The Introduction of Internet to Vietnam as the Technological Foundation for Online Gaming: An Analysis

Quang Anh Phan
University of Zurich, Switzerland
phanquanganh@u.nus.edu

Abstract: This paper touches upon the chronological contexts that set the basis for the foundation and development of the Internet—which is considered the blood veins system allowing the existence and operation of online games in Vietnam. These contexts include (1) the reform that allowed Vietnam to transit from a closed, state-centered economy to a market economy with which the development of information technology was considered one of the four primary pillars of the new economic policy system, (2) the lifting of economic embargo and diplomacy the U.S. set after the Vietnam War, and notably (3) the introduction of the Internet which could be observed through the timeline of policy-making process. The focus of this paper is to examine several key policies that made conditions to the establishment and expansion of internet services in Vietnam.

Keywords: entertainment, internet, online gaming, post-doi moi, Vietnam

As Wolf (2015) stated, after reviving from the economic crash in 1983, the video gaming industry has moved forward with impressive velocity which could be seen through the increase of the annual revenue, the number of game players, the quantity of newly released consoles, and the expansion to new platforms. To achieve that favorable outcome, there are several factors that should be taken into account, including the remarkable rise of the Internet, the relentless and unfaltering progress of the mobile technology which allows the birth of new portable devices, as well as the improvement in terms of quality of design software that

smooth the path of the video game manufacture. The last century's narrative of the gaming industry seems to have a narrow plot as the market was mainly dominated by the three major players: the U.S., Japan, and Europe. The circumstance has changed when the marketplace now has enough slots for other used-to-be-underrated companies and studios from unknown regions of the gaming map, offering these units chances to compete at the global level in a square and fair manner. As expressed by Schleiner (in press), the apparent default concept of East-West hemispheres in terms of industry development should be rotated to the idea of the North-

South axis, and the preference in trusting that there is a demarcation line between the well-known markets and the Third World nations in the southern hemisphere is no longer valid. That concept allows Southeast Asia, in general, and Vietnam, in particular, as a rising force of consuming video games to be on the world map of digital games.

The formation and emergence of computing technology have made remarkable transitions in terms of power, complexity, and miniaturization (Armitage, Claypool, & Branch, 2006, p. 1). Worldwide information systems, known as the Internet, are now a piece of a cutting-edge, regular day-to-day existence in the quotidian human life. The human craving for diversion and amusement has explicitly pushed the advancement of networking technology, in general, and the Internet, in particular. Multi-player and then online video games are making more prominent utilization of the Internet and the increasing interest of having high-end Internet services in terms of connecting speed, stability, and security.

A networked game must include a net system, which means an advanced association between at least two computers. Multiplayer video games are regularly organized amusements in that the players are physically isolated and the machines, regardless of whether personal computers, consoles, or handhelds are associated by means of a system. In any case, numerous multiplayer games were not networked games per se since such games would have clients alternately playing on the same physical machine (Armitage et al., 2006, p. 5). Armitage clarified it by stating that one player would alternate battling outsider boats while the second player is viewing. Once the main player was obliterated or when the level is finished, the second player would have a turn. Scores for every player were kept independently. For synchronous multiplayer play, every player would see their characters on the same screen, or the screen would be "split" into partitioned locales for every player. This case had been popular in Vietnam before the Internet was introduced largely. People would play the multiplayer mode by using the same computer and apply the turn-based mode. For those who play games that require simultaneous actions like Age of Empire or Counter Strike, an intranet was set by using LAN cables and IPX connection for direct play with which several computers could connect to each other even without the Internet.

However, games that require the Internet do not need to be multi-played. A game can utilize the connection to link the player's device to a remote server that manages different gameplay angles. The game itself can totally be a solitary version where there is no immediate connection with different gamers. A player needs to sign into a centralized server and plays remotely over a system. Indeed, today's current computer frameworks still employ that mechanism as players can run a game locally on a computer and connect with a server to access the content or to collaborate with artificial intelligence (AI) bots operated by a server.

The development of the Internet entails the expansion of game content as players can now download updates, patches, expansion packages, new stages, to name but a few, via the Internet even when they only play the single mode. This chain of actions could not be done in the past when the content was already fixed, and even when a bug was found, an intermediate solution was nearly impossible since no connection was provided. Therefore, the development of the Internet has guaranteed two aspects: firstly, the multiplayer mode is provided more effectively, assuring the connection between many players regardless of time and venue; secondly, the game content is enriched, stabilized, and secured.

Viettrack (2010), who conducted a study on Vietnamese children activities, uncovered that playing online games is the primary way of amusement for most Vietnamese youngsters. Newzoo (2014) reported that this S-shaped country has more than 31 million gamers among more than 44 million online citizens. In the case of Vietnam, online gaming in Internet cafés is a dominant practice largely because gaming devices (consoles) are not affordable (Nut Chuoi, 2015). Although the Vietnamese market has authorized resellers/retailers of branded companies who manufacture gaming console devices, the tag stuck on these devices always show a price which is at least 20% higher (Nut Chuoi, 2015) than the price of the same device bought through unofficial ways. Therefore, players, even if they could afford it, do not want to acquire a device legally but obtain it through a marginal path instead. For example, they could make purchases from overseas sources or gaming shops that import devices unofficially. Then they have to pay an additional cost to cover hacking activities that help activate game titles, making it playable in a country

where branded games feel difficult to enter the market. The obstacles that prevent players from owning gaming consoles have shaped the conditions that have allowed online games to flourish in Vietnam. Online gaming in Vietnam has become a prevalent everyday life entertainment form that reflects various aspects of concepts, including globalization, transnational cultural practices, as well as the localization process.

By analyzing journals retrieved at Vietnam National Library in Hanoi, research papers provided by the Central Library of National University of Singapore that focus on Vietnam's economy during that time, and dissecting numerous policies released by the Vietnamese government, this paper uses the documentary review method that helps provide unique insight into the state and economic forces that shaped the most basic technical condition for online gaming in the modern communist nation of Vietnam, the Internet.

Doi Moi (The Reform) in 1986 and the Removal of the Embargo in 1994

The introduction of online games does not follow the same path in every nation. We should not assume that the recent popularity of this media platform in Vietnam is merely a sudden manifestation of Vietnam, as a postwar nation, is trying to match the velocity of the regional and the world flow in terms of mass media development, including the integration of the computer-mediated communication environment as well as the dynamic nature of information as a new power (Cao, 2001). Instead, it is an accumulative result acquired after a long-term change since 1986 that is realized in core fields such as economy, politics, education, and society management (including the public's mentality), which is referred to by the Vietnamese government as the Reform (Fforde, 2009). Telecommunication is considered the central nervous system stabilizing the existence of the country by assuring the transmission of information at the domestic level and opening the portal that links Vietnam to the outside world. Thus, fruitful outcomes of this dramatic shift to set the foundation for the creation and continuous development of online games, making it one of the most popular amusement forms in this Southeast Asian country. The rise of online games has also entailed the public appearance of a new system and business sector: enterprises that see video games and virtual entertainment as a rich soil to plant and harvest, which is a turning point not only because it adds to the diversity of the economy, but also reflects a change in the popular Vietnamese mentality as video games were for a long time treated as an irrelevant childish matter.

To better understand what makes Vietnamese online gaming unique, it is necessary to return even further back in history to policy changes that arose along with the foundation of the modern Vietnamese state. When the Vietnam War finished in 1975, the nation was bound together as the Socialist Republic of Vietnam shortly after July 1976. To quicken and stabilize the procedure of political and monetary reconsolidation, the Vietnamese Communist Party (VCP) instantly forced the Northern communist improvement model on the South in every domain: political, ideological, social, financial, as well as technical without considering the particular economic and social attributes of the Southern region of Vietnam (Vo, 1990). From an economic point of view, amid the period of 1975–1985, state-controlled enterprises commanded all types of industry, especially the heavy sector (power generating, mining, metallurgy, mechanics, etc.). Through the collectivization of horticulture and the appropriation and nationalization of commercial enterprises and trade, the government kept a close eye on the manufacturing process as well as the appropriation of merchandise. Moreover, to reinforce its control over a variety of sectors, the state applied syndication over the banking system, transportation, information transfers, and postal administrations, which also served the purpose of assuring national security (Boymal, Martin, & Lam, 2007).

Ten years after the reunification of the nation, the scenario of replicating the economic model of the Soviet Union and China to deal with financial improvement did not give the outcomes that the Vietnamese government looked for, not to mention that the inflation was up to 700%, which put the whole country to a vulnerable situation. Financial emergencies and the breakdown of Eastern European communism constrained the nation to embrace another economic scheme (Plummer, 1995). Those events led to the milestone of August 1986 when the VCP started a critical movement in its change program and dispatched another procedure of economic improvement under the flag of "Doi Moi" (Reform; Vo, 1990). This Reform included a rebuilding of Vietnamese political institutions as well as legal and financial organizations. Theoretically, the

institutional change, which could be seen in the movement in prevalent political ideology, socio-legitimate, and social changes that incite new types of social, financial structures, are vital for the advancement of the economy (Landes, 1969).

The conduction of Doi Moi in Vietnam in 1986 marked a turning point for the country towards a hybrid economy where resource allocation is acknowledged as a fusion of state control and market mechanism (Smith & Scarpapi, 2000). This process concentrated on modernization and industrialization by strongly focusing on businesses which promise high and rapidly generated revenue. The aim was to create an exclusive industrial zone to serve as the fostering force for development (Nguyen, 2010, p.494). The start of innovation in Vietnam has implied a process of industrialization. Going back to the 1990s, industrialization officially became a national slogan for the party and the state to implement their development policies in many areas, pursuing the ambition of changing the Vietnamese economy, which was seen to have been in ruins due to its imitation of the Soviet Union and China.

By 1989, the administration had step-by-step destroyed the system of central, state-based arrangement. As an aftereffect of the financial change agenda, businesses that belong to the private sector began to spread out in South Vietnam and soon extended to the nation's northern areas (McGrath, 1995). In the mid-1990s, the Vietnamese economy experienced a quickened transition where market powers had been logically accepted (Chand, Duncan, & Doan, 2001). Although Vietnam moved from a closed economy to an open, market-driven economy, the position of the central state still remained powerful that was guaranteed by various control methods. Changes in establishments have slacked, and the legacy of regulatory control has remained. From a governmental and managerial perspective, Vietnam has remained a socialist state represented by a solitary political gathering.

In the process of financial change and social change, the Vietnamese regime and neighborhood enterprises have understood the significance of scientific achievements and innovation to create and manage monetary flourishing. Informatics, biotechnology, new materials, and computerization were the four high-innovation pillars chosen by the legislature to maintain the country's economic advancement (Bezanson et al., 1999). Amongst these four national high-priority programs, Vietnam puts great emphasis on the development of IT programs.

Taking off after those changes mentioned earlier with managed financial advancement in the 1990s, the Vietnamese telecom segment experienced quick modernization and improvement. From a mechanical point of view, Vietnam inherently had no legacy frameworks. Policymakers settled on a vital choice to construct an all-computerized national telecom system only with cutting-edge innovations and hardware. This ostensibly spoke to a type of innovative leap from a questionable obsolete electro-mechanical network to the most developed computerized innovation on the planet (Boymal et al., 2007).

The second historical economic landmark which should be highlighted is the decision to set up the diplomatic relationship between the U.S. and Vietnam, and the lifting of the U.S. embargo on trade from 1994 to 1995, after the visit of U.S. President Bill Clinton to Hanoi. Allowing the changes to be conducted since 1986 was only a part of the story. The conflict with China in 1979 resulted in the war over the northern borderland. Yet, the blockade (carried out by China, to limit the contact of Vietnam with other countries in the region) and the embargo (set by the U.S. after the Vietnam War as a penalty, to block/limit all of exportation and importation routes) were fences and walls that Vietnam needed to overcome. Endeavors to break through those obstacles were remarkable, but it was not enough as the consequences of the before-1986 period were still too heavy to endure. Vietnam needed to walk between two bullet lines: stay alive after the crisis and find an escaping way from the depression of isolation.

Therefore, normalizing the diplomatic relationship with the U.S. and eradicating the embargo on trade was an act of paving the path to allow the country to reach the outer world and integrate with the global economy. Individuals have also been liberated from a constrained life as the idea of an open economy has granted them new opportunities to acquire new patterns of trading activities, new perspective to build up modern industries which have no longer been limited to manufacturing (as a matter of fact, media, transportation, and telecommunication belong to this part), new chances to invest and support commercial relationships, and new forms of service including entertainment (Beresford, 2008).

Internet in Vietnam: A Rough Beginning of Electronic Networking

As mentioned above, the country entered the crisis period right after the Vietnam War, facing a poor postal service with technical equipment that was outdated, unsynchronized, and short on almost every aspect (Boymal et al., 2007). In 1985, Vietnam's telephone owning density rate was only 0.2/100 people, which was seven times lower than those in Africa. The same rate for telegraph was only 10.27/100 people, which was 18 times lower than Cuba (Lan, 2016a). The connecting time for an inter-city call from Hanoi to Ho Chi Minh City could take hours since the line was overloaded while the number of minutes made by international calls placed per year was too low to be worth counting (Thu, 2005).

Tran Dang Khoa (Multiple authors, 2000) stated that the current post-war situation fostered Dang Van Than, who was the Head of Department of Postal Services field at that time, to thought of the survival solution for those who work in this industry. He realized that outside Vietnam, the world had already entered into another scientific revolution in terms of telecommunication technology. Vietnam was left behind even when the war has ended for more than a decade, which led to the fact that Vietnam could no longer point at the war as the main reason for being obsolete. After building up his mind, Dang discussed with the General Committee of Communist Party and industry leaders about choosing a new path, which is daring, self-reliant, no longer dependent on old mechanism of the Soviet Union period, and can overcome the bureaucracy that had ruined the economy for such a long time (Multiple authors, 2000). That route, according to Dang, must go straight up to modern technology, focusing on the direction of digitization, automation, and diversification of services. Mai Liem Truc, another leader of the telecommunication field, noted that in order to set the path for the Internet to be introduced to Vietnam, at least three conditions must be fulfilled (Lan, 2016d): (1) the level of automation must be equal nationwide and the connection to the international server must be assured; (2) Vietnam must have enough companies and enterprises who can operate on their own, know broadly and deeply about Internet services, and are willing to invest, and (3) the deployment of Internet services must receive the acceptance nod from the government and the Communist Party.

To be eligible as stated, Vietnam had to face a number of issues. According to Do Trung Ta, the Minister of Ministry of Postal Service and Telecommunication from 2002 to 2007, selecting modern technology required Vietnam to have a stable financial resource, but the reality showed that the government did not have enough foreign currency (Lan, 2016a). After Doi Moi in 1986, Vietnam tried to obtain foreign currency by exporting agricultural products, but this process only marked its rise after 1990 when the global market gradually accepted the presence of Vietnamese products (Shivakumar, 1996). The accumulation of foreign currency, thus, was slow and not at the level that afforded the price of new technology. The Soviet Union and then the SNG countries after the fall of the Soviet were willing to help provide all equipment but the Soviet technology was already outdated. The replacement by modern equipment that represented the presence of capitalism was a brave decision (Multiple authors, 2000). First, this decision pointed out that Vietnam was ready to enter a market-driven economy instead of being quarantined inside its extreme, closed, and state-centered economy. Second, communist leaders eventually realized that bureaucracy and imitation after big countries within the communist system were no longer applicable since the inflation and crisis before 1986 had shown clearly. Third, the acceptance of technology from capitalist countries nailed down the possibility of later collaboration, which would gradually cool down the tension between those two ideologies (Grinter, 2006).

The realization of obtaining capitalist technology entailed several issues. Do note that Vietnam still had agreements with the former U.S.S.R. in which Vietnam needs to import the framework, including pillars, towers, and solar cells from the Soviet Union (Lan, 2016b). Although the technology was outdated, it might be of some use; which seems to be a reluctant way of explanation since Vietnam could not cut loose the relationship with the former U.S.S.R. in terms of material importation. Thus, the early stage of setting the Internet infrastructure observed a combination of the Soviet materials with antenna and other equipment imported from France and Germany, which was not synchronized (Lan, 2016b).

Secondly, the proposal to go straight to modern technology affected many other industries that had contracts with communist countries. Much equipment must be recycled or given away to Cuba because those were not qualified to set up in the new system (Lan, 2016b). That was a considerable waste as the endeavor spent to receive that huge volume of equipment from other communist allies was significant. The decision to get new devices and dispose of those that do not match the new technology also means that Vietnam needed to reactivate a new process of asking for financial aid as well as spending money to purchase equipment which used to be provided as grant element or items sold at a discounted price. Another difficulty was that the bank account of the Department of Postal Services had no more than a few tens of thousands U.S. dollar but the number of staffs was more than 9,000. The consequence of ineffective human resource management also jammed the operation of the new system.

Thirdly, Tran Dang Khoa (Multiple authors, 2000) asserted that many people were afraid of being dependent and the loss of ideology as the purchase of capital equipment would result in the dependence on capitalists which might lead to the abandonment of socialism and the heavy debt burden that future generations have to handle. This emotional and psychological state was only eased when the government assured that none of these mentioned issues would happen, especially when the motto of the Communist Party still declares that the new market-driven economy has a socialist direction, which is yet a controversial and opaque topic amongst scholars who study Vietnam (Neuberg & Roeckel, 2007, 2008).

Fourth, Do stressed on the matter that the government and the communist leaders were afraid of the possibility of being cyber-attacked and the leakage of confidential information through the Internet (Lan, 2016c, 2016d). Although it is not possible to totally control and prevent the possibility of information loss or leakage given that traditional ways of communication also showed several shortcomings and flaws in terms of security and confidentiality assurance, the government and the Party still accepted the introduction of the Internet as they had seen that its advantage outweighed the inconvenience.

The Timeline of Internet Development in Vietnam

There were a number of previous research on the Internet innovation in Vietnam in which authors proposed different viewpoints on how to divide the Internet timeline. From a poli-economical perspective, Boymal et al. (2007) suggested that we should summarize the progress of the Internet in Vietnam into five phrases based on the promulgation of key policies: 1990–1992, 1993–1994, 1995–1996, 1997–1999, and 2000–beyond. Sharing the same opinion with Boymal was Surborg (2008) whose divergence is more condensed with three milestones: before 1995 (the foundation), full access (1995–2000), and various aspects of control (2000–onwards). Le et al. (2007) seemed to highlight the importance of the popularization of Internet service in Vietnam and the access level, as well as connectivity quality; thus, their chronical version was divided into two parts: before 2001 and 2001 until 2007 (the point they published the paper). The year 2001 was chosen as the landmark as the concern of users regarding connection speed, security, flexibility, and other general services was the head title of many articles in newspapers in this year, forcing service providers and the government to sit down together and find a way to brighten the situation. Another effort to help sort out was credited to Pham (2017) whose main criteria applied to his four-phrases version were the notable events or remarkable products that represent a period: before 1997 as the time of preparation, 1997 as the birth year of the Internet, Yahoo as the tech giant of the 2000s, and Facebook as the new name to take over the market since the 2010s. The common issue found in these studies is that they slightly mentioned the impact brought by the Reform ignited in 1986 to the whole process later, and they thus touched upon the timeline by putting the emphasis on the year 1990 when technological aspects were the main theme. This gap has been filled by the first two sections of this paper.

To provide a more incisive timeline, my after-1986 version is categorized into three periods based on the promulgation of respective policies that gradually shaped out the formation and development of Internet services in Vietnam. These policies were extracted by mainly consulting the research conducted by Boymal et al. (2007), the suggestion of which sources to use by Surborg (2008), and the data in the series of white paper

released by Vietnam's Ministry of Information and Communication. To avoid falling into a merely one-sided chronicle, internal and external issues that were found during the process of setting Internet services are also mentioned and analyzed, where applicable, to show how a communist country coped with a new aspect of technology.

The First Period: The Foundation 1990–1996

This preliminary stage of building the foundation for introducing the Internet was by the endeavor of the Vietnamese government to urge research on connection and later the Internet at scholarly and research foundations in the nation with the assistance of foreign institutions (Boymal et al., 2007). The general objective was to access the Internet to tackle prompt, innovative issues as well as the pressure from the economic embargo forced by the U.S. since the end of the Vietnam War. The Institute of Information Technology (IoIT), a submissive organization of the National Center of Sciences and Technologies built in 1976, was the organization in charge. In the 1990s, the Vietnamese Ministry of Science Technology and the Environment (MoSTE) commanded the IoIT organizing division to investigate PC organizing arrangements, both broadly and globally ("Internet Will Soon Connect Vietnam," 1994). Amid this early stage, a couple of endeavors were made by the IoIT to get the Internet assets through contacts at universities in Europe; however, these endeavors failed (Dang, 1999).

In 1992, as shared by Dang Van Than (Lan, 2016c), U.S. removed the communications embargo on Vietnam, which is two years earlier than the removal of the economic ban (this communication embargo lifting has not been paid adequate attention because scholars were more interested in the later embargo discharge). This diplomatic dynamic fostered the IoIT to put more efforts into exploring other possibilities to get the connection. The Australian National University (ANU) became the partner in this joint venture to give basic Internet access through the dial-up connection utilizing the public switched telephone network technology that is based on the available phone line. The system was at first kept within the scale of training and scholastic research groups ("Internet Will Soon Connect Vietnam," 1994)—to be referred as the Vietnam Academic Research and Educational Network (VARENet) —providing email services and computing services for Hanoi University, the ancestor of the current Vietnam National University in Hanoi.

Amid the period from 1993 to 1994, once the nation's fundamental system was set up, Vietnamese organizations attempted to obtain more knowledge about the new technology and develop specialized frameworks required to utilize and launch the Internet advancement. As a communist country with total control as mentioned above, the improvement of Vietnamese information background and infrastructure during this period took after an extreme and strict instruction and management from the central state (Boymal et al., 2007).

In September 1993, considering the unsynchronized infrastructure of Vietnam's telecommunication system as well as the low price of required equipment, Unix-to-Unix copy protocols (UUCP) was chosen to be the systematic set of rules that govern the exchange of information between computer systems (Dang, 1999). As indicated by Hurle (1995), in the Vietnamese setting, UUCP was especially appropriate for the dial-up association because it is simple in terms of interface, installation, and operation, and was chosen with the aim of developing into the future Transmission Control Protocol/Internet Protocol (TCP/IP).

The future information transmission network was then formed with assistance from France, followed by the event that Vietnam Packet Switched Network (Vietpac) was propelled in February 1994 (Nguyen, 1994). In April 1994, the .vn, which is the national domain name, was registered with the global Internet organization in charge. As indicated by Quarterman (1998), just three months later, 35 domain names were recorded to be signed up in Vietnam. In terms of popularity, the Internet at this time was still an experiment rather than a complete service that could be provided to the masses, especially when the availability of the information leakage was visible while the Internet experts in Vietnam and the infrastructure back to this time were both short. Email through a worldwide UUCP connection was conceivable but still between institutions who are members of the project. Honestly, Teo, Lim, and Lai (1997) asserted that at this time in Southeast Asia, Singapore was the only country that granted open Internet access to the public since 1994, which means that Vietnam not providing public Internet service during this period is understandable.

Amid late 1994, VARENet extended to more than

40 client destinations, most of them are research institutions ("One Giant Leap Onto Internet," 1995a). Fortier (1996) stated that amid this same period, CIDS (Cooperation Internationale pour le Développement et la Solidarité), a Catholic organization headquartered in Belgium, financially supported the building process of a second network system that would upgrade VARENet into a full Internet service and be able to replace the email system in the current version. This second system was later named NetNam through which the bulletin broadcasting system was introduced to Vietnam, which is the basis that set the path to the birth of online forums in the future.

From 1995 through 1996, Vietnam witnessed a struggle between institutions that were willing to become the dominant factor in the new service sector, which promises a fruitful profit in the future. Although being afraid of the spread of the Internet would bring in various threats that might alter the existence of the ideology and the Communist Party, communist leaders could not deny the innovation potential of the Internet in facilitating communication and beyond. That led to the no compromise situation that all involved parties tried to legalize the monopoly over the Internet connection as well as other supportive resources such as infrastructure, control over the firewall, server priority, to name a few (Boymal et al., 2007).

Being empowered by the business prospect and the comfort brought by the removal of an economic embargo in February 1995, state-owned Vietnam Posts and Telecommunications Group (VNPT) declared its expectation to set up the perpetual Internet with Vietnam with the support from the American operator SPRINT. Simultaneously, NetNam also tried to publicly nail down a contract with the Australian network company named Telstra for the arrangement of a 64 kbps rented line to NetNam (Quarterman, 1998). The conflict between the two activities happened when Vietnam Telecom International (VTI), a subordinated company of VNPT, turned down the contract of supplying the lease line to NetNam, which suggested an internal constraint found between governmental institutions. Since the private sector was not granted the right to invest and exploit the Internet technology at that time, this internal conflict would give the government leaders headache. Besides, the number of subscribers (mostly educational institutions) still increased while the leaders were still in a maze of

finding ways to compile adequate laws and regulations to govern the new telecommunication service. Dang (1999) also added that the worry of losing the control over public information and the visible damage to national security increased.

Until September 1995, IoIT worked and kept up Vietnam's business Internet connection and email services while VNPT looked for government endorsement to expand its controlling influence over Internet benefits which are based on the idea of maintaining safety measures that help guarantee the national security. A "communist" dynamic was made by VDC (a VNPT auxiliary) when this institution declared that the Internet ought to be controlled by a solitary association to ensure "national security and social trustworthiness" ("VNPT Seeks to Control Internet," 1995b). In this case, because VDC is in charge of telecommunication and is directly governed and managed by VNPT, it should be the unit that possesses the right to provide the Internet services. NetNam immediately retaliated as it publicly showed a rivalry attitude on an electronic release board by commenting that VNPT's narrow-minded and financially spurred endeavor to control the new communication technology can undermine and defer Vietnam's improvement (Mai, 1995c). NetNam also tried to counsel the Prime Minister to reconsider the possibility of granting the right of providing Internet to VDC. The tension between involved parties revealed that the Vietnamese government was passive and did not prepare carefully to appoint the institution that should be responsible for operating the service. The predominance of bureaucracy before Doi Moi, and the vague demarcation line in terms of obligations, rights, and benefits between administrative bodies, which is the result of the state-centered model with an overloaded system, are evident in these tensions.

In December 1996, the government cautioned that clients who used the Internet illegally would face criminal indictment under new extreme controls. This provided the legislature tight control over the stream of electronic data into and out of the nation. To strengthen and legalize the control, two decrees in regards to the Internet were compiled: (1) set up a surveillance office to screen and oversee the Internet and (2) require all clients to apply and wait until permission is granted for an Internet account to be opened ("Internet Violators Face Stiff Penalties," 1996).

The Second Period: The Launch of the Service 1997–2001

Legitimate implementation and specialized confinements had been executed before the Internet became a service that could be accessed openly during this second period. The authorization incorporated the release of new codes, decrees, and the usage of specialized arrangements such as building firewalls to scrutinize over access and rule out unwanted data on the Internet. Although 1997 was an unforgettable year since Asia had to experience the economic crisis that took down many countries of this continent, and Vietnam was also a victim to a certain level, the development of the Internet was still a highlighted landmark of the time.

In March 1997, the Office of Prime Minister promulgated Decision 136/QD-TTg (1997) to set up the Vietnam National Internet Coordination Committee (VNICC). As a subordinate council of MoSTE, this administrative body framed a surveillance system to scrutinize the Internet improvement in Vietnam; or more honestly, to assure that no threat made through the Internet would be successful. VNICC was responsible for drafting controlling schemes in terms of technological methods and related documentation in order to keep sensitive data from being transmitted in and out of Vietnam. The term "sensitive" would be understood as information which could harm the existence of the Communist Party and the State as well as data that consist of images or texts which are inappropriate and against Vietnamese custom and ethic (Decision 136/QD-TTg, 1997). Moreover, the administration proclaimed Decree 21/CP (1997) regarding the impermanent controls on the administration, establishment, and use of the Internet in Vietnam. Decree 21/CP laid the legitimate reason for Vietnam's association with the worldwide Internet. On a basic level, the administration would control the data transmitted on the Internet, and all elements and endeavors wishing to interface with the Internet must pass through a local governmental gateway before reaching the global lines. E-mail, FTP, Telnet, and remote database access are four allowed services; those that are not listed would be blocked. Also, under Decree 21/CP, the Internet was no longer accessed by institutions like in the past. Instead, a case by case approval must be sought, and unlawful Internet utilization could prompt to criminal indictments including a fine or a correctional facility sentence. Users who receive approval must accordingly be responsible for what they would transmit over the Internet.

In May 1997, Circular 08/TTLB (1997) was promulgated to give direction to the conceding of licenses to give and utilize the Internet in Vietnam regarding providers of services, access, and content on the Internet. Secure portals and national firewalls were deployed, and only HTTP, TELNET, SMTP, and FTP were the allowed protocols.

In August 1997, the subscription tariff was set, and five authorized Internet providers with the license from the government (VDC, Vietel, NetNam, FPT, and SaigonPostel) were introduced, notifying that the popularize process of the Internet in Vietnam was initialized. Additionally, FPT became the first content provider by offering email services and forums whereas VDC was granted the right to become the first access provider, being in charge of setting infrastructure. These providers would be tightened by Decision 848/1997/QD-BNV (1997), according to which they have to set up proper assets to assure national security and prevent data from being transmitted illegally. Looking back to the tension in previous years, the event of having VDC as the access provider surely did not receive the consensus from other parties.

On November 12, 1997, the legislature proclaimed Decree l09/1997/ND-CP (1997) which incorporated the web, information transmissions, and mobile services into the telecommunication administrations; followed by Decision 679/1997/QD-TCBD (1997) that coordinate the control of Internet services, and Decision 682/QD-KTKH (1997) about the service fee, which should be considered the first complete legal documentation regarding Internet services and its management. On November 19, 1997, the Internet was officially introduced publicly in Vietnam. As the role of the Internet was well mentioned above in terms of communication, this introduction would pave the path for other digital activities to blossom in Vietnam, starting with the booming period of forums, instant messenger and later, online games.

The number of individual subscribers increased. However, the quality of the connection was not as expected, which could be explained by the interference of the firewall (Pham, 1998). In the beginning, the access cost was beyond the payment ability of the majority (around 400 VND/minute); thus, foreigners

and local business companies were the main users because they used email as the more money-saving communication tool that replaced telephone and fax ("Reduction in Internet Access," 1998).

The high cost prevented the Internet and its supplemental services from penetrating the everyday life of Vietnamese people (Boymal et al., 2007). A Ministry high-rank officer admitted that the access fee was indeed high, but it seemed to the best way to control over this platform as it limited the number of users within a manageable scale ("Vietnam Plans Sounder Policy," 2000). Along with previous efforts to strictly scrutinize over the deployment of the Internet, Boymal et al. (2007) asserted that the reason behind the high fee was still about protecting the political regime while simultaneously preserving the benefit of state-owned enterprise VNPT because it was the only approved provider. As stated by Le et al. (2007), these issues clearly made customers feel unsatisfied, which was well-reflected through the number of complaints in 2001. Although the customers had to pay an expensive access fee either on prepaid tariffs or postpaid plans, the time lag between surfing sessions was undoubtedly long and even not all contents could be loaded, not to mention that the volume of data allowance was small and could not meet the demand of users. As a result, especially for those who used prepaid cards, they usually ran out of data allowance in just a couple of days, although the number of tasks was limited to basic functions as mailing, news reading, or listening to a few tracks of music.

To tighten the already strict control, all providers needed to list out all websites hosted by their networks, although this dynamic was not well received because it could provoke users who want to use the Internet for business purposes later ("Internet Providers Asked to Submit Website Lists," 2000). The extreme and excessive control could bring up the psychology of awareness that all actions made over the Internet would be watched and the freedom of investment and trade using this communication method would be compromised.

In September 2001, the legislature declared Decree 55/2001/ND-CP as the new version replacing the previous Decree 21. On a basic level, the new Decree would expel the syndication of VDC as the exclusive access provider, and furthermore permit organizations regardless of economic sectors to invest and operate as services providers. As per Decree 55/2001/ ND-CP (2001), there were three sorts of Internet licenses including Internet exchange provider for the arrangement of a universal Internet portal, Internet service provider for general access to the Internet, and Internet content provider for the facilitation of content on the web. Although every sector would have the chance to join and invest in this domain, the fact revealed that only state-owned companies were granted the priority to become access provider, which is understandable since the access is the key of national security in terms of transmission input and output. The possibility of outsourcing and authorizing the right to the private sector or foreign investors was nearly not taken into consideration. This comment is backed up by the fact that the Ministry did not allow to process new license before 2005, which means that even other private investors were granted the right to be in, they could not apply for the license since its procedure was already on hiatus (Ha, 2002). In terms of service providers, the situation was identical with the process of applying for the license was delayed from 2001 to 2002 in order to commit adequate check ("Nation Sets Sights on Raising IT Standards," 2002), and thus, the market was still dominated by former providers despite the fact that many applications were received. The only news that might enlighten the day was that the Internet fee decreased, around 0.3 to 1.2 cents/minute since VDC applied a new program which helps reduce the cost to 210 VND/minute of access ("Nation Sets Sights on Raising IT Standards," 2002).

The Third Period: The 21st Century

This period was highlighted by the efforts put by Vietnamese organizations to over-watch and control the Internet, going abreast with the introduction of high-speed broadband connection ADSL, which is the foundation to operate online games since 2003. From an administrative point of view, various pronouncements and laws were promulgated to totally and completely control the Internet. Nonetheless, the reduction of service fee to help spread out the Internet and the expansion of new services ranging from electronic newspapers to online games were recorded.

In August 2002, the new Ministry of Posts and Telematics (MoPT) was legitimately systematized (Resolution 02/2002/QH11, 2002) to concentrate on control and administration in various domains ranging from postal services, media communications, IT, and

gadgets to the Internet and the national information infrastructure. The establishment of this new ministry could be seen as a solution since the government was reluctant to appoint which administrative body should be in charge of directing this field. That also helped exit the overlapping of shared responsibilities in practicing, enforcing, and inspecting Internet-related regulations amongst administrative bodies. Additionally, to reinforce the control, administration, arrangement, and utilization of data on the Internet, the Ministry of Culture and Information issued Decision 27 (2002) to supplant the previous Decision 1110/BC issued in May 1997. In accordance with this new decision, the Ministry would possess prominent control over the content posted on the Internet by any Vietnamese organizations, entailing the fact that organizations in Vietnam have to seek for approval before their website's content could be visible online.

In February 2002, KT Corporation (Korea) cooperated with VNPT to deploy the ADSL technology in Hai Phong. The dial-up connection used before 2002 has shown many shortcomings although the number of subscribers still increased, requiring an alternative technology. These disadvantages include the slow and unstable connection which cannot assure the operation of new digital entertainment forms including video games; the access fee, either per megabyte or per connecting time, was high; the installation at individual household would require the telephone landline to be shared with the Internet line, causing inconvenience when users want to use both services simultaneously; and the firewall that was set for blocking sensitive information actually delayed the transmission. After receiving positive feedback from the trial in Hai Phong, in July 2003, Internet service enterprises were licensed to provide high-speed ADSL Internet access in Vietnam. This dynamic came along with the drastic reduction of access price up to 40% ("10 years of Internet in Vietnam: Timeline," 2007) compared to the previous fees were two noticeable milestones that marked the foundation of qualified infrastructure to operate digital entertainment, notably online games in Vietnam.

When the first ADSL service was released, this first notable event in the development of online games "possessed the decisive characteristic of allowing all players to access a virtual world on a large scale with good speed and stable quality" (Doan, 2010, par. 2). The ADSL service flourished, and an increasingly reduced price has continued to be an important condition for online game development today with current cost per hour for access about 0.3 USD. The introduction of ADSL put an end to high price and low-speed connections through the prepaid card and subscription services using dial-up mode. At the same time, ADSL also opened up new opportunities for the Vietnamese online gaming to take place on an international scale, with clear evidence that many Vietnamese gaming teams held the leading position on the international server at that time.

Doan Giang (2010) also mentioned that 2003 was the year that one of the first role-fantasy-playing games called *MU* was "introduced to the Vietnamese youth, although it was in an unorthodox way" (par. 5). With the ability to connect with other players at a larger scale instead of using LAN cable limited within an Internet café like previous role-playing or real-time strategy games, *MU* had spread out even before the moment that the first ADSL service was provided. However, only with the advent of this connection mode has the game been regarded as a true blockbuster. The popularization process of this game was facilitated because the game's source code had been publicized before; the "pirated" version of this game title thus developed at breakneck speed with plenty of different servers.

In 2009, the Internet platform was changed one more time with two key turning points. The first was the introduction of the broadband network architecture using cables made of optical fiber, which is capable of carrying more data and transmit over a longer distance than the traditional copper cables—Fiber to the Home (FTTH; FTTH Council, 2009). However, the conversion from the copper core to an optical cable on a large scale was only initiated in 2010 when people accepted and confirmed that the connection speed and stability were better guaranteed. From the viewpoint of Internet service providers and online game companies, they insisted on the deployment of FTTH based on practicality. According to Zhao, Fischer, Aker, and Rigby (2013), FTTH could provide a better experience of using the Internet because this new architecture allows a connection with reduced path loss caused by electromagnetic noises, various weather conditions, or the length of cables—issues that could be found and unsolved in ADSL services. As a country influenced by the tropical monsoon climate that tends to see more rainfall caused by high humidity, the density of population is lower in

remote and mountainous areas, the houses scatter around large areas, and the system of urban planning that features many lanes in big cities (e.g., Hanoi, Haiphong, Danang, and Ho Chi Minh City) does not facilitate the installation of Internet service since the cost of setting cables is made higher, the presence of FTTH was certainly an adequate solution, especially when the cost to upgrade is acceptable. McCullough (2005) also noted that flexibility is the main factor to successful fiber to the premises deployments because it provides a higher connection speed, which could reach up to 10 Gigabit/s (200 times faster than the former ADSL 2+ architecture). Although the diameter of the fiber cable is smaller, the energy needed to operate is less and the possibility of pyro-incidents is nearly unavailable because no electricity is going through the cable. That adds more reasons for its service expansion in crowded cities in Vietnam where the problems above could partly be solved, the life quality is elaborated, and several risks could be reduced (Le, 2017).

The second milestone that marked the year 2009 as a memorable one is that the third generation (3G) of wireless mobile telecommunications technology was brought to the Vietnamese market. According to Lee (2011), Nguyen (2011), and the Ministry of Information and Communication (2009), the introduction of the 3G telecommunication network in Vietnam changed the definition of using Internet services via handheld devices which later entailed the booming period of smartphones and tablets. In terms of online games, it pinned key changes in the history of this entertainment format in Vietnam as (1) the expansion of web games primarily use browser as the main platform to play instead of downloading and installing a client package and (2) the rise of mobile games are released mainly through two application stores operated by Google (Google Play) and Apple (App Store). Before the time of the 3G network, GPRS was the dominant service that represented the 2G and 2.5G technology to connect to the Internet in Vietnam via mobile devices. It allowed users to utilize the service with the slow speed of connection and, thus, it led to limited multimedia experience including email, images transferring, video streaming, digital television services, GPS, and games. The advantage of the new 3G technology was that it secured a better wireless connection which granted people the ability to connect to the Internet with full multimedia services even when people move in high

speed. That facilitates and enriches the experience of using several services which require high-speed connection and stability such as video call (Dang & Nguyen, 2003) and online games at affordable cost. Online browser games have been popular since 2011 in Vietnam as it allows players to enjoy playing without worrying much about hardware conditions since they can run on many different operating systems without having to be ported to each platform (Adams, 2009, p. 80) as long as they could maintain a stable Internet connection. The two app stores which offer online mobile games in all genres and most of them are free of charge; the lower cost of purchasing a smartphone or a tablet that features 3G connection also opened up a new kind of amusement to Vietnamese players. These mobile services can only be operated thanks to the efficiency of 3G technology, then 4G technology which was introduced to Vietnam in 2016. White papers in the next seven years (2010 and onwards) revealed that the number of smartphones and tablets increased dramatically with more than 36 million 3G users (Ministry of Information and Communications, 2017) which makes up around 40% of Vietnam's population.

Conclusion

Considering the low system abilities in Vietnam before and even after Doi Moi, the emergence of the Internet in Vietnam has functioned with impressive velocity. This improvement was likewise a procedure of thorough calculation to guarantee the political control over the Internet by the Communist Party and the state. The Internet in Vietnam has turned out to be a risky space for giving a virtual location for free, anonymous, and unhindered open-ended discussions. With the capacity to connect to global lines, the possibility of escaping national restriction was recorded, entailing numerous enactments that would limit the power of the Internet including concentrating almost all managing and directing power to state-owned enterprises and administrative bodies, and the continual release of policies. Those defending measures would serve two purposes: first as the barrier to block away information which is against Vietnamese tradition; second as the method to check up on the political information transmitted through the Internet (Cain, 2014).

In terms of video games and especially online games, the introduction of the Internet was the key

turning point. Without the Internet, the development of amusement in Vietnam might still stop at the step of illegal consoles from China, pirated video games, and multiplayer playing mode using LAN cable since the infrastructure did not allow a more sophisticated form of entertainment. The operation of the high-speed Internet opened up with many opportunities not only for the amusement services industry but also to solve out the request of new relaxing forms for the youth who for such a long time has not had an affordable and attractive option of recreation (Nguyen et al., 2018). In 2017, Le (2017) noted that Vietnam already has 64 million Internet users which makes up 67% of the country's population; that helps put Vietnam in the 12th rank in the world list and 6th/35 Asian countries in terms of the number of users. This promises a still-emerging market for online games.

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Declaration of Ownership

This report is my original work.

Conflict of Interest

None.

Ethical clearance

The study was approved by the institution.

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