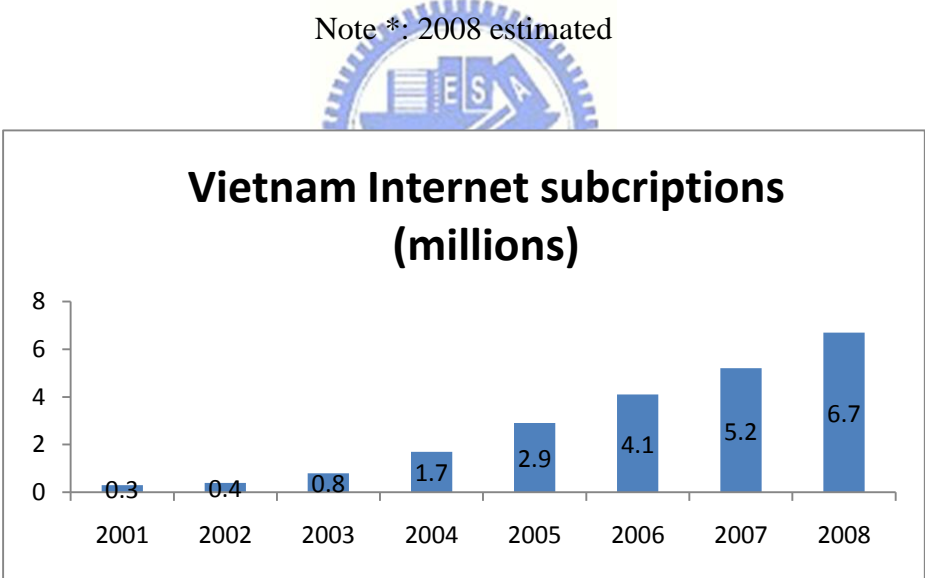


Figure 27 Vietnam Internet Subscription

Source: The Vietnam Internet Network Information Center (VNNIC)

VNPT can use its current advantageous status of being main internet supplier to support the its current users and potential customers in the future if it can create an moderately attractive mobile commerce market toward users.

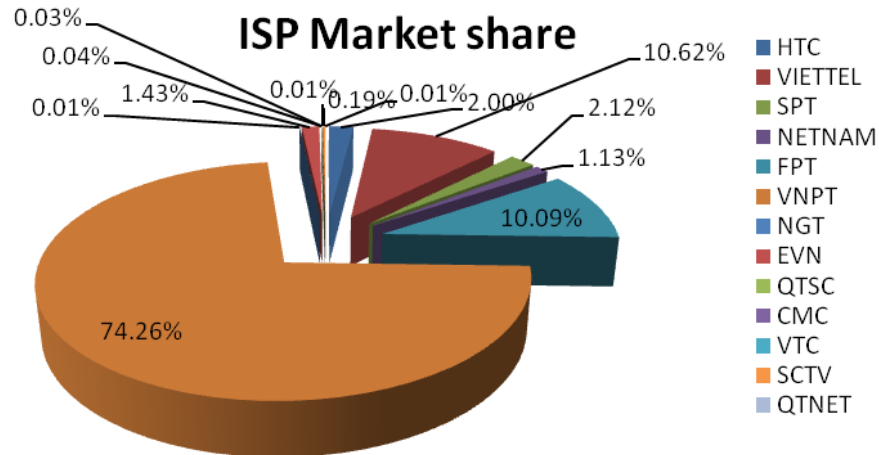


Figure 28 Internet Service Provider Market share 3/2010

Source: MIC

4.3.4 Emerging mobile and banking bond-trend of mobile banking

There are three main types of mobile payment existing in the world and Asia so far[2]

| Mobile money | Market required characteristics | Example |
|----------------------------------|---|---|
| Operator-centric | <ul style="list-style-type: none"> - Operator providing prepaid top-up services, - The majority of the population has not access to banking services. - No routine use of non-cash means of payment. - Community use of large mobile phone. - The demand for money, small payments in high population. | G-Cash (Philippines) — mobile banking M-PESA (Kenya) — mobile transfer |
| Bank-centric | <ul style="list-style-type: none"> - Bank building applications - banking services highly developed and most people have bank accounts - transactions and payments on personal bank account | Smart Money(Philippines) — mobile banking |
| Payment network or third parties | <ul style="list-style-type: none"> - Cooperation between identities to build whole payment system | PayPal Mobile (UK and US) — mobile banking |

| | | |
|--|---|--|
| | <ul style="list-style-type: none"> - Based on power of third parties - Capitalize on each parties - Hinder the rapid adoption in complex collaboration | <p>WIZZIT (South Africa) — mobile banking</p> <p>Crandy (Africa) — mobile transfer</p> |
|--|---|--|

Table 11 Mobile money business model
Source: Mobile banking KPMG

A glance of banking market in Vietnam in 2009

- 12 million people own bank accounts
- 17 million cardholders
- A national payment system that connects 89 bank members with 694 affiliates that reduces fund circulation from 3 -5 days in 2001 to 30 minutes in 2009
- Only 50 retail banks
- ATM and POS: 8,500 ATM; 27,000 POS

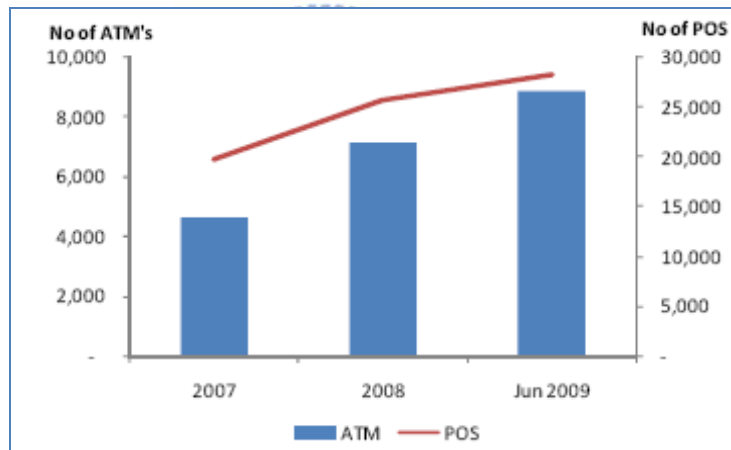


Figure 29 Number of POS and ATM
Source: Techcombank Vietnam

What is the chance and model for Vietnam’s mobile money?

Only about 12 million people have bank accounts in a population of more than 80 million people i.e. equivalent to 15% of the population. Vietnam shows the coverage of personal banking services is low. There exist about 17 million cardholders, both international and domestic, however common payment of cash still play major roles in retail transactions. People and

businesses offering goods and services are not acquainted with the use of bank cards for payment purposes. Hence card payment through POS is still certainly unfamiliar and inconvenient. Meanwhile Vietnam has seven mobile network service providers which have the widespread coverage of overall country. According to the Ministry of Information and Communications, Vietnam in QI 2010 reached up to over 120 million subscribers, average people register more than a mobile phone subscriber. The use of mobile phones is not only popular among youth in urban areas but that is common to all other age and area. Therefore Vietnam market has a great potential to exploit the mobile payment service

There are more than 50 banks are active and involved in the retail banking market in Vietnam. The banks are competing fiercely through continuous improvement and offering new products and services, including Mobile Banking Product (Bank-centric model). However, the bank offers products which can only offer certain functions or do not meet all the needs of customer's payment. In addition, a number of e-wallet products came out, but only supported payment transactions on the Internet. The market of mobile payment is still unanswered. In this context, providing mobile payment solutions for mobile phone customers who have no bank account is suitable. It benefit is:

- To create convenient payment applications for customer
- Bring more benefit for the mobile service provider
- Lead to the tendency of not using so much cash
- Save society's cost and furnishes the development of the economy.

In a word, there do exist in Vietnam opportunities either for Operator-centric model or for third party-centric using the mobile transaction ecosystem. It owing to Vietnam financial market characteristics:

- The majority of the population has not access to banking services – low personal account rate
- No routine use of non-cash means of payment – culture behavior
- Community use of large mobile phone
- The demand for money, small payments in high population

There are also many legal documents supporting for electronic transaction such as:

- Law on E-Transaction (Mar, 2006)

- Government's Decree on e-commerce (Sep, 2006)
- Government's Decree regarding digital signature and digital signature-certification services (Feb, 2007)
- Government's Decree on e-transitions in financial activities (Feb,2007)
- Government's Decree on banking e-transitions (Mar, 2007)

4.3.5 Stand out of intensive competition by ecosystem

Strong with capital, well-known by brand and being big player in almost telecommunication but VNPT have to face new threat when Vietnam more open after joining WTO. They are:

- Large-scale foreign corporations such as Motorola, Nokia, Ericson, Alcatel, NEC, SK Telecoms, Hutchinson etc, already came and will seek the investment opportunities in Vietnam when government no longer protect its monopoly position
- Local emerging and fast growing corporation such as Viettel corporation is another direct threat. Only by advancing in new way of providing service or creative business model VNPT would be able to stand out and win the market.

4.3.6 Emerging digital content industry

The Ministry of Information and Communication has drafted a master plan for digital content development. The target is for the digital content industry to earn about USD 400 million in revenues by 2010. To this end, some 300,000 content industry experts will be trained. The industry will include key activity areas such as e-learning, games (online, interactive and mobile), online publications, content development for the Internet, digital libraries, digital film and multimedia, and other value added services (VAS). At present there are about 400 enterprises working in the content industry and they are concentrated in Hanoi and Ho Chi Minh City. On 3 May 2007, the government signed Decision No.56/2007/QD-TT to ratify the development of the digital content industry. The emerging trend of digital content can see in figure. When revenue from software industry only grow with rate of below 30 percent per year, digital content industry growth rate are always more than 50 percent annually.

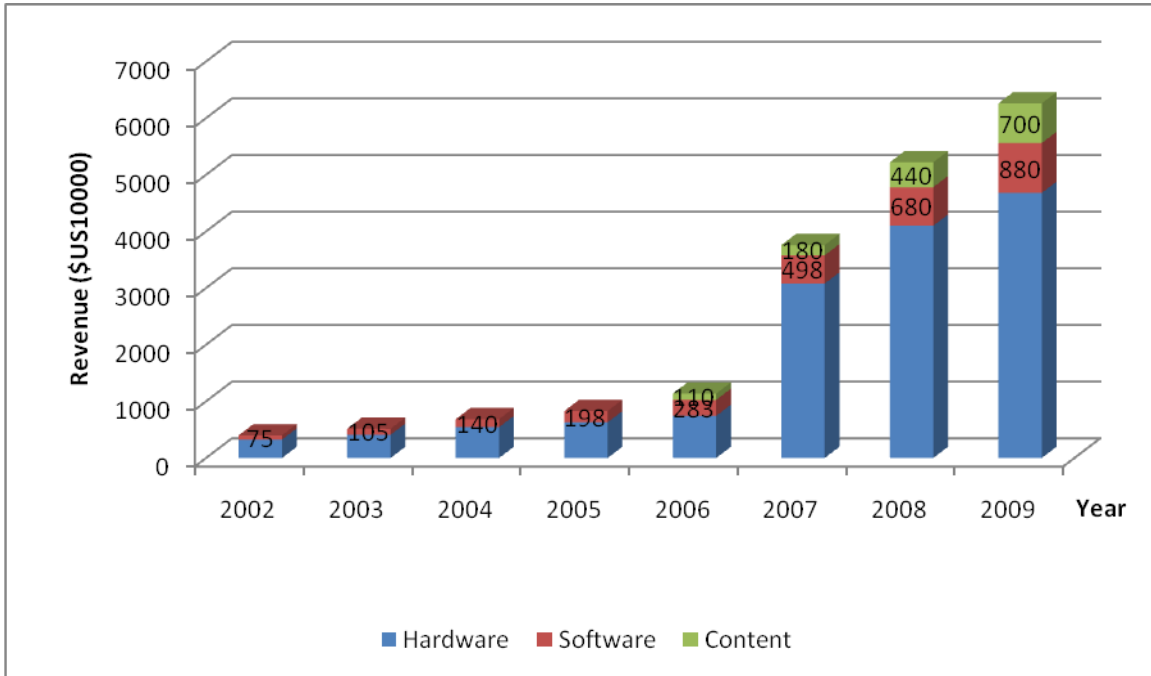


Figure 30 Emerging of digital content industry in recent years

Source: MIC

4.4 Vietnam and Japan general comparison

Last but not least, in this part the study will make a brief comparison between Japan and Vietnam at the time which i-mode has a potential to exist. This will give a more insightful look at the picture of society and economy. The comparison will be summarized in this table in term of demographic factors, customer behavior, market dynamic, industry relationship, culture orientation at the time i-mode system would suppose to have chance to develop 1990s in Japan and now in Vietnam. This summary is drawn from all analysis above, economy reports and culture studies of both countries

| Factors | Vietnam: 1995-2010 period | Japan: 1996 - 2001 period |
|--|---|--|
| Demographic | | |
| Population structure and distribution | <ul style="list-style-type: none"> Total population of 89.5 millions , relatively young with 68.8% percent of people | <ul style="list-style-type: none"> Total population of 126,9 millions in 2000. Similar to Vietnam: number of persons in |

| | | |
|--------------------------------------|---|---|
| | ranging 15-64 year old in 2010 with population growth rate of 1.096% and 0.99 male(s)/female [30, 31] | productive age (aged 15 through 64) is 67.9% of the total in this period however growth rate of 0.17% and 1.01 male(s)/female [32] |
| GDP | <ul style="list-style-type: none"> • \$258.1 billion (2009) relative small economy. Ranked 42th | <ul style="list-style-type: none"> • \$3.15 trillion (2000). Third largest economy |
| Income (GDP - per capita PPP) | <ul style="list-style-type: none"> • Still considerably low (\$2,900 in 2009) [33] | <ul style="list-style-type: none"> • Already high in the world (\$24,900 in 2000) [32] |
| Literacy | <ul style="list-style-type: none"> • 90.3% population[33] | <ul style="list-style-type: none"> • 90% population [32] |
| GDP growth rate | <ul style="list-style-type: none"> • 5.3%(2009) [33] | <ul style="list-style-type: none"> • 1.3% (2000) [32] |
| Market dynamic | <ul style="list-style-type: none"> • Voice service market comes to saturated point (103 mobiles per 100 persons in 2010)[34] • Low penetration on PC and Vietnam commuter population creating untapped market for wireless technology (1995-2009) [35] • Emerging need of mobile banking (estimate \$USD 1millions at 2010) [36], [37] • Content demand driven by high bandwidth internet and smart phone (iphone 2010)[31] | <ul style="list-style-type: none"> • Growth rate of voice service was gradually declining (1997). [42] • Usage of internet was still in its infancy in Japan (1998) and low penetration on PC, Japan's commuter population creating untapped market for wireless technology (1998) [43] • High demand on game, mobile money, text, e-commerce transactions increase with banking mobile(1999), due to the limit of PHS system[27] • Integrated phone with interactive interface encourage the content usage[44] |

| | | |
|---|---|---|
| | <ul style="list-style-type: none"> • Cheap labor, stable & favorable investment environment[35], [38] • FDI attraction, foreign high tech companies outsource and manufacture built in Vietnam: Intel (\$USD 1 billion) Foxconn (\$USD 5 billion) [39],[40] • WTO 2007with appearance and completion of big firm Nokia, NEC, Motorola, SK telecom, Singtel, Erricson, Siemen, Intel, IBM, Panasonic. Big local firm but slow and bureaucratic [41] | <ul style="list-style-type: none"> • Japan outsource to other country and keep it innovative inside make it an active innovator [45] • Big investors for other countries[46] • Extreme competition between big local firms for instance J-phone, KDDI. Big firm but quick change on the market demand [27, 47] |
| <p>IT, industries' strength and relationship</p> | <ul style="list-style-type: none"> • Internet Service Providers (ISPs): 16 (2008) [31] • Internet users: 20.834 million (2008) [31] • Industry in early stage focus on service and export of raw material • Government owns and backups for big company but now is forced to do privatization due to | <ul style="list-style-type: none"> • Internet Service Providers (ISPs): 73 (2000) [49] • Internet users: 27.06 million (2000) [49] • Among world's largest and technologically advanced producers of motor vehicles, electronic equipment, machine tools, steel etc [32] • Relationships between government bureaucrats and companies are often tightly mutual benefit to create unfair |

| | | |
|----------------------------|---|--|
| | <p>international regulation[40]</p> <ul style="list-style-type: none"> • VNPT still have power over supply chain but not whole[31, 48] | <p>behavior[50]</p> <ul style="list-style-type: none"> • Super companies such as NTT backed up by government dominated whole industry supply chain[51, 52] |
| Culture | | |
| Customer behavior | <ul style="list-style-type: none"> • More freedom for women to join e-trading but still limited in financial income due to culture prejudice[37], • Young people are also the most heavy used account on internet and electronics devices [39] • Older group are not willing to learn and try new technologies[41] | <ul style="list-style-type: none"> • Women involve many transaction such as cosmetic, fun and shopping at convenient store [53] • People at twenties are most active subscribers in social, fun and texting • The over-40s age group likes business news, stock trading, and sports news. [27]. |
| Culture orientation | <ul style="list-style-type: none"> • People used to like meeting face to face on meeting people but now change toward social sites, prefer and focus on fun activities than trading ones on mobile [34, 41] • Not very tight relationship between leader and followers and still bureaucratic and order followed[37] | <ul style="list-style-type: none"> • Social connection on mostly the phone, reserved characteristic but more open in youth, tech savvy and heavy use of trading and other integrated activities on phone [27] • Determine and spirit of stickiness together for leaders[54] and loyalty [55] |

Table 12 Comparison Vietnam and Japan in general
Source: MIC, GOP, VNNIC, HCA

4.5 VNPT “I-Mode” proposal

According to all analysis above after long time in monopoly position VNPT has establish itself as market leader in almost telecommunication areas such as mobile phone, internet, software etc Now it has a great time to enter the mobile commerce by its all resources, advances and as well opportunities to eliminate the weakness and avoid threat.

4.4.1 What is I-Mode revenue model

In order to do that:

- First, VNPT have to review its capability and resources to find its role in mobile commerce chain
- Secondly, depending on playing specific roles it should choose the appropriate business or revenue model
- Thirdly, VNPT then has to define the framework to implement its business model to plan out which services are offered and schedule for them.

In this part, the thesis will go through first and second points to suggest the role VNPT group will play in the mobile commerce chain then its following revenue model.

According to U.Varshney Mobile[16], Mobile Network Operator (MNO) can play one among four roles:

1. Only offer the mobile network infrastructure and let customers communicate and negotiate directly with the various content/service provider
2. Host a WAP/i-mode gateway for enabling the exchange of information between a customer holding a (WAP/i-mode) terminal and an Internet trader who does not provide WAP-compliant content
3. Act as a portal offering advertising services and providing search facilities while enabling connection with the content/service provider
4. Act as an intermediary and trusted third party

Beside ability to play role 1 and 2 because of advantage of having an existing long-term customer relationship and database of subscribers, VNPT’s subsidiaries such as Mobilefone and Vinaphone

can act in the third role as portal service provider rather than being a simple access provider and controller as the first and second roles. In other words, it can assist customer to pinpoint appropriate service providers and simultaneously facilitate content provider to reach target customer (see figure 31). The competitive portal providers do not have this kind of relationship and user profile to be mediator between customers and content providers

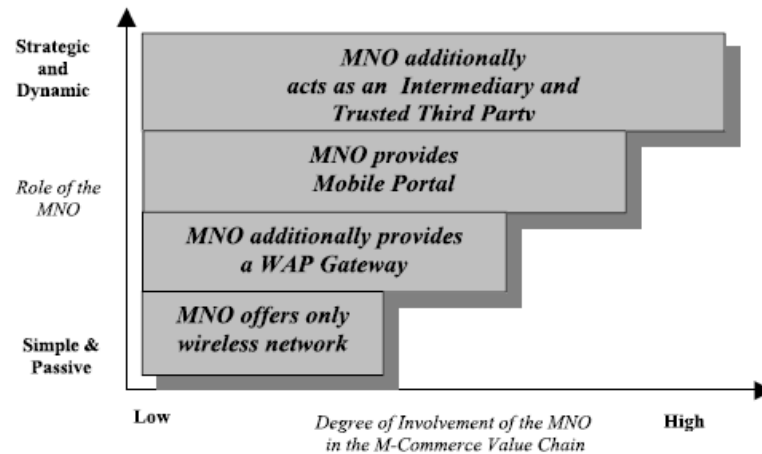


Figure 31 Mobile Network Operator (MNO) in m-commerce value chain
 Source: U. Varshney, "Business Models for Mobile Commerce Services: Requirements, Design, and the Future," IT Professional, 2008.

MNO such as Vinaphone and Mobifone could also play an intermediary and trusted third party as DoCoMo with i-mode did in the past. In this role VNPT or its subsidiary (MNO) can be a place like “one place shop all” toward customer. It provides service, takes charge of billing, collecting fee, retaining commission (e.g. 9% for DoCoMo) and redistributing benefit along content supply chain (91% for content aggregators).

In a word, VNPT should act central role as DoCoMo and bases on centric business model[16] – being portal provider, collecting fee and gain commissioning charge to take full advantage of its all recourses and market power

Because of characteristic of mobile handset distribution in Vietnam where in general user purchase phone directly from manufacturer or from network operators such as Vinaphone and Mobilfon therefore the model of M-commerce in Vietnam should be organized as figure 33 below.

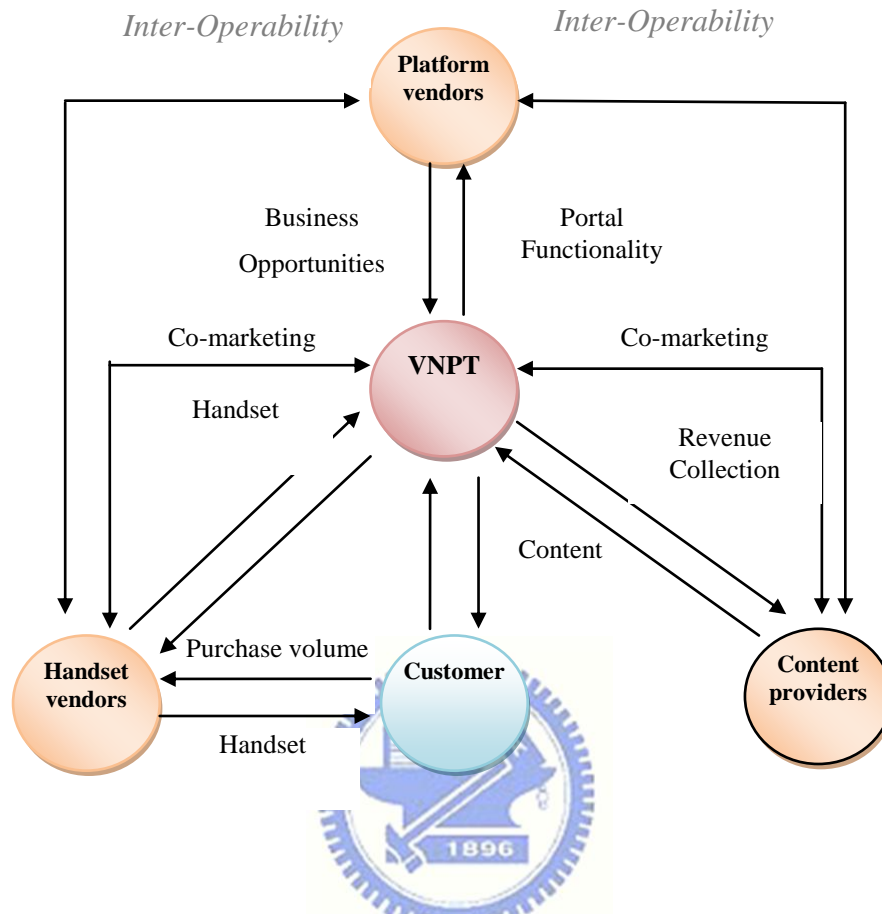


Figure 32 VNPT- M-commerce value chain

VNPT cannot control phone purchasing of customer because it does not have enough influence toward mobile phone manufacture. However, VNPT also could create a distribution channel for exclusive mobile phone like iphone, Droid, Google phone, HTC by signing the agreement with these manufacturers using its market power. VNPT need act a central role like a host for platform and content providers given the advantage of huge customer base and mobile network infrastructure.

4.4.2 What are i-Mode services?

Before launching 3G network in the end of 2009 which bases on WCDMA standard similar to that of DoCoMo's standard. Vinaphone and Mobilefone two VNPT subsidiaries already offered some of voice service and value-added services (VAS) on 2G and 2.5G network. They continue

to develop interactive and data content services on new launching 3G infrastructures such as mobile internet, mobile broadband, video call, mobile camera, mobile TV and 3G portal. However to have a systematic group of service or in other words VNPT should categorize all services into four groups similar to i-mode model: **E-commerce**, **Information**, **Database**, and **Entertainment** beside the common voice service (See table 13 & figure 33)

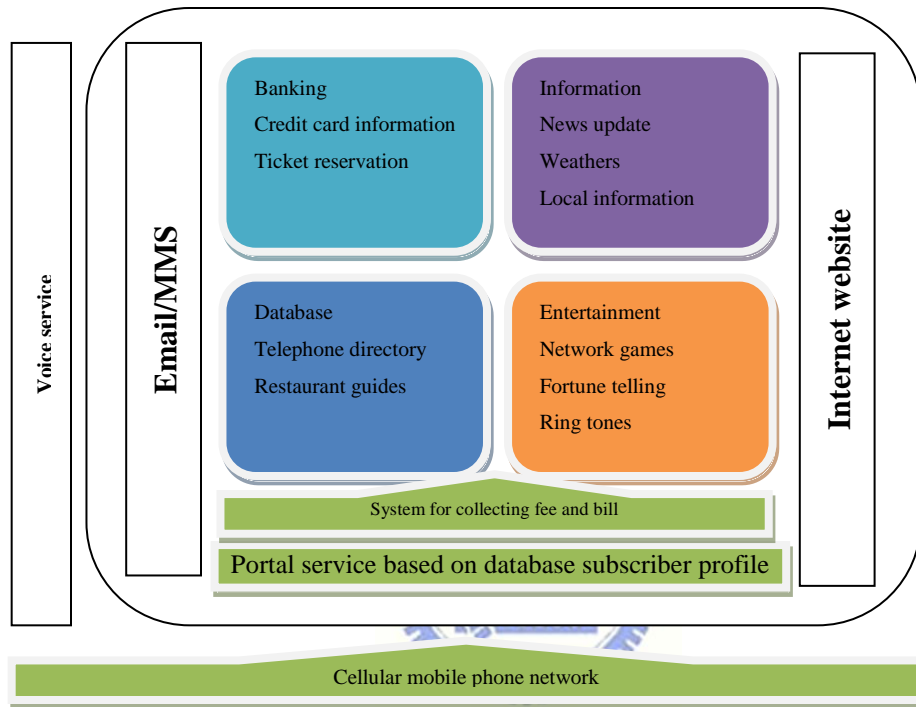


Figure 33 VNPT- “I mode like” ecosystem structure

| Service | Function/Category |
|------------------|--------------------------|
| Vlive | Portal for entertainment |
| Chacha | Music |
| Saytosend | Voice mail |
| Personal Website | Personal page |
| Careplus | Club |
| RingTunes | Ring tone |
| EasyTopUp | Money Deposit |
| Datasafe | Database |
| VinaSearch | Search |
| SMS | Message |
| Miss call | Call management |
| Call Me Back | Call remind forwarding |

| | |
|--------------------|-----------------------|
| TalkEZ | Voice service |
| TALK24 | |
| My Zone | |
| GPRS - MMS - WAP A | 2.5G internet service |

Table 13 Vinaphone's initial portal services

To offer range of services within four categories above, Vinaphone and Mobile phone need the partnership with other companies within or outside VNPT group such as bank, financial instruction, information agencies, new media companies, airlines, stock and real estate companies etc. According to analysis of current Vietnam market above, VNPT should

- Focus on mobile money to meet current demand of mobile transactions
- Then build up entertainment category for young savvy desire for recreation like game and social network
- Lastly Information and database should be developed

This research made a table to suggest some initiate service and recommend corresponding companies which VNPT already had the relationship and agreement with. They also have mutual benefit with VNPT in a sense that VNPT can offer another way to potential businesses or customers in turn they can provide these targets their services.

| Category | Service | Companies | Subsidiaries |
|-----------------------------------|--|--|--|
| Mobile banking | Information, Transaction details, balance inquiries, and bank transfers. | Vietcombank, Bank for Foreign Trade of Vietnam, Bank for Investment and Development, Housing Development Bank, Industrial and Commercial Bank of Vietnam, State Bank Of Vietnam, Vietnam Agriculture Bank, Techcombank, ACB, Sacombank | Vietnam Postal Savings Services Company |
| Mobile trading | Market information, stock price information, buy and sell orders | VCBS, HoSE, SSI, TSC, SSI, SBS, VCCI | |
| Share price information | Share price information | | |
| Credit cards | Information on special offers, credit card bill information | ACB, Vietcombank, Techcombank, Sacombank | |
| Games | Online games | Vinagame, gameloft, FPT | |
| Mobile TV | TV | VTC, VCTV, Jatis Mobile | Vinaphone, Mobilephon |
| Life insurance information | Information on procedures and processes | VietNam insurance corporation-BaoViet, PJICO | Post - Telecommunication Joint Stock Insurance Company |

| | | | |
|--|---|--|--|
| Airline information | Inquiries about seats available; making reservations, inquiries about mileage totals | Vietnam airline, Jetstar Pacific | VDC, VASC |
| Hotel reservations | Inquiries about room availability, reservations | | |
| Discount travel information | Retrieve information on inexpensive travel, make reservations | Viettravel, Saigontourist, Hanoitourist | |
| Local information | Restaurant guides, movie theatre information | | |
| Train, Bus ticket information connections | Retrieve concert information, make reservations, information on where to make transfers and restaurant guides | Transec, Saigonrailway, Hanoi railway, Hanoi Bus, Saigon bus | |
| News and sports news | News in general, sports news, entertainment news | VTC, VTV, HTV, TVAD, VCTV | |
| Weather forecasts | Weather forecasts | | |
| Real estate rental information | Retrieve information on rental properties | ACB, Mirec, VRnet, PJCO | |
| Phone numbers | Retrieve business phone numbers, by region | VNPT | Telephone Directory and Yellow Pages 1,2 |
| FM station information | Retrieve names of songs, program information, hit chart information | VOV | |
| Book sales | Retrieve information on books, purchase books, bestseller information | XunhaSaBa, SAVINA | |
| Dictionaries | English-Vietnamese, Vietnamese-English, several Vietnamese dictionaries, thesaurus | Lacviet, FPT | VASC, |

Table 14 Suggestion for VNPT's services and partners

4.6 Managerial implication for VNPT ecosystem

4.5.1 The role of VNPT in M-commerce value chain

Being market leader in the past and having advantage of technology and infrastructure, VNPT should play the role of platform initiator at first and then central coordinator in the whole value chain as in figure 33

4.5.2 Revenue model for VNPT

When playing the role of coordinator for both content provider and other platform vendor and being the main platform provider itself to customer, VNPT had better choose **the centric and**

supportive revenue model in which VNPT offers “one place shop all” to customer in term of providing services then does the billing process, collect money, gain commission fee then redistribute to content vender. This revenue model can run on all services offering suggested in table 14 as first step to take ecosystem off the ground.

4.5.3 VNPT supportive model

This research proposes VNPT an organizational structure to support for the role it play in value chain above. It was drew from all consideration on characteristic, capabilities of each VNPT’s sub company

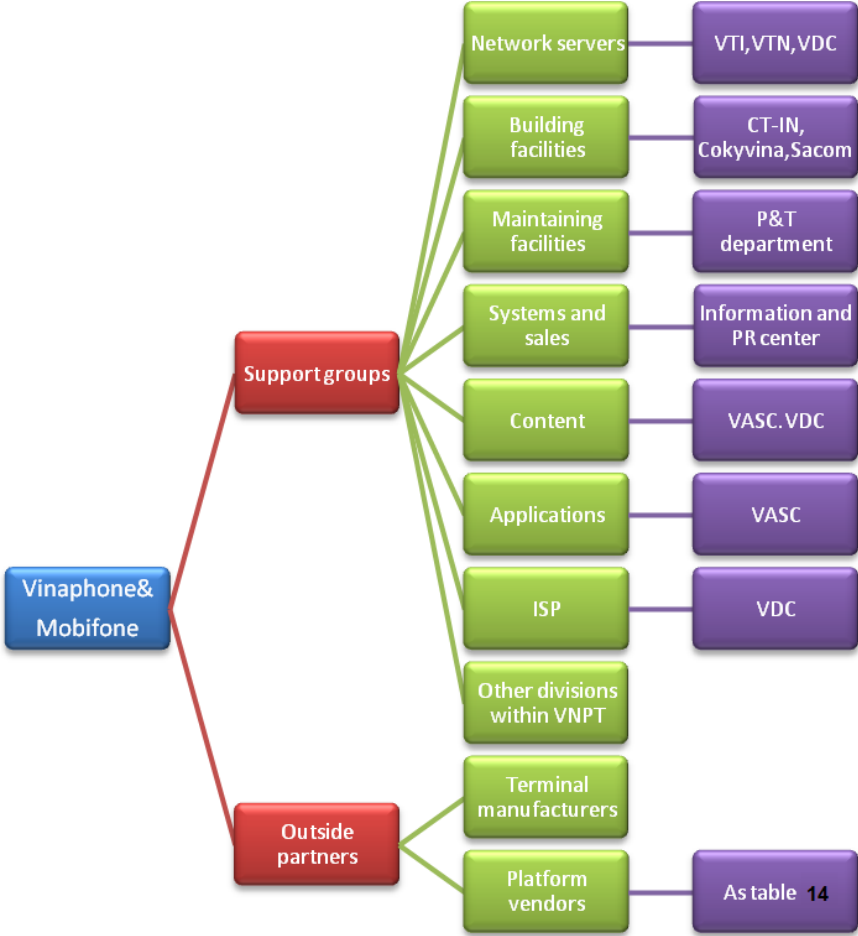


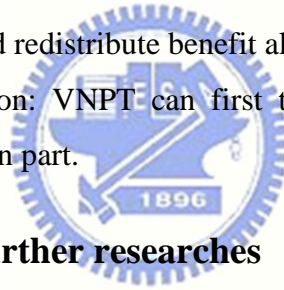
Figure 34 Suggestion of VNPT organization structure’s for ecosystem proposal

V. CONCLUSION AND SUGGESTION

5.1. Conclusions

This thesis aims to propose an ecosystem for VNPT in terms of revenue model and service after reviewing and analyzing a successful case in Japan. The result is summarized here as a proposal for VNPT to build one mobile commerce system while taking into account all recourses, abilities, market power and valuable lesson from case of i-mode in DoCoMo Company. Some areas are not mentioned or covered yet in this thesis which can lead to other interesting researches in near future will be recommended.

- For roles in M-commerce value chain: VNPT should play a centric and mediator role to both take advantage of its powers and coordinate all other partners.
- For revenue model: VNPT had better choose the centric revenue model to handle the billing process and redistribute benefit along M-commerce value chain.
- For resource allocation: VNPT can first try to arrange all its resources as in managerial implication part.



5.2. Recommendation for further researches

This research only pinpointed the business model for VNPT. However the benefit sharing mechanism such as percentage revenue for commission, the portion of benefit for content providers has not been investigated and calculated in detail yet. It will certainly be open for other quantitative research in the future.

Due to limit of time and scope, this research has not taken into account all factors in technology compatible, competitor's development and competency to have a completed view in ecosystem building process. Furthermore, research in these factors would enhance the possibility of success for i-mode like system building process.

Unsuccessful cases of i-mode in developed countries also should be taken into account in order to bypass failed factors which may affect or severely destroy all effort to build a similar ecosystem like the case in Europe. It surely leads to another attractive future study.

Last but not least, if any extending research could examine elements for success or factor of failure with similar system like Japanese i-mode for the next promising 4G technology and smart phone trend, it would be considered very fruitful and exciting future research topic. Other researchers who can analyze and generalize all elements enabling i-mode model successful or leading it failed in developing countries are also considered as appealing ones.



Appendix

Appendix 1 ITU- Cellular subscription 2003-2008

| | <i>Mobile cellular subscriptions</i> | | | | | <i>Ratio of mobile cellular subscriptions to fixed telephone lines</i> |
|------------------------|--------------------------------------|-----------------------|------------------|--------------------|----------------|--|
| | | | <i>CAGR</i> | <i>per 100</i> | <i>%</i> | |
| | <i>(000s)</i> | | <i>(%)</i> | <i>inhabitants</i> | <i>Digital</i> | |
| | <i>2003</i> | <i>2008</i> | <i>2003 - 08</i> | <i>2008</i> | <i>2008</i> | |
| Afghanistan | 200 | 7'898.9 | 108.6 | 29.03 | ... | 78.1:1 |
| Albania | 1'100.0 | 3'141.2 | 23.4 | 99.93 | 100 | 9.1:1 |
| Algeria | 1'446.9 | 31'871.0 | 85.6 | 92.72 | 100 | 9.6:1 |
| American Samoa | 2.1 | 2.2 | 7.1 | 3.65 | ... | 0.2:1 |
| Andorra | 51.9 | 64.2 | 4.3 | 76.06 | 100 | 1.7:1 |
| Angola | 350 | 6'773.4 | 80.9 | 37.59 | ... | 59.3:1 |
| Anguilla | 8.8 | 13.1 ¹ | 21.5 | 95.56 | ... | 2.4:1 |
| Antigua & Barbuda | 46.1 | 136.6 | 24.3 | 157.67 | 100 | 3.6:1 |
| Argentina | 7'842.2 | 46'508.8 | 42.8 | 116.61 | ... | 4.8:1 |
| Armenia | 114.4 | 3'076.8 | 93.2 | 99.99 | ... | 4.9:1 |
| Aruba | 70 | 120.8 | 11.5 | 114.56 | ... | 3.1:1 |
| Ascension | - | - | - | ... | ... | -:1 |
| Australia | 14'347.0 | 22'120.0 | 9 | 104.96 | 100 | 2.4:1 |
| Austria | 7'274.0 | 10'816.0 ² | 8.3 | 129.73 | 100 | 3.3:1 |
| Azerbaijan | 1'057.1 | 6'548.0 | 44 | 75 | 100 | 5.0:1 |
| Bahamas | 122.2 | 358 ³ | 24 | 106.04 | 100 | 2.7:1 |
| Bahrain | 443.1 | 1'440.8 | 26.6 | 185.77 | 100 | 6.5:1 |
| Bangladesh | 1'365.0 | 44'640.0 ⁴ | 100.9 | 27.9 | ... | 33.2:1 |
| Barbados | 140 | 406 | 23.7 | 159.09 | ... | 2.7:1 |
| Belarus | 1'118.0 | 8'128.0 | 48.7 | 83.98 | 100 | 2.2:1 |
| Belgium | 8'605.8 | 11'822.2 | 6.6 | 111.63 | 100 | 2.7:1 |
| Belize | 60.4 | 160 | 21.5 | 53.23 | ... | 5.1:1 |
| Benin | 236.2 | 3'625.4 | 72.7 | 41.85 | 100 | 35.1:1 |
| Bermuda | 40 | 79 | 14.6 | 122.07 | ... | 1.4:1 |
| Bhutan | 2.3 | 251 | 156.6 | 36.55 | 100 | 9.1:1 |
| Bolivia | 1'278.8 | 4'830.0 | 30.4 | 49.82 | ... | 7.0:1 |
| Bosnia and Herzegovina | 1'074.8 | 3'179.0 | 24.2 | 84.26 | 100 | 3.1:1 |
| Botswana | 445 | 1'485.8 | 27.3 | 77.34 | 100 | 10.4:1 |

| | | | | | | |
|------------------------|-----------|-----------|------|--------|------|---------|
| Brazil | 46'373.3 | 150'641.4 | 26.6 | 78.47 | ... | 3.7:1 |
| British Virgin Islands | 8 | 23 | 23.5 | 100.91 | ... | 1.2:1 |
| Brunei Darussalam | 177.4 | 376 | 16.2 | 95.85 | ... | 4.9:1 |
| Bulgaria | 3'500.9 | 10'500.2 | 24.6 | 138.3 | 100 | 4.8:1 |
| Burkina Faso | 238.1 | 2'553.0 | 60.7 | 16.76 | ... | 17.7:1 |
| Burundi | 64 | 480.6 | 49.7 | 5.95 | 100 | 15.8:1 |
| Cambodia | 498.4 | 4'237.0 | 53.4 | 29.1 | ... | 98.3:1 |
| Cameroon | 1'077.0 | 6'160.9 | 41.7 | 32.28 | 100 | 31.1:1 |
| Canada | 13'291.0 | 22'092.5 | 10.7 | 66.42 | - | 1.2:1 |
| Cape Verde | 53.3 | 277.7 | 39.1 | 55.68 | 100 | 3.9:1 |
| Cayman Islands | 21 | 33.8 | 60.6 | 66.84 | ... | 0.9:1 |
| Central African Rep. | 40 | 154 | 30.9 | 3.55 | ... | 12.8:1 |
| Chad | 65 | 1'809.0 | 94.5 | 16.58 | 100 | 139.2:1 |
| Chile | 7'268.3 | 14'796.6 | 15.3 | 88.05 | ... | 4.2:1 |
| China | 269'953.0 | 641'230.0 | 18.9 | 47.95 | 100 | 1.9:1 |
| Cocos Keeling Islands | ... | ... | ... | ... | ... | ... |
| Colombia | 6'186.2 | 41'364.7 | 46.2 | 91.9 | 100 | 5.1:1 |
| Comoros | 2 | 98.4 | 118 | 14.9 | 100 | 4.2:1 |
| Congo | 330 | 1'807.0 | 40.5 | 49.98 | ... | 81.4:1 |
| Congo (Dem. Rep.) | 1'246.2 | 9'262.9 | 49.4 | 14.42 | 100 | 248.2:1 |
| Cook Islands | 3.4 | 6.7 | 14.5 | 33.91 | ... | 1.0:1 |
| Costa Rica | 778.3 | 1'886.6 | 19.4 | 41.75 | 97.8 | 1.3:1 |
| Côte d'Ivoire | 1'280.7 | 10'449.0 | 52.2 | 50.74 | 100 | 29.3:1 |
| Croatia | 2'537.3 | 5'879.8 | 18.3 | 132.95 | 100 | 3.1:1 |
| Cuba | 35.4 | 331.7 | 56.5 | 2.96 | 100 | 0.3:1 |
| Cyprus | 551.8 | 1'016.7 | 13 | 117.89 | 100 | 2.6:1 |
| Czech Republic | 9'708.7 | 13'780.2 | 7.3 | 133.54 | 100 | 6.1:1 |
| D.P.R. Korea | - | - | - | - | ... | -1 |
| Denmark | 4'767.1 | 6'862.0 | 7.6 | 125.72 | 99.9 | 2.8:1 |
| Djibouti | 23 | 112.8 | 37.5 | 13.29 | 100 | 7.6:1 |
| Dominica | 23.8 | 100 | 33.3 | 149.66 | ... | 5.7:1 |
| Dominican Rep. | 2'091.9 | 7'210.5 | 28.1 | 72.45 | 100 | 7.3:1 |
| Ecuador | 2'398.2 | 11'542.1 | 36.9 | 85.61 | ... | 6.1:1 |

| | | | | | | | |
|-------------------------|----------|-----------|---------------|-------|--------|------|---------|
| Egypt | 5'797.5 | 41'272.5 | | 48.1 | 50.62 | 100 | 3.5:1 |
| El Salvador | 1'149.8 | 6'950.7 | | 43.3 | 113.32 | ... | 6.5:1 |
| Equatorial Guinea | 41.5 | 346 | | 52.8 | 52.49 | ... | 34.6:1 |
| Eritrea | - | 108.6 | | - | 2.2 | 100 | 2.7:1 |
| Estonia | 1'050.2 | 2'524.5 | ⁶ | 19.2 | 188.2 | 100 | 5.1:1 |
| Ethiopia | 51.3 | 1'954.5 | | 107.1 | 2.42 | ... | 2.2:1 |
| Falkland (Malvinas) Is. | - | 3 | | - | 99.3 | ... | 1.5:1 |
| Faroe Islands | 38 | 54.9 | | 7.6 | 110.55 | 100 | 2.5:1 |
| Fiji | 109.9 | 600 | ⁷ | 40.4 | 71.09 | 100 | 4.6:1 |
| Finland | 4'747.1 | 6'830.0 | | 7.5 | 128.76 | 100 | 4.1:1 |
| France | 41'702.0 | 57'972.0 | ⁴ | 6.8 | 93.45 | 100 | 1.7:1 |
| French Guiana | 92 | 98 | | 6.5 | 50.29 | 100 | 1.9:1 |
| French Polynesia | 60.1 | 187.1 | | 25.5 | 70.43 | ... | 3.4:1 |
| Gabon | 300 | 1'300.0 | ⁸ | 34.1 | 89.77 | 100 | 49.1:1 |
| Gambia | 149.3 | 1'166.1 | | 50.8 | 70.24 | ... | 23.9:1 |
| Georgia | 711.2 | 2'755.1 | | 31.1 | 63.97 | 100 | 4.5:1 |
| Germany | 64'800.0 | 105'523.1 | ⁹ | 10.2 | 128.27 | 100 | 2.1:1 |
| Ghana | 795.5 | 11'570.4 | | 70.8 | 49.55 | 100 | 80.4:1 |
| Gibraltar | 15.9 | 18.4 | | 15.7 | 60.48 | 100 | 0.7:1 |
| Greece | 8'936.2 | 13'799.3 | ¹⁰ | 9.1 | 123.9 | 100 | 2.3:1 |
| Greenland | 29.7 | 55.8 | | 13.4 | 97.4 | ... | 2.4:1 |
| Grenada | 42.3 | 60 | | 7.3 | 57.97 | ... | 2.1:1 |
| Guadeloupe | 289.4 | 314.7 | ¹¹ | 8.7 | 69.75 | ... | 1.4:1 |
| Guam | 79.8 | 98 | | 22.8 | 59.06 | ... | 1.5:1 |
| Guatemala | 2'034.8 | 14'948.6 | | 49 | 109.22 | 100 | 10.3:1 |
| Guernsey | 41.5 | 43.8 | | 5.5 | 78.54 | ... | 1.0:1 |
| Guinea | 111.5 | 3'840.4 | | 103 | 39.06 | ... | 182.9:1 |
| Guinea-Bissau | 1.3 | 500.2 | | 230.2 | 31.75 | 100 | 107.6:1 |
| Guyana | 138 | 281.4 | ¹¹ | 42.8 | 36.84 | ... | 2.6:1 |
| Haiti | 320 | 3'200.0 | | 58.5 | 32.4 | 100 | 29.6:1 |
| Honduras | 379.4 | 6'210.7 | | 74.9 | 84.86 | ... | 7.5:1 |
| Hong Kong, China | 7'349.2 | 11'580.1 | | 9.5 | 165.85 | 100 | 2.8:1 |
| Hungary | 7'944.6 | 12'224.2 | | 9 | 122.09 | 100 | 4.0:1 |
| Iceland | 279.7 | 342.7 | | 4.1 | 108.64 | 96.4 | 1.8:1 |
| India | 33'690.0 | 346'890.0 | | 59.4 | 29.36 | 100 | 9.2:1 |
| Indonesia | 18'495.3 | 140'578.2 | ¹² | 50 | 61.83 | ... | 4.6:1 |
| Japan | 86'655.0 | 110'395.0 | ¹³ | 5 | 86.73 | 100 | 2.3:1 |

| | | | | | | | |
|---------------------|--------------------|--------------------|----|-------------|--------------|-------------|----------------|
| Taiwan, | 25'799.8 | 25'412.5 | 22 | -0.3 | 110.31 | 100 | 1.8:1 |
| United Kingdom | 54'256.2 | 77'360.8 | | 7.4 | 126.34 | 100 | 2.3:1 |
| United States | 160'637.0 | 270'500.0 | 26 | 11 | 86.79 | 100 | 1.7:1 |
| Uruguay | 497.5 | 3'507.8 | | 47.8 | 104.73 | ... | 3.7:1 |
| Uzbekistan | 320.8 | 12'733.7 | | 108.8 | 46.83 | 2.4 | 6.9:1 |
| Vanuatu | 7.8 | 36 | 27 | 35.8 | 15.39 | ... | 3.5:1 |
| Vatican | ... | ... | | ... | ... | ... | ... |
| Venezuela | 7'015.1 | 27'083.8 | 28 | 31 | 96.31 | ... | 4.3:1 |
| Viet Nam | 2'742.0 | 70'000.0 | | 91.2 | 80.37 | 100 | 2.4:1 |
| Virgin Islands (US) | 49.3 | 80.3 | | 27.6 | 73.19 | ... | 1.1:1 |
| Wallis and Futuna | - | - | | - | - | ... | -:1 |
| Yemen | 675.2 | 3'700.0 | | 40.5 | 16.14 | ... | 3.3:1 |
| Zambia | 241 | 3'539.0 | | 71.1 | 28.04 | 100 | 39.1:1 |
| Zimbabwe | 363.7 | 1'654.7 | | 35.4 | 13.28 | 100 | 4.8:1 |
| World | 1'417'810.7 | 4'045'977.0 | | 23.3 | 59.74 | 73.4 | 3.2 : 1 |

Appendix 2

VNPT's key companies and partners



| Name of VNPT's subsidiaries | Function | Percentage of VNPT owned | Remark |
|---|--|--------------------------|--|
| Management and corporate executive units | | | |
| Central Post and Telecoms (P&T) department | Post office, fixed phone, transmission backbone line | 100% | 60 sub municipal and provincial telecoms |
| Vietnam Telecom National (VTN) | Domestic Telecoms | | |
| Vietnam Telecom International (VTI) | International Telecoms | | |
| Information and PR center | Public relationship | | |
| Subsidiaries | | | |
| Manufacture/Service/Operation/Education | | | |
| VDC | IAP, ISP, Data, internet | 100% | |
| VASC | Software on mobile, internet, TV, VoIP... | | |
| Fiber optic and accessories manufacturing | Fiber and accessories | | |

| | | | |
|--|----------------------------|------------------------------|--------------------------|
| P&T Institute of Technology (North,South) | Education | Over 50% | |
| P&T Hospital I,II,III | Health | | |
| P&T Nursing and Rehabilitation hospital I,II,III | | | |
| VMS | Mobile phone | | |
| Vinaphone | | | |
| P&T Materials | Telecom material | | |
| P&T Printing Corporation | Printing and accessories | | |
| Cokyvina | | | |
| P&T Electrical Material Telecommunications | Telecoms equipment | | |
| Financial Service Companies, Vietnam Postal Savings Services Company | Finance, banking | | |
| Post Insurance Joint Stock | Insurance | | |
| Postef | | | |
| Project Development | | | |
| P&T construction company | Construction | | |
| P&T Investment and Development | Investment | | |
| Telephone equipment. company | Equipment | | |
| | | | |
| | | | |
| Associates | | | |
| Sacom | Equipment, | Joint venture or joint stock | |
| Kasati. | construction, | | |
| CT-IN | infrastructure | | |
| Stock Investment Company | Stock | | |
| Telecoms Constructions | Constructions | | joint stock companies |
| Telephone Directory and Yellow Pages 1,2 | Yellow pages publishing | | |
| Telecommunications | Telecoms equipment | | a joint venture |
| | | | |

| | | | |
|--|--------------------------|--|---|
| Equipment Manufacturing | | | |
| VinaDeasung, | Cable manufacture | | |
| VKX | Switching system | | a joint venture with SK-Telecom(Korean) |
| Alcatel network systems Vietnam-ANSV | Mobile network operation | | |
| Vineco | | | a joint venture with NEC(Japan) |
| Vina-GSC | Fiber Optic manufacture | | joint venture with LG (Korean) |
| Telecommunications Systems | Telecomx equipment | | Joint venture |
| Manufacturing Telecommunications Equipment | | | |
| Teleq | | | |

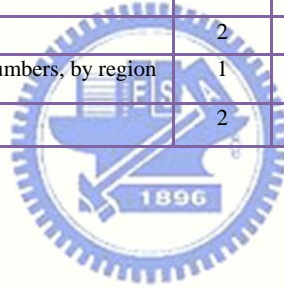


Source: VNPT, MIC

Appendix 3 67 i-mode pioneer content providers for the starting lineup

| Category | Service | Sites | Companies |
|-----------------------------|--|-------|--|
| Mobile banking | Transaction details, balance inquiries, , bank transfers, and information | 21 | Asahi Bank, Bank of Tokyo-Mitsubishi, Dai-ichi Kangyo Bank, Daiwa Bank, Fuji Bank, Fukuoka Bank, Fukuoka City Bank, Higo Bank, Hiroshima Bank, Iyo Bank, Kita-Nippon Bank, Kiyoo Bank, Nishi-Nippon Bank, Ogaki Kyoritsu Bank, Sakura Bank, Sanwa Bank, Sapporo Bank, Shiga Bank, Sumitomo Bank, Suruga Bank, Tokai Bank |
| Mobile trading | Market information, stock price information, , buy and sell orders | 2 | Daiwa Securities, Nikko Securities |
| Credit cards | Information on special offers, credit card bill information | 4 | JCB, Sumitomo Credit, DC Card, UC Card |
| Life insurance information | Information on procedures and processes | 5 | Sumitomo Life, Dai-ichi Life, Nippon Life, Meiji Life, Yasuda Life |
| Airline information | Inquiries about seats available; making reservations, inquiries about mileage totals | 3 | ANA, JAS, JAL |
| Hotel reservations | Inquiries about room availability, reservations | 2 | JTB, Pleco |
| Discount travel information | Retrieve information on inexpensive travel, make reservations | 1 | Open Door |

| | | | |
|--------------------------------|--|---|--|
| Train connections | Information on where to make transfers and restaurant guides | 2 | JR East, Toshiba Ekimae Adventure Club |
| News and sports news | News in general, sports news, entertainment news | 5 | Asahi News, Jiji Press, Hokkaido News, Mainichi News, Yomiuri News |
| Share price information | Share price information | 1 | Japan Telemedia Service |
| Weather forecasts | Weather forecasts | 1 | Weather News |
| Ticket information | Retrieve concert information, make reservations | 3 | Ticket Saison, Pia, Lawson Ticket |
| Real estate rental information | Retrieve information on rental properties | 1 | Able |
| Recipes | Names of dishes, recipes | 2 | Ajinomoto, Osaka Gas |
| Karaoke | Retrieve names of karaoke songs, karaoke centers, new songs | 1 | Daiichikosho |
| FM station information | Retrieve names of songs, program information, hit chart information | 2 | FM802, J-Wave |
| Book sales | Retrieve information on books, purchase books, bestseller information | 1 | Kinokuniya Bookstore |
| Dictionaries | English-Japanese, Japanese-English, several Japanese dictionaries, thesaurus | 1 | Sanseido |
| Games | Online games | 1 | Bandai |
| Local information | Restaurant guides, movie theatre information | 2 | Yellow Pages, Bay Area |
| Fortune telling | Fortune telling | 2 | Animo, Index, Telesys Network |
| Phone numbers | Retrieve business phone numbers, by region | 1 | NTT |
| Other | Surfing informaion | 2 | FM Chuo, Cybird |



Autobiography

I finished bachelor and master degree at Hanoi University of Technology (HUT) in 2002, 2004 repeatedly. My major was Electronics and Telecommunications. With the solid knowledge in technology, I used to work as the project supervisor at Champion Wireless Solution (CWS) Vietnam, a subsidiary of US Company. I involved in supervising several wireless local loop projects in the northern of Vietnam while working there. In 2005, working as senior engineer for Motorola Vietnam, I traveled and worked in most of Motorola mobile network projects in the Southeast Asia. Working in such professional environments let me be a persistent and organized person but I am also a humorous and thoughtful one. I am not only familiar with frequency optimizing for mobile network, but accustomed to preparing bidding contract, at ease with supporting and consulting customer and pre-sale, post-sale as well. In September 2008, I was admitted to Global MBA in National Chiao Tung University without interview because of exceptional academic performance and manager experience. During program beside acquiring the managerial knowledge and skill I had chance to work for Academic Sinica in Taiwan National Science project called Foresight Taiwan to help bring up to life many potential researches to market. In addition, I was honor to receive DAAD fund to join Summer Academic on Wireless Communication Research and Challenge. In June 2010, I graduate the AACSB accredited MBA program at National Chiao Tung University. With all my past experience in successful projects and backed up by my solid GMBA knowledge I insist on my goal of being global manger in future.

Reference List

- [1] K. Walk, "How to Write a Comparative Analysis " 1998.
- [2] KPMG:, "Mobile Payments in Asia Pacific," Money Transfers Newsletter, 2008.
- [3] F. Muller-Veerse, "Mobile Commerce Report. Durlacher Research Ltd. ," 1999.
- [4] A. Tsalgatidou, Veijalainen, J., 2000. Mobile electronic commerce:emerging issues. In: Proceedings of EC-WEB 2000 1st International Conference on E-Commerce and Web Technologies. London, Greenwich, UK, September, pp. 477–486.
- [5] I. Clarke, 2001. Emerging value propositions for m-commerce. *Journal of Business Strategies* 18 (2), 133–147.
- [6] S. J. Barnes, "The mobile commerce value chain: analysis and future developments," *International Journal of Information Management* 22 (2), pp. 91- 108, 2002.
- [7] P. G. W. Keen, Mackintosh, R., 2001. *The Freedom Economy: Gaining the M-Commerce Edge in the Era of the Wireless Internet*. Osborne/ McGrew-Hill, Berkeley.
- [8] P. K. Kannan, Chang, A.M., Whinston, A.B., 2001. *Wireless Commerce:Marketing Issues and Possibilities*. Proceeding of the 34th Annual Hawaii International Conference on System Sciences. Maui, Ha.
- [9] N. A. Mylonopoulos, Doukidis, G.I., "Introduction to the special issue: mobile business: technological pluralism, social assimilation, and growth. *International Journal of Electronic Commerce* 8 (1), 5-22.," 2003.
- [10] N. Sadeh, "M-commerce: Technologies, Services, and Business Models," John Wiley and Sons, New York, 2002.
- [11] R. V. U. Varshney, *Mobile commerce: framework, applications and networking support*, *Mobile Networks and Applications* (3) (2002) 185– 198.
- [12] M. E. Porter, 1985. *Competitive Advantage*. The Free Press, New York.
- [13] K. Siau, Lim, E.P., Shen, Z., 2001. Mobile commerce: promises, challenges, and research agenda. *Journal of Database Management* 12 (3), 4–13.
- [14] C.-W. Y. Ying-Feng Kuo, "3G telecommunication operators' challenges and roles: A perspective of mobile commerce value chain *Technovation*, Volume 26, Issue 12, December 2006, Pages 1347-1356."
- [15] T. Natsuno, "i-mode wireless ecosystem," 2003.
- [16] U. Varshney, "Business Models for Mobile Commerce Services: Requirements, Design, and the Future," *IT Professional*, vol. Vol. 10, No. 6., pp. 48-55., 2008.
- [17] A. B. W. X. Geng, "Profiting from Value-Added Wireless Services," *Computer*, vol. 34, pp. 87 - 89 2001.
- [18] M. Kodamay, "Transforming an old-economy company into a new economy—the case study of a mobile multimedia business in Japan
" *Technovation*, vol. 23, pp. 239-250, 2003.
- [19] S. T. Anwar, "CASES Vodafone and the wireless industry: a case in market expansion and global strategy," *The Journal of Business and Industrial Marketing* 18 (3) pp. 270-288, 2003.
- [20] H. S. Devine A, "Mobile Internet Content Providers and their Business Models- What can Sweden learn from the Japanese experience? Stockholm,," 2001.

- [21] J. Funk, "The Mobile Internet Market: Lessons from Japan's I-mode System. Paper,," 2000
- [22] B. S. Kunii I, "Amazing DoCoMo. In: BusinessWeek, Asian Edition, ," January 17, 2000
- [23] W. T. Stiehler A, "Mobile Internet in Japan - lessons for Europe. In: ePSO-N 2&5. epso.jrc.es," 2000.
- [24] M. V. Baker G, "The Semi-Walled Garden: Japan's "i-mode Phenomenon".," 2001.
- [25] S. E, "Mari Matsunaga: Reinventing the Wireless Web: The Story of DoCoMo's i-mode.," November 14., 2000.
- [26] W. F. Haas M, "The role of dominant players in network innovations: A new look at success and failure of the mobile internet. Paper, Japan Centre of the Ludwig-Maximilians-University, Munich," 2003.
- [27] T. Natsuno, "i-Mode Strategy," 2003.
- [28] F. M, "Telecoms in the Internet Age: From Boom to Bust to? Oxford," 2000.
- [29] L. Wisner, and Tan, "Principles of Supply Chain Management: A Balanced Approach," 2005
- [30] "General Statistics Office of Vietnam. (2010). Statistical data. Retrieved 3 March 2010".
- [31] "PC World Vietnam. (2008-2009). Various issues 2008-2009.."
- [32] D.-G. f. P. P. Japan Statistics Bureau, "Year 2000 population census".
- [33] C. I. A. (CIA), "The World Factbook - Vietnam," 2009.
- [34] "Vietnam Internet Network Information Center (VNNIC), Internet statistic. Retrieved March 2010," 2010.
- [35] "Lao Dong (Labour) newspaper. Various issues.," 2008-2010.
- [36] I. R. L. a. C. S. (Eds), "Impact of policy on development of e-commerce in Vietnam. , e-Commerce in the Asian context. Selected case studies. Singapore: IDRC-ISEAS," 2005.
- [37] "Ministry of Industry and Trade. Vietnam e-Commerce Report 2009. Hanoi.," 2009.
- [38] G. S. John Gallagher, "Software Outsourcing in Vietnam: A Case study of Local Operating Pioneer," The Electronic Journal of Information Systems in Developing Countries, Vol 17 2004.
- [39] "Vietnam Economist Association. Vietnam Economic Times. Various issues 2008-2009.," 2008-2009.
- [40] "Ministry of Planning and Investment. Investment Periodical. Various issues," 2008-2009.
- [41] "Ho Chi Minh City Computing Association (HCA). Vietnam ICT Outlook 2010. Annual report. Ho Chi Minh City: HCA," 2010.
- [42] D.-G. f. P. P. Statistics Bureau, "Japan Statistical Yearbook," 2001.
- [43] J. Funk, "The future of mobile phone-based intranet applications: a view from Japan. Technovation, 26(12),1337-1346. ."
- [44] L. Knutsen, &Lyytinen,K.(2005), "The differences in messaging: specifications, properties and gratifications affecting the Japanese wireless service evolution. In J.Krogstie, & B.Pernici(Eds.), Mobile information systems, proceedings of IFIPTC8 working conference on mobile information systems-2005 (MOBIS2005)."
- [45] D.-G. f. P. P. Statistics Bureau, "Survey of Research and Development " 2003.
- [46] D.-G. f. P. P. Statistics Bureau, "The Economic Census " 2005.

- [47] H. S. Devine A, "Mobile Internet Content Providers and their Business Models- What can Sweden learn from the Japanese experience? Stockholm, http://www.japaninc.com/online/sc/master_thesis_as1.pdf " 2001.
- [48] " Impact of policy on development of e-commerce in Vietnam. In R. Lafond and C. Sinha (Eds), e-Commerce in the Asian context. Selected case studies. Singapore: IDRC-ISEAS. ," 2005.
- [49] C. I. A. (CIA), "The World Factbook - Japan," 2001.
- [50] "Kano S (2000) Technical innovations, standardization and regional comparison – a case study in mobile communications. In: Telecommunications Policy 24, 305-321."
- [51] "Baker G, Megler V (2001) The Semi-Walled Garden: Japan's "i-mode Phenomenon". www.redbooks.ibm.com."
- [52] "Haas M, Waldenberger F (2003) The role of dominant players in network innovations: A new look at success and failure of the mobile internet. Paper, Japan Centre of the Ludwig-Maximilians-University, Munich."
- [53] "Shapiro E (2000) Mari Matsunaga: Reinventing the Wireless Web: The Story of DoCoMo's i-mode. November 14. <http://www.japansociety.org/corpnates/111400.htm>."
- [54] "Ratliff J (2000) DoCoMo as Nation Champion: I-Mode, W-CDMA and NTT's Role as Japan's Pilot Organization in Global Telecommunications. Santa Clara. <http://www.tprc.org/abstracts00/docomopap.pdf>
- [55] J. C. B. a. M. Wade, "DoCoMo: Japan's Wireless Tsunami: How One Mobile Telecom Created a New Market and Became a Global Force," 2002.
- [56] Hibberd, M.(2007).What's the usage? Mobile Communications International, 42–44.
- [57] Peppard, J.,&Rylander,A.(2006).From value chain to value network: lessons for mobile operators. European , 24(2), 128–141.
- [58] Tilson, D.,&Lyytinen,K.(2006).The 3G transition: changes in the US wireless industry. Telecommunications Policy, 30, 569–586.
- [59] Wu,T.(2007).Wireless Net Neutrality, Working Paper#17 New America Foundation, February.
- [60] Pateli, A. G., and Giaglis, G. M. (2004) A research framework for analyzing eBusiness models. European Journal of Information Systems, 13(4), pp. 302-314.
- [61] Kim, C., Lee, H., and Park, Y. (2006) A Taxonomical Classification of Business Models on Mobile Business: Patent Analysis and SOM Mapping. IEEE International conference on Management of Innovation and Technology, 1(1), pp. 478-482.
- [62] Li, W., and Chao, X. (2004) Modeling and Performance Evaluation of a Cellular Mobile Network. IEEE/ACM Transactions on Networking (TON), 12(1), pp. 131-145.
- [63] Ofcom (2008) The Communications Market 2008(<http://www.ofcom.org.uk/research/cm/cmr08/>: accessed 5th of November, 2008).