KARELIA UNIVERSITY OF APPLIED SCIENCES
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THE OPEN-SOURCE SOFTWARE MARKET IN VIETNAM – RISKS AND OPPORTUNITIES FOR FOREIGN SERVICE PROVIDERS
CASE: LINAGORA

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Title Open-source Software Market in Vietnam – Risks and Opportunities for Foreign Service Providers. Case: Linagora Commissioned by None	
Abstract: The fourth technological revolution brings forth waves of innovative changes and challenges to many enterprises and governments. In order not to lag behind its peers, Vietnam is now shifting its focus towards the development of a digital economy and electronic government in an effort to digitalize itself on the national level. To achieve it, a digital ecology must be constructed to provide an environment for governments as well as businesses so that they can thrive. The solution is software development and in particular open-source software. Although the Vietnamese software market follows similar trends as the world, it still possesses distinguishable differences. Understanding these differences and being able to incorporate them into business activities is essential to guarantee a foreign firm's success. The aim of the study is to analyze the Vietnamese market in terms of current trends in open-source software development affecting the operation of Linagora – a service provider from France, and to identify opportunities for further development in Vietnam. The study is comprised of qualitative research methods, interviews and first-hand experiences. Combined with the corporation's capacity, recommendations are given.	
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1 INTRODUCTION

1.1 Background

Open-source software (OSS) is a type of computer software whose source code is released under a license in which the copyright holder grants users the rights to study, change and distribute the software to anyone for any purpose (Laurent & Andrew 2008). Even though in its first appearance, OSS was viewed as a paradox with many questions raised, such as: “Why would a software be available free of charge?” “What are my benefits for participating in a project which does not generate financial compensation?”. By providing a massive collaborative environment, free and open-source development models have made impressive contributions by sustaining research and commercial projects. By taking a leap to prominence in some important market segments, e.g. web page storing, this disruptive force has launched itself well past the stage of just being a hype bubble that will risk bursting soon. Instead, it has sparked a series of fundamental changes in the software marketplace by increasing the intensity of the competition with collective voluntary efforts, throwing challenges at a corporate monopoly.

Linagora, founded in 2000 in Paris, is one of the largest open-source software publishers, with more than 150 employees located in France, Canada, the US, Belgium and Tunisia. In using its variety of open-source solutions, Linagora helps its large clientele “maintaining their own digital sovereignty” (Linagora 2018). They focus on three main areas of business:

- Developing open-source software
- Industrializing open-source software for large enterprises
- Supporting digital transformation and co-innovation

Features introduced by the software company include corporate messaging, file sharing, identity federation, open collaborative platform, third-party software support, digital transformation consulting, integration and training, and more. The customers are from both the private and public sectors, such as Crédit Agricole, BNP Paribas, Sovico Holdings, Société Générale, Ville de Montreal, SNCF, French Ministry of Finance (Linagora 2018).

Linagora presents itself as a strong competitor with “free and free” alternatives (free as freedom and free as in accessibility for all), challenging major US software giants and emerging Chinese firms. Having established itself as a major player in its local market, Linagora is now aiming to further expand to other countries (Linagora 2018).

1.2 Aim

The study analyzes current trends and practices in the business of the Vietnamese market, combined with Linagora’s previous entry attempt to define the challenges and opportunities the company must overcome, resulting in an improved marketing strategy being mapped out for the company to successfully enter this area.

The objectives of this research include:

- Investigating the propensity of software development in general and open-source in particular.
- Classifying procedures from various aspects which curb open-source software publishers from doing business.
- Determining opportunities for establishing a successful market entry to Vietnam.
- Creating a marketing strategy for Linagora.

1.3 Methodology

Both quantitative and qualitative research are encompassed within the research methods. Primary data is extracted through interviews with Executives from Linagora, officials from the governments of France and Vietnam. The researcher’s practical experience in utilizing software materials while supporting various projects as a Communication Officer directly under the General Manager of Association of Vietnamese Scientists and Experts (AVSE-G) is also taken into consideration. Other relevant information is extracted from unpublished memos.

Consistent secondary data is collected via online articles, books and academic journals as well as from blogs dedicated to open-source community.

Data for the study was collected from a variety of sources with monetary values in different currencies. Therefore, currency conversion will be provided with the following exchange rate: USD 1 = EUR 0.87 (ECB 23/10/2018).

1.4 Outline

The study starts by providing general information about open-source software regarding its development in becoming a disruptive force and challenging the traditional monopoly of large tech-corporations. The first part of the research also deals with technologies and business models applicable in the current timeline for organizations to create their go-to-market strategies. This chapter also divulges into the impacts open-source software have on modern society.

The open-source software market in Vietnam is discussed in the second chapter. Information related to the trends in the Vietnamese software market, with focus on its business environment, is revealed from political, economic, technological, legal and societal perspectives.

The continuing part features Linagora's first experience in entering Vietnam and the setbacks encountered. An analysis of the firm's strengths, weaknesses, opportunities and threats is presented in relevance to the Vietnamese software market. The final part of the study maps out a marketing strategy for Linagora with more effective business activities in Vietnam.

2 OPEN-SOURCE PROGRAMMING IN THE GLOBAL CONTEXT

2.1 Open-source vs Proprietary

Ever since the early days of computing, developers and programmers have been sharing software to learn from each other and thus, further evolve their field of knowledge. During the 1970 – 1980s, despite the increasing notion to switch to the side of commercialization, collaborations between academics to develop software still occurred with notable examples including the TeX typesetting system by Donald Knuth in 1979 (Gaudeul 2007) and the GNU operating system by Richard Stallman in 1983. In the late 1990s, Netscape made a move that signaled the re-vitalization of open-source development models by launching their Internet suite Netscape Communicator as free software. Popular open-source software that were later developed all have their source codes subsequently built upon the same code that Netscape released publicly. Eventually, on February 1998, the Open Source Initiative was founded to encourage the use of new terms and re-vitalize open-source principles (OSI 2018). Commercial software vendors did not take it well, as the idea of software being distributed openly and the source code to an application being granted universal access progressively threatened them financially or because "open-source is an intellectual property destroyer", as stated by a Microsoft executive in 2001 (CNET News 2002).

Today, we are living in an open-source world. According to a survey conducted by Black Duck Software and North Bridge in 2015, nearly 80% of companies ran part or all their operations on OSS, and 66 percent created software for customers built on open source (ZDNET 2015). The survey also revealed that open source has become a go-to solution with more than half of the respondents admitting that they take OSS into consideration prior to other available options. Millions of dollars are being saved for organizations just by using open-source solutions for their IT operations.

Commercially, open-source has its significance and growth calibrated by the revenues generated from it. In 2017, open-source services generated approximately $11.4 billion (€9.69 billion) and is projected to grow to $32.95 billion (€28 billion) in the next five years (Figure 1).

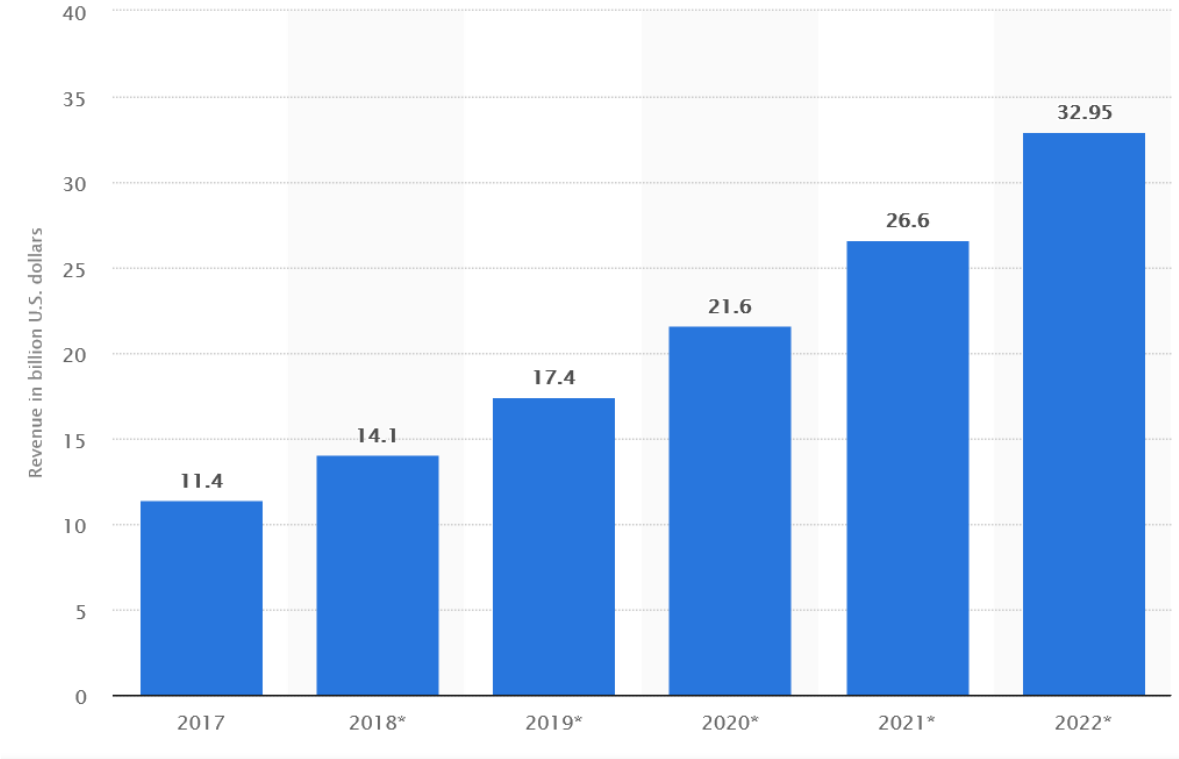

Figure 1. Projected revenue of open-source services from 2017 to 2022 (in billions of USD) (Source: Statista 2018).

2.2 Business models for open-source software

Unlike proprietary software, whose creators can require users to pay a license fee to fund its development, open-source software is circulated openly online or offline. Consequently, a variety of funding models has emerged as alternate solutions.

A typical approach is when made-to-measure software is developed as an independent project for one or more customers who order it. The developers are paid by these clients to create a software that includes features exclusive to their needs and they can participate closely to conceptualization as well as the realization of their order. When both parties reach an agreement, the finished product could be published with an open-source license to allow other organizations or individuals to ratify it for their own operation. The cost paid by the customers can be significantly reduced while an independent consultant – the software's original

developer – can request payment for training, integration, technical support or even further customization when the product piques the interest of more customers after the debut (Open-source.org 2018).

Another way to deal with financing is to give the product uninhibitedly while however pitching licenses to restrict additional items such as information libraries. For example, an open-source CAD program may require parts libraries which are sold on a membership or flat-fee basis. Open-source software can likewise advance the offer of the hardware that it interoperates with, some model cases being the Asterisk communication programming created by PC-communication equipment manufacturer Digium and the Robot Operating System (ROS) robotic platform by Willow Garage and Stanford AI Labs (Van Meggelen 2007). Many open-source programming ventures have started out as research extensions among colleges, as personal activities of students or teachers, or as instruments to support scientific purposes.

Corporations are also able to hire developers to participate in open-source projects deemed valuable to their infrastructure. The resulting software is not considered a product to be put on the market in this scenario but in fact, a shared public utility. A local tweak to fix bugs in the system or just to simplify the developer's tasks can be released as a contribution to the open-source software without costing the company anything (Holtgrewe 2004). Linux kernel is the prime example of this approach, as it has many contributors from a variety of companies which utilize or depend entirely on it, not to exclude people who participate as a hobby or for research purposes.

Business approaches which are compatible with open-source software include the following prominent patterns:

- Dual-licensing or Multi-licensing: the user is offered an open-source license together with a separate proprietary license whereas the latter serves as the main tool to finance the development of the free former. The no-cost solution is utilized to attract customers then make them interested in purchasing the commercial edition as a part of an up-selling. A worth mentioning example is Oracle's MySQL database, which is dual-

licensed under a commercial proprietary license as also under the GPLv2 (Oracle 2010).

- Selling professional services: rather than offering the software itself, companies can provide technical support, training service or consultancy to generate financial return. Other forms include handing over the open-source software only in source code form then charge users for executable binaries. Successful adoptions of this models are IBM and RedHat (McMillan 2012).
- Selling software as a service: the software is centrally hosted as a service with access only granted to users via paid subscription. While this is a legally accepted business model, it remains a topic of debate due a lack of software freedom (Johnson 2008).

From a customer's point of view, being able to utilize open innovation with standard terms of business and support is very beneficial. Even though they have to pay for legal protection and other professional consulting services, they also receive fine-grained control and software liberty that come with open-source solutions.

2.3 Impacts of open-source adoption on society

Traditionally, companies like Microsoft developed their software in-house and made use of a variety of end user license agreements that provided licensees with a very limited right to use the software for specific purposes (Välimäki 2005). This is called price discrimination "as products are differentiated and priced through release delay, quality discrimination, upgrade, renting and bundling" (Shy 2001). Theoretically, this method maximizes the value from the software use as users only pay according to their own personal valuation and it is supported legally by intellectual property rights. However, by granting software producers exclusive rights for replication, appropriation and modification, users are left with an absence in software liberty. For example, when subscribing for office software packages like Microsoft Office and Google Suite, users are not obligated to make modifications or even have access to the source code to adjust the software to their personal needs. This is due to the fact that these are ready-to-use products for general customer segment. Even though it is convenient, and usage does not require much training, they have to make a trade offs with their

personal data being extracted by the service providers. The collected information then can be purchased and used by another party without its original owners' knowledge (Figure 2).

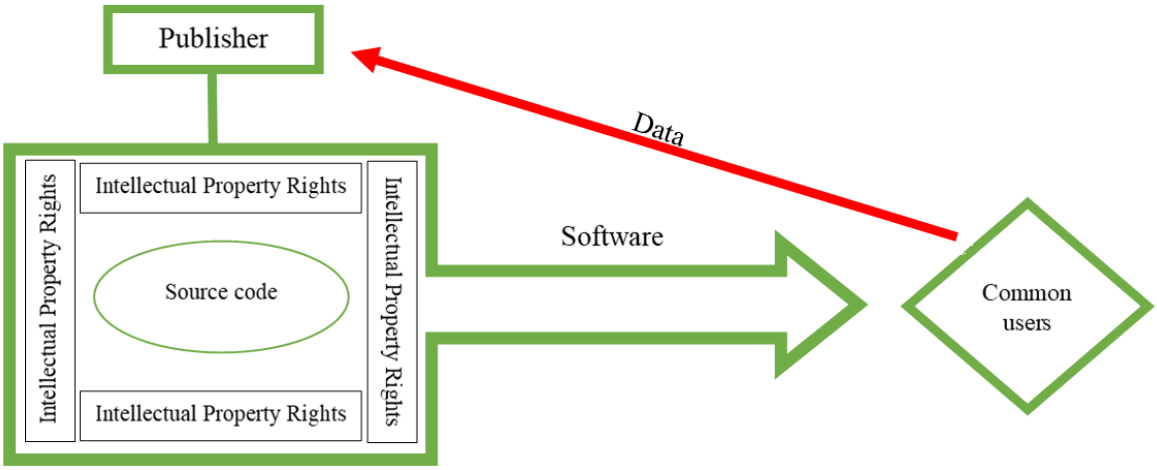

Figure 2. Proprietary software

In April 2018, the world was caught in one of the greatest breaches in privacy: the Facebook – Cambridge Analytica data scandal. From 2014, more than 87 million Facebook users reportedly had their personal identifiable information extracted by Cambridge Analytica – a political consulting firm (The Guardian 2018). The data collected was then made used of by various political figures within the US, including Senator Ted Cruz, without the awareness of the subjects of the data. The scandal incited public discussion regarding ethical standards for social media companies as well as igniting a consumer campaign calling for more significant protection online and emphases on the right to privacy. Academic and government institutions started looking for software services that gave them more control over their data, program modification to suits their needs and collaborative environment for cheaper price; a different kind of accord they did not have when using off-the-shelf software (Bowles 2018).

By deploying open-source software, IT leaders get some advantages despite still surrendering some control over their data:

- Ability to customize
- The capacity to review a system completely to investigate data manipulation

- The ability to adjust a system to conform to data privacy policies

All things considered, organizations which need to depend on open-source solutions stay in charge of verifying security and keeping up with security updates. Fortunately, there are online databases and tools that track vulnerabilities in open-source libraries contributed by publishers as well as variety of users (Figure 2). With quantifiable exertion, it is possible to stay safe while utilizing open-source software. Most commercial software merchants that embed open-source libraries are proactive by means of patches and professional advisory programs (Lamarque 2016).

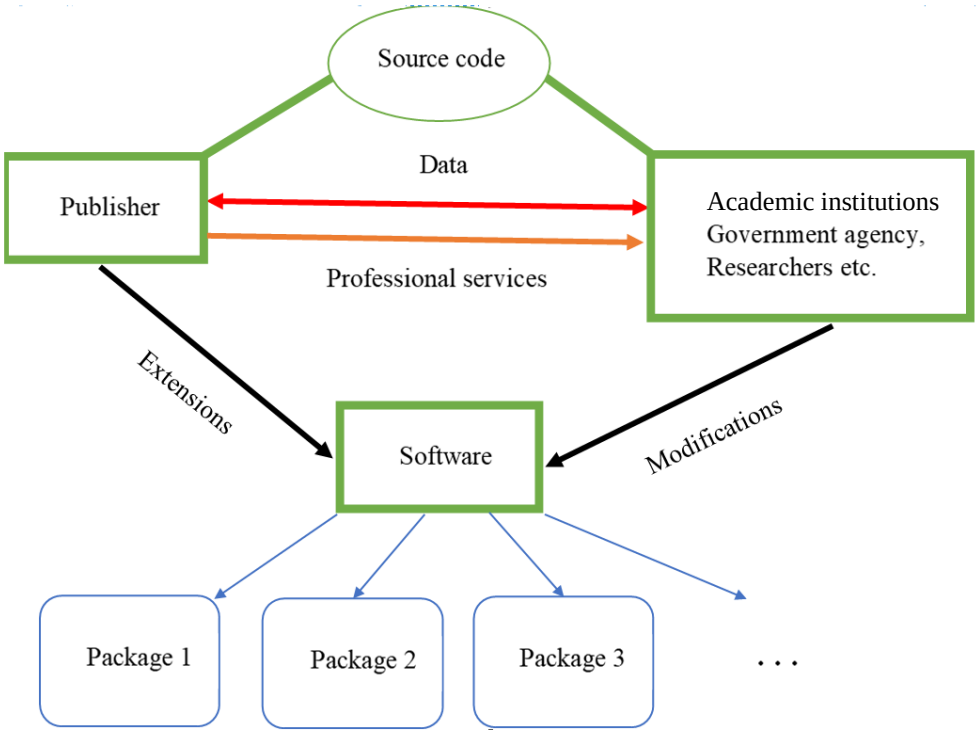

Figure 3. Open-source software

Open-source also paves the way for entrepreneurship to become more prominent. The expense for beginning an online business nowadays is comparatively low to starting a firm dependent on physical channels. This minimal cost of bootstrapping a business joined with the pure creativity of the Internet has urged millions to dispatch their own personal endeavors. The low cost becomes conceivable principally thanks to the easily accessible open-source software and infrastructures (Opensource.com 2013)

From the socio-political perspective, open-source also enables non-US players to steer the direction of future IT innovations. For a long time, major US tech-giants or GAFAM (Google, Amazon, Facebook, Apple, Microsoft) in particular, have dominated the market, and the emerging powers from China are looming to tip over the scale. With the re-vitalization of open-source, competitors from other states are now armed with tools to advance forward and seize the initiative. This may be the main reason for the eagerness of the CEC (Commission of the European Communities) and some member states for OSS, so much that they are funding companies like Linagora to develop alternate open-source solutions to GAFAM's services (CORDIS 2001).

3 THE OPEN-SOURCE SOFTWARE MARKET IN VIETNAM

3.1 Vietnamese software market

The population of approximately 95 million provides a standing for the country as an important regional market for global technology vendors and domestic entrepreneurs (World Bank 2018). According to Internet Live Stats with data retrieved from the World Bank, UN Population Division and the International Telecommunication Union, Vietnam ranked 13th in the number of Internet users with an estimated 49 million users and 52% penetration rate (Table 4).

Table 4. Internet Users by Country (Source: Internet Live Stats 2018).

#	Country	Internet Users (2016)	Penetration (% of Pop)
1	China	721,434,547	52.2 %
2	India	462,124,989	34.8 %
3	U.S.	286,942,362	88.5 %
4	Brazil	139,111,185	66.4 %
5	Japan	115,111,595	91.1 %
6	Russia	102,258,256	71.3 %
7	Nigeria	86,219,965	46.1 %
8	Germany	71,016,605	88 %
9	U.K.	60,273,385	92.6 %
10	Mexico	58,016,997	45.1 %
11	France	55,860,330	86.4 %
12	Indonesia	53,236,719	20.4 %
13	Viet Nam	49,063,762	52 %
14	Turkey	46,196,720	58 %
15	Philippines	44,478,808	43.5 %

Despite the fact that there is still an eminent distinction among provincial and urban web usage, the penetration rate has begun to increase in the countryside, with most recent information indicating a penetration of 20% among those aged somewhere in the range of 18 and

24. This is considered a rapid growth for Vietnam, as the country's IT market is still young: the population only gained access to the Internet in 1997. Before, Internet access could only be used experimentally in selected government-controlled facilities and research institutions. Additionally, Vietnam has started exporting software around the same time they went online.

The software sector in Vietnam is still moderately humble. Domestic vendors represent 75% of the market, which prominently comprises low-cost software products (Oxford Business Group 2018). In spite of its little size, the area has seen development lately. As reported by the Vietnam Software Association in 2018, the turnover of the software industry in the country was $8.8 billion (€7.52 billion) in 2017 with a labor force of 600,000 people. The latest survey by HackerRank also revealed that Vietnamese coding capability is relatively high, ranking 23rd among 50 other countries and surpassing India as well as the US, who are tech giants with long histories of IT development (HackerRank 2016).

While small and medium sized enterprises (SMEs) in Vietnam prefer products from local software producers, larger firms are more likely to turn to high-price solutions from multinational sources which take up 25% of the market (EVBN 2016). For software supporting services, the demand is on the rise with customers expecting more advanced levels of support for their products. Finance, oil & gas, aviation and telecommunication are rapidly growing industries in Vietnam. They are also projected to be the most significant investors in software segments. Off-the-shelf packages and customized software are met with great potentials in these areas (EVBN 2016). The government is also considered as a big spender for software purchases, accounting for approximately 30% of the total IT spending with 7,000 offices at municipal, provincial as well as national levels. The Vietnamese Government's expectation to actualize itself as an e-government may turn into another driver in the segment (EVBN 2016).

Behind the rapid software market expansion in Vietnam is the substantial role of IT outsourcing services. Revenue generated from this area was roughly $3 billion (€2.59 billion) in 2017, which is still lagging behind compared to fellow competitors in the Asian regions such as the Philippines or India, which respectively brought in $21.3 billion (€18.36 billion) and $98 billion (€84.55 billion). Nevertheless, outsourcing firms in Vietnam have over the years made

advances into the business sectors of the US, Japan and a few European nations. Vietnam has as of late overwhelmed India to wind up Japan's second-biggest software outsourcing partner after China, representing around 21% of the market, while US and European markets have produced development rates of 20-30% every year (Oxford Business Group 2018). The leaders of Vietnam's software industry are FPT Software, TMA Solutions, Harvey Nash Vietnam, Global Cybersoft Vietnam, KMS Technology and Logigear Vietnam (VINASA 2018).

3.2 Business environment for open-source software in Vietnam

3.2.1 Societal context

A few years ago, software consumers in Vietnam were not familiar with the term "open-source" or even "licensed software", but significant changes in software usage behavior has seen changes. More and more organizations as well as individuals has emphasized the practice of utilizing licensed products in place of pirated alternatives. Furthermore, legislative actions undertaken by the central government continues to strike down piracy as described by the Chairman of the Vietnamese Intellectual Property Association "while Vietnam integrates globally, compliance with international laws becomes imperative" (Vietnam News 2017). However, license fees take great tolls on corporations and as a consequence, firms are looking for cheaper long-term solutions.

Although the Vietnamese software market is considered a potential area, piracy is still running rampant in the region. In 2017, the rate of unlicensed software usage was recorded at 74%, leaving the country in the top 10 countries for software infringement (Table 5). Currently, Vietnamese authorities are setting a goal of reducing software piracy to 57% - the median for South East Asia as recorded by US' Business Software Alliance (BSA 2018).

Table 5. Rates and commercial values of unlicensed PC software installation in South East Asia (Source: BSA 2018)

	RATES OF UNLICENSED SOFTWARE INSTALLATION				COMMERCIAL VALUE OF UNLICENSED SOFTWARE ($M)			
	2017	2015	2013	2011	2017	2015	2013	2011
ASIA PACIFIC								
Australia	18%	20%	21%	23%	$540	$579	$743	$763
Bangladesh	84%	86%	87%	90%	$226	$236	$197	$147
Brunei	64%	66%	66%	67%	$18	$19	$13	$25
China	66%	70%	74%	77%	$6,842	$8,657	$8,767	$8,902
Hong Kong	38%	41%	43%	43%	$277	$320	$316	$232
India	56%	58%	60%	63%	$2,474	$2,684	$2,911	$2,930
Indonesia	83%	84%	84%	86%	$1,095	$1,145	$1,463	$1,467
Japan	16%	18%	19%	21%	$982	$994	$1,349	$1,875
Malaysia	51%	53%	54%	55%	$395	$456	$616	$657
New Zealand	16%	18%	20%	22%	$62	$66	$78	$99
Pakistan	83%	84%	85%	86%	$267	$276	$344	$278
Philippines	64%	67%	69%	70%	$388	$431	$444	$338
Singapore	27%	30%	32%	33%	$235	$290	$344	$255
South Korea	32%	35%	38%	40%	$598	$657	$712	$815
Sri Lanka	77%	79%	83%	84%	$138	$163	$187	$86
Taiwan	34%	36%	38%	37%	$254	$264	$305	$293
Thailand	66%	69%	71%	72%	$714	$738	$869	$852
Vietnam	74%	78%	81%	81%	$492	$598	$620	$395
Other AP	87%	87%	91%	91%	$442	$491	$763	$589
TOTAL AP	**57%**	**61%**	**62%**	**60%**	**$16,439**	**$19,064**	**$21,041**	**$20,998**

After many years of promoting open-source adoption without visible results, the establishment of FDS Joint Stock Company, a free open-source software company, and the online public service platform OpenCPS in 2016 signaled another important shift in awareness within the Vietnamese business community and society (VFOSSA 2017). Before, local companies had already tried to integrate open-source services into their operations, but FDS took an entirely different approach. By actively building a community for the development of open-source solutions in Vietnam following international standard, FDS has switched the aim of open-source advancement from a hobby to a serious strategy – a software business strategy using open-source as market approach. This “phenomenon” has shown a new trend in software development welcomed by the general public and following the current mega-trend: collaborative working, sharing knowledge and technology (Zapolsky 2018).

3.2.2 Political and economic context

Vietnam’s record for development over the course of 30 years is remarkable. Economic and political changes under Đổi Mới – a shift from centrally planned to market economy, initiated in 1986, have stimulated the country’s rapid growth and propelled Vietnam from one of the world’s poorest nations to a lower middle-income country. Economic performance in 2017

has been versatile with GDP growth was estimated at 6.8% and projected to remain stable at 6.5% in the upcoming years (Figure 5). This has resulted from a robust bounce back on agriculture, increasing demand externally and internally which promotes manufacturing as well as trade, combined with booming FDI inflows (World Bank 2018).

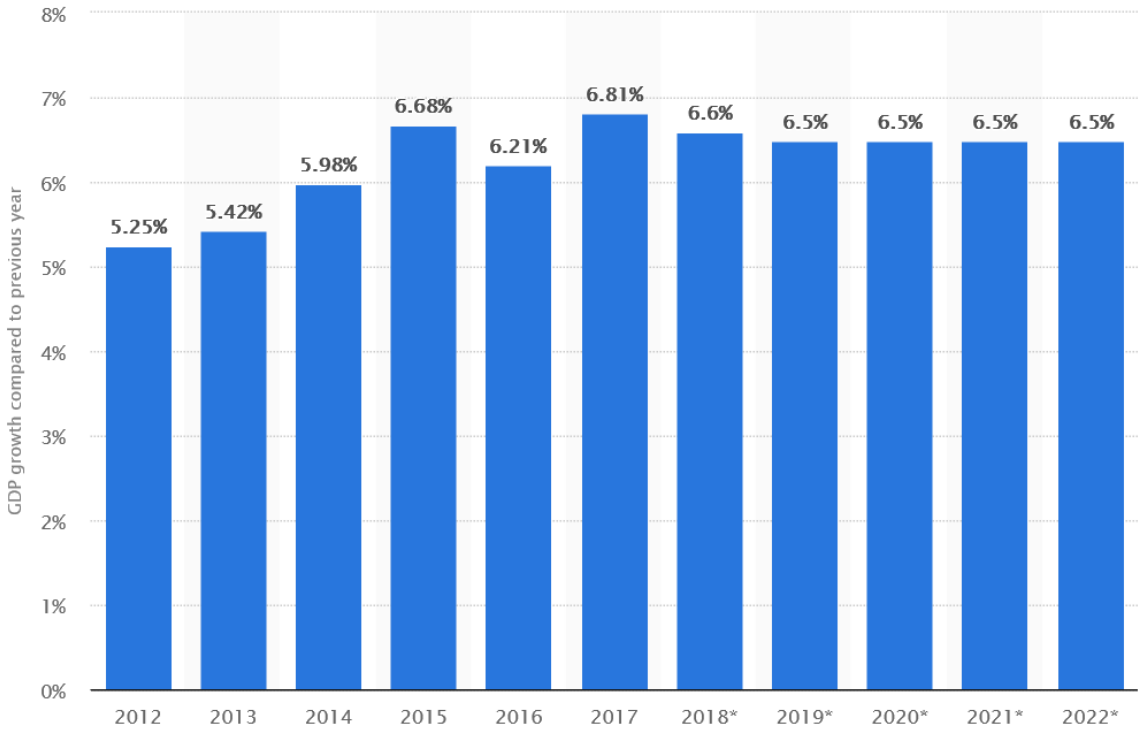

Figure 6. Vietnam's growth rate of GDP, 2012-2022 (Source: Statista 2017).

In 2004, Decision no. 235/QĐ-TTg of the Prime Minister approving General Project "Implementation and Development of Open-source Software in Vietnam, period 2004-2008" was considered a foundation for open-source application in the country in that it was expected to create a breakthrough in technology (Vietnamese Ministry of Justice 2004). However, after 12 years, the progress has only reached the stage of "reforming mindset" for various reasons from both the government and the business. Policy-makers remained stagnant in issuing official documents encouraging governmental institutions to implement open-source solutions without creating a true environment for the sector to thrive. Consequently, the Vietnamese

business community was skeptical when discussing the profitability of open-source software (VFOSSA 2017).

Nevertheless, the worldwide financial downturn coupled with recent breaches in data privacy scandals may have added to the enthusiasm towards open-source software due to its apparently lower cost and access to codes. Clients from public and private sectors were looking all the more carefully at open-source office software as well as services. For example, authorities in Ho Chi Minh City spent $1.4 million (€1.2 million) essentially on open-source services for the city's agencies in 2013. For context, the aforementioned spending covered roughly 13% of the city's expense on software licenses for state offices and furthermore for social organizations and business in the same year (EVBN 2015).

Development hit a roadblock in 2014 when the Director of the Communist Party Central Committee Office's Informatic Center announced the termination of open-source adoption and instead favored proprietary solutions belongs to Microsoft or Google, citing a lack of maintenance staffs with technical experience as the main cause (EVBN 2015). Interest for OSS was revitalized in 2016 with the inauguration of the new Prime Minister, Nguyen Xuan Phuc, during the 11th working session of the XII National Assembly. The new administration under the leadership of General Secretary Nguyen Phu Trong places emphasis on the digital transformation of public services, e-commerce economy, knowledge economy etc. In addition, recent directives from the newly elected central government about the creation of three Special Economic Zones which implement special legal institution to serve as technological hubs for innovations prove that Vietnamese administration have not permanently deserted open-source software arrangements, but rather the pattern of utilizing proprietary software may give a chance for foreign SMEs to fill existing niches (Tuoi Tre 2017).

3.2.3 Technological context

Most local authorities have organized training programs for their personnel to gain experience in operating open-source software, placing emphasis on OpenOffice, Ubuntu system, and Mozilla Thunderbird electronic mail service. As of 2017, nearly half of the surveyed locations have had at least one government office with OpenOffice and Ubuntu operating

system installed to their mainframe, while hundreds of others having their open-source integration in progress (VFOSSA 2015).

In recent years, a new trend has been applied in many provincial government agencies is integrating open-source solutions to servers. For example, 16 offices in Bac Giang design their online information service portal using Joomla open-source platform, while in Quang Nam, 90% of public service websites as well as other online utilities are built upon various open-source software such as Joomla, Mambo, PhpNuke, DotnetNuke, etc. (VINASA 2015). Two municipalities in Vietnam, Ho Chi Minh City and Da Nang, are now developing frameworks for electronic government as part of the Information Technology Development Project spearheaded by Ministry of Information and Media, sponsored by World Bank (VFOSSA 2015).

Vietnamese IT companies have also made significant steps in developing technology based on open-source. For example, NukeViet, considered the oldest player within Vietnam's open-source marketplace, has continued releasing numerous applications since 2004 for a variety of segments: online shopping, education, business and journalism. All of which is constructed upon the publicly released source code developed by NukeViet team (ICT News 2016).

3.2.4 Legal and regulatory context

According to law in Vietnam, software companies are eligible for exemption from corporate income tax up to four years and preferential tax rate of 10% in 15 years. Those who specifically participate in the development of software also have special individual income tax applied to them. Discounts on value added tax (VAT) are eligible in addition to software products. These tax exclusions are applied to all corporations, paying little heed to their ownership type. Nonetheless, it is imperative to remember that the previously mentioned tax collection approaches do not suggest that SMEs can straightforwardly profit by them. This is because the current practice and utilization of these policies are susceptible to adjustments due to extreme bureaucracy and characteristic corruption issues, the two of which are regular in Vietnam. Additionally, regulations can change rapidly (EVBN 2015).

From 2017, legislative activities performed by Vietnamese government have shown trends in restricting GAFAM's freedom of operation in its territory and subtly supporting more sustainable approaches in software development, in other words, open-source. There are two events which can be considered as powerful bits of evidence: the issuing of new Cybersecurity Law and the forthcoming establishment of the National Committee for E-Government.

The new Cybersecurity Law requires foreign service providers to more "cooperative" with local authorities in protecting Vietnamese citizen and its sovereignty from threats existing in cyberspace will come into effect starting 01/01/2019. Particularly, point 3 in Article 26 of the Cybersecurity Law states that "Domestic and foreign enterprises providing services on telecommunication networks, Internet and other cyber-based services in Vietnam, which collect, exploit, analyze and process personal identifiable information, data of the user of the service and the data generated by service users in Vietnam must be stored in Vietnamese territory within the time prescribed by the Government. Foreign enterprises defined in this Clause must set up branches or representative offices in Vietnam as of the designated date" (Vietnamnet 2018).

This is a direct attack on Google and Facebook, as these major US-based tech firms have been operating in this Asian country for years without any serious obstruction. As expected, the approval incited controversy across the IT industry and the nation, with people who are against it citing the restriction of freedom of speech, impediment of technological cooperation with foreign tech companies as the expense for setting up servers as well as offices in Vietnam can be costly. However, data localization is not uncommon, in fact 18 Member States of WTO (including USA, Canada, Australia, Germany and France) have mandated data storage within their borders. Depending on the actual situation, countries may require the storage of different data (Baomoi 2018).

On July 2018, the central government revealed the upcoming establishment of the National Committee for E-Government with Prime Minister Nguyen Xuan Phuc acting as its head as part of the long-term plan starting from 2010 to develop e-governance. Before the revelation, many public services offices of municipal as well as provincial levels have initiated replacement of off-the-self applications (most commonly Microsoft package and Google Suite) in

favor of open-source software for better data protection as required by central authority. Various other directives released by local authorities also suggest a trend in encouraging the population to be familiarized with open-source adoption (Vietnamnet 2018).

4 IMPLICATIONS FOR LINAGORA

This chapter provides information regarding Linagora's first entry attempt in the Vietnamese market and the problems it encountered. The study then analyzes the customer base as well as competition within the market to delineate implications for Linagora after the firm's first business activities.

4.1 Previous entry attempt

Realizing the potential for open-source software development in Vietnam, Linagora had made multiple scouting trips to the market since 2013. This resulted in the establishment of the company's Vietnamese branch office in 2015 (Linagora 2018). Despite the threat of open-source adoption programs being terminated following a statement from an official, Linagora relied on strong support provided by the Vietnamese Ministry of Science and Technology as well as French government to begin the entry (Zapolsky 2018).

As of 2016, the French firm had signed on to multiple agreements with representatives both from the central government and local authorities regarding the development of a framework for e-governance. The most important checkpoint so far was the signing of a memorandum for partnership between Linagora Vietnam, Hanel DTT and Quang Trung Software Park in Ho Chi Minh City, following the official visit of the then-President of France Francois Hollande (VTV 2016). According to the content of the document, the three parties will explore existing public services to improve efficiency in the electronic direction; integrate and unified residential data, enterprise data and infrastructure data, etc. Quang Trung Software Park will cooperate with Linagora and Hanel on open technology related to big data as well as the-Internet of Things (IoT), developing smart services and open database applications for the citizens. In addition, Quang Trung will propose to the city to support open-source software training in collaboration with Linagora and Hanel DTT (VTV 2016).

However, progress has remained stagnant ever since. Linagora still has not made itself present in the market as strong and capable player despite achieving critical partnerships and

receiving considerable support from both governments. No practical services have been introduced or implemented properly, most government agencies still prefer proprietary products even though directives from the higher-ups to support open-source adoption have been passed down and most significantly, the public awareness about open-source solutions are still skeptical as it was when the firm first made their market penetration (Zapolsky 2018). In fact, the promise to "bring forth digital transformation to Vietnamese people just as how they did it successfully in France" seems farfetched at this point. Discussion with Linagora's executive and analysis on their operation reveal many causes, internal and external, for their failure.

At time of entry, Linagora aimed for its customer base to be found from the government, institutions and corporations. However, the company did not have a functional product suitable for the requirements of clients, who requested an open-source collaborative working platform including a unified email system similar to Google Suite (Zapolsky 2018). As a matter of fact, the company was in the process of fine-tuning such software, but it remained unstable and experimental until early 2018. Consequently, their clients turned to more well-known solutions, such as Thunderbird mailing service, or then kept utilizing proprietary products from Google and Microsoft (Zapolsky 2018).

The company's vague presence on the market also contributed to its initial failure. Three years after entering Vietnam, the name Linagora is still unfamiliar to many local enterprises, big or small. Only a handful of software publishers in Vietnam who work in the same field or already have had a chance to meet with a representative of Linagora are able to recognize the company's identity and its expertise. Marketing presence is extremely crucial, as it is the organization's message to its prospects and customer base (Agno 2017). Although, Linagora has set up a branch office in Hanoi, its performance is questionable as it cannot convey the firm's message properly in order to reach out to other potential clients as well as business partners instead of just a few provincial public service agencies.

In addition, external factors generated from authorities and Vietnamese IT business at the time also impeded the marketing effort of Linagora. The government and regulators were too demanding toward open-source software development community while forgetting about the

key role that policy-makers must play in promoting open-source solutions for their own benefits, then for the benefits of the people and businesses (VFOSSA 2017). The Vietnamese IT entrepreneur community itself was also skeptical about business efficiency when using open-source model for software development. This lack of coordination between the government and IT firms, combined with Linagora's own absence in marketing efforts created a vicious loop which significantly hampered the company's performance in Vietnam and the progress of open-source development of the country in general (VFOSSA 2017).

Recent changes within the government and the shift in Vietnamese public awareness about open-source software has given Linagora another chance to initiate a re-entry with a proper marketing strategy.

4.2 Customer analysis

4.2.1 Customer segments

In this research, segmentation is utilized to pinpoint which segments within the public sector Linagora should prioritize their resources on. Open-source solutions have great potential and are appealing to the whole sector, but organizations are still wary of its performance. It is wise to focus on the people who need the product the most. The first customer with success will create a positive influence on others via word-of-mouth marketing (MayeCreate Design 2018). Although open-source software is very attractive to startups or SMEs, considering the vision of Linagora as well as their already established relationship with the Vietnamese government, the influence these corporations have on the market will give the French firm a much better advantage if the deployments are successful (AVSE 2018).The public sector is divided into many sub-categories, including education, electricity, emergency services, gas & oil, healthcare, infrastructure, finance, aviation, etc. Vietnam's enterprise spending on information and communication technology (ICT) reached $2.5 billion USD (€2.16 billion) in 2016. The expense for software alone is forecasted to reach $403.8 million (€348.8 million)

by 2019. e-Government projects for social services such as tax, social welfare system and business registration take up the most share of the total spending on software (IDC 2016).

The most suitable client for Linagora would be large organizations which the selected institutions are also under pressure from the government to find a cost-effective solution for their information system with higher security requirements. Additionally, they are also demanded to follow international intellectual property laws or risk being estranged by their foreign peers. In conclusion, Linagora should specifically target finance and education institutes during the first stage, as they are considered Vietnam's foundations of development while maintaining on-going e-Government projects as leverage. The selected banks are large in size with high credibility, while selected universities are specialized in or have training programs relevant to information technology as well as banking. Other segments can be approached at later stages when the company has established a solid market presence. The detailed list of recommended organizations as potential prospects in their respective segments is included in Appendices 1 and 2.

4.2.2 Customer persona

While segmentation enable brands to comprehend their distinctive sets or groups of clients, the customer persona (or sometimes referred to as marketing persona) is the anecdotal, summed up portrayal of the optimal customer within such groups (Vaugh & Gilliland 2017). With the end goal of making a sample of a gathering people, personas depend on investigation and research of genuine client. This assembles a more detailed appearance of the hypothetical client, including more emotive data, i.e. individual motivation, the value they look for in a brand, the type of communication they prefer, and so on. (Gilliland 2017). Potential clients for Linagora's open-source solutions are senior managers and executives of organizations indicated in Appendix 1 and 2, who are in charge of budgeting and performance optimization.

Qualitative data extracted from unpublished memos of interviews and discussions with six individuals from two segments of the public sector. These professionals are currently holding

executive positions or having great influence in their respective fields. All of them are familiar with or endorse open-source solutions to their organizations and potentially, Linagora's prospects. Their detailed information is displayed in Appendix 3. The information collected is then comprised into the customer persona and customer awareness journey. The motivation behind their support for open-source transformation is described with the customer persona, while the customer awareness journey provides further insights as to how they become aware of new open-source solutions. Appendix 4 reveals details questions used in these discussions.

The information extracted from the interviews reveals that a purchase decision for service or software is delivered from managers at the director level. Heads of IT departments have great influence on the decision-making process of the directors, as their responsibilities encompass managing the organization's information technology system, data security as well as system integration. Three sets of personas are described in further detail: two customer personas i.e. the director of a bank and the head of a university, and one influencer persona , i.e. the head of an IT department.

Directors of banks are either male or female, aged around 40, who have been working in the financial industry for many years. They obtained master's degrees or even PhDs in banking, financial management and economics at prestigious institutes in Vietnam and abroad. Some of them are visiting professors while maintaining their main jobs. Bank directors concern a lot about data security and analytic solutions. In terms of software support for financial operations, they are willing to accept new technology if it proves beneficial to their organizations in the long run. If a solution is approved of or endorsed by the central government or respectable telecommunication enterprises, they will gladly initiate integration. Directors of banks expect that innovative projects introduced to them will have visible results in a fixed time frame, while the expense for such projects does not exceed their budget or negatively affect their performance. If a project is costly to carry out, they are willing to take the risk if the opportunity cost is in their favor.

Heads of educational institutes have similar demographic information regarding genders and age as bank directors. All of the interviewees of this persona have PhDs in their respective

fields, namely biotechnology and computer sciences. They are determined to implement information technology in teaching and digitalize training activities as well as deploy e-learning systems to their organization. In terms of open-sourced adoption, each of them has had experience in using or currently taking advantage of open-source solutions to conduct their researches. Their main concern over open-source software is how to successfully deploy innovative solutions to each and every individual within their organizations. The heads also strongly believe that it is the responsibility of the government to take practical action in promoting new technology that is sustainably better. One of the interviewees also pointed out that his organization would gladly adopt open-source solutions if they would have support from the software developer or service providers.

The buying process does not include the participation of IT personnel. In fact, the heads of the IT department will contribute to the decision-making process by providing specifications of the organization's mainframes and other information regarding other IT facilities that can directly affect the choice of products. The interviewees are all individuals who have worked for their respective organizations for an extended period of time. Therefore, they have thorough understandings of the systems they are responsible for. They express willingness to integrate new technology despite the price but are very demanding in terms of security requirements. The main concern that the candidates want the service providers to verify is the training of their staffs.

With the objectives and expectations made clear by the customer personas, Linagora can draft a marketing message design suitable for each persona. Budgets, integration processes, trainings for staffs and the benefits of the new software or platform compared to the products they are using are the pressure points which need to be targeted for the best marketing results.

4.2.3 Customer awareness journey

There are five stages of the customer buying cycle: awareness, consideration, preference, purchase and re-purchase. The customer awareness journey clarifies the very first stage – awareness which help companies approach their clients (Redbord 2017). The journey is constructed based on the response for the second part of the interviews. Due to the fact that the

participants indicated that they are not accustomed to Linagora and its array of products, the interviews focused on how they knew about any open-source software. Five marketing channels were presented to the interviewees to have their effectiveness evaluated: social media, content marketing, search engine, partnership and events.

Social media marketing is the least effective, followed by search engine. According to the four interviewees, social media is very effective to conduct mass marketing activities, but when the target customers are executives or managers of the private sectors, the results are mediocre. The interviewees shared that they frequently skipped watching advertisements or simply did not have time to pay attention to any kind of promotion on Facebook, Twitter, or other personal platforms. However, if they encountered a post from their peers on LinkedIn endorsing a software, they may do deeper research into it. Search engines are only useful when the solutions are already well-known. An example is if one searches for "open-source software for office in Vietnam", the result is a list of unrelated posts about open-source development organizations or companies that are already famous on the market. In case the customers are not well-informed about the software, they cannot enter the right keywords for the desired results.

Technical papers and reports provide detailed information about any kind of technology. However, half of the interviewees admitted they did not actively seek out content to read. They only pay attention to those contents in these cases:

- Contents shared by their peers or published on blogs they frequently visit.
- Contents appearing on well-known research portals, newspapers or websites.
- Content delivered to them by sellers during the purchasing process.

Their responses heavily indicate that content marketing can only be effective when paired with word-of-mouth.

Doing business in Asia is all about establishing connections – this statement is once again affirmed by all six interviewees. Remarkably, medium and large organizations have a network of partners to provide them with software and other IT infrastructures. The participants also revealed that they were more likely to utilize the software or systems recommended to

them by their existing vendors or business partners. The reasons include they have more confidence when a product is recommended. The time and expense needed for integration can also be reduced.

Event marketing is approved of by the majority of the interviewees as an effective marketing tool. In this case, they clarify that while the numbers of quality exhibitions and conventions in Vietnam are scarce, companies have better chances in international events organized overseas. High level managers, IT technicians and even government officials usually travel abroad and participate in such events in order to try the software on hand and connect with the service providers on site. Interviewed heads of IT departments also revealed that they saved lots of time just because an event is the occasion for vendors to publicly show off their products and services.

In general, partnership marketing and event marketing are the channels with the most approval from the participants of the interviews. The list of potential partners will be provided in Appendix 5. Even though social media marketing does not have as much impact, when combined with event marketing, they can become great tools for Linagora to increase its presence on the market, potentially reaching out to more customers.

4.3 Competition analysis

Currently in Vietnam, competition in the whole IT industry is intense as local service providers are increasing in numbers and starting to take the initiative in competing with foreign peers. However, Linagora's aim is to share the knowledge and create alliances with Vietnamese software publishers to compete with foreign tech giants, GAFAM in particular (Zapolsky 2018). There are more political as well as socio-economic aspects to these issues, but they are not within the scope of this research and as such, will not be mentioned. Therefore, the general competitive landscape of open-source software in Vietnam is further described using Porter's Five Forces model. Additionally, the French firm currently does not have a direct competitor on the market. Consequently, the marketing mix is utilized to make

comparison between Linagora and its proprietary correlatives to support marketing communication. The chosen examples for this part of the study are solutions from Google and Microsoft – 2 most popular foreign service providers in Vietnam.

4.3.1 Competitiveness of open-source software market in Vietnam

The competition within the open-source software development is not intense because the market itself is a niche one and has only been re-vitalized in recent years. Even though there are several companies that are orienting their business towards developing open-source solutions, successful examples are few, and their customer bases do not overlap much (Zapolsky 2018). Consequently, low competition decreases the bargaining power of the customers, which in turn, lowers the risk of hurting profitability (Porter 2008). That said, companies that are oriented towards developing open-source software need to allocate more resources into marketing efforts to make themselves more attractive. This can hurt the profitability but will prove more beneficial when competition become intense (Zapolsky 2018).

Buyers of open-source solutions are both public and private enterprises. In fact, any company can initiate its own open-source adoption, which leads to a large demand. The only obstacles toward this transformation are the costs of transition. The larger and older the organization is, the more expensive it is for re-training staffs and uniformed integration to their entire operation (Zapolsky 2018). However, after a bumpy transitioning period, the long-term benefits are significant, as a huge amount of spending on subscription is reduced while data security as well as software liberty skyrockets. As a result, Zapolsky (2018) notes that the opportunity cost for choosing open-source software is acceptable, and the bargaining power of the buyers is low.

The bargaining power of the suppliers is also very limited. In the case of software-as-a-service, suppliers provide servers, storages, data center and power supplies, all of which do not involve the production of the products itself. The cost for changing supplier is negligible due to the fact that they are usually big players in the market, and the difference in prices is not very significant. Consequently, the profitability of the open-source software market is not affected by the bargaining power of suppliers.

Entry and substitution threat are low for various reasons. To be able to produce sophisticated software which can distinguish itself on the market and replace traditional office packages, a considerable amount of resource and expertise is needed. Even though more and more open-source alternatives to proprietary packages are appearing on the market, only a few cases that have gained momentum to be competent (Zapolsky 2018). For threat of substitutes, Ms. Zapolsky noted that open-source software is already a substitution threat to traditional software production, and currently there are no other viable technologies to solve the current economic need.

In conclusion, the analysis based on Porter's Five Forces shows that the profitability of the industry is not affected with much negative impact. At least for this stage, when the world economy is starting to shift towards small and open development models, the major threat only comes from traditional tech giants. The only way to ensure Linagora's triumph is to pump out more software which out-scale the traditional proprietary packages in terms of performance, cost and digital sovereignty. This will persuade an organization to start its own open-source transition and look for Linagora's solutions.

4.3.2 Marketing Mix Analysis

For the segment of Software-as-a-Service industry, the Chief Operating Officer of Linagora Vietnam revealed that they have no direct competitors who offer similar open-source solutions in the market (Zapolsky 2018). The list below gives details about what type of open-source solutions Linagora is providing at the moment:

- Collaborative platform
- Smart assistant
- File sharing
- Identity management
- Secured solutions for electronic certificates and signatures.

Therefore, the analysis in this part revolves around utilizing the marketing mix to compare the product, price, place and promotion of the French company's software and their proprietary counterparts. Details of the products will be omitted in favor of key features that help distinguish Linagora's services.

Product

There are three core features which help Linagora's products excel in comparison with the rest: privacy & security, emphasis on functionality and open API (Robin-Prévallée 2018). The first one deals with the customer's ability to control the server and its data. For example, OpenPaas – a collaborative platform developed by the French service provider – can be deployed at client's requested location (OpenPaas 2018). Either hosted by Linagora or on premise, the choice is in the buyer's hand. As a result, the customer also has total control over his data, who he wants to share it with and how he wants it to be used. This core characteristic has attracted a number of customers mainly from the public sector due to the increasing demand in data security as well as data localization in some regions (Zapolsky 2018). On the other hand, G Suite and Office 365 are hosted by their data centers, and therefore force subscribers to relinquish significant manipulation over data to the companies. Having developed open-source solutions for 18 years, Linagora has had to focus on functionality while struggling to keep up with proprietary counterparts. Such emphasis has made the products developed by this "dinosaur" gradually gain favor from the consumers (Robin-Prévallée 2018). Recent years have seen technology firms and proprietary software developers hitting a bump in the progress, releasing changes that are good-looking but non-functional. As told by Robin-Prévallée (2018), "pretty user interfaces can attract common users but for business, the functionality is all that matters". It is also noteworthy to mention that from the researcher's personal experience with the software, the visual aspect has been improved, not totally neglected while performance capability remains emphasized. The third core factor refers to the open standards that Linagora has been following since its foundation. The documented API provided together with product deployment will grant "full interactability" to everyone (Robin-Prévallée 2018).

Price and place

The standard pricing strategy for Software-as-a-Service is tiered pricing. Customers are offered different prices for various level of accessible functions, storages, support services and so on (Forbes 2018). According to Robin-Prévallée (2018), Linagora follows the subscription strategy instead. In this case, customers are offered a product with full features (including the documented source code), and they can request the removal or addition of features to suit their needs without the fees being adjusted. Currently, there are two pricing options: one for the service hosted by Linagora, and one for the on-site deployment (this option is currently only available for selected products i.e. collaborative platform, security system). The former option has a disadvantage: the customer will be charged the same amount of money regardless of how many functions they choose. As a result, they either have to utilize all features or cope with paying more than what they receive (Robin-Prévallée 2018). The on-site price is more expensive, as Linagora is required to send personnel or request personnel from their partners to install the software to their customer's mainframe. This option is most suitable for an organization with high security requirements and data localization. Depending on the customers as well as the products they choose, the sales team will recommend the best solutions for them.

After a deal has been settled, the software or system inquired by the customers will be delivered to them straight from Linagora (Robin-Prévallée 2018). Nevertheless, the company relies on its vast network of partners to conduct training, integration on the premise (if required), maintenance and support services. All of which is managed by the Linagora's Open Source Software Assurance (OSSA). In France, the firm has the ability to mobilize more than 100 technical experts of over 30 SMEs via the network for this service (Figure 6).

Figure 7. OSSA's ecosystem in France (Source: Linagora 2018).

The partnerships forged through this ecosystem have brought many advantages to Linagora, and it can be very effective or even vital for the company when they operate in Vietnam. The deduction from the customer analysis section cemented the method of forming a network to increase customer reach. The details regarding this partnership marketing is discussed in Chapter 5.

Promotion

This analysis has only taken online forms of marketing activities without the presence of other offline activities. Compared to other tech companies providing proprietary products with the same features, Linagora's frequency of marketing activities is low. Due to the nature of proprietary software which requires the continuous release of new features to generate profits, the promotion to boost sales has to be consistent and frequent. For example, when

visiting the Facebook page of Slack – a proprietary collaborative platform, the average numbers of posts per week is two to three. Larger companies with bigger budgets are even more active not just on social media but also assure their presence with contents on blogs, priority results on search engines, appearances at events, and so on. While Linagora's online activities have witnessed a considerable increase, the traffic of interaction has not improved.

5 MARKETING STRATEGY RECOMMENDATIONS

5.1 Partnership marketing

By definition, partnership marketing is simply cooperating with a business or an individual who has connections in the industry or the market a company aiming to. The goal is having its brand introduced to new prospects by partners. The benefits are Linagora's receiving a credible distribution channel and exposure to the market.

Partnered distribution is relatively straightforward. The partner will distribute Linagora's products as an additional service to their existing customers and thus, the French firm can reach out to a larger customer base. Currently, only large telecommunication enterprises in Vietnam have the credibility and connection to do so (Nguyen 2018). Since Linagora has already established a firm relationship with the Vietnamese government through multiple government-invested projects, the company can use this connection as leverage to form partnerships. In return, Linagora can help these organizations start their open-source transformation. By turning customers into business partners, Linagora can optimize their resources and steadily increase their presence in the market. Additionally, OSSA's network can be expanded through training to the partner's technical staff which in turn, further increases the French corporation's capacity in providing professional support. The partners of Linagora also receive significant benefits. While Linagora gets the exposure, its partners can make their offers more valuable. Additionally, by forming partnership with companies supported by the governments of both countries (France and Vietnam), they have opportunities to land

more lucrative projects and access to more customer pools. If Linagora prefers showcasing their products at conferences or convention, co-exhibition is highly recommended.

5.2 Event marketing

Exhibitions and conferences are occasions for Linagora to put their products on display and attract prospects. At the moment, the company mostly participates in events about the software industry or the information technology industry. However, interviewees confirmed that they were more likely to attend finance technology or education technology conferences. Accordingly, Linagora is recommended three types of events where it would have opportunities to connect with potential clients corresponding to the customer persona: information technology, finance technology and education technology. The catalog of the selected events in 2018 and 2019 is demonstrated in Appendix 6.

Preparation for event marketing involves a long process of planning. Large conferences or exhibitions usually have their tickets sold out approximately five to six months before the opening day. Consequently, it is important for Linagora to have an annual event marketing strategy planned out. Due to extreme costs, organizing physical events is not advisable for the company. On the other hand, virtual and co-hosted events are cost-effective as well as able to bring many qualified potential customers to Linagora. Considering the fact that the target customers are located in Vietnam, it is recommended for Linagora to utilize its connection with AVSE-G. Doing so has several benefits:

- Linagora can co-organize or participate in AVSE-G's events to get in touch with prospects.
- Linagora can figure out information regarding their potential clients' attendance to conferences in Europe and focus their marketing efforts on those selected events.

During the event, it is important to note that salespeople from Linagora should not go too deep with the features from Linagora's products. Instead, the company is recommended to

discuss what kinds of problems their products solve and the philosophy that Linagora is following. If the person in conversation can be their potential partner, salespeople can make subtle hints about Linagora's endorsement from the French Government to gain attention. Tech firms in Vietnam become interested when they see opportunities to interact with foreign governments to boost their reputation. Content marketing works as good supporting tools. Linagora is recommended to prepare well-tailored materials in Vietnamese to generate a welcoming atmosphere toward its prospects. Adapting original marketing content for it to be effective towards target customers will ultimately inspire the target clients to purchase (RWS 2018).

6 SUMMARY

The rapid growth of the open-source software industry in Vietnam, a market gap in the customer segment as well as a non-aggressive competition environment are characteristics that define financial and education as potential segments for Linagora.

The increasing demands for businesses and institutions from Vietnam to respect international laws about intellectual property have forced these organizations to seek more cost-effective solutions to maintain their operations. Simultaneously, the central government is also urging the adoption of small and open models for sustainable development. Managers are motivated by these external and internal drivers to seek for a more economical tool. In addition, the continuous occurrence of data breaches also challenge organization to re-evaluate and refit their current system with something else more dependable.

The market gap in the public sector is the financial and education segments due to their significant growth, absence of competition and multi-faceted benefits for Linagora's operation in Vietnam. Directors of banks and Head of educational institutions are revealed by the customer analysis as decision-makers in the buying process. Additionally, these individuals provided information that social media marketing and partnership marketing are the most effective channels.

The mild competitive environment is the result of few competitors and lack of technology. Ineffective coordination of government policies also contributed to the problem, but recent changes in cabinet members are showing positive results. These are implications that this is the right moment for Linagora to take the initiative and seize the leading position in the market.

Recommendations for Linagora include utilizing their strong endorsement from the French and Vietnamese governments as leverage for partnership marketing and event marketing for further reach to the customer base. Partnered distribution is effective in approaching intended prospects, and co-hosted virtual events attract more potential customers.

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List of potential customers in finance & banking

Name	Information
Vietnam Development Bank – VDB (https://en.vdb.gov.vn/)	Founded in 2000. Expertise in state development investment and export credit policies as regulated by the government
Vietnam Bank for Agriculture and Rural Development – Agribank (http://www.agribank.com.vn/default.aspx)	By total assets, this is the largest commercial bank in Vietnam. It is also under a special status for a publicly owned corporation.
Join Stock Commercial Bank for Foreign Trade of Vietnam – Vietcombank (https://www.vietcombank.com.vn/)	The first state-owned commercial bank chosen for pilot privatization. Leader of financial services in international trade and modern banking.
Joint Stock Commercial Bank for Investment and Development of Vietnam – BIDV (http://www.bidv.com.vn/)	A state-owned bank and the largest bank by net income and the second largest by total assets, behind Agribank. Specialized in banking, insurance, stock exchange and financial investment.
Vietnam Join Stock Commercial Bank of Industry and Trade – Vietinbank (http://www.vietinbank.com/)	One of Vietnam largest bank. It has formed a strategic partnership with the International Finance Corporation and Mitsubishi UFJ Financial Group. Notable customers include PetroVietnam & Vietnam Electricity.
Vietnam Joint Stock Commercial Export Import Bank – Eximbank (https://www.eximbank.com.vn/home/)	One of the first join-stock commercial banks in Vietnam. It has a wide network domestically and internationally (84 countries)
Military Bank – MB (https://www.mbbank.com.vn/)	Endorsed by the military. It has more than 10000 employees spread across the country.
Saigon Thuong Tin Commercial Join Stock Bank – Sacombank (https://www.sacombank.com.vn/Pages/default.aspx)	Has exclusive partnership with Dai-ichi Life Vietnam. It is deploying multiple e-banking services with high security
Asia Commercial Joint Stock Bank – ACB (http://acb.com.vn/wps/portal/en)	Largest private bank in Vietnam by assets
Vietnam Technological and Commercial Joint Stock Bank – Techcombank (https://www.techcombank.com.vn/trang-chu)	One of the largest join-stock commercial banks in Vietnam. Specialized in personal financial services and banking services for SMEs,

List of potential customers in education

Name	Information
Ho Chi Minh University of Technology (http://www.hcmut.edu.vn/en/)	A member college of Vietnam National University, Ho Chi Minh City. It is the flagship university in conducting technological researches and teachings
Ho Chi Minh University of Sciences (http://www.hcmus.edu.vn/)	A member of Vietnam National University, Ho Chi Minh City. It has two joint bachelor programs in information technology and computer science with Auckland University of Technology, New Zealand.
Hanoi University of Sciences (http://hus.vnu.edu.vn/en)	A member college of Vietnam National University, Hanoi.
Hanoi University of Science and Technology (https://www.hust.edu.vn/)	It is the largest technical university in Vietnam. It has produced several famous alumni over the years including former Deputy Prime Minister of Vietnam Pham Gia Khiem, Flappy Bird creator Pham Van Dong and CEO of BKIS Nguyen Tu Quang.
Ho Chi Minh University Information Technology (https://www.uit.edu.vn/)	A member of Vietnam National University, Ho Chi Minh City. It specializes in computer science, information system and software engineering.
University of Engineering and Technology (https://e.uet.vnu.edu.vn/)	A member of Vietnam National University, Hanoi.
University of Economics – Law (https://www.uel.edu.vn/)	A member of Vietnam National University, Ho Chi Minh City. It is a higher education institution as well as scientific research & technology transfer center in response to the demands of industrialization, modernization and global integration of Vietnam.
University of Economics and Business (http://ueb.vnu.edu.vn/enHome/44.htm)	A member college of Vietnam National University, Hanoi.
National Economics University (https://en.neu.edu.vn/)	It is considered as top university in economics of Vietnam. It specializes in economics teaching, consulting macroeconomics policies to the government and international economics researches.

List of interviewees

Nguyen Ba Thanh, Ph.D. Head of Institute of Biotechnology and Food Technology, Ho Chi Minh University of Industry.

Prof. Tran Tho Dat, Ph.D. President of National Economics University.

Prof. Hoang Duc Than, Ph.D. Senior Lecturer. Institute of International Trade and Economics, National Economics University

Le Thi Viet Thao, Deputy Head of Technology Projects Management Board, Vietcombank Headquarter.

Nguyen Hung Thanh, Deputy Head of Banking Modernization Board, Vietcombank Headquarter.

Le Van Hop, Deputy Director of Vietcombank Information Technology Center

Interview Questionnaire

Customer Persona

- What is your position and how do you describe your responsibility within your organization?
- What challenges have you encountered, personally and organizational-wise, when it comes to software that affect your/your organization's performance? How do you plan on solving them?
- What you do think about "open-source adoption"? How will it affect your organization?
- What are your personal goals that you want to accomplish using open-source software?
- In which way do you want your organization to initiate integration of open-source solutions?

Customer awareness journey

- Which of the following channels do you find the most effective when it comes to learning about new open-source solutions: social media marketing, search engine marketing, content marketing, event marketing and partnership marketing?
- Which social media do you use personal / professional purposes? What type of content do you pay attention to? For what purpose do you use Facebook/LinkedIn/Twitter/…?
- How often do you read IT / software content? How do you become aware of such content?
- What is the role of partnership in your opinion? How does partnership affect your decisions as managers? How do you become aware of software technology and other relevant software services via your partners?
- Do you attend marketing events for software / IT? What do you think about event marketing for IT solutions in Vietnam? Do you usually attend events for professional purposes?

List of potential partners and their characteristics

Companies	Characteristics
FPT - Establishment: 1988 - Revenue: €1.7 billion (2017) - Capitalization: more than €1.17 billion (2017) - Workforce: more than 34000 employees - Core business segments: technology, telecommunications, technology product distribution & retails	- National brand for Vietnam's IT industry - Large staffs working on multiple projects and spread across the country - Have strong financial support - Experienced in developing software after years of doing outsourcing for Japan, USA and France - Complex projects required international cooperation
CMC Corporation - Establishment: 1993 - Revenue: more than €170 million (2017) - Capitalization: more than €41 million (2017) - Workforce: more than 2200 employees - Core business segments: software, system integration, product & trading, telecommunication – Internet	- Have deep rooted connection with national banks, state firms and the government itself - Headquarters in Hanoi - Experienced in data centers installation and SAP solutions deployment - Most of the staffs does not possess strong background in IT
HPT - Establishment: 1995 - Revenue: €337 million (2017) - Capitalization: more than €36 million (2017) - Workforce: 286 empolyees - Core business segments: system integration & services, software integration, software outsourcing, cloud computing, customer service	- Have a long history of collaboration with Hewlette Packard - Strong presence in Ho Chi Minh market - Loyal customers from banking and public sectors - Hardware focus, low emphasis on software

Viettel ICT - Establishment: 1989 - Revenue: €9.4 billion (2017) - Workforce: more than 70000 employees - Core business segments: IT, telecommunications, R&D, manufacturing, post, retail	- Endorsed by the military - Prioritize projects for national security
Tinh Van Group - Establishment: 1997 - Workforce: more than 500 employees - Core business segments: IT, software outsourcing, consultancy, system integration, digital marketing	- Expert in online content - Customers from banking and public sectors - Too spread focus in many areas which can lead to diminished investment for the group's system integration business.
Amigo - Establishment: 2005 - Core business segments: system integration, software services, personal banking solutions	- Experienced in Internet banking and public sectors - Too much emphasis on those two areas - Only well-known in the northern part of Vietnam
Hong Co - Establishment: 1993 - Core business segments: hardware support & maintenance, information infrastructure, deployment & installation, consultancy, system security	- Expertise in hardware and support - Too much emphasis on hardware and support

List of potential events by categories

Category	Event	Date	Location
2018			
IT	SaaStock	15-17/10	Dublin, Ireland
Education Technology	iNACOL Blended & Online Learning Symposium	21-24/10	Nashville, USA
Financial Technology	FinovateAsia	29-30/10	Hong Kong
Financial Technology	The Canada Fintech Forum	29-31/10	Montreal, Canada
Financial Technology	FinTech Talents	30-31/10	London, UK
IT	VMWorld	5-8/11	Barcelona, Spain
IT	WebSummit (SaaS Monster)	5-8/11	Lisbon, Portugal
IT	Pulse Europe	7-9/11	London, UK
Financial Technology	LendIt Europe 2018	19-20/11	London, UK
Financial Technology	Asian Banking Forum: East Asia's digital transformation in banking	21-22/11	Hong Kong
Financial Technology	Fintech World Forum	21-22/11	London, UK
Financial Technology	Open Banking Expo	27/11	London, UK
Financial Technology	Inside Fintech	29-30/11	South Korea
2019			
Financial Technology	Paris FinTech Forum 2019	29/01	Paris, France
Financial Technology	TechNOVA: AI in Financial Services 2019	27/03	London, UK
Financial Technology	Synchronize 2019	17/04	New York, USA
IT	Techspo NY	mid-May	New York, USA
IT	Techspo Toronto	late -May	Toronto, Canada
IT	Techspo LA	mid-June	Los Angeles, USA
Education Technology	EdTechXEurope 2019	18/06	London, UK