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MASTER OF PUBLIC ADMINISTRATION PROGRAMME**

**THE USERS' PERCEPTION ON TELECOMMUNICATION
SECTOR LIBERALIZATION IN MYANMAR
(CASE STUDY: YANGON)**

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ABSTRACT

Telecommunications service is a infrastructure services playing a important role in a country's socioeconomic development, and it links to the living standards of people and economic growth of the country both directly and indirectly. Liberalization of Myanmar telecommunication sector was started in 2014. The objective of this thesis is to examine the user's perception on telecommunication sector liberalization in Yangon, Myanmar. To achieve the objective, a quantitative, descriptive method was used. The structured questionnaires are collected from 264mobile phone users of 4 telecoms operators in Yangon. As the survey result, it is found that telecommunication sector liberalization and improvement of telecommunication service support the improvement in health, economic, education and social sectors of citizen's life as well the nation. Most of respondents accepted that the education system is better, easier and more effective than the status of before liberalization. The perception on employment opportunity, economic opportunity for local business, internal and external trade opportunity are led to increase and agreed the improvements in telecommunications sector have great impact on economic growth of the country as one part.

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LIST OF ABBREVIATIONS

ABT	Agreement on Basic Telecommunications
ADB	Asian Development Bank
ADSL	Asynchronous Digital Subscriber Line
ASEAN	Association of Southeast Asian Nations
EU	European Union
FIL	Foreign Investment Law
FY	Fiscal Year
GB	Giga Bits (Internet Bandwidth)
Gbps	Giga Bits per second
GDP	Gross Domestic Product
GPRS	General Packet Radio Service
GSM	Global System for Mobile
HSPA	High Speed Packet Access
ICC	International Chamber of Commerce
ICT	Information and Communication Technology
IDA	International Development Assistance
IP	Internet Protocol
IPLC	International Private Leased Circuit
ISP	Internet Service Providers
IT	Information Technology
ITCS	Information Technology and Cyber Security
ITMC	International Transmission Maintenance Center
ITU	International Telecommunications Union
KSGM	KDDI Summit Global Myanmar Company Ltd.
LAC	Latin America and the Caribbean
LDC	Less Developed Countries
LTE	Long Term Evolution
MCIT	Ministry of Communications and Information Technology
MENA	Middle East and North Africa

MEP	Mobile Enablement Package
MNO	Mobile Network Operator
MNTC	Myanmar National Tele and Communications Co.,Ltd (MyTel)
MPA	Master of Public Administration
MPC	Myanma Privatization Commission
MPLS	Muli-Protocol Label Switching
MPT	Myanma Posts and Telecommunications
MTC	Ministry of Transport and Communications
NB-IoT	Narrowband Internet of Things
NGN	Next Generation Network
OECD	Organization for Economic Co-operation and Development
PSTN	Public Switch Telephone Network
PPIAF	Public Private Infrastructure Advisory Facility
PTD	Posts and Telecommunications Department
QoS	Quality of Service
SEA-ME-WE	South East Asia – Middle East-Western Europe
SEEs	State Economic Enterprises
SIM	Subscriber Identity Module
SOE	State Owned Enterprise
SSA	Sub-Saharan Africa
TSRP	Telecommunications Sector Reform Project
UK	United Kingdom
UMTS	Universal Mobile Telephone System
UPU	Universal Post Union
USA	United States of America
VSAT	Very Small Aperture Terminal
WBG	World Bank Group
WCDMA	Wideband Code Division Multiple Access
WTO	World Trade Organization

CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

Telecommunications service is a framework administration providing a significant job in a nation's financial improvement, and straightforwardly and in a roundabout way connects to expectations for everyday comforts of individuals and monetary development of the country. Liberalization of the telecommunications sector has been taking place in industrialized and less developed countries (LDCs) the same as a feature of more extensive economic reforms started during the 1980s. The pattern of sector advancement has not showed itself consistently on the grounds that its understanding, method of reasoning, objectives and usage fluctuate crosswise over nations. In any case, the 1997 World Trade Organization (WTO) Agreement on Basic Telecommunications (ABT) is an indication of the solidification of this pattern, with more than 40 LDCs and all the industrialized nations making legitimately restricting duties to execute shifting degrees of advancement in their broadcast communications part throughout the following decade (WTO 1997). Moreover, numerous different LDCs are seeking after part progression approaches outside the structure of the multilateral exchanging framework.

At the same time, theorists and policymakers increasingly recognize the importance of widespread access to telecommunications in enhancing socioeconomic development. Within a country, lack of access threatens to undermine social stability because restricted access to information fosters economic and social inequality (Hieronymi1999, 77).

The dynamism of world telecom markets is largely attributed to faster technological improvement and an enhancing liberal policy environment. Over the previous decade, a huge number of developing countries have get on reform paths and witnessed the major expansion of their telecommunications networks and noticeable improvements in productivity. Over the period 1985-1999, mainline penetration and efficiency in developing nations dramatically multiplied. Be that as it may, neither

execution nor strategy was uniform inside or crosswise over districts. Telecommunication liberalization is a complex and moderately new procedure for creating nations. Decisions must be made in regards to the privatization of state-claimed media communications administrators, the presentation of rivalry, the opening of business sectors to remote venture and the foundation of expert focused guidelines. While there is developing agreement that every one of these components is alluring, it is an uncommon nation that has promptly gone right on all fronts. When all is said in done, governments have varied in their eagerness to yield control to the market, and most have a propensity for gradualism. .

Over the last twenty years, the institutional frameworks of the telecommunications sector in Europe have been completely redefined. While in the early 1980's, the dominant model was public ownership of national monopolies with a concentration of decision-making powers in the hands of governments, national regulatory frameworks are now best described in terms of privatization, complete liberalization and semi-independent regulators in which government's role is to a significant diminished.

Information and communication technologies are presently broadly accepted to have a huge part to play in advancing social and financial improvement, including the improvement of individual jobs, network success and the accomplishment of national improvement objectives identified with the UN Millennium Development Goals. There is a strong relationship between telecommunication infrastructure and enhancement of economic activities in all industrialized and developing countries with open communication and financial sectors are found to attain 1.5 times more economic growth (Mattoo, Rathindran, & Subramanian, 2006).

Before liberalization, Myanmar telecoms sector had been controlled by the state-own enterprise, Myanmar Posts and Telecommunications (MPT). In 2014, liberalization of the Myanmar telecom sector brought about change with astonishing speed. The development of telecommunication has supported economic growth of the countries. Telecommunication business licenses were awarded to two international companies, Telenor from Norway and Ooredoo (Former Qtel) from Qatar in a selection process that has been widely praised for its transparency.

The cost of a mobile phone SIM card is about USD 1,500 (15 Lakhs Kyats) before 2012. By June 2015 more than half of the country's population had a mobile sim card with cost of only 1500 Kyats and a verity of handsets available in the

market. The telecom segment can be seen marvelous development when it was opened to the private area in different nations. The improvements in the telecom part helped different sectors in their activity. Privatization of Telecommunication has made it effectively reasonable to normal man. This thesis studies the users' perception of telecom sector liberalization on the socioeconomic development of Myanmar whether it helps Myanmar citizens to grow from all aspects.

1.2 Objective of the Study

The objective of this study is to examine the users' perception on the telecommunications sector liberalization in Myanmar.

1.3 Method of Study

This study uses the descriptive method based on primary and secondary data. Primary data are collected by using structured interviews questionnaires from 264 mobile phone users in Yangon. Secondary data are gathered from some relevant sources such as Ministry of Transport and Communications, unpublished MPA theses, annual report and official issued data of MPT, books, journals articles, and relevant topics from the internet.

1.4 Scope and Limitations of the Study

When collecting data and doing survey, this study only focuses on some mobile phone users in Yangon to analyze their perception on the improvement of telecommunication sector after liberalization. Survey data was mainly collected by online and by delivering hand to hand to some students from Technical universities in Yangon region. Although there are many mobile phone users in the whole country, Yangon is the biggest and populous city in Myanmar. However, this study does not look into the economic cost and benefit of telecommunication market in Myanmar.

1.5 Organization of the Study

This study consists of five chapters. Chapter I is mainly about the introductory parts, which covers the rationale of the study, objects of the study, scope and limitations of the study, design and method of the study and organization of the study. Chapter II focused on the effects of telecommunication sector liberalization. It consists of concept of liberalization, introduction of liberalization and the need for

regulation, liberalization and development of telecommunications sector in other countries, the impact of telecommunication sector on economic growth, the relationship between telecommunication development and economic growth of the nation and telecommunications performance and policies in developing countries. Chapter III contains, backgrounds of telecommunications in Myanmar, public sector reform in Myanmar and Telecommunications sector reform and its effect is briefly stated, Telecoms regulatory in Myanmar, telecommunication sector improvement before and after of liberalization and other related information. Chapter 4 represented about survey analysis containing survey profile and design and analysis of the users' perception on the effects of telecommunications sector liberalizations in aspect of economy, education, health and social sectors in Yangon based on the result of survey. The last chapter, Chapter 5 addressed the summary of finding, concluded with recommendation parts.

CHAPTER 2

LITERATURE REVIEW

2.1 Concept of Liberalization

The concept of liberalization is often used in place of deregulation. Deregulation is the process of removing restrictions on prices, product standards and types, and entry conditions (Ikpe&Idiong, 2011 and Parkin, *et al.*, 1997). It has been presented where the current guideline is thought to make a boundary passage in a market in this manner diminishing challenge.

Liberalization can take place via unilateral or multilateral arrangements. Unilateral liberalization is initiated by a given country without any external influence. According to Oyejide&Bankole (2001), the driving force of such an approach is the strong need to restructure and reposition the economy for sustainable growth, achieved through the establishment of pro-competition regulatory and institutional framework.

2.1.1 Background Conditions of Telecommunication Sector Liberalization

The dynamism of worldwide Telecom markets is generally ascribed to quick innovative advancement and an inexorably liberal strategy condition. Over the previous decade, countless creating economies have left on change ways and saw critical development of their broadcast communications systems and striking enhancements in efficiency.

Telecommunications liberalization is a complex and new process for developing economies. Choices must be made in regards to the privatization of state-owned telecom service providers, the presentation of rivalry, the opening of business sectors to outside venture and the foundation of star focused guidelines. While there is developing accord that every one of these components is alluring, it is an uncommon

nation that has promptly gone right on all fronts.. In general, governments have differed in their willingness to concedecontrol to the market, and most have a penchant for gradualism. Competition has beenintroduced, but the number of firms has been fixed by policy; privatization is often partial andthere are limits on foreign participation; “autonomous” regulators have been created but arerarely fully independent,Noll (2000).

Telecommunications was formerly considered as a public utility, which was also the case with water, gas and electricity supply. Historically, telecoms infrastructure and services were provided on a monopoly basis with the post, telegraph and fixed telephone service as the main offering. The reasons set forward for describing this as a characteristic imposing business model case have been the enormous vital speculations for setting up national media transmission frameworks and the solid system impacts related with highlight point to point correspondences. The above factors influenced governments to think about reforming their telecom sectors. Senior policy advisors and international experts offered three basic recommendations; privatize the state-owned monopoly provider, introduce competition and create independent regulatory agencies. Governments realized that monopoly networks and services were limiting the development of new markets and services. The goal of furthering economic growth in the national market place and the desire to attract investment in the telecommunications infrastructure became the catalyst for governments to start the telecommunication liberalization process (International Chamber of Commerce, 2007).

Telecommunications industry was traditionally a natural monopoly, where the telecom services and the collection of products were supplied by one Telecommunication Company. In a monopolistic market structure, the company and the industry are identical. The single company makes all the output and price decisions, it has complete control over the market (MUTUNGI, 2010). Normally, the telecom service providers are monopolized by the government.

One significant issue with telecom syndication is that monopolist may abuse its showcase position by charging over the top costs and bargain nature of administration. With the changes in the telecom business, came a progression of rebuilding of the telecom industry. Today most created nations are or have presented rivalry in the telecom showcase that was once monopolistic in nature. Driven by

mechanical improvements, rivalry has come to command a market that was at one time an imposing business model.

The 1990s witnessed a major revolution in telecommunications policy in North America and Europe (Wallsten, 2001). Although telecommunications liberalization had started in the United States in the 1970s and in the United Kingdom in the mid-1980s, there was no debt for the need to substitute competition for private or public monopoly on each side of the Atlantic. The United States had a clear firstmover advantage in some markets, but the EU and Canada strived mightily to catch up. In the case of Europe, European telecommunications companies were government-owned monopolies as late as 1990. The United Kingdom had privatized its national earner in 1984 and allowed limited entry in 1985. A few countries followed suit, but the other EU countries had not begun to privatize their national monopolies in 1990, much less to admit competition.

2.1.2 Basic Economic Aspects on Telecommunications Market

The essential economic features of an ideal global telecommunications market, i.e. a market characterized by undistorted competition amongst a variety of alternative service and network providers are quite obvious(OCDE, 1995a). There is opportunity of passage and exit for each provider paying little mind to their nationality, with this privilege stretching out not exclusively to the administration level yet additionally to the framework level. The clients' uncovered inclinations alone decide the business practicality of explicit administrations and frameworks and, because of these buying choices, additionally the level of transnationality of their suppliers. This requires low exchanging costs which, in addition to other things, might be verified by allowing the customers the privilege to full number transportability. An independent regulatory body is responsible for creating and maintaining a 'level playing field', characterized by the strict separation of commercial and regulatory activities, by non-discrimination between competing public and private operators in key areas such as taxation, market access including interconnection rules and state aids, and by the threat of antitrust action to prevent and/or sanction restrictive business practices.Universal service obligations, if deemed necessary by a government, are imposed in a competitively neutral manner only, (OECD,1995b). First of all, this means that the government has to define precisely both the scope and the scale of the universal service obligation and has to develop objective output measures covering all three relevant output

dimensions (quality, quantity and price). Otherwise, it would be impossible to determine in the first place whether there is indeed a (political) need for any universal service obligation at all and, if this is the case, to calculate the exact incremental costs of its provision. Second, to minimize both these incremental costs and, as a result, the potential for uncompetitive cross subsidization through overcompensation of their provider, the right to deliver universal service should be auctioned off to the agent willing and able to supply this service in return for the lowest amount of state subsidies. However, the status quo of most national and cross-border telecommunications markets still falls rather short of the theoretical ideal for political reasons as well as on the technical grounds.

2.1.3 Importance of Liberalization and Basic Aspects of the Telecommunication Sector

The telecommunications sector has impossibly become the essential industry in the world. Telecommunications outputs are valued at around two per cent of global GNP. Definitely more significant than this is the Telecommunications segment is the 'sensory system' of an undeniably information based world economy, giving fundamental contributions to practically all other business and government exercises. Be that as it may, in spite of the exactly demonstrated positive effect of open, focused markets on by and large work, development and financial advancement, media communications progression has been on the political motivation for barely over 10 years. In this time, a spectacular paradigm shift has fundamentally changed telecommunications policies worldwide. Around 96 per cent of all telecommunications revenues in OECD member states are by now formally liberalized, i.e. open to competition, (OECD, 1999a). Yet the distance most telecommunications markets still need to go in order to realize full economic integration is, for instance, clearly demonstrated by the fact that international telephone calls are still much more expensive for consumers and a great deal more profitable for their carriers than national ones. In general, all things being equal, most cross-border telecommunications services are still overpriced as compared to identical domestic service, their costs of provision only differ marginally.

2.2 Introduction of Liberalization and the Need for Regulation

Starting from 1980's the state-owned enterprises came for much criticism mainly because their lack of efficiency and poor customer service. In many developing and transition economies these entities suffered from low labor productivity, deteriorating fixed facilities and equipment, poor service quality, chronic revenue shortages, inadequate investment, and serious problems of theft and nonpayment (Kessides, 2004). The governments in these countries were severely cash restricted and that meant further investment in these enterprises was minimal if not impossible. According to Wallsten (2004), a monopoly provider, whether state-owned or private, faces fewer incentives to improve service and lower prices than firms operating in a competitive environment do. Additionally, he asserts that a telecommunications sector which is not living up to its potential can create problems in the arena of economic development and growth. Quality and penetration of telecommunications infrastructure can serve as an engine of economic growth, making the country more attractive to foreign investment (Wolcott and Çağiltay, 2001).

In the last 30 years, states began to recognize the benefits of competition in the telecommunication sector, and many countries began full liberalization processes. Successes have further encouraged the move to the market model from state-led policies. According to Levy and Spiller (1996), competition can be a powerful spur to innovation and technical efficiency and claim that when a country's major telecommunications company fails to develop an adequate communications network, the normative case is strong for opening up the sector to competition. Due to the problems in state owned enterprises, an essential need was seen to reform them. Thereafter competition was introduced into long distance communications and then to local communications. Further, companies were allowed to operate in both broadcast and communications markets simultaneously. Thereafter many countries in the world were followed suit (Berhin et al., 2005).

2.2.1 Evolution of Regulatory Reforms

Prior to the telecommunications sector reforms undertaken in many countries during the last two decades, telecommunications services were largely provided under monopoly conditions, either by state entities or, to a lesser extent, by private companies. Often the operator and regulator for telecommunications services was the

government; therefore, no regulatory independence existed. This classic model of supply generally concentrated policy-making, regulatory, frequency management and network operating responsibilities in a single entity. This model worked well for many years in the more developed economies, where long-distance and international tariffs, which stayed high despite significant decreases in costs due to technological change, basically subsidized local services and led to relatively high levels of universal service. However, the model did not work as well in developing countries where networks were generally restricted to urban areas and more accessible to middle/high income consumers. In the 1980s, countries began to recognize the increasingly important role of the telecommunications sector for economic growth. As a result, in primarily developed nations, policies evolved to introduce competition, in an effort to inject dynamism into the sector, spur innovation, increase choice, enhance availability, and lower tariffs. In the 1990s, partly as a result of national, regional and multilateral efforts, many countries introduced the first wave of reform by privatizing their national operators. In the second wave of liberalization, which sometimes occurred simultaneous with the privatization or followed soon thereafter, governments began allowing the introduction of new services (*e.g.*, mobile services and value-added services) into the market. These new services generally did not compete directly with the privatized basic telecommunications operator, which often had been granted an exclusivity period, or the non-privatized government-owned incumbent operator. The third wave of liberalization occurred once the incumbent operator's exclusivity period was over and full competition could be introduced.

2.3 Effects of Telecommunication Sector Liberalization

The telecommunication sector has arguably become the most important industry in the world. Telecommunication sector is the ‘nervous system’ of an increasingly knowledge-based world economy, providing indispensable inputs to almost all other commercial and government activities. As it plays vital role in the development of the country, sector liberalization has many impacts and effects in every aspect.

2.3.1 Impact of Policy Reform in Basic Telecommunications on Sectoral Performance

Carsten Fink, AadityaMattoo, and RandeepRathindran analyzed the impact of policy reform in basic telecommunications on sectoral performance in 86 developing countries in Africa, Asia, the Middle East, Latin America, and the Caribbean over the period 1985 to 1999. Most governments have been unwilling to commit to complete liberalization immediately, preferring instead a gradual reform process, encompassing the privatization of state-owned operators, the introduction of competition, and the establishment of independent regulation.

The econometric evidence presented in that study provided some guidance on possible priorities for telecommunications reform. First, the researchers found that complete liberalization pays off. *Ceteris paribus*, tele-density is 8 percent higher and labor productivity 21 percent higher in years that saw privatized incumbents, additional competitors, and separate regulators, compared to years with no or only partial reform. Second, both privatization and competition improve performance and the latter reinforces the former. Third, sequences matter. Introducing competition after privatizing incumbent operators leads to fewer mainlines per population compared to a simultaneous introduction of the two policies. Furthermore, mobile competition can serve as a surrogate for fixed-line competition in achieving higher mainline penetration and can thereby mitigate the harmful effects of exclusivity periods. An interesting supplemental finding of the paper is that the impact of policy reforms has in the past fifteen years been outweighed by the improvements in telecommunications performance not directly attributable to the policy variables considered here. One possible explanation is the rapid pace of technological progress in telecommunications and the increased public investment in this sector.

2.3.2 Effects of Liberalization in the ICT Sector of Developing Countries

This section discusses a number of experiences of the effects of liberalization, competition, and effective regulators in the ICT sector in developing countries. It is clear that market reforms can boost productivity and profitability and stimulate investment, enhancing the performance of the ICT sector. Market-based strategies also allow governments to meet social and economic goals, such as increasing access to ICTs and revenue from telecommunication services. Further, effective regulation has been part of ICT growth (ITU, 2007). Cross-country studies find that, after

controlling for geographical region and income levels, countries with GATS commitments in basic telecommunications outperformed others without commitments with respect to fixed and mobile penetration as well as revenues as a percent of GDP (Campos, 2006). The ITU provides a number of country case studies of liberalization in telecommunications. These tend to indicate that the liberalization of telecommunications has coincided with the spread of ICTs, although the specifics differ by country.

Mauritania has undergone significant telecom reforms in recent years and experienced a falling ratio of international to local tariffs, from 60:1 in 1999 to 6:1 by 2004 (Adlung, 2007). Competition to the incumbent was introduced **St Lucia ICT** in 2003, when a second mobile company entered the market. Six months after the introduction of mobile competition, the telecom regulator reported 132,700 subscriptions, resulting in a penetration rate of 83% of the population. This is a remarkable result, considering that the number of mobile subscribers per 100 inhabitants stood at only nine in 2002. Competition has resulted in mobile tariffs that are among the lowest in the region. **Botswana's** priority in the early 1990s was to improve the level and quality of basic telecommunications service provided to its citizens. Liberalization improved tele-density(fixed lines from 59,673 in 1996 to 140,000 by mid-2001; mobile from zero in 1998 to 250,000 in 2001 16% of the population). The introduction of mobile technology helped to reduce the digital divide between urban and rural areas (ITU, 2007).

Morocco had one of the lowest telephone access levels in the region in 1998. It then liberalized and licensed a second mobile operator for a record US\$902 million, and a foreign company bought into the incumbent Maroctelecom for a high price. Morocco has North Africa's most independent regulator. Then after five years, Morocco had the highest telephone access levels in North Africa, from 6.5 lines per 100 inhabitants in 1999 to 15.2 the following year, attributable to the development of mobile phones. The choice, availability and quality of service have all improved, and the reform process has attracted significant foreign investment. Few **Tanzanians** were able to access a telephone prior to the liberalization of the telecommunications sector in the 1990s, as monopoly landline prices were high and services were poor. Liberalization led to an increase in mobile phone subscriber rates to almost 90% a year from 1998 to 2003.

Nigeria launched the National Telecommunications Policy (NTP) in September 2000, at which time it had a very poor telecommunications network. It licensed a number of new service providers. As a result of the liberalization, Nigeria has one of the most competitive fixed and mobile markets in Africa. The population coverage of mobile networks increased from around 5% in 2000 to 75% by June 2006. Nigeria has licensed over 20 private operators, accounting for 71% of its 1.5 million fixed lines in operation in June 2006, far more than the incumbent (ITU, 2007).

2.3.4 Responding to Liberalization in the Telecoms Sector

A prominent characteristic of the telecommunications sector is the extent to which it is influenced by government policy and regulation (Ndukwe, 2000). The forces these exert on the sector are inextricably tied to technological and market forces. Because of the pervasive nature of information and communication technologies and the services that derive from them, coupled with the large prizes to be won, the telecommunications sector is subjected to a lot of attention from policymakers. Particularly over the past 20 years or so, telecommunications policy and regulation have been prominent on the agendas of governments around the world.

This reflects the global trend toward liberalization, including, in many countries, privatization of the former monopoly telecoms. However, interest from policymakers in telecommunications goes much deeper than this. A great deal of this interest stems from the extended reach and wide impact that information and communication technologies have. Given this background of the pervasive impact that information and communication technologies have, it is hardly surprising they get heavy policy attention.

Many national regulatory authorities today are separate from central government, and they are, nevertheless, built on foundations of government policy. Indeed, the very act of creating an independent regulatory body is a key policy decision. Historically, before telecommunications privatization and liberalization came to the fore, regulation was often carried out within central government, which also controlled the state-run telecoms. That has changed in recent years in almost all countries. Given their policy foundation, and the fact that government policies vary from country to country and from time to time, it is not surprising that regulatory environments evolve and differ from country to country. Moreover, given that

regulations need to reflect changing market conditions and changing technological capabilities, it is inevitable that over time regulatory environments will change, too (Afeikhena Jerome and Ademola Ariyo, 2004)

Therefore, regulation is best viewed as another of the variables, such as technological change, that the telecommunications industry needs to take into account. At the national level, several parts of central government are generally involved, and there can sometimes be more than one regulatory body for a nation. Some of these organizations are major players; others play less prominent, but nevertheless influential, roles. In the early years of liberalization, much time would typically be spent in licensing new entrants and in putting in place regulations designed to keep a former monopoly telco from abusing its position by, for example, stifling its new competitors or by charging inappropriately high prices to its customers (Crandall and Jerry, 2000). Here the regulator is acting as a proxy for market forces. As effective competition takes root, the role of the regulator changes somewhat. Much of the work then typically involves ensuring that all licensed operators or service providers meet their license obligations and taking steps to encourage the development of the market such that consumers benefit. The focus of most regulatory bodies is, or should be, primarily on looking after the interests of the various end users of telecommunications (Gardner, 2004). However, most regulators would recognize that this can be achieved only if there is a healthy and vibrant industry to deliver the products and services. So, while there are often natural tensions between a regulator and the companies being regulated, it is at the same time important for cooperation between the regulator and the industry to take place.

From the regulators' high-level objectives are a range of activities such as licensing, price control, service-level agreements, interconnection, radio spectrum management, and access to infrastructure (Laffont and Tirole, 2000). Often, regulatory bodies consult formally with the industry, consumers, and other interested parties on major issues before introducing regulatory changes.

2.4 Liberalization and Developments in the Telecommunications Industry Sector

For several decades telecommunications services was exclusively provided by government agencies in many countries around the world. According to Ospina (2002) the high sunk and fixed costs of building telecommunications infrastructure

led most countries to treat the provision of telecommunications services as a natural monopoly not until 1980s when there was sufficient advancement in technology that helped to lower the costs of providing the services.

Telecommunications services under government monopoly was characterized by monopolistic control, high costs of services, low quality of services and long waiting connection periods (Shiu and Lam 2008). This arrangement obviously does not support business growth and economic development. Therefore, liberalization became inevitable in order to attract private investments, encourage competition, promote innovations, reduce waiting time and make telecommunications services accessible to all and sundries.

The study conducted by International Telecommunications Union (ITU, 2002) stated that, between 1990 and 1999, the number of state-owned incumbent telecom carriers that were at least partially privatized increased from about 40 to 83, while the number of countries that allowed long-distance competition increased from 5 to 29. At the same time, the share of telecom investment in global GDP increased from 0.69 to 0.75 percent (ITU, 2002). This is a major proof that liberalization has helped to accelerate growth in the telecommunications sectors around the world.

Aggressive liberalization of telecommunications services in the developed countries started in early 1980s (Cave and Crandall, 2001) after most of the countries realized that effective competition in the global markets depend on vibrant and competitive telecommunications services. In United Kingdom (U.K), liberalization began in the Mid 80s (Cave and Crandall, 2001) while America's first private microwave license was granted to Microwave Communications Incorporated in 1959 (Ito and Krueger 2000). Canada, China and India were also among the front-line countries that reformed their telecommunications sector. Canada opened its long-distance market to competition in 1992; China began its own reform in 1994 (Zheng and Ward 2011). India, smarting from the bitter experience of recurring fiscal deficits and negative balances of payments of the late 1980s initiated economic reforms that ended government's monopoly over telecommunications services and opened the sector to private sector participation and foreign investment (Greene, 2004).

Apparently, the successes achieved by these countries motivated several other countries in Europe, Asia, Latin America and Oceania to liberalize their telecommunications sectors with the aim of positioning it for inherent growth. In any programme of reform, policies and effective regulations are required to manage

transitions and the complexities that may arise during reform process .International Chamber of Commerce (2004) researched liberalization of the Telecommunications sector around the world and concluded that successful transformation of a monopolistic telecom market to a competitive one requires effective and independent regulatory environment. Therefore, without effective regulatory authorities, viable competition is unlikely to emerge. While reviewing the impact of market liberalization on the Mauritian Telecommunications Sector stated that for liberalization to be useful and effective in terms of increasing penetration rates, it must be accompanied by complementary policies and governance framework that enhances self-sustainable development and growth.

According to the World Bank (2012), countries that successfully implement reforms and overhaul regulatory obstacles experience better economic outcomes, job creation and improved standards of living. For the benefits of competition to accrue to the operators in the Telecommunications sector, establishment of regulatory body is germane. The successes recorded in countries that liberalized its telecommunications sector are substantially attributable to a very effective and efficient regulatory environment (Gutierrez and Berg, 2002). The evolution of the USA and UK telecommunications industries rode on regulations and policies that enabled fair competition amongst operators in the industry. The same also applies to other countries around the world including Nigeria. In a study of twelve Latin American countries conducted by Gutierrez and Berg (2002) it was found that the index of regulatory framework is positively associated with network development. Therefore, efficient regulatory environment is *sine qua non* for growth and development in the telecommunications sector.

2.4.1 Benefits of Telecom Market Liberalization

According to Maitra (2004), telecommunication is now universally acknowledged as one of the prime movers of the modern-day economy. It is a vital infrastructure, affecting all national and public interests. Telecommunication is generally recognized as one of the crucial infrastructural backbones of any modern-day economy. Because, it is a vital intermediate input for most final goods, an improvement in telecom services can have a significant impact on efficiency and growth across a wide range of user industries (Konan and Assche, 2004). Worldwide the telecommunications actor is being opened to competition in response to both

technological development and the failure of state-owned telecom monopolies to satisfy the growing telecommunications needs of users and economies (Global Internet Initiative, 2002). The liberalization of the telecommunications industry is intended to bring benefits to consumers and as stated by different writers, the benefits of telecommunications market liberalization include; A more efficient use of global resources lowers the cost of producing telecommunications services which benefits consumers and producers who use them as intermediate inputs. In addition, a complete liberalization mainly removes non-discriminatory market access barriers. Introducing competition in telecommunication services leads to consumer welfare in accessing telecommunication services (Torero et al., 2004).

In the case of telecommunication, improved efficiency generates economy-wide benefits as telecommunications are a vital intermediate input and are also crucial to the dissemination and diffusion of knowledge – the segment of internet and the dynamism that has bent to economies around the world is telling testimony to the importance of liberalized telecommunications services (Matto et al., 2001). International Chamber of Commerce (ICC) in its business guide to telecom liberalization (2007) summarized the benefits of telecom liberalization with its some challenges of it as below:

Table 2.1. Summary of the advantages and disadvantages of telecom liberalization

Advantages of telecom liberalization	Disadvantages of telecom liberalization
<ul style="list-style-type: none"> < Lower prices, particularly on long distance and international calls. < New and innovative services, with more reliability and greater capacity as facilitators for overall economic growth. < Foreign direct investment in telecoms sector and accompanying spend in local economy and transfer of technology, skills and business methods. < Foreign direct investment increase as a whole country's facilities and 	<ul style="list-style-type: none"> Δ Higher prices of local calls, as tariff rebalancing occurs. (short term) Δ Potential initial loss of jobs at incumbent as it becomes more streamlined and competitive. Δ Incumbent can no longer act as a 'cash cow' for the national budget.

<p>infrastructure attract FDI and liberalization gives positive signal to potential investors.</p> <ul style="list-style-type: none"> < Increased access and the opportunity to deploy more affordable universal access. < Concrete step to boost ICTs and allow citizens to join the global information society. 	
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Source: Carsten Fink, Anditya Matto, Randeep Rathindran (2002)

2.4.2 Economic Impacts of Telecommunications Networks

According to the discussion paper no.16-056, by Center for European Economic Research, the main results of the reviewed papers are as follows. The researchers apply a further separation into studies examining wireline and wireless telecommunications networks. Overall, a majority of 13 studies reviewed provide evidence that economic growth measured by GDP/GNP or GDP per capita is significantly and positively affected by landline telecommunications with all of the 10 studies with data at the country level finding such an effect for at least some of the examined countries. However, some studies also indicate that the positive effect of telecommunications is mostly present in developed countries with a high number of mainlines whereas evidence for developing countries with a lower number of mainlines is slightly less conclusive. In contrast to wireline telecommunications, mobile telecommunications networks are found to significantly enhance economic growth in developed but even more so in less developed countries. Lee et al. (2012) further demonstrate that the impact of mobile telecommunications is stronger in developing countries with less developed wireline telecommunications infrastructure.

Based on these findings, developing countries should put their focus on the further deployment of mobile telecommunications if they want to stimulate economic growth effectively. All of the studies focusing on both wireline and wireless telecommunications find at least partially significant positive impacts on productivity, firm performance or market performance. On the sectoral level, Cronin et al. (1993) and Greenstein and Spiller (1995) provide evidence that the benefits of wireline telecommunications are particularly concentrated in-service sectors which generally require higher skilled workers. In contrast, studies by Jensen (2007) and Aker (2010)

suggest that mobile telecommunications can help agricultural markets in developing countries to be more efficient and increase social welfare.

In sum, the reviewed studies provide strong evidence that telecommunications networks (fixed-line and mobile) exert positive effects on economic growth as well as national and sectoral productivity. The author also found that mobile telecommunications networks have a stronger positive impact on developing countries while wireline telecommunications networks rather benefit developed countries. Furthermore, we observe no distinguished difference between the availability (infrastructure investment) and the adoption of both wireline and wireless telecommunications networks. Almost all microeconomic studies regarding the effects of wireline and wireless telecommunication networks on growth and productivity find positive effects in line with the macroeconomic country-level studies.

2.5 The Impact of Telecommunication Sector on Economic Growth

Over the years, several theories have been postulated to explain economic growth around the world. Solow (1994) explained that there were three waves of interest in growth theory during the past 50 years, the first was associated with the work of Domar (1947) and Harrod (1948), while the second wave was the development of the **neoclassical model** (Solow, 1956) and the third began as a reaction to omissions and deficiencies in the neoclassical model.

Deriving from these waves of interests are different shades of theories propounded by different researchers in line with the economic realities of their period. Some of these theories are **Classical, Neoclassical, Exogenous and Endogenous growth** theories. However, several other variants of these theories have been developed by various researchers.

The basic idea of **classical growth theory** is that, there is a subsistence real wage rate, which is needed to maintain life and the growth in the real wage is determined by population and labour supply. Classical growth theory therefore views real GDP growth as temporary and that when real GDP per person rises above the subsistence level, population explosion brings it back to the subsistence level. Neoclassical growth theory was premised on the fact that growth comes from efficient use of labour, capital and natural resources (Solow, 1956). It assumes diminishing returns to investment and as such predicts the convergence of economic development.

Exogenous growth theory according to Solow and Swan (1956) believes that growth within an economy is influenced by factors outside the economy. That is, the growth in an economy is not a product of either the decisions made by internal operators, or by any direct policy interventions.

Endogenous growth theory refers to growth that is being influenced by the decisions made by private agents as well as their policy choices. Endogenous factors are things taking place within an economic model as opposed to external forces. The implication of an endogenous growth theory is that policies which embrace openness, competition, change and innovation will promote growth (Riley, 2012). Endogenous growth according to Riley (2012) believes that government policies can raise a country's growth rate if they lead to more intense competition in markets and help to stimulate product and process innovation and that private sector investment in research and development is a key source of technical progress. Therefore, improvements in productivity can be directly attributed to a faster pace of innovation plus investment in human capital typically in knowledge industries such as telecommunications. Endogenous growth theory was therefore advanced as a viable alternative to neoclassical growth.

Röller-Waverman (1997) found an endogenous relationship between telecommunications and growth in a more rigorous economic and econometric context. Romer (1986) argued that the rate of investment and the rate of return on capital may increase rather than decrease with a rise in the capital stock because of the intrinsic extremities. This research work is situated in the endogenous growth theory which believes that government policies can raise a country's growth rate if they lead to more intense competition in markets and help to stimulate products and processes (Riley, 2012).

2.6 Relationship between Telecommunication Development and EconomicGrowth

Both positive and negative relationships have been established between telecommunications development and economic growth around the world. Positive relationships are predominant in the developed economies while negative relationship exists in many developing economies. The trend also continued in the 2000s. For instance, Madden and Savage (2000) identified in their work that investment in telecommunications infrastructure is a good predictor of growth in transition

economies. Waverman et al (2001) also conducted a similar research; their findings concluded that the spread of modern fixed-line telecommunication networks alone was responsible for one third of output growth between 1970 and 1990 in USA economy. They also found out through the research that mobile telephony has a positive and significant impact on economic growth and this impact may be twice in developing countries compared to developed countries.

The study conducted by Li & Lyons (2008) on the effect of competition, privatization and the existence of an independent industry regulator on mobile network penetration in 30 national mobile markets, comprising 29 OECD countries and China from 1991 to 2006 confirmed that competition is generally associated with improved telecommunications performance. While the outcome of Vuong's (2008) research work also confirmed that having more advance telephone system reduces costs of doing business because there is more access to information, which lowers transaction costs and leads to more efficient operations and in the end affects the growth of the economy and strong externalities.

In 2009, Sridhar and Sridhar (2009) from their investigation of the empirical relationship between telephone penetration and economic growth, using data from developing countries found positive impacts of mobile and landline phones on national output. More recently, Gruber and Koutroumpis (2011) used annual data from 192 countries over the period 1990–2007 to assess the impact of mobile telecommunications on economic growth and recommended liberalization policies along with appropriate regulatory framework to promote mobile telecommunications penetration in countries with low mobile penetrations. While the study conducted by Aker and Mbiti (2010) on mobile phones and economic development in Africa affirmed that mobile phone coverage and adoption have positively impacted agriculture and labour market efficiency and welfare in many countries concluded that investments in telecommunications are a necessary but not sufficient condition for economic growth.

In Nigeria, Tella et al (2007) investigated the simultaneous relationship between telecommunications and economic growth. Their findings revealed that fixed lines and mobile phone penetration have significant effects on economic growth. In the same vein, Osotimehin et al (2010) conducted a study on the effects of investment in telecommunication infrastructure on economic growth and found that telecommunication infrastructure measured by tele-density and telecommunications

employment is both statistically significant and positively correlated with economic growth. But the research conducted by Onakoya (2013) from his study of the impact of economic reform on the telecommunications sector concluded that Telecommunications sector is statistically insignificant to explain GDP growth and the impact of investment in telecommunications was found to be an insignificant predictor of GDP even when the investment was lagged by one year. While that of Oji-Okoro (2010) on the relationship between FDI and Telecommunications growth in Nigeria shows a negative relationship between FDI and GDP. This was corroborated by the findings of Gold (2008) which shows a negative relationship between tele-density and GDP growth from his aggregate analysis of the impacts of telecommunication infrastructural development on Nigeria economy.

2.7 Review on Previous Studies

Recent study of Myanmar Candidate, NyoNyoSeint, (2014) studied on “Customer satisfaction on MPT internet service”. Her study aimed to explore the current internet services provision of MPT and to analyze the customers’ satisfaction in utilization of MPT internet services in Yangon. From the study, it was found that major reasons for using internet among respondents mainly to access updated information locally and internationally. The second reason for using internet among respondents was to make social network. She also found that, majority of the internet users in Myanmar started subscribing internet in 2012 and 2013. From NyoNyoSeint’s study, it was found that there was negative gap in all dimensions of service quality of MPT. The researcher recommended MPT improve skill of their employees such as communication, service provision style and to reduce the gap between expectation and perception of all customers.

Marlar Aung, (2017) had studied the Telecommunications reform in Myanmar and analyzed the situation of state-owned enterprise (MPT) with special emphasis on customer perception after the reform. She found out that as the telecommunications sector opening up, the mobile phone penetration rate in Myanmar was increased from less than 10% in 2012 up to 82% in 2016. Although the mobile phone penetration rate was increased after the reform, MPT’s market share and customer usage were decreased. She suggested that MPT need to try to increase market share and retain loyal customer by providing with new invention, innovation, promotion, good customer services and reasonable prices.

Nwe Zin Nyunt, (2018) has studied analysis of demand side on reform of public sector. Her study was aimed to investigate the reason why government wanted to restructure the telecommunication sector in current restructuring stages of MPT and to analyze the customers' loyalty and satisfaction in utilization for service plan, price, process and quality of service providing by MPT after making the reform. Her findings were MPT had 100% market share before the telecommunications reform and at the time of her study MPT has above 40% market share in Myanmar. Being reforming, MPT was facing so many challenges and crises in market share, human resources, capital, investments, technologies and customer retention. She recommended that to be a successful reform of an enterprise, there needs the facts such as employees have a good understanding of the reform process, transparent and accountable process, clear aims and objectives and commitment from senior management, regular change management workshops for employees and research and proper planning.

Recent study of Nigerian candidates Akinyomi, O. J., & Tasie, C. (2011) studied "Impact of telecommunication liberalization in Nigeria" which was published in Journal of Management and Enterprise Development, 8(2), 125-133. That study examined the impact of the telecommunication liberalization in Nigeria. The goal of the study was to examine telecom contribution to gross domestic product (GDP), volume of local and foreign direct investment, employment generation and the availability of telecom services to the majority of the citizenry. Secondary data were used for the study while descriptive analytical tools were employed in the data analysis. Findings from the study revealed that telecommunication liberalization has increased employment opportunities to many Nigerians. The numbers of people that have direct access to telecom services in Nigeria have also increased tremendously. The study further revealed that the total revenue accruing to the government in form of tax and other charges from the telecom sector has increased greatly. Moreover, the study revealed that the liberalization of the telecommunication sector has boosted local and foreign direct investment (FDI) in the country. Likewise, the contribution of telecommunication sector to real GDP has increased tremendously. Finally, the study showed that telecommunication sector plays important role in social transformation in Nigeria by bringing connectivity to remote areas and to lower-income strata of the population. The main recommendation, which is to the Federal Government of Nigeria, is the full liberalization of the power sector.

CHAPTER III

TELECOM SECTOR LIBERALIZATIONIN MYANMAR

This chapter will present the background history of telecommunications sector reform and liberalization of telecom sector in Myanmar, prior and current status of Myanmar telecom industry. Development of telecommunication sector can enhance productivity and economic development of the country. The Myanmar government has been liberalizing telecommunication sector to increase the productivity, market

penetration, reducing cost and improving services as well as related technologies and infrastructure and increase accessibility for Myanmar population.

Ensuring separation of the policy and regulatory roles of government from that of operation during sector liberalization. PPIAF's support is requested for the restructuring of the Government-owned operator, Myanmar Post and Telecommunications (MPT). PPIAF is aimed at providing further assistance to; (1) Support the business line separation of the Myanmar Post and Telecommunications from Myanmar Communications and Information Technology; and (2) Conduct a valuation of the telecommunications business of MPT so as to arrive at a balance sheet and help ready MPT for eventual corporatization.

3.1 Background of Telecommunication Services in Myanmar

In Myanmar, Postal and Telecommunication services are provided since the Myanmar King era in late 19th century. After British colonization, it was founded as the Oriental Telephone and Electric in 1884. It was changed as the Rangoon Exchange in March 1884 and again as Rangoon Telephone Limited in 1924. Since the period of British occupation, postal service, telegraph, and telephone service were offered in Myanmar. The first telegraph lines were raised in Myanmar in 1861, yet the telephone services in Myanmar started only in 1884, eight years after the invention of the unique instrument by Sir Alexander Graham Bell in 1876. In 1884, there were about 1300 telephone lines in Yangon. After the separation from India in 1937, the Directorate of Posts and Telegraph was established in Myanmar. During the same year, links to other 50 towns in provincial areas were established by making use of open wire lines and open wire carrier systems, both for telegraph and telephone services. All through the Japanese occupation between 1942 and 1945, it was organized as Burma Telegraphic communications Bureau. Rehabilitation and reconstruction of Telecommunication started in the British reoccupation period and after Independence. In the post war period, telecommunication services continued to grow. It became two separate departments in 1947 one for posts and the other for telegraphs. (<https://www.motc.gov.mm>)

In post-independence period, Ministry of Transport, Posts and Telecommunications was established in 1948. In 1956, MPT launched a project called Yangon Automation with 4 crossbar switches in Yangon and was completed in 1962. In January 1960, Posts and Telegraphs Department was established with the

combination of previous two main departments. By the end of 1962, there were 80 exchanges in the country inclusive of 4 crossbar automatic exchanges in Yangon and the total numbers of telephone lines were 14,754. In 1967, the number of telephones had grown to 21,444 and continued to grow ever since. For national long-distance communication, the first low capacity microwave transmission system was introduced in 1960 in delta area. Other national long-distance communication systems at that time were 3 and 12 channels open wire carrier systems. Both international telephone and telex services during that time chiefly used high frequency (H.F) radio communication.

Up to the early 1970s, MPT was operating with about 143 exchanges in Yangon. Among them, 6 exchanges were automatic exchanges. The total number of telephones in Yangon at that time was about 17,400 numbers and nationwide was about 22,000. During the socialist era, particularly in 1972, the Ministry was transformed as Ministry of Transport and Communications. On March 15, 1972, the Posts and Telegraphs Department was reorganized as Posts and Telecommunications Corporation in accordance with the general guideline of the Revolutionary Council to do business economically in the state economic sector. (MPT official annual report to Ministry)

The main responsibilities of telecommunication industry in Myanmar are providing public communication service for the people of Myanmar, establishing communication centers and routers with standard requirement, issuing licenses for all communications industry, collecting licenses fee from the stakeholders, monitoring communication services according Laws, Rules and Regulations, managing radio frequency resources and monitoring standard and quality of communication services in the country.

Myanmar had initiated changes in communication sector of in post 1988 period. After implementation of market-oriented reforms, Myanma Posts and Telecommunications Enterprise had established under the Ministry of Transport and Communications in March, 1989. Ministry of Transport and Communications had been reorganized and restructured into three separate Ministries, namely, Ministry of Transport, Ministry of Rail Transportation and Ministry of Communications, Posts and Telegraphs as per notification 10/92 on January 29, 1992 of the State Law and Order Restoration Council. The main objective of this restructure process is to

implement effective and successful development in economic, nation building endeavor and transport and communication projects and their respective tasks.

Subsequently, the Ministry of Communications, Posts and Telegraphs had formed on February 3, 1992 with three main departments. They were Meteorology and Hydrology Department, Posts and Telecommunications Department and Myanma Posts and Telecommunications. The Meteorology and Hydrology Department was transferred under the Ministry of Transport on August 20, 1999 for better and effective implementation of its tasks. With the new structure, both MPT (the government operator) and PTD (the regulator) would fall under the purview of Ministry of Communications, Posts and Telegraphs (MCPT). MCPT was renamed as Ministry of Communications and Information Technology (MCIT) as per notification (83/2012) on November 9, 2012 of Republic of Union of Myanmar President Office.

The Ministry of Communications and Information Technology has been modified its organization structure on April 1, 2015 as follow:

1. Minister office
2. Posts and Telecommunications Department
3. Information Technology and Cyber Security Department
4. Myanma Posts and Telecommunications
5. Myanmar Posts

By the President Office Order No. (3/2016) released on 30-3-2016, the Ministry of Communications and Information Technology has been merged with the Ministry of Transport as the Ministry of Transport and Communications.

3.2 Institutional Context of Telecommunication

Telecommunications have the power to impact countries' economic and social development, as they are a fundamental element in strengthening growth and productivity. It is essential for Myanmar's continued economic development for well being of the Myanmar population and fundamental to generating sustainable sources of economic growth. Since the commencement of mobile telecommunication in Myanmar, state-owned Myanma Posts and Telecommunications (MPT) has been serving as one and sole mobile operator across the whole country. Thus, the government set new discerning policies to adapt with telecom sector reform which can truly enhance socio-economic development to the ordinary people. According to

ITU (2011), Myanmar had an internet penetration rate of only 0.98% and just 1.3 million mobile subscribers (2.3% of total population).

In the telecommunications sector before 2014, the government is a major shareholder in MPT, which runs the fixed and wireless networks in the country as the government owned telecom operator. In addition, the government plays a key dominating role in media sector with a very few private players and opposition party organizations. To meet the objectives of the State, there will be necessary to participate private sector in communication sector. Union law No (31) for communication sector was enacted for national communications development international operator such as Ooredoo company and Telenor company were issued licenses on (5-2-2014). The local operator MyTel was issued license on 12th January 2017.

State's communications needs fulfilled by making the competition between (2) local operators and (2) foreign operators. Citizens can be used good quality telecommunications services with cheapest price. Myanmar is building its telecommunications infrastructure, involving international mobile companies and complex regulatory reform: an unprecedented process requiring corporate social responsibility that will support digital rights and may finally secure freedom of expression for the country. After initiating the public policy reform such as the liberalization on private participation in telecommunications sectorthe situation regarding connectivity have changed radically. The contribution of telecommunication sector was from (2.7) percent of GDP in 2012-2013 to (4.8) percent of GDP in 2014-2015. The tele-density was 35.7% in 2015.

As a part of the transition took place, the government has opened up a process to facilitate a public debate on new regulatory laws, aiming to ensure a free and open telecom market. The new law has been drafted and published online in Burmese and in English for a public consultation process that remained open for about 30 days, between November and December 2013. The consultation facilitated the submission of comments on the law from both national and international telecom companies, civil society organizations, and even foreign governments. This is no small feat: after years of autocratic regime, this transparent and inclusive process opens up new spaces for dialogue between governments, citizens, and international companies, and the debate on internet freedoms in Myanmar has clearly begun.

Myanmar is in transition and a window of opportunity is open for ensuring that the development of its telecom infrastructure will go hand in hand with implementing freedom of expression. Both Ooredoo and Telenor is holding accountable for this double responsibility: on the one hand they are called on to develop telecommunication infrastructures, and now they are playing a key role in ensuring that this go together with the design of a new regulatory policy agenda that prides itself on removing limits to freedom of expression and enhancing digital freedoms in the country. In the coming years, Myanmar has the opportunity to ensure real and sustainable change. Ooredoo and Telenor has properly addressed their double responsibility, now connecting Myanmar is indeed an opportunity – rather than a threat – and even an important tool to ensure positive change.

3.3 Public Sector Reforms in Myanmar

The public sector in Myanmar are the Union Government, the state and region governments, Union territories, and the state economic enterprises. The 2008 Constitution of Myanmar sets out three branches of the state: the executive, the legislature, and the judiciary. The public sector delivers core functions of government such as economic management, public infrastructure, health, education and welfare services. It also includes government business enterprises such as Myanma Oil and Gas Enterprise. In many countries, public sector employees are divided into civil servants and other government employees. Civil servants work for government ministries in public administration. Other government employees include state enterprise workers and sometimes also personnel such as teachers, health workers and police. In Myanmar, however, all public sector employees come under the Civil Service Personnel Act.

Public sector reform concerns activities that can drive systemic and sustained improvements in the public administration of the state, its role and functions, as well as the effectiveness and efficiency of core civil service institutions. Public sector reforms in Myanmar are coming from many quarters. Members of civil society organizations, farmer groups, labor unions, and student groups, as well as urban residents have protested and marched to demand that the government address needs that range from greater academic freedom to ending land grabs and frequent power outages. Public expectations of government are rising as political reforms allow new voices to speak out in independent media and new social organizations to form such

as farmers' associations and trade unions. Some of the most outspoken criticisms of the public sector have come from some surprising quarters. The typical public sector reform goals in Myanmar are to: (1) Sustain public spending (2) Improve service delivery

(3) Increase efficiency and value for money (4) Increase transparency and accountability (5) Strengthen the strategic management of government (6) Decentralize functions to sub-national government (7) Improve public sector leadership and management (8) Engage citizens.

To reduce state monopolies in economy, the privatization program has been introduced in public sector. Since most of the SOEs have been previously facing the problems: successive deficit in State budget, shortages of funds for expansion, heavy debts and inefficiency in production. To cope with these difficulties, SOEs have to be handed over to the private sector. There comes the implementation of series of reforms to remove economic distortions, floating the currency, new fiscal regulations to rationalize personal income tax and reduce consumption tax, liberalizing the telecommunication sector.

As institutional reform, some inefficient SOEs were leased and denationalized in 1992. The SOEs were facing problems such as losses, deficits in the state budget, shortages of funds for expansion, heavy debts, operating problems and inability to realize their full production capacity, the SOEs were transferred to the private sector. It began with the leasing of SOEs to foreign private entrepreneurs and inviting them to form joint ventures with the state agencies.

Thus, privatization became a part of the reform package to transform the command economy to the market-oriented system. The privatization process was initiated in 1995 established Myanmar Privatization Commission (MPC) was established to coordinate and supervise the transfer of SEEs to the private sector. After the new elective government took political power in 2011, MPC was reorganized with 18 members and the chairman of today's MPC is Vice President. The main objectives of Myanmar privatization program are to increase the efficiency of enterprises through competition and to strengthen the private sector and increase its role in economic development of the state. As soon as the formation of Commission (MPC), fifty-one SEEs under five ministers were privatized as the first phase of a systematic privatization program. By early 2003, the number of privatized State assets are 180 out of some 600 enterprises identified by 18 Ministries. Indeed, the

privatization process proceed slowly because the lack of “management expertise”, “financial capacity” in the private sector and lack the hard currency required to upgrade and operate “by the privatized enterprises.

3.4 Telecommunications Sector Reform and its Impact in Myanmar

The Republic of the Union of Myanmars one of the largest and poorest countries in the South East Asian region. The country recently emerged out of 60 years of conflict with run-down infrastructure from years of civil unrest. The government has embarked on a long-term transition from an authoritarian military system to democratic governance; from a centrally directed economy to market-oriented reforms; and from years of strife to peace. Since the Information, Communication and Technology (ICT) sector tend to be the first to arrive in post-conflict settings, it is important that government reforms and regulatory approaches facilitate these investments and begin to change country risk ratings and investor perceptions. Before telecom sector liberalization, Myanmar’s mobile cellular penetration (8 percent of population), fixed telephone lines (1.14 percent), broadband fixed lines (0.014 percent) and mobile broadband penetration (0.51 percent) were among the lowest in the world.

3.4.1 The Telecom Sector Reform

The reform of Myanmar’s telecommunications sector has the potential to lift millions of people out of poverty. Reform can also create a new paradigm for private sector participation in Myanmar during this transition period. The World Bank Group presents an integrated approach to the development of Myanmar’s ICT sector by creating the enabling policy alongside the regulatory and legal environment for a competitive telecommunications market. In order to realize the full potential of Myanmar’s telecommunication sector, large scale investments of private sector and a favorable operating environment are crucial. From the analytical point of view, it is found that several distinctive characteristics of the telecommunication sector in Myanmar have lacked of Telecommunication infrastructure, strong regulation and instability of the micro economy. Moreover, it is identified that there is national consensus enhancing the Telecommunication development including building of infrastructure but there are too many outdated telecom network systems. Some

advantages that would expedite the development are rapid increase of demand of mobile service and the government's high interest in telecommunication development.

In 1990s, the global pursuant of telecom liberalization and regulatory reform that was unparalleled to any technological led reform. The two critical outputs in the telecommunication reform were competition which is safeguarded by regulation through the creation of a regulator. The factors that have been attributed to why the telecom reform started in most countries are the revolution in telecommunication technology, technological change and urgency need to attract financial investment in this sector and the inefficiency of the monopoly operator which is the main motivation for the reform.

In early 2013, the Public-Private Infrastructure Advisory Facility (PPIAF) provided assistance to the Myanmar Post and Telecommunications Department (PTD) to build a regulatory framework to enable liberalization of the telecommunications market. PPIAF supported PTD in developing an operational sector road map and designing and implementing of a regulatory framework. PPIAF also works to enhance PTD's technical and administrative capacity to manage the reform process. This work was part of the preparation of the International Development Assistance (IDA)-financed Telecommunications Sector Reform Project (TSRP), which became effective in early 2014. The project is also helping to put in place the foundation for "eGovernment" by developing the Myanmar National Portal to provide citizens, businesses, and visitors (including foreign workers, investors, and tourists) with a single on-line window for government information and services. PPIAF and IDA will remain engaged with the Government of Myanmar for the next several years while the telecommunications sector reform is underway. Outcomes WBG and PPIAF assistance led to finalization of the key regulations providing a legal basis for implementation of sector liberalization.

With the regulatory framework and capacity-building initiatives in place, PDT launched a competitive, transparent licensing issuance process for the selected bidders. Telenor from Norway and Ooredoo from Qatar obtained their licenses in January 2014 and launched commercial services later that year. World Bank Group participation in Myanmar's telecom reform has fostered a drastic reduction in the cost of SIM cards— from \$300 in 2012 to \$1.50 in 2015—bringing mobile phone technology within reach of most of the population. Going forward, one of the key challenges for Myanmar's telecom sector reform is to ensure that a level playing field

can be established, by meaningfully separating the policy and regulatory roles of government from that of operation. PPIAF furthers this goal by supporting the restructuring of Myanmar Post and Telecommunications into a partially or wholly privatized successor organization.

To enhance the telecommunication sector development, there are many advantages or opportunities such as high demand in Telecom service, high profitability of mobile industry, increase in well-educated human resources, distribution system, new administration with new ICT policy direction, improving international cooperation environment, regional cooperation with ASEAN ,China and India, strong determination on Information, the government's high interest in Telecommunication Development, strong consensus on telecommunication infrastructure build up, fast increase in demand on mobile service, high return of telecom business, new administration with new Telecommunication policy direction, improving international cooperation environment, dynamism of ICT industry environment.

3.4.2 Challenges of Telecom Sector Reform

To transform MPT into a corporate entity, there are some weakness: limited and unstable telecom infrastructure, weak telecommunication industry base, strong regulation imposed on most of industry sector, comparatively high price, gap digital divide, intense competition from neighboring countries, instability and low efficiency in macro or economy, limited foreign investment, brain drain of ICT human resources, natural disaster, too many outdated telecom network system, lack of national information strategy and lack of skilled professional.

Myanmar has a population of around 51 million, but less than 10 percent are estimated to own a mobile phone and less than one percent are thought to have internet access. Given that SIM card penetration exceeds 100 percent of the population in many neighboring countries in Southeast Asia, Myanmar has plenty of catching up to do it is fascinating to see how many of its population jump straight into smart phone s, or just begin with regular cell phones.

Myanmar Post and Telecommunication started working on a reform plan to provide telecommunication services to the people at an international standard and at a cheap price. Myanmar Posts and Telecommunications, a state-owned telephone operator, and Internet provider Yatanarpon Teleport, plans to form joint ventures after

a tender process. To raise telephone density in Myanmar, Myanmar Posts and Telecommunication had been implemented out the expansion of Mobile 4 million in the whole country in 2012, providing of necessary traffic transportation is assisted with the use of NGN Based Trunk Gateways in the major cities and 23 Based Trunk Gateways have been installed for Mobile backhaul. As a result, telecommunication throughout the country has become smooth. In July 2014, MPT signed a partnership with KDDI & Sumitomo to join forces in order to make access to mobile telecommunication easier for everyone in the country, to extend network coverage and to provide more people with a quality network using advanced technologies. Through its wide network of retail outlets and points of sale, it aims to make telecommunication services more accessible nationwide.

The October 8, 2013 approval of the Telecommunications Law established the legal basis for sector liberalization in Myanmar. Key sets of rules have been developed within the framework of the law on licensing, competition, access and interconnection, spectrum, and numbering; these rules provide the sector's regulatory framework. A transparent, competitive licensing process was conducted in 2013 with the support of international advisors. The government received 91 expressions of interest on February 8, 2013 and issued pre-qualification criteria to all interested parties on February 21, 2013. On April 11, 2013, a total of 12 companies were pre-qualified from a long list of 22 companies that submitted their documentation.

In 2014, Qatar-based Ooredoo and Norwegian Telenor Group entered the market. The Myanmar Telecommunications Operator Tender Evaluation and Selection Committee selected Norwegian Telenor Group and Ooredoo of Qatar as winners of the bidding, for the two telecom licenses issued by the government of Myanmar. The licenses allow the operators to build and operate a nationwide wireless network for 15 years. Ooredoo began selling low-price SIM cards at a price of US\$1.5 in Yangon, Mandalay and Naypyidaw in August 2014. Prior to 2012, during military rule, SIM cards cost USD 1,500. Ooredoo began servicing the capital Yangon and major cities Mandalay and Nay Pyi Taw, but Telenor is starting out slower covering just Mandalay initially. The two overseas firms won a tender to bring mobile services in Myanmar last year, and compete with state-owned Myanmar Post and Telecommunication.

In second quarter of 2016, LTE service was launched by Ooredoo with 2100 MHz bandwidth in three major cities such as Nay Pyi Taw, Yangon and Mandalay. In

third quarter of 2016, Telenor officially launched 4G network in Nay Pyi Taw with 2100MHz. In the fourth quarter of 2016, MPT has soft launched 4G services in two capital cities, Nay Pyi Taw and Yangon with 2100 MHz band. In first quarter of 2017, Nationwide telecommunication license was secured by MyTel. In 2018, MyTel entered the market, resulting in the reduction of consumer prices and a rapid growth in the number of subscribers, as well as the expansion of the country's infrastructure. In second quarter of 2017, all the operators in Myanmar were granted permission by the Posts and Telecommunications Department which is under Ministry of Transports and Communications to use 1800 MHz band.

The new government realized that telecommunications sector has the growth potential of Myanmar and has desired to transform MPT into a corporate entity that will be independent of government funding. In addition, the private sector participation in telecommunication development expands and improves services, create incentives for efficiency and reduce the burden on sustained public resources. Liberalization in telecommunication can positively affect the economy that are reducing the cost of production and increasing revenue and employment directly and indirectly.

The liberalization of Myanmar's telecommunications sector is an integral part of lifting millions of people out of poverty. The facts will be recognized by creating competitiveness in telecom sector, generating growth in employment opportunities in the sector, provisioning of efficient and cost-effective telecom services, improving infrastructure through private sector support, meet increasing demand of telecom services, improving public access in rural and urban areas to telecom services and increasing choice of providers and services.

As regarding the telecom sector reform process in Myanmar, there are many dramatic changes in mobile telecommunication market. Opening internal mobile phone market to international mobile phone operators is the first stepping stone of Myanmar telecom sector. In reform process, it can access to better quality mobile connectivity and get the chance to own a mobile phone at an affordable price and the right to choose the mobile service they prefer, which provides better quality with cheaper charges.

Under the new government era, the development in mobile telecommunications must go together with telecommunication regulatory reforms. The development in countries characterized by political uncertainty may certainly

offer support to people to enhance the basic networks of cooperation is easier access to mobile telecommunications and easy access to information and which can enhance the transparency of the government in Myanmar, raising the living standards of ordinary people in Myanmar and pave the way for all around economic development in Myanmar by linking small and medium business enterprise to new opportunities and connect people to each other and access to online information which can change the ways of life.

3.5 Telecom Regulatory in Myanmar

The Posts and Telecommunications department is responsible for the regulatory matters of telecommunications in Myanmar. It is one of the departments under the Ministry of Transport and Communication. Before 1960, there were two departments; Department of Posts and Department of Telegraphs. It was organized as Department of Posts and Telegraphs on the 25th January 1960. On the 15th March 1972, it was organized into two organizations such as Posts and Telecommunications Department and Telecommunications Corporation i.e. Myanmar Posts and Telecommunications. The Government affirmed that the development of communications and information technology sector was the basic for Nationwide Comprehensive Development. The development process of communications and information technology sector in local such as the construction of communications network, the highest quality service by using modern technologies and local & international cooperation programs in ICT Sector is being improved by Ministry of Transport and Communications.

After Myanmar had been Independent, there are two enterprises; Postal Services and Telegraphs Services separately. In 1960, these two enterprises had been changed into departments as Department of Posts and Department of Telegraphs. After being organized as Department of Posts and Telegraphs on the 25th January 1960, Communications Sectors was implemented under the Administration of Ministry of Transport and Communications. At that time, Director of Posts and Director of Telegraphs are serving for Director General and implemented for post services in 11 divisions, wireless communications in 2 divisions and telegraphs in 3 divisions.

According to the new administration system implemented by Revolutionary Council on the 15th March 1962, Ministry of Transport and Communications was reorganized into two organizations as Posts and Telecommunications Department (which

regulated and supervised with local and international laws and rules, instructions in ICT sectors) and Telecommunications Corporation (which carried out Telecommunication services such as postal, telegraph and telephones). On the 29th January 1992, the State Law and Order Restoration Council was reorganized into three organizations as Ministry of Transport, Ministry of Railway Transport and Ministry of Communications, Posts and Telegraphs from Ministry of Transport and Communications in order to implement effectively the economic growth, comprehensive development, transportations and communications of the country.

There were two departments and one enterprise under Ministry of Communications, Posts and Telegraphs. They were Posts and Telecommunications Department, Department of Meteorology and Hydrology and Myanmar Posts and Telecommunications. On the 20th August 1999, Ministry of Communications, Posts and Telegraphs handed over Department of Meteorology and Hydrology to Ministry of Transport according to the nature of procedures. According to the laws, Rules and Regulations, Posts and Telecommunications Department is the regulatory body in ICT Sectors of our country and serves as the representative for ICT sectors and participates in international meetings and conferences hosted by international organizations.

In March 1972, Posts and Telecommunications Department was organized with (9) officials, (40) staffs and the total (49) staffs as Grade (3) department. On the 11th February 1999, with the approval of Cabinet meeting (7/99), Posts and Telecommunications Department was reorganized with (16) officials, (61) staffs and the total (77) staffs as Grade (2) department. On the 17th January 2013, with the approval of Union of Myanmar's Cabinet meeting (3/2013), Posts and Telecommunications Department was transformed with (196) officials, (623) staffs and the total (819) staffs as Grade (1) department. On the 15th January 2015, with the approval of the Union of Myanmar's Cabinet meeting (2/ 2015), Posts and Telecommunications Department was reformed with (163) officials, (566) staffs and the total (729) staffs as Grade (1) department. (www.

3.5.1 Myanmar Telecoms Sector Liberalizations and Roles of PTD

Posts and Telecommunications Department (PTD) is carrying out frequency spectrum monitoring in order not to be frequency interference by purchasing the necessary monitoring equipment. According to international standards,

Telecommunications law and rules, local and international companies competed in telecommunication services and PTD is carrying out to collect the spectrum fees and license fees. It's main responsibility is checking and monitoring to Telecommunications Services Licensee who perform or not in accord with the terms of License Agreement and carrying out QoS and Drive Test concerned with service coverage. PTD has to manage the utilization of the limited resources of the nation such as frequency spectrum, telecommunications numbering and electronic addressing effectively. It has to sustain the Telecommunications market as a competitive market, and to get access good quality telecommunications services for the public with a fair price. PTD must be enable to protect the telecommunications service providers and users in accord with the laws. It also needs to monitor Telecommunications Sector effectively, PTD is planning to establish Myanmar Communications Regulatory Commission and Universal Service Fund for implementation of universal service plans. It is trying to enable to cover the telecommunications network more than 90% of the population.

After Myanmar Telecommunications sector liberalization started in late 2012, PTD tried to adopt Myanmar Telecoms Law and it was adopted on October 2013. It consists of five Rules, namely Licensing, Interconnection, Competition, Numbering, Spectrum. Mobile user registration instruction to MNO and guidelines on Provision of International Gateway Services are included in the law. Institutional Reform of Telecommunication Sector in Ministry are separation of posts from telecoms, creation of Information Technology and Cyber Security Department (ITCS) within MOTC, independent regulator to be established (Law Drafted), corporatization of MPT (Plan) and currently joint operation with Sumitomo and KDDI from Japan.

PTD issued two new Integrated Nationwide Licenses on 5th Feb, 2014. It issued Integrated Nationwide License for MPT on 24th March, 2015 and on 12th Jan, 2017 issued Fourth Integrated Nationwide License to My Tel. PTD has already issued 4 Nationwide Telecommunications Licenses, 72 individual Network Facilities Service Licenses, 17 Network Service License, 66 Network Facilities Service (Class) Licenses, 39 Application Service Licenses, total 198 Licenses has been issued. In March 2019, PTD released public consultation document for an IMT Spectrum Roadmap Review in order to review on the need for additional spectrum capacity bands including 5G candidates' band. Feedbacks from operators, vendors and satellite

operators were received. The draft decision will be conducted for further comments and will have Updated Spectrum Roadmap in August 2019.

3.6 Telecommunication Sector Developments in Myanmar

Five years ago, Myanmar was one of the last underdeveloped telecommunication markets in Asia, however this gap is being bridged quickly with a focus on mobile and mobile broadband services and exploding growth in that sector. By 2019 Myanmar was four years into a telecoms boom that has dramatically changed the physical and technological landscape of the country, since the sector was opened to foreign competition in 2014.

3.6.1 Current Situation of Telecom Sector

Investments in the Myanmar mobile telecom industry are already taking place amongst the top four telecom companies, which are Vietnam's MyTel, Qatar's Ooredoo, Norway's Telenor, and Myanmar's Myanma Posts and Telecommunications (MPT). In Telenor and Ooredoo's case, ever since their entry in 2014, they've invested more than US\$ 2billion in the Myanmar mobile telecom industry. Similarly, MPT have pledged to invest US\$ 2billion and cooperate with Japan's KDDI Corporation and Sumitomo Corporation over the span of ten years to ensure excellent telecom services.

Fixed broadband penetration in Myanmar remains extremely low mainly due to a limited number of fixed lines as well as the dominance of the mobile platform and an unwillingness by operators to invest in fixed broadband infrastructure. However, by 2019 a number of new fixed broadband service providers were emerging, installing fiber below or above ground for fixed line broadband access. One factor behind home broadband pricing falls is the entry of the telcos into the home broadband market to compete directly with existing ISPs. Over the next five years to 2023 the market is expected to grow very strongly but overall market penetration will remain extremely low compared to other nations. Myanmar's mobile market has experienced very rapid growth in recent years, driven by the entry of three new competitors in the market, increasing the number of operators from just one to four. This has dramatically increased market competition.

By 2019 the mobile market was approaching saturation and was seeing increased competition over data prices. Average revenue per user dropped further with the entry of a fourth operator- MyTel. Mobile broadband has experienced rapid growth over the past five years, driven by rapid growth in the mobile sector. Because telco reform came very late Myanmar, it has essentially leap frogged past fixed broadband access to mobile devices access for internet services. Strong growth is predicted over the next five years however at a slower rate due to increasing maturity in the market. The mobile broadband market will be driven by increasingly faster speeds offered by the mobile operators as they roll out 4G and eventually 5G networks.

Telenor Myanmar and Ericsson trialedNB-IoT on Telenor's LTE network in Mandalay,Ruckus Networks installed a Wi-Fi-based fixed-wireless network for Myanmar Net.The number of mobile operators has increased from one to four over the past few years.This has dramatically increased market competition.The fixed broadband market remains highly underdeveloped but is now gaining momentum. Mobile broadband has experienced very strong growth over the past few years.The 2018-2019 National Planning Bill projects the Myanmar telecom industry to grow by 15 percent in the next fiscal year (October 1, 2018 to September 30, 2019). This bill was signed on September 21, 2018 by President U Win Myint. According to DawNyein Chan Thu, Amara Communications Co.Ltd's public relations and internal communications manager, one reason for this growth is attributed to the importance of having Myanmar telecom services when doing business. Telecom services allow businesses to run their operations efficiently, which makes it no surprise why its market demand continues to increase every year. As such, the rising inflow of foreign direct investments and local investments into the telecom sector in Myanmar is expected to occur.

The rising demand of telecom solutions in Myanmar have also resulted in an influx of internet service providers (ISPs). In fact, there are more than 140 licensed ISPs operating in Myanmar. As a result of this, Myanmar mobile operators are pushing down the price of their phone data packages to capture market share. For instance, in May 2017, Myanmar SpeedNet charged their customers US\$95 per month for 2mbps and a US\$250 set up fee. After one year, customers now only pay approximately US\$18 per month for 2mbps and a US\$90 set up fee, whereas customers who sign up for a six-month contract pay no set up fee.Customers not only

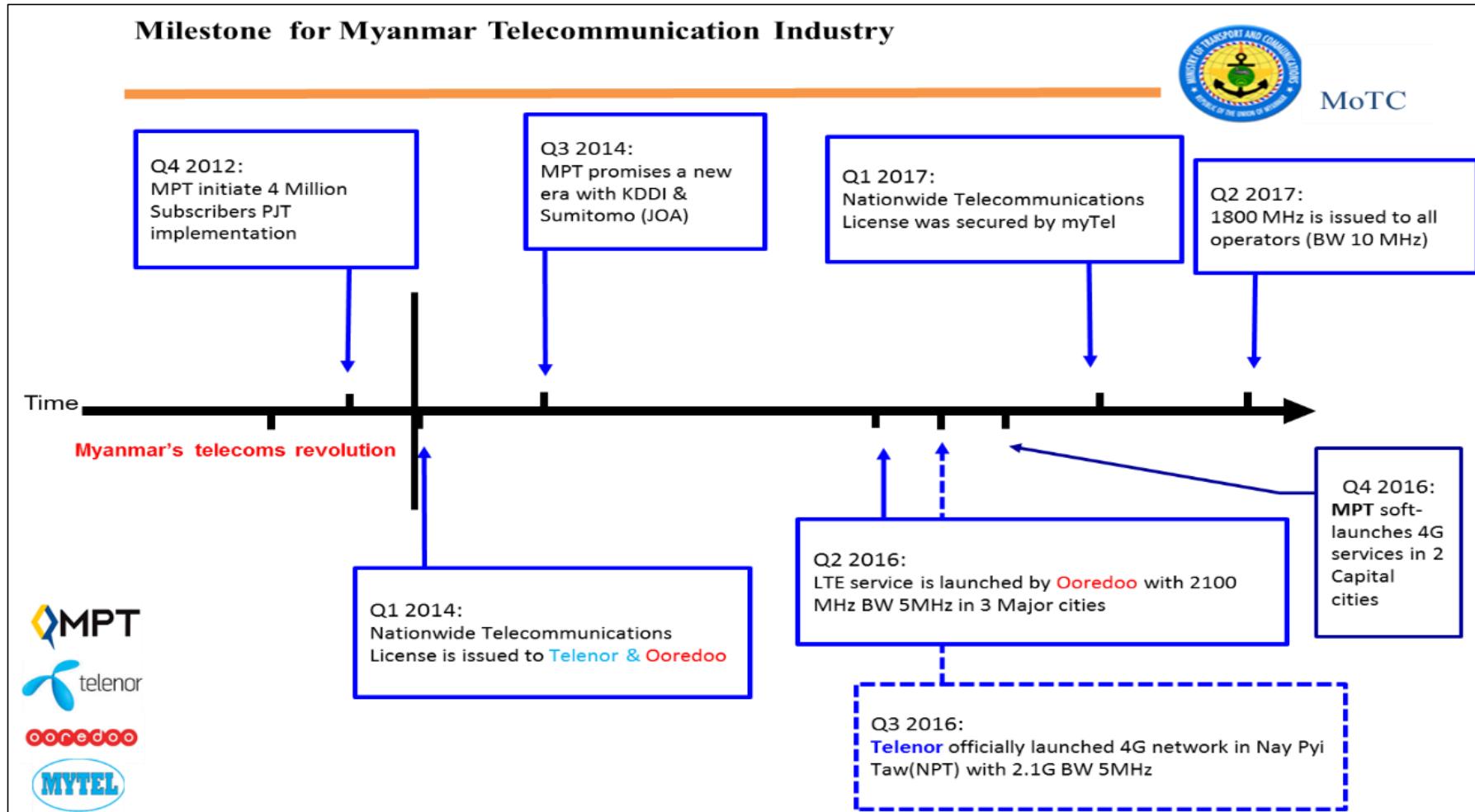
can expect to pay lower prices for the same services offered before, but also get better telecom quality and services as every Myanmar mobile operator improves their offerings to stay competitive.

Based on the data from 2018-19, mobile phone penetration rate in Myanmar has exceeded 120 percent, with the country having 56.8 million mobile phone users. What's more, a report by OpenSignal found that 4G availability in Yangon, the capital city of Myanmar, is at 80 percent. This is the fourth highest among ASEAN cities, following Bangkok, Singapore, and Jakarta.

According to the country report data as shown in Table (3.1), before telecom sector reform in Myanmar the nationwide telecom operator was only sole provider known as MPT and the telephone density was about 13%. The internet penetration was less than 2 million in that time. The national fiber backbone was 7,600 km and only SE-ME-WE-3 international submarine cable was used. There were two route such as China (Muse) and Thailand (Myawaddy) for cross border fiber and the international bandwidth was 30Gbps and had only one international gateway and the total mobile sites were less than 3000.

After making reform in telecom sector in Myanmar, there are four operators today such as MPT (Myanma Posts and Telecommunications), TML (Telenor Myanmar Ltd.,) OML (Ooredoo Myanmar Ltd.,) and MNTC (Myanmar National Tele and Communications Co.,Ltd (MyTel). The telephone density of Myanmar is 109.69%. The internet penetration is 46.82 million and the national fiber backbone is 55,160.23 kilometer and the international submarine cables has been used SE-ME-WE-3 in 2013, SE-ME-WE-5 in 2016 and AAEI projects are still ongoing. There are five cross border route such as China (Muse) and Thailand (Myawaddy), Tachileik (Three Pagoda, Mawtaung), India (Tamu) and Laos (Tachileik) and the international bandwidth is 324 Gbps and has eight international gateways and four international gateways are active. The total mobile sites are more than 19,000 sites and mobile smart phone penetration rates are 80% of the total mobile phone handsets. Nationwide coverage is 87.56% based on the country population.

Figure (3.1) Milestone for Myanmar Telecommunication Industry



Source: Myanma Posts and Telecommunications

Table (3.1)Development of Telecommunication Services and Infrastructure

Indicator	Before Telecom Reform	After Telecom Reform
Nationwide Telecom Operator	MPT	4 Nos
Number of Telephone		
Fixed	0.61 million	052 million
Mobile	6.09 million	52.64 million
Total	6.70 million	53.16 million
Telephone Density	About 13%	109.69%
Internet users / Penetration	Less than 2 million	46.82 million (90.93%)
National Fiber Backbone	7,600 km at 2013	55,160.23 km
International Submarine Cable	SEA-ME-WE-3	SEA-ME-WE-3 (2000) SEA-ME-WE-5 (13.12.2016) AAEI (ongoing project)
Cross-border Fiber	China (Muse) Thailand (Myawaddy)	China (Muse) Thailand (Myawaddy, Tachileik, Three Pagoda, Mawtaung) India (Tamu) Laos (Tachileik)
International Bandwidth	30 Gbps	324 Gbps
International Gateway	1	8 Nos (4 Nos in Service)
Mobile Sites	Less than 3000	More than 71,000 Sites
Smart phone penetration		80% of total mobile handset
Coverage		87.56% (Pop)/55.6% (Geo)

Source: Country Report Myanma Posts and Telecommunications

Table (3.2) Improvement of MPT services and User Status after 4 years of Reform

Sector	Classification	Quantity			
		FY2015	FY2016	FY2017	FY2018
Telephone	Fixed phone	523722	515193	516023	521802
	Mobile phone	24192251	36214926	39101317	62,559,468
	Density	48.00%	71.3%	79.23%	118.04%
IT	Internet Bandwidth(GB)	48.6Gbs	126.58Gbps	164.1Gbps	324Gbps
	Internet Users	14129218	19406977	19431205	~21000000
	Internet Gateway	1	1	1	1
	Packet Exchange	1	1	1	1
Exchange	International Exchange	2	2	2	2
	Auto Exchange	440	457	465	450
	Transit Exchange	10	10	10	10
	Mobile Exchange	13	13	13	13
DigitalMicrowaveStation		349	351	351	360
Earth Stations	International Station	1	1	1	1
	MPTSatellite Terminal	2597	2552	1996	1993
	VSAT Stations	12	12	12	12
International Channel	SEA-ME-WE-3+FOC+Satellite	9797	10799	7752	3673
International Submarine Cable Landing Point		1	1	1	1

Source: Myanma Posts and Telecommunications annual report data, 2018-2019

According to telecommunication annual report data (2018-2019) , MPT services and users have been improved in telecommunication sector than the status of

before reform, table (3.2). In mobile phone service, the subscriber numbers was increased from 3,413,453 in 2013 up to 53,083,441 in 2018. But In fixed line service, the subscriber number was decreased from 583768 in 2013 to 519718 in 2018. Nowadays, mobile phone can bring everywhere and use easier than fixed phone. So, the mobile phone user penetration rate is increased than the number of fixed phone users.

As the internet bandwidth (GB) was increased from 26.76 Gbps in 2013 up to 164.1 Gbps in 2017, the number of internet users was increased from 3,413,453 in 2013 up to 19435325 in 2018. The number of Auto Exchange, Mobile exchange and International channel was also more increased than the situation of before the reform.

CHAPTER IV

SURVEY ANALYSIS

Telecommunication recognized as an engine of economic growth in the sense that it can increase employment and revenue to pay for other development needs such as extension of universal services, including health care and education. Telecommunications infrastructure could lure foreign investors to countries with advanced telecommunications networks. Based on these factors, the survey questionnaire for master thesis are constructed. This chapter presents the analysis on the user's perception on the telecommunication sector liberalization in Myanmar.

4.1 Survey Profile

This thesis is targeted mainly on the people who are using Myanmar mobile telecom network in Yangon. To study the user's perception on telecommunications sector liberalization in Myanmar, the survey was conducted in Yangon. Yangon is the largest city in Myanmar. It is the capital city of the Yangon Region. It was formerly the capital city of the country through 2006. The area of Yangon region is (10276.7) square kilometer. According to 2014 Census data, total population of Yangon region is 7,360,703. Male population is 3,516,403 (47.77%) and total female is 3,844,300 (52.23%). Male to Female ratio is 91.5. Urban population is 70% and rural is 30%. Population density is 716.3 in one square kilometer. The literacy rate of those aged 15 and over in Yangon Region (96.6%). The city limits in recent years have expanded, leading to a significant increase in population. There are four districts in Yangon region, namely Eastern district, Western district, Southern district and Northern district. The population in each district are 2,366,659 in Eastern district, 969,650 in Western district, 1,417,724 in Southern district and 2,606,670 in Northern district. The status of household for using communication network and facilities in

Yangon Region are radio (25.9%), television (71.6%), fixed line phone (8.2%), mobile phone (60.9%), computer (11.1%), home internet (19.1%) and the households who cannot use for communication facility is (17.8%).

Yangon is the most developed city and the largest population city of Myanmar. Yangon population is 14.3% of the whole country population. It was chosen for survey analysis to get response from mobile phone users in Yangon because there was high mobile phone usage rate, and communication facility usage rate.

4.2 Survey Design

As telecommunication sector develops more customers use mobile phone for various reasons. Every customer use one (or) two mobile sims from service providers. Therefore, there are many mobile phone users in Yangon region. This research paper cannot cover the whole entire population of mobile phone users and exact number of mobile users is unknown for the researcher. The sampling method used in this study is nonprobability and convenient sampling method. Among the mobile phone users, 300 mobile phone users from Yangon are selected as sample by randomly. Out of 300 questionnaires distributed, only 246 mobile users from the four districts of Yangon are answered the survey questionnaires yielding the response rate of 82%. According to the results, 85 respondents live in Eastern District, 73 persons live in Western District, 42 respondents are from Southern District and 64 respondents from Northern District of Yangon City.

This survey was conducted in July'2019 by using structured questionnaire and mixture of online survey and paper distribution method. Both quantitative and qualitative research design was used in collecting data. The surveys questionnaire composed of two parts: part-1 was to obtain the personal information of the respondents and usage of mobile service and part-2 included the four sections to know the respondent's perception on telecommunication sector liberalization. The first section was about the respondent's perception on telecom improvement related with education. The second section is related with the perception of telecom sector improvement on the economic sector of the country. The third section was regarding the improvement on the health sector after telecom industry liberalization. The fourth section was about the perception on the effects of telecom liberalization on the social sector of the respondents. The survey questionnaires were shown in the Appendix.

4.3 Survey Results

The survey findings are analyzed and shown as characteristics of respondents, perception of the respondents on the telecommunication sector liberalization in Myanmar.

4.3.1 Characteristics of the Respondents

Total 264 of mobile phone users were involved in this study. The findings of respondents' characteristics were presented in Table 4.1.

Table (4.1) Characteristics of the Respondents

Particulars	No. of Respondent	Percent (%)
Gender		
Male	111	42
Female	153	58
	264	100
Age		
25 and under 25	66	25
Between 26 to 35	55	21
Between 36 to 45	65	25
Age 46 and above	78	30
	264	100
Education		
Undergraduate	62	23
Graduate	97	37
Master and Doctorate	105	40
	264	100
Occupation		
Assistant level	28	11
Supervisor to assistant manager level	41	15
Manager to executive level	163	62
Private business	32	12
	264	100
Income per month (MMK)		
Less than 200,000	59	22
Between 200,001 to 500,000	74	28

Above 500,000	131	50
	264	100

Source: Survey data, 2019

According to the survey data, male respondent is 42% and female is 58%. It is the same trend as the 2014 census data of Yangon region, number of males is a little lower than the females (male 42% and female 52%). There are four different age groups. According to the survey results, 66 respondents are under 25 years old, 55 respondents are age between 26 to 35, 65 respondents are between 36 to 45 years old and 78 respondents are 46 years and above. It can be said that most of the respondents (75%) are above 26 years and they are at mature level of the life. Therefore, their opinion is reliable for research findings.

Among 264 respondents, mostly are bachelor's degree holders, 97 respondents. Master's degree holders and Doctorate are 105 persons and 62 respondents are under graduate level. As Yangon is the most developed city and literacy rate is high, 77 percent of the respondents are graduates.

According to survey data, most of the respondents ,163 persons are Manager to executive level employees. The second most respondents, 41 persons are supervisor to assistant manager level employees, 28 respondents are assistant level employees and 32 respondents are running own business. 62 percent of the respondents are managerial level in their organization.

Regarding the income per month of the responds, 59 respondent's income are less than 200,000 MMK, income for 74 respondents are between 200,001 MMK to 500,000 MMK, the number of respondents whose monthly income above 500,000 MMK is 131, 50% of total respondents. As the most of the respondent's occupation are managers and above level, their income is relatively high compared to others.

4.3.2 Duration of the Respondent's Mobile Phone Service Usage

Survey questions are set up to know the duration of mobile phone usage by the respondents and findings are as below.

Table (4.2) Duration of Mobile Phone Service Usage

Duration	No of Respondent	Percent
Less than 1 year	5	2
1 year to 3 year	18	7
3 years to 5 years	44	17
5 years and above	197	75

Total	264	100
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Source: Survey data, 2019

Table(4.2) shows the duration of mobile network service by the respondents. The number of respondents who used mobile service in less than one year is only 5 persons, 18 respondents used between 1 year to 3 years, 44 respondents has been used mobile sims since 3 to 5 years ago and 197 persons used mobile sims more than 5 years ago. According to the survey result, 92% of the respondents are using the mobile phone more than three years. 75% of the respondents are using more than five years and they are long term users of mobile networks before opening of Myanmar telecom market. Other 25% of respondents are mobile phone users after opening up the market.

4.3.3 Choice of Mobile Service Operator

There are four mobile service operators in Myanmar telecom market, namely, MPT, Telenor, Ooredoo and My Tel. In this part, the research examines the number of the respondents with the respective operator for mobile phone service.

Table (4.3) Choice of Mobile Service Operator

Mobile Operator	No. of respondents	Percent
(a) MPT	170	64
(b) Telenor	46	17
(c) Ooredoo	34	13
(d) My Tel	14	5
Total	264	100

Source: Survey data, 2019

According to the survey data, out of 264 mobile user respondents, the number of respondents who use MPT is 170, 46 respondents are using Telenor sims, 34 persons choose Ooredoo and 14 respondents are customers of My Tel. Among the respondents, 64% are MPT users. MPT is the oldest operator and providing telecommunication services in Myanmar over 130 years ago, that is why most of the number of respondents are MPT users.

4.3.4 Influenced Person for Choosing Mobile Service Provider

Regarding the influenced person for choosing mobile service operator by the respondents, the survey findings are as in table (4.4).

Table (4.4) Influenced Person for Choosing Mobile Service Provider

AdvisedBy	No of Respondent	Percent
Family member	109	41
Friends	72	27
Retailers	8	3
Self-decision	75	29
Total	264	100

Source: Survey data 2019

Among 264 respondents, 109 respondents get the advice for choosing mobile operator from family member, 72 respondents get the advice from friends, 8 respondents choose by the advice of retailers, 75 persons decided to choose by their own sense. According to the survey result, advice from family member is the largest portion that is 41% because people trust their family members than the other persons. The second large portion for choice of mobile operator is by self-decision, 29%. The third largest portion, 27% is advice by friends, it can be noted that friends can influence by each other's.

4.3.5 Monthly Expense for Mobile phone service

Finding about the respondents' expense for mobile usage is shown in table (4.5).

Table (4.5) Monthly Expense for Mobile Phone Usage

Time (Used the service from MPT)	No. of Respondent	Percent
Less than 5,000 Kyats	41	16
Between 5000 ~ 30,000 Kyats	164	62
Between 30,001 ~ 50,000 Kyats	40	15
More than 50,000 Kyats	19	7
Total	264	100

Source: Survey data 2019

According to survey data, the total number of the respondents whose expense for mobile usage less than 5,000 MMK is 41. For usage between 5,000 and 30,000 MMK, the total respondent number is 164, the largest group. Mobile service usage for

40 respondents is between 30,001 and 50,000 MMK and 19 persons used more than 50,000 MMK for mobile phone service. Among the respondents, 62% are used for 5,000 to 30,000 MMK per month for mobile phone service.

4.3.6 Most Preferred Mobile Service and Most Use Service from MPT

Most preferred mobile service are listed in Table (4.6) and most use service from MPT is shown in Table (4.7).

Table (4.6) Choosing Mobile Service Provider as Most Preferred

Services	Frequency	Percent
Wide network coverage	145	55
Cost fairness	47	18
Better quality of service	57	22
Customer care service	17	6
Better promotion package	39	15
Brand image	65	25
High internet speed	80	30
Voice quality	34	13
Other reasons	23	9

Source: Survey data, 2019

For choosing most preferred mobile service provider, 55% of respondents chose for wide network coverage, 18% of respondents chose for cost fairness, 22% of respondents chose for better quality of service, 6% of respondents chose customer care service, 15% of respondents chose for better promotion package, 25% of respondents chose for brand image, 30% of respondents chose for high internet speed, 13% of respondents chose for voice quality and 9% of respondents chose for other reasons. According to survey results,it found that the respondents preferred the operator which can provide wide network coverage and high-speed internet service.

Table (4.7) Mostly Use Service from MPT

MPT Services	Frequency	Percent
Voice Call	92	32
Data / Internet service	120	41
SMS / Text message	80	27

Source: Survey data, 2019

About mostly used serviced by MPT, 92 respondents mostly used voice call, 120 respondents used data service and 80 respondents used SMS service. It can be obviously seen that data and internet service are more demanding among MPT mobile phone users.

4.4 Respondent's Perception and Opinion on the Improvement in Telecommunication Sector

Myanmar Telecom sector was liberalized on 2013 and government expanded the telecoms market to provide telecom services by one operator to four operators in the market. To know the users perception on the telecommunication sector liberalization in Myanmar, questionnaires concerned with the impact of telecom sector improvement on education, economic, health and social factor after 4 years of liberalization are delivered to the 300 persons who live in Yangon via online and in hand distribution.

4.4.1 Improvement in Telecommunications IndustrySupports in Education Sector

Mobile technology can provide the largest connectivity platform across the world with the help of 3G/4G technology. More importantly, it can add incredible opportunities in the education sector. It has potential to change people's lives if supported with strategic planning. Advanced wireless technologies can bring global communities closer by investing in education related programs. In this way, the telecom sector improvement can support social sector developments. Well-connected wireless devices can provide a set of opportunities for learning resources. Providing access to wireless technologies would enable the out of the class-room students practice the contemporary knowledge and skillset.

According to the survey results, 109 respondents strongly agreed with the telecom sector improvementsupports the education system to become better than before, 121 respondentsagreed and only 34 respondents are neither agreed nor disagreed. Among 264 respondents, 102 respondentsstrongly accepted that telecom sector improvement provides multimedia learning in education system easier and more effective than the that of before liberalization period.136 respondents acceptedwith that idea and26respondents wasneither accept or reject the idea.106

respondents strongly agreed, and 130 respondents agreed with telecom sector improvement encourages to learn everywhere and anytime, 26 respondents were neutral and only 0.8% disagree with that.63 respondents strongly agreed with that telecom sector improvement provide affordable lifelong learning process to everyoneand 168 respondents agreed with and 30 respondents are neutral and only 3 respondents disagreed with that.

Table (4.8) Survey results for the improvements in Telecommunications support in Education Sector

Improvement in Telecommunications support in Education Sector	Unit	Strongly Agree (5)	Agree (4)	Neutral (3)	Dis-agree (2)	Strongly Dis-agree (1)	Total	Avg: Score
supports the education system to become better than before	No:	109	121	34	0	0	264	4.3
	Percent	41	46	13	0	0	100	
provides multimedia learning in education system easier and more effective	No:	102	136	26	0	0	264	4.3
	Percent	39	52	10	0	0	100	
encourages to learn everywhere and anytime	No:	106	130	26	2	0	264	4.3
	Percent	40	49	10	1	0	100	
provide affordable lifelong learning process to everyone	No:	63	168	30	3	0	264	4.1
	Percent	24	64	11	1	0	100	

Source: Survey data 2019

4.4.2 Improvements in telecommunicationssupport in Economic Sector

From business perspective of economic activities of modern world, through the communication channel telecommunication not only has significant influences over the economy in term of GDP per capita but also serve many people by creating job opportunities. Hence increasing employment rate may also another significant factor to enhance economic development. Investment in infrastructural development

and earned revenue may have strong impact on the GDP per capita in an economy. As a result, for the potential role of the telecommunication, a modern world as well as economy without telecommunication cannot be thought for one moment.

Table (4.9) Survey Results for the Improvements in Telecommunications Support in the Economic Sector

Telecommunications support Economic Sector	Unit	Strongly Agree (5)	Agree (4)	Neutral (3)	Dis-agree (2)	Strongly Dis-agree (1)	Total	Avg Score
Increase the employment opportunities	No:	62	176	24	2	0	264	4.1
	Percent	23%	67%	9%	1%	0%	100%	
Increase the economic opportunities in local economy	No:	81	146	36	1	0	264	4.2
	Percent	31%	55%	14%	0%	0%	100%	
Increase the internal and external trade opportunities	No:	64	155	41	4	0	264	4.1
	Percent	24	59	16	2	0	100	
have an impact on the economic growth and development of the country	No:	79	143	37	5	0	264	4.1
	Percent	30	54	14	2	0	100	

Source: Survey data 2019

According to the survey results, 62 respondents strongly agreed with the telecom sector improvement increase the employment opportunities, 176 respondents agreed, 24 respondents are neutral and only 2 persons (0.8%) disagreed with that. Among the 264 respondents, 81 respondents are strongly accepted that because of telecom sector improvement, the economic opportunities increase in local economy. 146 respondents accepted with that idea and 36 respondents were neither accepted or

rejected the idea. Only one person disagreed with that. Regarding the trade opportunity, 64 respondents strongly agreed, 155 respondents agreed with telecom sector improvement increase the internal and external trade opportunities, 36 respondents were neutral and only 4 respondents disagreed with that.

Out of 264 respondents, 79 respondents strongly agreed with that telecom sector improvement have an impact on the economic growth and development of the country and 143 respondents agreed with and 37 respondents were neither agreed nor disagreed and only 5 respondents disagreed with.

4.4.3 Improvement in telecommunication supports in Health Sector

Advanced information and telecommunication technologies have an undeniable role in the field of medicine and preserve electronic medical records more efficiently and permanently in databases, and are accessible anytime. ICT can improve communication among health professionals and patients. To assess the impact of current improvement in telecommunications on health care delivery in Myanmar, some questions were constructed, and the survey findings are shown in table (4.10).

According to the survey results, 55 respondents strongly agreed, and 129 respondents agreed with the telecom sector improvement can provide better health care service than before by introducing effective health care applications, 65 respondents were neutral and 15 persons disagreed with that. 63 respondents are strongly accepted, and 174 respondents accepted that improvement in telecom sector can support to be able to know the information about diseases and preventive measurements via mobile internet. 24 persons were neither accepted or rejected the idea. Only 3 persons disagreed with that. Regarding the opinion for the reduction of the mortality rate and morbidity rate, whether telecom sector can provide the information related with maternal and child health care procedures, 45 respondents strongly agreed, 127 respondents agreed, 72 respondents were neutral, 17 respondents disagreed, and 3 persons were strongly disagreed with that.

In the survey questionnaire, the researcher asked the respondent's opinion whether the improvement of telecommunication sector enhance the quality of health care service providers such as private hospital, clinic and government hospital. 56 respondents strongly agreed, 127 respondents agreed with and 65 respondents were neither agreed nor disagreed and 16 respondents disagreed.

The researcher found out the respondent's opinion whether the improvement in telecommunication sector have positive impact on health of local and indigenous people. For that question, 52 respondents strongly agreed, 136 respondents agreed with and 67 respondents replied as don't know and 9 respondents disagreed on that matter. According to the survey results, there are still rooms for improvement in healthcare provision and awareness of people in Yangon.

Table (4.10) Survey Results for Improvements in telecommunicationssupport in Health Sector

Telecommunications support in Health Sector	Unit	Strongly Agree (5)	Agree (4)	Neutral (3)	Dis-agree (2)	Strongly Dis-agree (1)	Total	Avg Score
provide better healthcare service by introducing effective health care applications	No:	55	129	65	15	0	264	3.8
	Percent	21	49	25	6	0	100	
supports the information about diseases and preventive measurements	No:	63	174	24	3	0	264	4.1
	Percent	24	66	9	1	0	100	
reduces the mortality rate and morbidity rate	No:	45	127	72	17	3	264	3.7
	Percent	17	48	27	6	1	100	
enhances the quality of health care service providers	No:	56	127	65	16	0	264	3.8
	Percent	21	48	25	6	0	100	
positive impacts on health of local and indigenous people	No:	52	136	67	9	0	264	3.9
	Percent	20	52	25	3	0	100	

Source: Survey data 2019

4.4.4 Improvement in telecommunication supports in Social Sector

Telecommunication has played a significant role in modifying social relationships. The transformation of social media from telegram to telephone to SMS to MMS has seen a significant transformation in the form of social networking and is set to witness robust growth. Introduction of 3G and 4G cellular networks in various countries will further fuel the social transformation to grow into new levels. Telecommunication plays the central role in cultural conglomeration and allows access to global music, art forms and news. Distribution of information is nowadays instant, and people can choose from different sources. It can't be denied that advanced telecommunications have empowered the global population with more choices in every field of daily life. Globalization has set the platform for such interactions on a large scale and growth in the field of telecommunication is set to further accelerate the process.

In the survey questionnaire, there are 4 statements which exploring the opinion of respondents about the improvement in telecommunication support social sector in four different approaches. The first statement is improvement in telecommunications enhances the standard of living better than before. 67 respondents willingly agreed to that, 139 respondents agreed, 50 respondents stayed as neither agreed nor disagreed and 8 persons disagreed. According to survey data, we can say that improvement in telecommunications enhances the standard of living better than before.

The second statement is improvement in telecommunications upgrades the personality and attitudes of the citizens. 50 respondents willingly agreed to that, 102 respondents agreed, 75 respondents were neither agreed nor disagreed, 35 persons are disagreed, and 2 respondents are strongly disagreed to that statement. Because there are some negative impacts which cannot be avoided. The recent years have seen a phenomenal growth in pornography and terrorism with the help of advanced telecommunication methodologies in Myanmar.

The next statement is improvement in telecommunications encourages the ability to contribute to the local charity program. 49 respondents willingly agreed to

that, 159 respondents agreed, 56 respondents stayed as neither agreed nor disagreed and there was no respondent disagreed for that statement.

The last statement is to explore the respondents' opinion that improvement in telecommunications enhances the local community by understanding the CSR (corporate social responsibility). Out of 264 respondents, 50 respondents strongly agreed to that, 139 respondents agreed, 61 respondents were neutral, neither agreed nor disagreed and 14 respondents disagreed for that statement. The neutral and disagreements persons are lack of awareness on CSR and charity program which the mobile phone users can contribute via mobile top up providing telecommunications operators in Myanmar.

Table (4.12) Survey Results for Improvement in Telecommunication Supports in Social Sector

Improvement in Telecommunication in Social Sector	Unit	Strongly Agree	Agree	Neutral	Dis-agree	Strongly Disagree	Total	Avg Score
enhances the standard of living better than before	No:	67	139	50	8	0	264	4.0
	Percent	25%	53	19	3	0	100	
upgrades the personality and attitudes	No:	50	102	75	35	2	264	3.6
	Percent	19	39	28	13	1	100	
encourages the ability to contribute to the local charity program	No:	49	159	56	0	0	264	4.0
	Percent	19	60	21	0	0	100	
enhances the local community by understanding the CSR (Corporate Social Responsibility)	No:	50	139	61	14	0	264	3.9
	Percent	19	53	23	5	0	100	

Source: Survey data, 2019

4.4.5 General Opinions and Suggestions of the Respondents

Some respondents agree that there is the improvement in many aspects of Yangon citizen's life. The improvement of telecommunications sector has a great positive impact on people's lifestyle today and it can contribute the development of social sector in some extent. Because of telecom sector improvement, the citizens can communicate and access to internet easily, can search whatever they want to know and can learn everything what they want to learn. Most certainly and significantly, telecommunication sector improvement has saved the time, money and easy to share the information with less energy. The improvement of the said sector can have two effects: negative and positive one. In social and cultural sector, telecom development can cause cybercrimes and over use in social media can make the young generation into other undesired culture such as under adult dating. Blaming culture becomes worse than before the liberalization in telecommunication sector. Some respondents suggested that liberalization should be together with responsibility on society. Hate speech, porn content and state security matter should be carefully monitor and censored by related department. It is required to educate the community to use ICT effectively and efficiently. There should have some mechanism to control the usage of internet for children.

All the operators need to improve customer service and taking aware of the customers need and wants. They should be always focused on customer care with affordable service charge rate, and quality of service. Service charges are still expensive in Myanmar for telecommunication system and need to improve customer service sector by all telecoms service providers. The concerned ministry should educate the people about the Myanmar Telecommunications law.

CHAPTER V

CONCLUSION

5.1 Findings

This thesis has investigated the effects of the telecommunications sector liberalization in Myanmar. When analyzing the Myanmar telecom industry, it highlighted the whole process of reform from 2013 till now. The telecom sector reform process is still on-going according to the government policy. The corporatization and privatization of the telecommunications is also still on-going and restructure in any enterprise aims to make the organization more ‘cost effective’, ‘efficient’ and ‘enhance customer service delivery. However, the improvement of the productivity and the performance of employees are still flawed.

Before the telecommunications reform, MPT was only sole operator in Myanmar and it influenced the whole telecom market and owned by 100% market share. After 4 years of liberalization, the market share are spreading and changing time to time for four operators. Currently, MPT has about 40% market share in Myanmar. Telenor has around 38 % market share and Ooredoo 18% and My Tel 4%. Being liberalization in telecommunication sector, MPT was facing so many challenges and crises in market share, insufficient human resources and capital endowment, investments, updated technological supporting and customer retention. Therefore, MPT has been working a joint Operation with one Japanese company, KSGM in order to sustain market share and services quality.

Telecommunication sector provide the basic and essential element for every sector development because no business activity that can be out of touch with telecommunication. In this study, there are 264 respondents involved (female 153 and male 111 respondents). Most of respondents are totally agree with the concept that

there are positive effects of telecommunication sector liberalizations in every aspects of Myanmar citizens life. But one finding is all the survey questions are leading to positive impacts but there are a lot of negative impacts such as increasing cybercrimes and cyber bullying, family divorce by mis using of social media, children are immersed in playing internet games. Regarding analysis on the effect of telecom sector liberalization on educational factor in Myanmar, most of respondents (87%) are accepted the improvement in telecommunication sector supports the education system to become better than before. 90 % respondents accepted that telecom sector liberalization provides multimedia learning in education system easier and more effective. Most of the respondents (more than 87%) agreed with that telecom sector improvement encourages the citizens to learn everywhere and anytime with affordable service fees and provide affordable lifelong learning process to everyone.

Regarding analysis on the effect of telecom sector liberalization on economic factor in Myanmar, 90% of the respondents are reveal that the telecom sector improvement increases the employment opportunities. 86% of respondents are accepted that because of telecom sector improvement, the economic opportunities increase in local economy. Regarding the trade opportunity, 83 % of respondents are agree with the statement of telecom sector improvement increase the internal and external trade opportunities. 222 out of 246 respondents are agree with that telecom sector improvement have an impact on the economic growth and development of the country. On the other hand, there are some costs for using mobile internet specifically incur both money and time consuming.

In the aspect of health sector, 70 % of the respondents accept that the effects of telecommunication sector liberalization and the telecom sector improvement can provide better health care service than before by introducing effective health care applications, 90 % respondents are accepted that improvement in telecom sector can support to be able to know the information about diseases and preventive measurements via mobile internet. 172 out of 264 respondents agreed that for the reduction of the mortality rate and morbidity rate, telecom sector can provide the information related with maternal and child health care procedures. 183 respondents accepted that the improvement of telecommunication sector enhance the quality of health care service providers such as private hospital, clinic and government hospital. 72% of the respondents are agree with that the improvement in

telecommunication sector have positive impact on health of local and indigenous people.

In relating with the social factor, most of the respondents, 206 out of 264, 88% of the total responds accepted the improvement in telecommunications enhances the standard of living better than before. More than half of the respondents, 152 persons agreed that telecom sector liberalization has affected on upgrading the personality and attitudes of the citizens. Most of the respondents (79%) are accepted the improvement in telecommunications encourages the ability to contribute to the local charity programlike donation fund for flooding can made via mobile top up. There isno respondent disagreed for that statement.The opinion of 189 respondents is improvement in telecommunications enhances the local community by understanding the CSR (Corporate Social Responsibility).According to the general comments about social affects, there are many other side effects such as threads the family life as most of family free time are consuming by using social media, youth generations are playing games and could not manage time effectively.

5.2 Recommendations

Telecommunication sector liberalization is affected on nation development in every aspect. But the telecom market is still thriving in Myanmar with all its infrastructure and operational challenges affecting the rollout plans. MNOs, Mobile Network Operatorsneeds to deal with a new telecommunication law, spectrum issue and power availability during their network construction. At the same time, MNOs also need to focus on seizing a new customer and increase their market penetration. Poor infrastructure, site acquisition and power availability remain main challenges during a site construction and rollout process.Removing obstacles to competition and eliminating anti-competitive practices is needed to come into existence in Myanmar telecom sector. Rules and regulations familiar with the foreign direct investment is also important while building an effective and efficient telecommunication infrastructures and facilities. Not only developing skilled personnel in government, industry and society but also educating public in connection with technical advancements is also needed to be implemented by the government.

Government is needed to intervene in the telecom sector's infrastructural and technological advancements. Only government able to regulate the telecom sector and provide the access and use of affordable telecommunication facilities and services.

Thus, providing the telecommunication services to rural areas for ethnic minorities and socially disadvantaged areas can be done only by the government. Role of independent regulator and creation of fair competition is imperative for sustainable growth. Moreover, government is responsible for promoting and protecting the interests of consumers of telecommunication services. It needs to be faster in internet speed, fares to be cost-effective and personal data of the user are to be kept as the confidential.

And government also needs to ensure the efficient use of national resource for citizens concerning with telecommunication facilities. With only government's efforts to provide and ensure the telecommunication infrastructure and services will not be efficient enough. Thus, inviting foreign direct investment into telecom sector development is also essential. Competition, not regulation, is the best way to spur innovation and the development of new services. A competitive market place is the most efficient way to lower prices and increase value for telecom sector's consumers.

In furthering the principles of free and fair competition in all telecommunications markets, it must be recognized that some markets are more open than others. More competitive Myanmar telecommunications markets will promote Myanmar technology advancements, local jobs opportunities and investment opportunities, national competitiveness, sustainable economic development, and improve the quality of Myanmar people's lives more effectively than regulation. Competitive communications markets safeguarded by effective antitrust enforcement in Myanmar will foster Myanmar public to be able to access to advanced telecommunications technologies. Achieving free and fair competition requires strict parity of marketplace opportunities and responsibilities on the part of incumbent telecommunications service providers as well as new entrants into the telecommunications market place that any responsibilities placed on providers should be the minimum required to advance a clearly defined public policy goal.

Myanmar people are now aware of the new telecommunication technologies and the contribution it can make to the economic and social developments of the people and the communities as a whole. There has been enormous increasing in telecommunication sector liberalization in Yangon in recent years. However, laws and policy to control misuse and cyber bullying is not enough provide comprehensive approach. Thus, it should be enforced to synchronize.

Currently, all the operators are facing market competition with lesser revenue and they need to maintain their market share and increase revenue to cover the operational expenses. So, all the operators should provide their customers with better services with reasonable price and better network system. And then, they need to promote their service especially in internet service and increase customer's satisfaction for long term sustainability. All the operators need to follow international telecommunication standard.

REFERENCES

- (Knorr, 2002), "Liberalization in Telecommunications", HWWA Discussion paper 162, HWWA-Institute for Wirtschaftsforschung-Hamburg, 2002.
- Adlung, R. 2007, "The Contribution of Services Liberalization to Poverty Reduction: *What Role for the GATS?* Staff Working Paper ERSD-2007-01. Geneva: World Trade
- Afeikhena Jerome and Ademola Ariyo, (2004), "Infrastructure Reform and Poverty Reduction in Africa", African Development and Poverty Reduction: The Micro-Macro Linkage, Forum Paper 2004
- Aker J. C and Mbiti I. M (2010) "Mobile Phones and Economic Development in Africa." CGD Working Paper 211. Washington, D.C.: Center for Global Development. <http://www.cgdev.org/content/publications/detail/1424175>
- Akinyomi, O. J., & Tasie, C. (2011). Impact of telecommunication liberalization in Nigeria. *Journal of Management and Enterprise Development*, 8(2), 125-133
- Aye Yu Lin (2012), "ICT Infrastructure and Mobile Communications Development in Myanmar" Unpublished MPA Thesis, Yangon University of Economics.
- Beesley, M.E. & Littlechild, S.C. (1983). "Privatization Principles, Problems and Priorities", Lloyds Bank Review, Vol. 149 Pp.1-20.
- Berhin et al., (2005), "Sector-specific regulation in European electronic communications – meant to disappear? Article in Info VOL. 7 NO. 1 2005, pp. 4-19, Q by Emerald Group Publishing Limited, ISSN 1463-6697. February 2005
- Berhin, D., Godart, F., Jolles, M., and Nihoul, P., 2005. "Sector-specific regulation in European electronic communications – meant to disappear? Article in Info VOL. 7 NO. 1 2005, pp. 4-19, Q by Emerald Group Publishing Limited,

- Campos, N.F.(2006) “The Impact of Information and Communication Technologies on Economic Growth in Latin America in an International Perspective” Middlesex, UK: Brunel University, Centre for Economic Development. Organization, Economic Research and Statistics Division.
- Carsten Fink, AndityaMatto, RandeepRathindran (2002) “An assessment of telecommunications reform in developing countries” Published Research Working Paper, Washington DC.
- CarstenFink,AadityaMattoo, and RandeepRathindran,(2002), “An Assessment of Telecommunications Reform in Developing Countries”, World Bank Policy Research Working Paper 2909, October 2002
- Cave, M. and Crandall R.W. (2001) Telecommunications liberalization on two sides of the Atlantic; AEI-Brookings Joint Center for Regulatory Studies. Washington D.C.
- Cho ChoThein (2015), “State Owned Enterprises Reforms in Myanmar” (Case Study on Telecommunication Services), KRI-KDI MRH Regional Workshop Paper, Thailand.
- Crandall, R.W. and Jerry H., (2000). Competition in U.S. Telecommunication Services: Effects of the 1996 Legislation in Deregulation of Network Industries: Brookings.
- European electronic communications meant to disappear Info”, *The journal of Policy, Regulation and strategy for telecommunications*.
- Gardner, S.P.N., (2004). The effect of commercialization, privatization and liberalization on universal access in South Africa. Master’s thesis, Rhodes University.
- Gensollen Michel (1995), “The Role of Telecommunications in Economic Development”, Volume 50, No.5, pp. 315-324.
- Gold, (2008) “Aggregate analysis of the impacts of telecommunication infrastructural development on Nigeria economy” *Proceedings of the 1st International Technology, Education and Environment Conference(c)* African Society for Scientific Research (ASSR)
- Greene, W (2004) “The liberalization of India’s Telecommunications Sector: Implications for trade and investment”. *United State International Trade*

- Gruber, H. and Koutroumpis, P (2011) “Mobile telecommunications and the impact on economic development” *Economic Policy* July 2011 pp. 387–426
- Gutierrez and Berg, (2002), “The Impact of the Regulatory Process and Price Cap Regulation in Latin American Telecommunications Markets”, in *Review of Network Economics* 2(3):270-286 · January 2003
- Hieronymi, O. (1999), “The Role of Telecommunications in Promoting Social and Cultural Cohesion. Telecommunications and Economic Growth”, Geneva: ITU.
- Hughes. E.O., (2003). “Public Management and Administration - *An introduction*”, Third Edition, *Palgrave Macmillan, New York*.
- Ikpe, E. H., &Idiong, N. S. (2011). “Liberalizing Telecommunication in Nigeria: Argument for a Democratic Model”, *Journal of social Sciences*, 26 (3): 211-216.
- Indicators Database Geneva: ITU.
- International Chamber of Commerce, 2007, “Telecoms liberalization an international Business guide for policymakers, Second Edition”, The world business organization course. *Albert 1er 75008 Paris, France*.
- International Telecommunication Network (ITU) 2007, World Telecommunication / ICT
- Ito and Krueger, (2000), “Introduction to Deregulation and Interdependence in the Asia-Pacific Region”, Published in January 2000 by University of Chicago Press© 2000 by the National Bureau of Economic Research in NBER Book Series East Asia Seminar on Economics.
- ITU (1995), “Report for Telecom reform in other countries” *Geneva*.
- Kessides, (2004), “Reforming Infrastructure, Privatization, Regulation, and Competition”, A World Bank Policy Research Report, *A co-publication of the World Bank and Oxford University Press*.
- Konan and Assche, (2004), Kessides, I. N., 2004. Reforming infrastructure: Privatization, regulation and Competition, World Bank and Oxford university press, retrieved from

- Kotler, P. and Keller, K. (2006) "Marketing Management", 12th Edition, *Pearson EducationInc*, New Jersey.
- Laffont and Tirole (2000), "Competition and Regulation in Telecommunications: Examining Germany and America", European Journal of Political Economy, 2002, vol. 18, issue 3, 609-610
- Laffont, J.J. and Tirole J., (2000) "Competition in Telecommunications. Cambridge, London
- Levy and Spiller (1996), Levy, B., and Spiller, P. T., 1996. "Regulations, Institutions, and Commitment". Cambridge: *Cambridge University Press*
- Li, Y. & Lyons, B. (2010), "An Empirical Analysis of Market Structure, Privatization and Independent Regulation on Mobile Network Penetration", *paper presented at the CRESSE Conference*, Crete, 2nd –4th July, 2010.
- Luke Haggarty, Mary M. Shirley and Scott Wallsten (2012), "Telecommunication reform in Ghana" *Published Research Paper, Ghana*.
- Madden, G. Savage, Scott J. (2000) "Telecommunications and economic growth", International Journal of Social Economics, Vol. 27 Issued: 7/8/9/10
- Maitra, A. K., (2004), "Working Papers on Information Systems, Privatization, Liberalization and Regulatory Reform: The Case of Telecommunications Case", *Western Reserve University, USA*.
- MarlarAung (2017), "A Study on Telecommunications Reform in Myanmar", Unpublished MPA Thesis, Yangon University of Economics.
- Matto et al., (2001), "Mattoo, Aaditya, RandeepRathindran, and Arvind Subramanian., 2001. Measuring Services Trade Liberalization and its Impact on Economic Growth", *An illustration*.
- Mattoo, Rathindran, & Subramanian, 2006, Measuring Service Trade and Liberalization and its Impact on Economic Growth", *Policy Research Working paper series 2655, The World Bank*
- Maureen Fatiaki Karan (2010), "Public Sector Reforms in Fiji: A Case Study of Telecom Fiji Limited", Published Research Paper, The University of South Pacific.
- Ministry of Transport and Communications "Status of communication sector improvement" Unpublished Ministry Report, FY-2018.

- MUTUNGI, 2010, “ Influence of Telecommunication Industry Liberalization on Technological Innovation Strategy of Safaricom,Kenya”, *Unpublic research project for Master of Art, The University of Nairobi.*
- Myanmar next Asian telecommunication green field (2013), “Telecom Market Research Paper” Deloitte Southeast Asia Ltd, UK.
- Myanmar Post and Telecommunication “Annual report 2012 to 2018”
- Myanmar Post and Telecommunication “Country report (2017 to 2018)”
- Ndukwe (2000), “Environmental Law and Underdevelopment in the Niger Delta Region of Nigeria”, *International Multidisciplinary Journal, Ethiopia, Vol. 5 (5), Serial No. 22, October, 2011*
- NweZinNyunt(2018), “Demand Side Analysis On Reform Of Public Sector (Case of Myanma Posts And Telecommunications)”, Unpublished MPA Thesis, Yangon University of Economics.
- NyoNyoSeint (2014), “Customer satisfaction on MPT internet service”, Unpublished MPA Thesis, Yangon University of Economics.
- OECD. 1995a. “International Infrastructure Competition: Towards a Policy Framework”.OCDE/GD(95)133. Paris.
- OECD. 1995b. *Universal Service Obligations in a Competitive Telecommunications Environment*, Paris.
- OECD. 1995c. “International telecommunications. A Review of Issues and Developments”.OCDE/GD(95)107. Paris.
- Onakoya (2013), “Impact of Economic Reform on the Nigerian Telecommunications Sector”; *Advances in Management & Applied Economics*, vol. 3, no.3, 2013, 141-154
- Osborne, D.E. &Gaebler, T. (1992). “*Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector*”. New York: Penguin Books.
- Ospina (2002), “Telecommunications for All: does liberalization help” , Development Studies Institute, *London School of Economics and Political Science, working paper* No.02-29, published on April,2002
- Oyejide A. &Bankole A. (2001). “Liberalization of the Services Sector in Nigeria: Implications of Unilateral and Multilateral Approaches”. A Paper Presented at the African Economic Research Consortium on Services Sector

Liberalization in Nigeria

- Parkin, M., Powell, M. & Matthews, K. (1997). Economics (3rd edition), England: Addison Wesley Longman Limited.
- Paulrajan and Harish Rajkumar (2011), *Service Quality and Customers Preference of cellular Mobile Service Providers, The journal of Technology Management Innovation*, Volume 4, No.4, pp.1-9.
- Prizzia, R. (2001). "Privatisation and Social Responsibility: A Critical Evaluation of Economic Performance", International Journal of Public Sector Management, Vol. 12 No.5, Pp.450-64.
- Richard O. L., Joseph S. K. & Randolph J. M. (2003). *Trends in the competitiveness of Telecommunications Markets: Implications for Deregulation of Retail Local Services, the Progress & Freedom Foundation*. The Progress and Freedom Foundation.
- Riley G. (2012) Sources of Economic Growth – Overview; Available at: <http://www.tutor2u.net/economics/revision-notes/a2-macro-theories-of-economic-growth.html>. Access online on 5/18/13
- Role for the GATS?" *Staff Working Paper ERSD-2007-01. Geneva: World Trade Organization*
- Röller-Waverman (1997), Röller, L-H., & Waverman, L. (1997): "The Impact of Telecommunications Infrastructure on Economic growth and Development", *Working Paper WZB*, Berlin.
- Scott Wallsten (1999), "An Empirical Analysis of competition, Privatization, and Regulation in Telecommunication market in Africa and Latin America", Published Research Paper, Stanford University.
- Shiu A. and Lam P. (2008), "Relationship between Economic Growth, Telecommunications Development and Productivity Growth: Evidence around the World. Paper presented at the 17th Biennial Conference of the International Telecommunications society in Montreal on 25 June 2008.
- Sridhar, K. S., Sridhar, V. (2007), "Telecommunications Infrastructure and Economic Growth", Evidence from Developing Countries Applied Econometrics and International Development, July-December 2007, v. 7, issue. 2, pp. 37-56

- Talbot, C. (2001). "UK Public Services and Management (1979-2000): Evolution or Revolution?", *International Journal of Public Sector Management*, Vol. 14No.4, pp.281-303.
- Telecoms Liberalizations, International Business Guide to Policy Makers, May 2004)
- Tella S. A, Amaghionyeodiwe L.A and Adesoye, B. A (2007) Telecommunications Infrastructure and Economic Growth: Evidence from Nigeria.
- Torero et al., (2004), "Torero, M., Schroth, E., Font, P. A. 2004. "The impact of telecommunications Privatization in Peru on the welfare of urban consumers, *Economia*", 4 (1),
- Vuong Victor, (2008). Mobile Telecommunication Impact on Developing countries' Growth; Bachelor Thesis, International Economics & Finance. Faculty of Economics and Business Administration, Tilburg University.
- Wallsten (2001), "An Econometric Analysis of Telecom Competition, Privatization, and Regulation in Africa and Latin America", Econ Paper, *Journal of Industrial Economics*, 2001, vol. 49, issue 1, 1-19
- Wallsten (2004), "Privatizing Monopolies in Developing Countries: The Real Effects of Exclusivity Periods in Telecommunications", Article in *Journal of Regulatory Economics* Vol 26, February 2004
- William H. Melody (1999), "Telecom reform progress and prospects" Deft university of Technology and LIRNRNRT, Washington DC.
- Wolcott and Çağiltay,(2001)." Telecommunications, Liberalization, and the Growth Of the Internet in Turkey." *The Information Society*, 17: 133-141.
- Zheng, S. and Ward M.R. (2011) "The effects of market liberalization and privatization on Chinese telecommunications". *China Economic Review* 22 (210–220).

WEBSITES

1. <http://mpt.com.mm/en/mobile-services/international-roaming-en/>
2. <http://www.analysysmason.com/Research/Content/Country-reports/Myanmar-country-report-RDRP0/>
3. <https://www.ptd.gov.mm/LicenseslistDetail.aspx?id=2152>
4. <https://www.telenor.com/wp-content/uploads/2018/10/Telenor-Q1-2019-report-51dc771f45a9d935c5ded933f7d6f2e4.pdf>
5. <https://www.ooredoo.com/wp-content/uploads/2015/10/IR-report-Q1-2019-Final.pdf>
6. <http://www.mpt.com.mm/myanmar/telecom/myanmar internet>
7. <http://www.study mode.com/essays/the role of the telecommunication in our life/2009>
8. <http://www.telxcomputers.com/the role of telecommunication in business /2014>
9. <https://asiafoundation.org/wp-content/uploads/2015/08/Conceptualizing-Public-Sector-Reform-in-Myanmar.pdf>
10. <https://www.gsma.com/mobilefordevelopment/wpcontent/uploads/2019/02/Mobile-phones-internet-and-gender-in-Myanmar.pdf>
11. <https://www.mmtimes.com/business/technology/>
12. <https://www.motc.gov.mm>
13. <https://www.opendemocracy.net/andrea-calderaro/connecting-myanmar-telecom-reform-and-political-transition>
14. <http:// www.mpt.com.mm>

15. <http://www.academia.edu/>

APPENDIX

Questionnaires for Effects of Telecom Sector Liberalization

This questionnaire-survey is intended to be used as primary data for master's thesis project of my Master of Public Administration Course under the Yangon University of Economics. It will not take more than 30 minutes to complete the questionnaire. I will kindly note that your responses are strictly confidential and will not be used for any other purpose than academic purpose.

Part A. Questionnaires based on demographic data of respondents

Please answer by circling the number which best corresponds to your opinion. Read the questions carefully and consider that your chosen alphabets correspond with your opinion.

1. Gender

(a) Male

(b) Female

2. Age Group

(a) Age 25 and Under 25

(b) Between 26 to 35

(c) Between 36 to 45

(d) Age 46 and above

3. Education

(a) Undergraduate

(b) Graduate

(c) Master degree

(d) Doctorate degree

(e) Other

(if other, please specify)

4. Income Per Month

- (a) Less than 200,000 MMK
- (b) Between 200,001 MMK to 500,000 MMK
- (c) Between 500,001 MMK to 700,000 MMK
- (d) Above 700,001 MMK

5. Job Position

- (a) Assistant level
- (b) Supervisor level
- (c) Assistant Manager level
- (d) Manager level
- (e) Above Manager level
- (f) Other (if other, please specify

6. Address

Where do you live?

- (a) Western District
- (b) Eastern District
- (c) Southern District
- (d) Northern District

7. How long have you use your mobile phone service?

- (a) Less than 1 year
- (b) 1 year to 2 year
- (c) 2 year to 3 years
- (d) 3 years to 5 years
- (e) 5 years and above

8. Please indicate which type of purpose are you using for mobile/ auto phone

- (a) Business Affairs
- (b) Social Affairs

9. Which mobile operator are you using for mobile sim?

- (a) MPT
- (b) Telenor
- (c) Ooredoo
- (d) My Tel

10. Why do you choose your mobile service provider as most preferred or primary carrier? (More than one answer is applicable)

- (a) Wide network coverage
- (b) Cost fairness
- (c) Better quality of service
- (d) Customer care service
- (e) Better promotion package
- (f) Brand image
- (g) High internet speed
- (h) Voice quality
- (i) Others (pls. specify)

11. From whom advice influenced on you to make the decision for choosing your current mobile service provider (SIM)?

- (a) Family member
- (b) Friends
- (c) Retailers
- (d) Other

12. How much do you spend in a month for using mobile phone service from your mobile operator?

- (a) Less than 5,000 Kyats
- (b) Between 5000 ~ 10000 Kyats
- (c) Between 10,001 ~ 30,000 Kyats
- (d) Between 30,001 ~ 50,000 Kyats
- (e) More than 50,000 Kyats

Part B. Myanmar Telecom sector was liberalized on 2013 from one operator to 4 operators in the market. Questionnaires concerned with the effect of telecom sector liberalization on education, economic, health and social factor after 4 years of liberalization. Please kindly tick the answer (✓) you like most in the list.

I. Effect of telecom sector liberalization on educational factor in Myanmar

Improvement in telecommunication sector	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
supports the education system to become better than before					
provides multimedia learning in education system easier and more effective					
encourages to learn everywhere and anytime					
provide affordable lifelong learning process to everyone					

II. Effect of telecom sector liberalization on economic factor in Myanmar

Improvement in telecommunication sector	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
increase the employment opportunities					
increase the economic opportunities in local economy					
increase the internal and external trade opportunities					
have an impact on the economic growth and development of the country					

III. Effect of telecom sector liberalization on health factor in Myanmar

Improvement in telecommunication sector	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
provide better health care service than before by introducing effective health care applications					
supports to be able to know the information about diseases and preventive measurements via mobile internet					
reduces the mortality rate and morbidity rate by providing the information related with maternal and child health care procedures					
enhances the quality of health care service providers such as private hospital , clinic and government hospital					
have positive impacts on health of local and indigenous people.					

IV. Effect of telecom sector liberalization on social factor in Myanmar

Improvement in telecommunication sector	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
enhances the standard of living better than before					
upgrades the personality and attitudes					
encourages the ability to contribute to the local charity program					
enhances the local community by understanding the CSR (corporate social responsibility)					

V. Any Suggestions and comments on the effects of telecommunication sector liberalization in Yangon, Myanmar

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