# YANGON UNIVERSITY OF ECONOMICS
## DEPARTMENT OF ECONOMICS
## MASTER OF DEVELOPMENT STUDIES PROGRAMME

# MOBILE TECHNOLOGY USAGE AND ITS IMPACT ON LEARNING
## (A CASE OF POSTGRADUATE STUDENTS AT YUECO)

**YE AUNG AUNG**
**EMDevS-61 (17th Batch)**

**OCTOBER, 2022**

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**A thesis submitted in partial fulfillment towards the requirement for the Degree of Executive Master of Development Studies (EMDevS)**

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This is to certify that this thesis entitled **"MOBILE TECHNOLOGY USAGE AND ITS IMPACT ON LEARNING (A CASE OF POSTGRADUATE STUDENTS AT YUECO)"** submitted as the requirement for the Degree of Master of Development Studies has been accepted by the Board of Examiners.

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# ABSTRACT

The development of telecommunication sector in Myanmar is an important factor for the development of the country in modern technological era. The development in education also depends on the use of new technology. The usage of mobile technology in learning has dramatically increased due to the availability of affordable data. This study bases on the development of telecommunication sector in Myanmar and focuses on students' satisfaction with the uses of mobile technology and its impact on learning. The survey results are shown by descriptive methods, frequency statistics and percentages, graphs, and reliability analysis for mobile phone users' satisfaction with distance mobile learning. The result finds that mobile phones are widely used among students, and these are the essential tools for the educational achievements of modern student life. Additionally, this study also found strong support for how these effects contribute to overall satisfaction with mobile phone use in learning and overall positive satisfaction leads to differentiated and continued mobile phone use in course learning at Yangon University of Economics.

# ACKNOWLEDGEMENTS

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| | | |
|---|---|---|
| Telcos | - | Telecommunication Companies |
| UNESCO | - | United Nations  Educational, Scientific and Cultural Organization |
| WAN | - | Wide Area Networks |
| GSM | - | Global Service for Mobile |
| TV | - | Television |
| IVR | - | Integrated Voice Response |
| PC | - | Personal Computer |
| PCS | - | Personal Communication Service |
| PDA | - | Personal Digital Assistants |
| VoIP | - | Voice  over Internet Protocol |
| www | - | World Wide Webs |
| VR | - | Virtual Reality |
| NFC | - | Near Field Communication |
| LCD | - | Liquid Crystal Display |
| WAP | - | Wireless Application Protocol |
| RAM | - | Random Access Memory |
| Wi-Fi | - | Wireless Fidelity |
| GPO | - | General Post Office |
| PMG | - | Post Master General |
| SMS | - | Short-Message Service |
| C.D.M.A | - | Code Division Multiple Access |
| W.C.D.M.A | - | Wide-Band Code Division Multiple Access |
| IDD | - | International Direct Dialing |
| MOTC | - | Ministry of Transports and Communications |
| MCPT | - | Ministry of Communication, Post and Telecommunication |
| SEA-ME-WE | - | South East Asian-Middle East-West Europe |
| BTS | - | Base Transceiver Station |
| CSO | - | Central Statistical Organization |
| PDA | - | Personal Digital Assistant |
| GPA | - | Grade Point Average |
| ITCS | - | Information Technology Central Services |

| | | |
|---|---|---|
| VSAT | - | Very Small Aperture Terminal |
| MMK | - | Myanmar Kyat |
| USD | - | United States Dollar |
| NFSI | - | Network Facilities Service for Individual |
| NFSC | - | Network Facilities Service for Class |
| NS | - | Network Service License |
| AS | - | Application Service License |
| MP | - | Mobile Phone |
| GU | - | General Usefulness |
| LM | - | Learning Mobile |
| SQ | - | Service Quality |
| COVID-19 | - | Coronavirus Disease 2019 |

# Chapter I

# INTRODUCTION

The telecoms industry in Myanmar has changed significantly over the previous ten years. Myanmar, once one of Asia's least developed markets, is experiencing unprecedented growth in mobile and mobile broadband services. The telecommunications boom that is reshaping the economy, creating downstream opportunities and providing a platform for innovation is fueled by foreign investment. The penetration of fixed broadband is still incredibly low, but the mobile industry in Myanmar has grown more vibrant and competitive.

(Charlton, British Chamber, 2022)

## 1.1        Rationale of the Study

Mobile technology has had a profound impact on both people's daily lives and the business world. The shift improves people's lives, and it is anticipated that daily operations will become more effective and contribute more to the expansion of Myanmar's economy. Therefore, as the use of mobile devices and services increased throughout the country, not just in major cities, rural communities also had more opportunity to participate in national activities. This development is worth researching. Individual development improved throughout the decade alongside the expansion of telecommunications infrastructures and local business networks. Beyond the economy, improved mobile communication is influencing societal change in day-to-day living. Telecommunication is a fundamental component of modern civilizations, and the widespread accessibility of this particular communication instrument has an impact on all aspects of society.

Essential characteristics of a successful education today differ from those of traditional education, with telecommunications playing a significant role in the transition to modern education. Methods, courses, and educational programs predate the more dynamic, engaged, and tailored classrooms, preferred methods, and new technologies that may be used to support this method of learning. Mobile communication, whether it be with other students, teachers, for online learning, meetings, or management, is a

fundamental requirement for every student. By ensuring and afterwards achieving the lectures and effective communication remotely, cloud communication solutions are assisting in reducing the burden on instructors.

According to UNESCO, in 2020, more than 1.5 billion students worldwide were forced out of their typical learning settings and began participating in lessons online. There has never been such disruption in education in the twenty-first century, and it has sparked important discussions about the role of technology in delivering education. It is clearly obvious that education will never be the same after remote learning. (Karim Husami, 2022)

Mobile technology seems to be more widely adopted which are a simpler technology with very low learning costs, especially when it comes to cloud communication, and less expensive infrastructure requirements. Lack of such telecommunications infrastructure is a barrier to community improvement, particularly in the area of education. That is why, this paper focuses on the student's satisfaction with the mobile technology usage and its impacts on learning.

**1.2        Objective of the Study**

The objective is to study the development of the telecommunications  sector in Myanmar and analyze the students' satisfaction with the uses of mobile technology and its impact on the learning community at Yangon University of Economics.

**1.3        Method of the Study**

The method of study uses the descriptive method and also uses primary and secondary data. The primary data were collected using a survey questionnaire. This survey was conducted using semi-structured questions about students' satisfactions with mobile phone technology usage, experiences, and impacts on learning using the Five-Point-Likert-Scale. It focuses on students' satisfaction, especially with the attendance of the master and executive master programs of the Yangon  University of Economics. Stratified random sampling was used to carry out a sample survey and investigated among eight master's programs and there are 697 master's students in total. Therefore, 120 students were collected, especially 23 from MDevS, 34 from MBA, 5 from MAS, 18 from MBF, 6 from MMM, 2 from MHTM, 25 from MPA, and 7 from MSESI for the survey. Secondary data from the Ministry of Transportation and Communication, Regional Telecommunication Enterprises, the Myanmar Statistical Year Book, the World Bank and Asian Development Bank, journals, and websites were also used.

**1.4**     **Scope and Limitation of the Study**

This study is based on major reforms in the telecommunications sector, the development of mobile technology usage, and the growth of telecom services at the Yangon University of Economics. Also, it focuses on students' satisfaction with the usage of mobile technology and the impacts of telecommunication technology on the community at Yangon University of Economics. Survey data were collected from July to October in 2022, and secondary data were collected from 2004–2005 to 2018–2019.

**1.5**     **Organization of the Study**

The study is organized into five chapters. Chapter one is rationale of the study, objective, method, scope and limitation and organization of the study. Chapter two consists of the definition of telecommunication, the types of telecommunication and their usefulness, the evolution of mobile phones and their usefulness, the student's satisfaction with mobile phone technology, and the previous studies on the student's satisfaction with mobile phone technology. Chapter three consists of an overview of telecommunication reforms in Myanmar, including the historical background and evolution of Myanmar's telecom infrastructure and an overview of policies, rules, and regulations. In Chapter 4, we discuss students' satisfaction with mobile technology and its impacts on the community. Chapter five is the last chapter, with findings, a conclusion, and a suggestion of the thesis.

# Chapter II

# LITERATURE REVIEW

## 2.1        The Definition of Telecommunication

The word telecommunications comes from the Greek prefix tele-, which means "distant," combined with the Latin word communicate, which means "to share."

Telecommunications, also called "telecommunications", is the exchange of information over long distances by electrical means and refers to all kinds of voice, data and image transmission. This is a broad term that encompasses a wide range of information transmission technologies and communication infrastructures, such as fixed-line phones, mobile phones, microwave communications, fiber optics, satellites, radio and television broadcasts, the Internet and telegraphs. (Wesley Chai, 2020)

A complete telecommunications circuit consists of two stations, each with a transmitter and a receiver. Each station's transmitter and receiver can be combined into one device called a transceiver. Signal transmission media can be wires or cables (also called copper), fiber optics, electromagnetic fields, or light. Transmitting and receiving data in free space using electromagnetic fields is called wireless communication. (Irwin Lazar, Metrigy Research, 2021)

Telecommunications technology means any mechanisms of real-time communication in which some of the participants are not in the physical presence of the others. Such communication mechanisms shall include, but not be limited to, teleconferencing, video conferencing, the Internet, and any other forms of interactive audio or audio-video systems. Telecommunications meetings are permitted only if all members have all the required documentation and the committee cannot meet in person within the time required to make a decision. Telecommunications technology means the transmission, transmission, or reception of data, text, characters, signals, writing, images, sounds, or communications of any kind by wired, wireless, optical, telephone, computer, or other electronic system. I mean Whether data, text, characters, signals, characters, images, sounds or communications have been reconstructed, computed or otherwise processed in the course of transmission, transmission or reception. (Law Insider, telecommunication technology definition, 2020)

Telecommunications also means voice, data, message, and video transmissions and includes the transmission and switching facilities of public telecommunications systems, as well as operating and network software. (Joshik, 2019)

**2.2      Types of Telecommunication and Their Usefulness**

Although the simplest form of communication is between two stations, it is common for multiple sending and receiving stations to exchange data with each other. Such a configuration is called a telecommunications network. The Internet is the largest example of a telecommunications network. On a smaller scale, examples include the following:

(i)     Wide area networks (WANs);

(ii)    Telephone networks;

(iii)   Cellular networks;

(iv)    Police and  fire communications systems;

(v)     Taxi dispatch networks;

(vi)    Groups of amateur radio operators; and

(vii)   Broadcast networks.

There can also be described in various types of telecommunication based on their functions, components and usefulness of telecommunication networks, some of the functions are as followed. (Wesley Chai, 2020)

**2.2.1      Functions of Telecommunication Network**

The main and fundamental role of communication networks is to transmit information from one part to another or over long distances and to provide an interface between senders and receivers through modes of transmission. As terminals and nodes are randomly connected to the network, the system sends messages along the least time-consuming and most efficient paths to get them to the receiver.

Data is transmitted uninterruptedly over the shortest route in the shortest time. These systems also ensure that correct messages are only received by correct users and check for transmission errors during transmission. As you know, networks use different software and hardware to transmit data over different communication channels for different mediums. Telecoms are therefore responsible for converting and managing transmission rates directly to their platforms. It also converts messages from one format to another, as information is presented in different ways on different platforms, and the flow of data depends on the communication channel and end device used to transmit the information. A telecommunications network is a set of end nodes, intermediate nodes, and links that are connected to enable electrical communication between end devices. Nodes use different types of switching. B. Circuit switching, message switching, and

packet switching to route signals through the appropriate links and nodes to reach the appropriate destination terminal. Each end device in a communication network usually has a unique type of address to ensure that messages or connections are routed to the correct recipients.

In today's telecommunication networks, users are connected to one of the nodes and each connection between each user is called a communication channel (wire, fiber optic cable, or radio).

**Figure (2.1): Typical Structure of Modern Telecommunication Network**
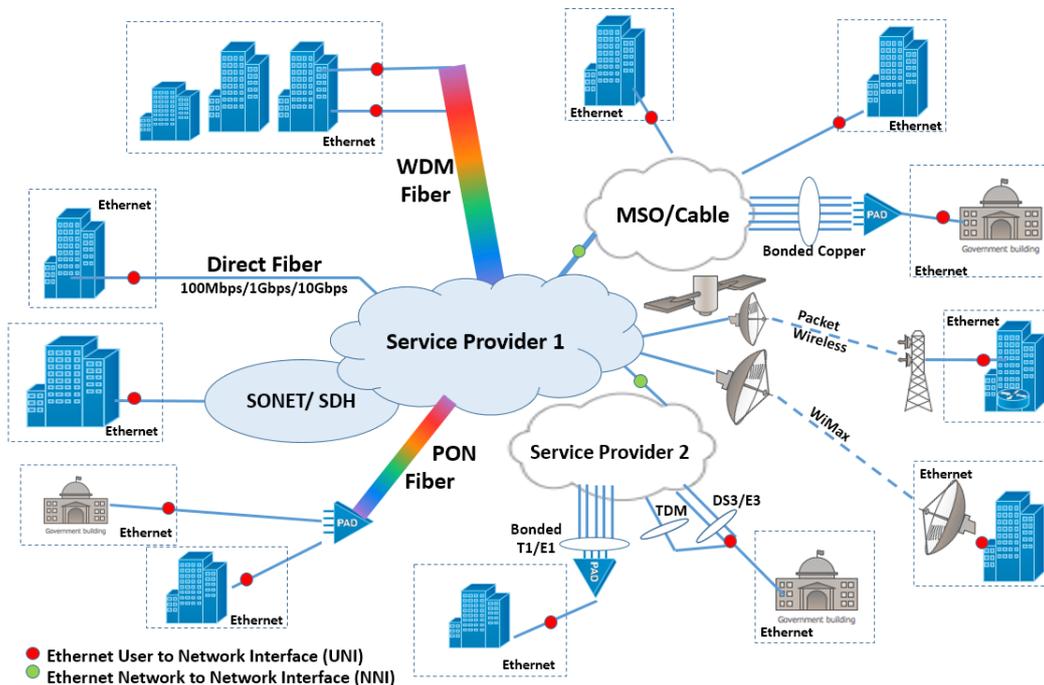


(Reference: Modern Telecommunication Network, MEF, 2020)

### 2.2.2   Components of a Telecommunications Networks

Today's telecommunications networks can carry voice, video, graphic images, and text information. The telecommunications network components required to transmit information include computers to process information, terminals to send and receive data, processors, and software. Some of the components of communication networks are:

Signal: Analog and digital electromagnetic signals are used in telecommunications for data transmission. Analog electromagnetic signals are used for voice communication across communication media. In contrast, digital electromagnetic signals carry data encoded as 1-bits and 0-bits, or on/off electrical pulses. Computers can communicate using digital signals. Whenever a computer needs to communicate over an

analog line, it needs a modem to convert the signal. A modem then converts the analog signal to a digital signal and vice versa.

Communication channel: Transmission of data via telecommunications also requires a communication channel. We use various mediums to transfer information from one device to another. The speed at which information flows depends on the transmission medium. High-speed transmissions are more expensive because the infrastructure required to support high-speed transmissions costs more than the infrastructure used to support low-speed transmissions. Examples of transmission are fiber optic, radio, coaxial cable, and twisted pair.

Communication network: Telecommunications networks have different functions and classifications based on their geographical capacity and the type of services they provide. A network's topology specifies how the network performs tasks. Various topologies include star, bus, and ring networks. (Team Tesca, Tesca Global 2021)

Star network: A star network uses a central computer connected to various smaller computers.

Bus network: A bus network uses circuits to connect other computers.

Ring network: Ring networks are also the most independent type of network, not dependent on a central host computer.

The examples of communication networks are: Communication network devices include telephones, microwave communication devices, fiber optics, telegraphs, radios, satellites, the largest example being the Internet. Most people associate telecommunications with modern technology, but in ancient times it was also used to transmit smoke signals as visual telegrams. Smoke signals, formerly widely used by various people, were used to convey short messages over long distances, given clear visibility. Telecommunications also includes mobile phones with conferencing capabilities. Communications technology allowed astronauts on the moon to communicate with people on Earth. Communication satellites are used for telecommunications. Satellite phones vary in size, but all rely on satellite networks. Cell towers are used for telecommunications. A GSM phone is a telecommunications device. Communications networks allow military units to be controlled from remote headquarters through command and control systems. A heliograph is an optical signal that uses mirrors to reflect light, mimicking the sign lamp.

### 2.2.3   Usefulness of Telecommunication Services

Long distance communication: The days of sending letters are over. Today, using computers, mobile phones, and the Internet, it's much easier than ever to connect with people around the world. People can communicate via phone, phone call, text message, email, or social media platforms. Telecommunications have made it easier, more convenient, more efficient and cheaper to stay in touch with loved ones.

Entertainment: The growth of telecommunications has completely changed the entertainment landscape. Today people have access to many TV channels to watch news, movies and music. Social media is commonly used for entertainment to share videos, photos and rolls of film.

Socialization: As more and more people become obsessed with their jobs and careers, finding time for a social life is becoming more difficult. However, the growth of social media platforms has done much to bridge the gap for today's generation. Today, anyone can connect and meet new people and friends at work via her Facebook, Instagram and Twitter. People also use Skype, WhatsApp, Google Hangouts and various other apps to make video calls and interact live (Team Tesca, Tesca Global 2021).

In addition, the advantages of communication services in the banking sector are:

Customer service: Today banks are connected to each customer through telecommunications. You may need to check your account balance, inquire about bank products and services, or provide information about your bank account or transactions. Banking apps will also be available, allowing customers to check their balance history, transactions, and more.

Mobile Banking Transactions: Technology is growing every day. Today, people can use their mobile phones to access their bank accounts, withdraw cash, make deposits, and check balances from anywhere. Mobile banking app integration has made managing and transacting personal bank accounts easier.

Integrated voice response and callback manager: Integrated Voice Response (IVR) and callback management are the two main technologies used by banking institutions. In particular, implementing integrated voice output enables banks to provide consistent, high-quality customer support. The use of recall management also has a positive effect on streamlining banking operations. (Tesca article, 2021).

The use of telecommunications services by enterprises is as follows.

Communication logistics: Traditionally, businesses spend a lot of time traveling to meet customers, employees, or business partners. Today, thanks to communication,

they don't have to go anywhere. You can conduct video conferences, telephone calls, face-to-face communication, and online conferences on PCs and telephones.

Business meeting: Technological developments have allowed companies to interact with their employees through telephone and video calls over the Internet. The use of video conferencing has made things much easier for businesses such as: B. Cloud Meetings, Google Meet, Zoom Meetings, etc.

International customers: Internet use has had a major impact on the growth of e-commerce. Businesses can now reach large audiences through online websites, social media platforms, and TV advertising. The geographic boundaries between businesses and consumers are now blurring, and businesses enjoy more benefits. (Tesca, 2021)

### 2.2.4   Advantages and Disadvantages of Telecommunication Networks

Reduce costs: Telecommunications help reduce the cost of doing business. Going paperless in offices where e-mail is the primary means of communication reduces the costs of purchasing, printing, disposing and recycling paper. Sending letters to many customers is more expensive than emailing the same information to many customers.

Save time: Telecommunications tools are now ubiquitous, such as computers, mobile phones, and faxes, in ways that can deliver messages more efficiently. Information is exchanged more quickly and effectively than with older forms of communication such as handwritten letters. For example, with a phone, you can easily send letters, communicate, and complain.

International customers: Tools like the Internet enable e-commerce all over the world. This means businesses have the opportunity to reach more customers around the world in less time. Telecommunications can also increase a company's bottom line while breaking down the geographical boundaries between businesses and consumers.

Improved communication logistics: Businesses spend a lot of money and time on training, traveling and communicating with customers. Communication methods such as conference calls reduce logistical costs and constraints. Audio conferencing uses your Internet connection and phone lines to communicate with people in remote locations.

Fast decision making: Telecom Capabilities Teleconferencing allows many companies to make decisions faster. Especially if these companies have partnerships abroad. Customers and her business partners can communicate directly and immediately without having to travel far or wait long to hear from them.

Marketing and advertising: Marketing and advertising campaigns are essential

for many businesses. Advertising and marketing communication methods include social network marketing, telephone marketing calls, and online advertising. These types of campaigns spread product awareness to a wider audience. This allows the company to generate more sales and expand its customer base. (Tesca Global, 2021)

Disadvantages of communication networks are:

Longer business days: While it's true that a telecommuter can often choose the hours she works in a day, this leaves her constantly busy with work. This is because remote her workers are unable to find the right balance between work and personal life and eventually have to limit their non-work activities to meet project deadlines. The time you spend doing your daily schedule is wasted and you can't get it back.

Limited feedback: Office workers are privileged to receive immediate feedback, giving them the opportunity to improve their work. When you know exactly how your plan will be received by employers, colleagues, and customers, it becomes much easier to control what is important to you.

Logistics: Teleworkers don't need to arrange business trips, but they do need to meet people outside of the office. Another problem with working from home is internal email. In this case, it should be picked up at one location rather than personally delivered by an employee of a special office. Emotional connection:

The biggest drawback of telecommunications is that people in offices sometimes enjoy freebies during working hours, especially when a special day is approaching. For telecommuters, it is again their responsibility to find what their company likes. (Team Tesca, Tesca Global 2021)

## 2.3 Evolution of the Mobile Phones and their Usefulness

The telephone was as influential in the 20th century as it was in the 19th century industrial revolution, and the industries around it produced some of the most amazing technological advances in human history. The rise of the telephone changed the way we live, work, and play, and contributed to the invention of televisions, computers, pagers, fax machines, email, the Internet, online stock trading, and more. See timeline below. We highlight just a few of these extraordinary leaps in innovation and invention.

For as long as humans have existed on this planet, we have invented forms of communication, from smoke signals and homing pigeons to telephone calls and email. Major telecommunications technologies include telegraph, telephone, radio, television, video telephony, satellite, closed computer networks, and the public Internet. One of the

greatest developments in communication came in 1831 when the electric telegraph was invented. Email as a means of communication predates this date, but it was his 19th-century electrical engineering that had a revolutionary impact.

**Table (2.1): Major History of Telecommunications**

| | |
|---|---|
| 1876 | The first telephone was invented by Alexander Graham Bell. This early model required an interpreter or telegram at each end. These first phones were intercoms that directly connected two phones. |
| 1877 | The invention of the central office telephone system made it possible to connect any combination of two telephone lines to each other and make a call. |
| 1891 | Dial-up telephones were invented, eliminating the need for an operator for each call. This made phone calls much faster and easier. |
| 1947 | The transistor was invented, and modern electronic devices such as computers and calculators were developed. |
| 1948 | Where telephone lines did not exist, microwaves were used to transmit telephone signals. |
| 1960 | Telephones began to move from mechanical exchanges to electronic exchanges. This enabled features such as voice messages, speed dials, and caller ID. |
| 1984 | The Bell system, which gave AT&T a near monopoly on telecommunications services in the United States, was dismantled, creating room for other providers to compete. |
| 1984 | The use of cellular and personal communication service (PCS) phones was introduced to enable mobile communication beyond the use of radio. |
| 1990s | Modern Internet usage is widespread. |
| 2000s and beyond | During the first decade of the 2000s, mobile phones became more and more sophisticated. |
| By 2012 | Widespread use of mobile phones. |

(Source: Wesley Chai, TechTarget Journal, Singapore, 2021)

**The Telephone**: The telephone was invented in 1876 and became a household and office necessity within 50 years, but tethering reduced the phone's flexibility and privacy. Then the cell phone appeared. A mobile phone developed by Motorola in 1973 served as the catalyst for a series of innovations that forever changed communication. Early mobile phones bridged the gap between phones and personal digital assistants (PDAs), particularly targeting the enterprise market, but they were heavy and had limited battery life. Nokia began releasing phones with QWERTY keyboards in 1996, and by 2010, most Android phones just had touchscreens. The first iPhone was unveiled to the public by Steve Jobs in 2007, and Apple is credited with inventing the current mobile phone look. Flip phones and phones with a split keyboard and screen were commonplace before the invention of the iPhone. A central application store with the first 500 downloaded "apps" was introduced a year later. The Apple App Store currently has over two million apps available. (Sol Rogers, 2019)

**The Internet:** On the Internet Since the middle of the 1990s, the Internet has had a revolutionary effect on communication. Examples include the rise of nearly instantaneous communication via electronic mail, instant messaging, and voice over Internet protocol (VoIP) phone calls, two-way interactive video calls, discussion forums, blogs, and social networking. We may now communicate more quickly and easily online, connecting with individuals wherever they are and at any time. It has quickened business and expanded the range of options available in the enterprise sector. Through social media, YouTube, and memes, it's enabled people to express themselves. Like nothing before, the internet has brought us together and torn us apart. (Sol Rogers, 2019)

**Email:** Email became widely available in 1991 and, depending on how you look at it, it has had a huge impact on our lives. The military and education sectors were the first to adopt messaging systems, using e-mail for communication. More than 3.8 billion people used email in 2018, more than half of the world's population. By 2022, 333 billion personal and business emails are expected to be sent daily. Email is essential and has become an integral part of our lives, but new tools are emerging to combat it. (Sol Rogers, 2019)

**Wearable Technology:** The first wearable gadget was a hands-free mobile headset that was introduced in 1999 and quickly became associated with city workers. Most crucially, it allowed entrepreneurs to take calls while they were on the road. Ten years ago, it would have been sci-fi to think you could make a video call from anything other than a phone. Thanks to wearable technology like smart watches, audio sunglasses,

and other new devices, these features have become part of our daily lives. (Sol Rogers, 2019)

**Virtual Reality (VR):** The newest version of virtual reality (VR), which has only been available since 2016, is already reshaping communications. Even if your players are in different countries, the beauty of VR (presence) allows you to connect with someone in the same place at the same time without the time and expense of traveling. Additionally, much of the information contained in normal conversation is non-verbal communication that VR can record. Understanding the participants' emotions and intentions is substantially enhanced by voice tone, hesitations, head movements, and hand gestures. Additionally, no distractions are present in VR, allowing users to fully concentrate on what is going on around them. In fact, MeetinVR asserts that virtual reality meetings result in a 25% increase in attention span when compared to video conferencing. Additionally, studies show that when we engage in virtual reality, learnt more effectively and retain it longer. Language obstacles and technical jargon can both be overcome using the natural communication language of 3D. (Sol Rogers, 2019)

**5G mobile phone:** The fifth generation of mobile networks, or 5G, guarantees substantially faster data upload and download rates, more coverage, and more reliable connections. It will be possible to communicate instantly, and those jerky, annoying video calls will no longer exist. Currently, our mobile phones can transmit data at a 4G average speed of roughly 21 Mbps. 100 to 1000 times faster will be provided by 5G. According to the Consumer Technology Association, at this speed, a two-hour movie could be downloaded in just 3.6 seconds, as opposed to 6 minutes or 26 hours on 3G or 4G. As millions of devices can be connected at once thanks to 5G, its effects will extend far beyond our mobile phones. (Sol Rogers, 2019)

There is already discussion about 6G in the future. Even though it's 15-20 years distant and just has fundamental research completed, it's intriguing from the standpoint of innovation. 6G will serve as the foundation for the connected utopia we foresee, resulting in tremendous improvements in the reliability and speed of our connectivity.

## 2.4 Customers' Satisfaction with Mobile Phone Technology

According to Vasita (2011), customer satisfaction is the result of the buyer comparing the expected performance with the perceived real performance and the cost before making the purchase. Customers are satisfied if the service provider's actual performance meets or exceeds their expectations. Customers would, however, be

unsatisfied if the perceived actual performance was below what was expected. Transaction-specific satisfaction and cumulative satisfaction are the two main conceptualizations of satisfaction (Boulding et al. 1993). According to Boshoff and Gray (2004), cumulative satisfaction refers to the customer's overall assessment of their overall consumption experience. Transaction-specific satisfaction refers to the customer's evaluation of his experience and reactions to a specific service encounter (Cook, 2008). Customers stay loyal to one telecommunications service provider longer when they are satisfied. Gerpott (2000) defined customer loyalty as the length of time a consumer sticks with a certain brand. Evidence suggests that brands can develop enduring and lucrative relationships with their customers when customers are highly satisfied (Eshghi et al. 2007). According to Hafeez et al. (2010), if a brand keeps its promises, it will increase customer satisfaction and give the customer the impression that he made the right choice in terms of brands.

Many academics and researchers conducted studies using different methods and variables to empirically analyze how satisfied customers were with their mobile phone service providers. Below is a review of a few of those empirical studies, using 250 Pakistani customers, Hafeez et al. (2010) conducted a study to look into the factors that affect customer satisfaction in the country's telecommunications industry. According to their study's findings, consumer satisfaction is positively correlated with both fair prices and good customer service.

In order to investigate the relationship between service quality, customer satisfaction, and customer loyalty with reference to mobile phone usage among postgraduate students at a university in Northern Malaysia, Maiyaki et al. (2011) applied the SERVQUAL (*marketing the provision of high-quality products by an organization backed by a high level of service for consumers*) model. The study employed a sample size of 341 students and the findings show that customer happiness and service quality have a big impact on how loyal Malaysian mobile phone consumers are. Harish and Rajkumar (2011) used 125 cell phone users to study the service quality and customer preferences of mobile service providers in India. According to the study, consumers' perceptions varied depending on the level of communication, call service, price, customer service, and service provider quality. According to the study, consumers' perceptions of a telecommunications service provider are significantly improved by price. According to Haque et al. (2010), consumers should consider price, service quality, product quality, and promotional offers when choosing a telecommunications service provider.

Using a sample size of 315 students, Motinyane (2003) performed the study in Lesotho to gauge how clients viewed various aspects of service experiences. According to the findings of the correlation research, both the caliber of network coverage and the professionalism of the employees have a significant role in determining how satisfied customers are with the services they receive from the service centers. The report also finds that areas including service delivery speed, staff professionalism, network coverage quality, and employee civility were underperforming. Overall, the respondents were happy with the services provided for them and indicated that they would tell their friends about it.

Heshmati and Khayyat (2010) used a sample of 1458 mobile phone customers to analyze the consumer satisfaction of the telecoms service in the Kurdistan region of Iraq. To evaluate the three models for user satisfaction—the multinomial logit model for brand use and the binomial logit model for handset preferences—the study employed a discrete choice methodology. The results demonstrate that network quality, demographic factors, and service price are factors that affect consumer happiness. The findings also showed that men and older persons are more likely to be satisfied.

Leelakulthanit and Hongcharn (2011) conducted interviews with 400 Thai mobile phone customers to learn more about the factors that influence customer satisfaction. Their study's findings showed that the most crucial factors in determining consumer happiness are promotional value, the caliber of in-store customer service, and corporate image. Similar to this, Alom et al. (2010) conducted interviews with 60 university students in Bangladesh who also owned mobile phones to determine the influencing variables while choosing mobile service providers. The findings of their study indicated that in Bangladesh, consumers' decisions to choose a mobile service provider are most influenced by two factors: brand image and perceived call rate.

According to a study by Gerpott et al. (2000) conducted in Germany using a structural equation modeling approach, telecommunications providers in the German mobile telecommunications market place a high priority on customer satisfaction, loyalty, and retention. Results also indicate that consumer satisfaction was positively and significantly impacted by network quality, pricing evaluation, and personal benefits.

Based on a sample of 1000 mobile phone users, Nimako et al. (2010) conducted a study in Ghana to gauge and analyze overall consumer satisfaction with the service quality provided by mobile telecommunication networks in Ghana. According to the study's findings, men are substantially more satisfied with their service providers than

women are. These findings suggest that gender is a reliable feature that service providers in Ghana can utilize as the foundation for market segmentation. The study's conclusions are in line with those made by Samuel (2006) in Nigeria.

Using a sample of 150 mobile phone users, Omotayo and Joachim (2008) sought to determine the link between customer services and customer retention in the Nigerian telecommunications business. By examining the chain of consequences of retention from customer service, satisfaction, value, and behavioral intention, their study looked at potential constructs in client retention. The findings showed a substantial correlation between customer service, satisfaction, and retention in the Nigerian telecom industry. According to theory, customer loyalty to the telecoms firm is strengthened when they are satisfied.

## 2.5 Review on Previous Studies

Ahmad Sulaiman and Ali Dashti (2018) used the constructivism mastering idea to research the students' satisfaction and the factors that predict the adoption of cellular learning among public and private college students in the learning process. It included 1012 samples of undergraduate college students who were chosen at random from three prestigious Kuwaiti universities. The results of the study, which was generally conducted in the second semester of 2015–16, confirmed that Kuwaiti students tend to be more comfortable using mobile phones for academic purposes than students from other countries, and that females are more likely than males to be at ease using mobile phones for academic purposes. Internet speed, mobile phone mobility, mobile phone abilities, screen size, gender, nationality, and level of education were among the variables the researchers analyzed to predict students' satisfaction with cell studying. Researchers support broadening graduate students' participation in current knowledge.

According to the study's findings, college students at both public and private colleges were at ease using mobile phones for educational purposes. According to the results, female students were happier with mobile studying than male students. Additionally, Kuwaiti students were cozier than students from other countries. Additionally, students with higher GPAs were more at ease with mobile learning than students with lower GPAs. The least satisfied students came from the schools of pharmacy and religious studies, while students from the schools of education and life sciences were more at ease with mobile learning than students from all other colleges. Students who used their mobile phones for longer than four hours a day were shown to

be more at ease with cell communication than students who used them for shorter periods of time. Finally, the research found that criteria such as Internet speed, mobile phone portability, mobile phone abilities, and display screen size, password issues on campus, gender, nationality, college kind, and time spent using a mobile phone were the best predictors of satisfaction with mobile phone-based mobile learning.

Babee Toperesu, Marita Turpin, and Jean Paul van Bellee (2019) According to research on the benefits and pride of using mobile phones for learning in a university setting, there has been a sharp increase in the usage of mobile phones for learning as a result of the accessibility of cheap records and free Wi-Fi networks in universities. However, further research is required to fully understand the impact that mobile phones have on a student's journey toward universal mastery. This research article examines the positive and negative effects that mobile phone use has on students' learning experiences and explores whether or not this results in a general sense of pride in mobile learning. An online survey that was distributed through email to the student body of one South African university was used to gather quantitative data. With more than 400 responses, we were able to confirm some, but not all, of the good and harmful effects that were predicted. Furthermore, there was substantial support for how these effects contribute to the common pride in using a mobile phone for learning, accounting for more than 60% of the variance. Additionally, we found that the universally satisfying experience encourages varied, ongoing mobile phone use.

There are many ideas that explain how people evaluate and increase their knowledge. These theories aid in understanding the many ways that people learn. The three groups of most prevalent theories are behaviorism, cognitivism, and constructivism (Siemens, 2005). The link between all four of the mannequin's structures, according to the researchers, will be confirmed by testing the theories. To illustrate and explain the empirical relationship between a numbers of constructs in the lookup framework, a set of hypotheses are given. These hypotheses and the conceptual model that goes along with them were studied in the works of Wai et al. and Bhattacherjee (2001). (2018).

The outcomes proved that the positive influences far outweigh the negative influences. Although there is a strong correlation between the exceptional mobile phone uses and a variety of positive and bad effects, this correlation only accounts for 4% to 14% of the heterogeneity in the effects, thus more antecedents will be required to understand how mobile phones affect learning. On the other hand, the suggested model of great and bad effects, as well as the absence of any significant issues, offer a correct

(>60%) explanation of the variation in consumer pride with regard to using mobile phones for learning reasons. It's interesting to see that female students appear to be a little less satisfied. Finally, there is some statistical evidence to support the idea that use in a study environment leads to continuing satisfaction rather than use directly affecting satisfaction.

Katleho E. Thokoa and Kalebe M. Kalebe examined the elements that influence National University of Lesotho (NUL) students' pride in the services they receive from the mobile telecommunications industry (2015). Customer satisfaction is essential because satisfied customers are the foundation of a successful service provider. It promotes customer loyalty, repeat business, and good word-of-mouth, all of which can boost the provider's financial performance. The respondents are selected using a non-probability convenience sample strategy, and data are collected using a self-administered, structured questionnaire. According to the findings, 37% of students have changed from their original provider. The primary argument for switching from the original service provider is poor network satisfaction, which is followed by the initial provider's high call rates. The results also indicate a significant relationship between student satisfaction and neighborhood accessibility, client care services, and call expenses.

The tests also revealed that the second- and third-most significant criteria in determining students' satisfaction are call rates and customer care services. Additionally, it was shown that, regardless of the mobile network carrier provider, on average (50%) students are satisfied with their provider services. Contrarily, it was shown that students who use Econet Telecom Lesotho are more comfortable with their service provider than those who use Vodacom Lesotho. Finally, the study's findings show that there is no longer a statistically significant difference between the overall happiness of male and female respondents. This implies that gender should no longer be a key consideration when undertaking market segmentation to raise student satisfaction levels at National University of Lesotho.

A cross-sectional survey was used as the study's main methodology, which is excellent for figuring out how the target audience views a problem. To accomplish the goals of the study, statistics were gathered using a questionnaire created by the researcher. The target population includes all National University of Lesotho students who have cell phone service. The sample for this study consisted of 100 college students, regardless of how long they had been enrolled in classes. A sample size of 100 college students was selected due to time and money restrictions. According to Sekaran (2003),

samples with a size of 30 to 500 are ideal for most studies. A non-probability comfort sampling approach is used to select the respondents because it would be difficult to collect the sample body. Similar research revealed a significant relationship between student satisfaction and name prices, patron care services, and community accessibility. The findings also indicate that, after customer support services and name fees, network accessibility has the most impact on students' satisfaction. Additionally, it was discovered that college students are generally (50%) satisfied with their carrier providers, irrespective of the cell phone company they use.

# Chapter III

## Development of Telecommunication Sector in Myanmar

### 3.1 History of Post and Telegraph Services in Myanmar

Since the Myanmar monarchy period, royal mail has been dispatched by horsemen, runners, and boatmen as special messengers. The messages were sent either directly to the destination or via relay, depending on the circumstances. After the British initially occupied Myanmar, Sittwe post office, Bago post office, and Yangon GPO were opened in 1827, 1852, and 1854, respectively. After annexation of the whole country in 1885, post and telegraph operations were jointly administered. Burma Posts and Telegraphs Department was under the India Post & Telegraphs from 1885 to 31 Mar 1937. It was administered as a province of India until 1937, when it became a separate colony. After the separation from the Indian Government under the colonial era, the directorate office of the Burma Post and Telegraph Service was established in 1937. In 1947, postal and telegraph services were separated into two different departments. After the independence, both departments were combined together into same department in 1960. In order to operate as an economic activity, the post and telegraph department was reorganized into a telecommunications corporation under the Revolutionary Council government in 1972.

The Simla Plans drawn up by the exile government of Myanmar had the intention of splitting the Post and Telegraph Department into the Postal Department and the Telegraph Department, with one department for one head. The postal department was under the management of the postal administrative officer, and the telegraph department was under the management of the signal director, during the CAS (B) administration period. On 24 December 1947, two new positions had been appointed, one for Postmaster General (PMG) of Postal Department and other for Chief Engineer of Telegraph Department. Myanmar won its independence on January 4, 1948. The nomenclatures of the posts were changed from PMG again to "Director of Post" and "Chief Engineer" to "Director of Telegraph" (DOP & DOT). Myanmar became a member of the Universal Postal Union (UPU) on October 4, 1949.

In due course, the Foreign Post Division was established on May 5, 1956. Postal Development plans had been drawn up since 1959 for rural postal network as speedy delivery and operational development. On January 20, 1960, the Postal Department and Telegraph Department were recombined into one organization under the management of a Director General. In Pre-war time the number of P.Os Operation used to be 625 in post-war time 601 number were existed in 1959 - 60 throughout Myanmar.

Due to the guidance of the Union Minister for the Ministry of Communications and Information Technology, the Domestic Express Mail Service (DEMS) launched the Track & Trace System on April 1, 2009, in the 26 cities of the States and Regions of Myanmar. Starting from 1 April 2010, Postal Data Information System (PDIS) project was introduced on-line to enable to monitor the daily operations and data base of each P.Os in respective Regions & States by the responsible personnel from the Head-Quarter and Regions & States. Starting from 1st April 2012, Hand-free Barcode Scanner was introduced in EMS International for delivery process. Data Collection Accounting Software was introduced in Regions and States Sub-Account Departments starting on December 1, 2013. The Ministry of Communications and Information Technology of Myanmar and the Ministry of Internal Affairs and Communications of Japan signed a Memorandum on Cooperation on April 21, 2014, in Japan to provide technical assistance and cooperation to develop Myanmar Post. Japan's Prime Minister Mr. Shinzo Abe visited Yangon General Post Office in 2014 and give encourage speech to both Japan and Myanmar Postal Team for further cooperation. Hometown Product Delivery was introduced on January 1st, 2015 as a new service with next-day delivery between Yangon GPO and Taunggyi Post Office for the first step. The outdated Myanmar Postal Act (1898) was redrawn by the two consultants starting from 22nd January 2015 funded by World Bank. The current Myanmar Post services are as follows : (1) Ordinary Letter (2) Registered Letter (3) Ordinary Money Order (4) Express Money Order (5) Registered Parcels (6) Domestic EMS (7) International EMS (8) Sales Of Stamps (9) Rent of Post Box (10) Same Day Delivery (11) Home Town Product Delivery (12)Telegraph and (13) Myanmar DHL.
(MPT Website, 2020)

**Table (3.1): Post Services in Use (2004-2005 to 2018-2019)**

(Unit: Number of Letter)

| Statistical Year | Post Office | Post-Telegraph Office | Letter Mail Domestic (thousands) | Letter Mail Foreign-Received (thousands) | Letter Mail Send (thousands) |
|---|---|---|---|---|---|
| 2004-05 | 1,331 | 157 | 89,681 | 541 | 3,028 |
| 2005-06 | 1,343 | 159 | 8,545 | 541 | 1,452 |
| 2006-07 | 1,349 | 160 | 87,844 | 563 | 1,227 |
| 2007-08 | 1,364 | 182 | 84,699 | 512 | 793 |
| 2008-09 | 1,369 | 180 | 85,003 | 467 | 663 |
| 2009-10 | 1,373 | 179 | 84,837 | 375 | 265 |
| 2010-11 | 1,385 | 181 | 80,941 | 214 | 118 |
| 2011-12 | 1,389 | 177 | 47,245 | 120 | 88 |
| 2012-13 | 1,380 | 176 | 11,375 | 180 | 150 |
| 2013-14 | 1,387 | 173 | 1,558 | 163 | 447 |
| 2014-15 | 1,384 | 167 | 1,231 | 176 | 508 |
| 2015-16 | 1,378 | 150 | 1,188 | 205 | 444 |
| 2016-17 | 1,381 | - | 1,081 | 194 | 429 |
| 2017-18 | 1,382 | - | 1,223 | 211 | 338 |
| 2018-19 | 1,389 | - | 3306 | 272 | 318 |

(Source: CSO, Statistical Year Book, 2020)

According to the Statistical Data 2020, Post Services were still used in Myanmar until now. But there were found no improvements widely and these services were mostly used in some cities which were difficult to build the mobile telecommunication stations and difficult to access road. The old technology telegraphs system like Post-cum-telegraph offices were shut down after 2016 but post offices were still in use in about 1300 places around country. Usage of Letter Mail Services were also decreased after the launch of mobile networks and Short Message Services were launched in 2006.

**Table (3.2): Telegraphs and Telegram Services in Use (2004-2005 to 2018-2019)**

**(Unit: Number of Message)**

| Statistical Year | Telegraph Office | Wireless Stations | Telegram Domestic (thousands) | Telegram Foreign-Received (thousands) | Telegram Send (thousand) |
|---|---|---|---|---|---|
| 2004-05 | 132 | 161 | 3,699 | 0.40 | 5 |
| 2005-06 | 158 | 153 | 3,184 | 0.50 | 4 |
| 2006-07 | 167 | 150 | 2,972 | 0.28 | 2.89 |
| 2007-08 | 178 | 146 | 2,621 | 0.25 | 2.53 |
| 2008-09 | 182 | 145 | 2,120 | 0.15 | 1.37 |
| 2009-10 | 199 | 133 | 1,433 | 0.12 | 0.87 |
| 2010-11 | 225 | 120 | 879 | - | - |
| 2011-12 | 252 | 108 | 586 | - | - |
| 2012-13 | 262 | 102 | 478 | - | - |
| 2013-14 | 276 | 94 | 456 | - | - |
| 2014-15 | 285 | 88 | 425 | - | - |
| 2015-16 | 260 | 81 | 127 | - | - |
| 2016-17 | - | - | 111 | - | - |
| 2017-18 | - | - | 97 | - | - |
| 2018-19 | - | - | 63 | - | - |

(Source: CSO, Statistical Year Book, 2020)

According to the statistical data 2020, the telegraph offices and wireless stations were shut down after 2016 all over the country but telegraph services in domestic were still using with decrease in amount year by year. This mean that telegraph system was continuously used over the mobile communication networks through internet gateway of the country to connect not only within country and also to other neighbour countries.

## 3.2 Telephone Communication Services and its Evolution

Telephone Communication Services in Myanmar started from the basic of telegraph and posts since colonial era but the beginning of the new technology had brought Myanmar to another level of telecommunication with Fixed-line telephone system and then the wireless technology brought new telecommunication system of cellular phones.

### 3.2.1 Telephones in Myanmar

The Communications, Post, and Telegraphs Ministry operates the telephone system in Myanmar. The service is pretty awful, and few people have phones. However, the situation is changing fast—almost every month—and the infrastructure is gradually improving, though less so in rural areas. Cell phones are still relatively uncommon. Until fairly recently, they were very expensive, and the government made them difficult to obtain. In 2004, cell phones cost as much as 4,000 USD each. But again, things are changing very fast, and cell phones are much easier and cheaper to obtain now than they were in the past. Telephones: main lines in use: 18,405,814 lines in 2015, 1,643,392 lines in 2011, compared to 372,317 lines in 2003 and 86,333 lines in 1991. General assessment: meets minimum requirements for local and intercity service for business and government. Domestic: The system is barely capable of providing basic service. Landing point for the SEA-ME-WE-3 optical telecommunications submarine cable that provides links to Asia, the Middle East, and Europe; satellite earth stations: 2, Intelsat (Indian Ocean), and ShinSat (2011).

**Table (3.3): Fixed-Line Telephone in Use (2004-2005 to 2014-2015)**

**(Unit: Number of Subscriber Line)**

| Statistical Year | Telephone in use | Telephone in Yangon | Telephone in Other Cities |
|---|---|---|---|
| 2004-05 | 434182 | 228654 | 205528 |
| 2005-06 | 500396 | 269333 | 231063 |
| 2006-07 | 594475 | 315068 | 279407 |
| 2007-08 | 716349 | 384451 | 331898 |
| 2008-09 | 846705 | 419268 | 427437 |
| 2009-10 | 1077084 | 499914 | 577170 |
| 2010-11 | 1643392 | 687798 | 955594 |
| 2011-12 | 2202462 | 917353 | 1285109 |
| 2012-13 | 4375405 | 1559778 | 2815627 |
| 2013-14 | 8299791 | 2618371 | 5681420 |
| 2014-15 | 18405814 | 5844375 | 12561439 |

Source: CSO, Statistical Year Book (2015)

**Table (3.4): Mobile Phones in Use Compared with Fixed-Line Phones**
**(2014-2015 to 2018-2019)**

**(Unit: Number of Subscriber Line)**

| Statistical Year | Telephone In Use | Fixed Phone in use | Mobile Phone in use |
|---|---|---|---|
| 2014-15 | 28095036 | 526792 | 27568244 |
| 2015-16 | 49936297 | 521626 | 49414671 |
| 2016-17 | 55300256 | 516831 | 54783425 |
| 2017-18 | 56868439 | 520372 | 56348067 |
| 2018-19 | 74182301 | 522760 | 73659541 |

Source: CSO, Statistical Year Book (2015, 2016, 2017, 2018, 2019 & 2020)

According to the Statistical Year Book, line phones were widely used between 2010 and 2015. User demand were growing double in quantity due to the user demand and telephone infrastructure expansion not only in Yangon and also in the other cities all over the country. Until now, Line phones are still using mostly in many offices of public and private sectors. But the quantities are not improved like the growth in demand of Mobile phones and Fiber internet services. During 2010 and 2015, the remarkable growth of line phone usage in Myanmar rapidly increased.

### 3.2.2 Cellular Phones in Myanmar

Cellular phones were a novelty in Myanmar, and fewer than one in 10 people owns one and it could be surprising how many people have cell phones. Controlling the communications apparatus was a way for the junta to monitor its citizens and a lucrative source of revenue for favoring business interests. However, the government of Burma, which the former military administration renamed Myanmar, is lowering the cost of mobile phone connection and expanding its telecoms sector, along with a number of other economic and political reforms since 2011. (Joseph, 2013)

It was easy to find cell phones; stores all across Yangon sold a wide variety of genuine and counterfeit models, many of which were produced nearby in China. However, a few years ago, purchasing mobile connection might cost as much as 2,500 USD due to the government's monopoly. The cost was 250 USD up until the beginning of this year, which was far over the average person's means. Then, the government makes an effort to lower prices. The state-run behemoth Myanmar Post and Telecommunication

began selling SIM cards in April 2013 for 1,500 MMK, or roughly $1.60 USD. However, there was a lottery to obtain the few available cards, many of which were offered for up to 90 USD on the illicit market. (Washington Post, 2013)

In 2011, there were 1.244 million cell phones worldwide, up from 66,500 in 2003. The system for mobile phones is egregiously underdeveloped. According to the World Bank, Myanmar has one of the lowest rates of mobile penetration in the world, with barely 3% of the population possessing a phone in 2011. In Bangladesh, a neighboring country, 56% of individuals have a cell phone. (Jeremy, 2013)

In the 2012 Report from Freedom House, it is said that "the government also remains cautious of mobile communications." Short-message service (SMS) is either out of reach or politically risky for Burmese who want to use them as an additional platform for news, information, or mobilization because SIM cards for mobile phones in Burma continue to be most expensive in Asia and complicated pre- and post-paid service plans.

**Table (3.5): Cellular Phone Usage in Myanmar**

**(Unit: Number of Cellular Subscriber)**

| Statistical Year | Yangon | Other Cities | Mobile Phone (Cellular) | Mobile Phone (C.D.M.A) | Mobile Phone (G.S.M) |
|---|---|---|---|---|---|
| 1990-91 | - | - | - | - | - |
| 1995-96 | 1973 | 644 | **2617** | - | - |
| 2000-01 | 10370 | 3110 | **8550** | 4930 | - |
| 2003-04 | 39416 | 9325 | **8441** | 11964 | 28336 |
| 2004-05 | 72560 | 19447 | **21524** | 12041 | 58442 |
| 2005-06 | 103144 | 25556 | **22764** | 12083 | 93852 |
| 2006-07 | 143240 | 52809 | **23256** | 12090 | 160703 |
| 2007-08 | 185338 | 102369 | **23879** | 12153 | 251675 |
| 2008-09 | 211432 | 188398 | **26662** | 73312 | 299856 |
| 2009-10 | 297940 | 281969 | **26832** | 198990 | 354087 |
| 2010-11 | 464164 | 609019 | **23361** | 655502 | 394320 |
| 2011-12 | 672048 | 965581 | - | 936490 | 701139 |

(Source: CSO, Statistical Year Book, 2015)

First Cellular Network was established before 1996 when there was planned the Visit Myanmar Year 1996 and the usage quantity was over 2000 Users. Cellular Phones

were especially for Voice communication and there were limitations for future communication with data and text. So, after year 2000, Government started to plan the future mobile communication network which can be upgraded and promoted to global system of mobile communication.

In 2001, there was the first launch of CDMA phones which can be carried other cities and for emergency use in disaster management. There can be sent and receive short messages between users. Then, GSM networks appeared to be launched in parallel especially for the mobile users in Main Cities like Yangon and Mandalay which was better in usage and advanced in technology than CDMA phones. After several years of GSM downtown and main cities network, the technology was upgraded to WCDMA system which is the high end in global telecommunication technology at that time.

All cellular Phone users were then cutover to the advanced technology networks after 2010.

### 3.2.3 Mobile Phone Use in Myanmar

After the age of cellular phones, the first useful network type is the CDMA (Code Division Multiple Access) network, whose frequency categories are 450 MHz for the coastal area and 800 MHz for the main cities and inland areas. It became operational during the Nagis Storm disaster to save lives and assist victims in recovering and restoring for future emergencies. There were a few telecommunication towers that were installed immediately inside those areas and were initially launched at 450 MHz, then cut over and upgraded to 800 MHz following the recovery and restoration. Then, these 800 MHz CDMA networks were launched in all the big cities, especially in Yangon, Mandalay, Mon, Kayin, Rakhine, and also the middle area around Myanmar.

During these years, CDMA networks were also more popular than GSM networks because GSM networks had not yet been upgraded to provide Hi-Speed internet services. When GSM networks were upgraded to wide streaming internet data services and the WCDMA (Wideband Code Division Multiple Access) network was established, CDMA networks decreased in demand and got lower in use among mobile users due to the vastly different quality of internet services between these two main trends in mobile telecommunication.

In December 2020, Myanmar's mobile subscriber base was reported to be 78,548.329 people. This records a decrease from the previous number of 81,945,491 persons for December 2019. Myanmar's number of mobile subscribers is updated yearly,

averaging 7,260.000 persons from December 1960 to 2020, with 49 observations. The data peaked at 81,945,491 people in 2019 and fell to a record-low 0 people in 1992. (CEIC, World Bank, 2020)

According to the statistical yearbook of 2010 to 2020, there was a remarkable growth in mobile capacity in Myanmar, and user capacity was enormously increased and developed in both internet service provision and market demand. When Myanmar was using CDMA networks (450 MHz and 800 MHz), there were upcoming generations of CDMA being used in Korea, China, and so on. But in Myanmar, GSM network users were a big part of all mobile user capacity, and MPT planned to upgrade the GSM networks (900 MHz) to its next generation networks step by step, like WCDMA (1800 MHz and 2100 MHz). Before upgrading directly from GSM 900MHz to WCDMA 2100MHz, GSM 1800MHz was for trial use during transformation and cutover from old mobile networks to new mobile networks. (MCIT, 2013)

**Table (3.6): Frequency Spectrum Assignment for MPT (2013)**

| Frequency Band | Assigned User | Current Use | Bandwidth (MHz) |
|---|---|---|---|
| 450 MHz | MPT | CDMA 450 | 2 x 3.75 |
| 800 MHz | MPT | CDMA 800 | 2 x 10 |
| 900 MHz | MPT | GSM 900 | 2 x 25 |
| 1800 MHz | MPT | LTE Trial | 2 x 20 |
| 2100 MHz | MPT | WCDMA | 2 x 15 |

(Source: Ministry of Communication and Information Technology, 2013)

Although mobile internet access can be patchy, mobile phones generally work well in towns. Mobile phones from other countries generally will not work in Myanmar. Go-Myanmar.com reports: "International roaming with a number of western mobile networks is now possible in Myanmar; the situation is changing fast, so it is best to check with the operator." With Asian networks, such as Thailand's AIS, Singapore's M1 and Singtel, Indonesia's Telkomsel, and Vietnam's Viettel, some roaming services are now accessible.

The mobile phone industry and availability of SIM cards in Myanmar are in a state of flux. For many years, SIM cards were very expensive, but in April 2013, the price of a SIM card was reduced to 1,500 MMK (1.70 USD). However, at the moment, only inhabitants of Myanmar can purchase these cards at regular stores through a lottery system. However, in the airports in Yangon, Mandalay, and Pagan, you can rent a SIM card (and hand set) from dealers there. This costs 5 USD to 12 USD per day, depending

on the rental period.

Some outlets will sell permanent SIM cards to foreigners, usually costing around 150,000 MMK (typically have to pay an additional fee to enable 3G mobile internet). Phones work on a top-up basis, with 5,000 MMK and 10,000 MMK cards available. Cards can be bought at the Yangon airport and numerous shops in downtown Yangon and Mandalay, as well as other larger towns and cities. Although Micro SIM cards (used in high-end mobile phones like the iPhone, Samsung Galaxy, and others) are not readily available in Myanmar, most phone shops can expertly cut regular SIM cards to fit a Micro SIM slot.

### 3.3 Existing Services and Usage of Mobile Phones in Myanmar

Mobile phones were first introduced about 15 years ago. First-generation mobile phones were very heavy, old, slow, noisy, and analogue. Only a small number of senior government officials and foreign diplomats had access to it. The public could now purchase CDMA mobile phones from the government a few years later. However, there was a large waiting list, and only government employees and businesses were eligible. The GSM follows. It has a superior voice quality, is newer, and is faster.

There are 4 mobile operators in Myanmar: MPT (Government+KDDI), Telenor, Ooredoo, and MyTel (Military+VietTel). MPT is the largest in Myanmar in terms of network coverage and users. Operators offer similar price plans. In general, the standard plan charges 20-25 MMK/min for voice calls and 15-20 MMK/message for SMS. Pay as go data plans offer around 7 K/MB, but specific data plans will offer around 1000 MMK/GB or less. Prices for IDD and roaming services vary depending on the operators and destination countries. In urban areas only, there is not much difference between operators for local calls and data.

**Table (3.7): Mobile and Fixed Broadband Internet Density by States and Regions**

**(Years 2017/2018-2018/2019)**

| | Mobile Phone User per 100 People | | Fixed Broadband Internet User per 100 people | |
|---|---|---|---|---|
| | 2017-18 | 2018-19 | 2017-18 | 2018-19 |
| **Union** | **100** | **137** | **0.39** | **0.06** |
| Kachin State | 109 | 132 | 0.36 | 0.06 |
| Kayah State | 148 | 176 | 0.97 | 0.06 |
| Kayin State | 78 | 106 | 0.17 | 0.03 |
| Chin State | 98 | 96 | 0.34 | 0.04 |
| Mon State | 101 | 147 | 0.42 | 0.06 |
| Rakhine State | 55 | 63 | 0.11 | 0.01 |
| Shan State | 75 | 90 | 0.33 | 0.5 |
| Sagaing Region | 102 | 123 | 0.17 | 0.03 |
| Tanintharyi Region | 93 | 116 | 0.36 | 0.03 |
| Bago Region | 79 | 119 | 0.27 | 0.02 |
| Magway Region | 96 | 200 | 0.12 | 0.02 |
| Mandalay Region | 115 | 164 | 0.20 | 0.11 |
| Yangon Region | 151 | 211 | 1.17 | 0.16 |
| Ayeyawaddy Region | 76 | 96 | 0.18 | 0.01 |
| Nay Pyi Taw | 139 | 144 | 1.19 | 0.06 |

(Source: Central Statistical Organization, 2020)

The cost of and difficulty in obtaining SIM cards in Myanmar were both high for a long time, however cards sold by the Telenor, Ooredoo, Mytel, and MPT (Myanmar Post & Telecommunications) networks are now typically accessible for a reasonable 1,500 Myanmar MMK. Top-up cards are available in denominations of 1,000 MMK, 3,000 MMK, 5,000 MMK, and 10,000 MMK.

Mobile phone users, whether registered or not, frequently use multiple SIM cards to meet their needs. Most mobile phone users in capital cities such as Nay Pyi Taw, Yangon, and Mandalay use two SIM cards for separate business and personal use. In some states, like Kayah, people use additional SIM cards for ease of accessing the network, improving mobile service quality, and achieving better signal stability.

### 3.3.1 Internet in Myanmar

The country's telecommunications sector was revolutionized in 2013, and speed is steadily increasing and prices are becoming cheaper. As of 2020, free Wi-Fi is available at almost every hotel. Unlike other countries, Myanmar hugely rely on 4G Internet than cable or Wi-Fi. Surprisingly, Yangon has the 4th-fastest 4G speeds in East Asia, despite the fact that it had the slowest speeds in Asia before 2013. Seamless 4G Every town and city has access to the internet, as well as key major roads. Unless it is in a distant location or a region where there is active hostilities, even a tiny village is likely to have access to 3G Internet. Data costs are around 1000 MMK (0.8 USD) per GB. There are also cheaper fancy data plans depending on operators. MPT is the largest mobile operator, and Telenor is second. 4G SIM cards are available at international airports and any convenience store.

With the extended coverage of 4G and mobile smartphones, once dominant Internet cafes are going out of business and turning into gaming stations. In order to access the Internet urgently, those gaming stations can be visited, but extensive file downloading is not welcome because it can affect their gaming experience. Facebook and Viber are the most popular apps and services in Myanmar.

The government controls each of the more than a dozen domestic internet service providers, making access to the internet expensive, stringently regulated, and censored. In addition to the poor infrastructure in the country, these factors meant that only 1 percent of the population accessed the internet in 2011. The number of Internet users in Myanmar is one of the lowest of any country in the world. Internet users: 110,000 (2009); Internet hosts: 1,055 (2012). (Freedom House, 2012)

Private individuals were not given access to the Internet for a very long time. Generally, it is impossible to read the email. Some persons may have store-and-forward email accounts, which provide the government the ability to watch over and block them. Internet cafes and certain other academic and commercial establishments permit Web access, but a national system restricts access to websites.

### 3.3.2 Internet Serviced in Myanmar in Early 2000s

Only 5,000 people have access to the Internet as of 2003, when there were only two Internet cafes in Yangon and none elsewhere in the nation. Universities at the time had access to the Internet, and the government had a lot of firewalls, filters, and other types of restricting technologies in place.

For internet access in 2003, Internet cafes charged 1.50 USD per hour, which was expensive for those from Myanmar. It appears that a large number of users were only there to play video games or visit websites connected to employment and education. Anyone who desired email service in 2003 had to pay a high price for it from a provider that was approved by the government. Internet connections were not available in even the business centers of five-star hotels. In one law, having a modem was punishable by 15 years in prison. Six soldiers and a colonel were once detained for visiting a website critical of the government. The military government of Myanmar was still preventing its citizens from accessing news websites and even web-based email services like Yahoo or Hotmail in the late 2000s.

## 3.4    Remarkable Growths of Myanmar Telecommunication Sector

Myanmar's telecommunications industry has reached a number of important milestones thanks to the growth of technology in both quantity and quality.

**Table (3.8) Development of Myanmar Telecommunication Sector**

| Year | Events |
| --- | --- |
| 1861 | The first telegraph lines were established in Myanmar |
| 1884 | The first telephone services with 1300 fixed-line telephones in Yangon were installed |
| 1937 | 50 towns were linked for telephone and telegraph service |
| 1970 | 22,000 telephones were installed, about 17,400 are in Yangon |
| 1978 | Satellite earth stations allowed direct contact with six countries |
| 1987 | 73,203 telephone lines were installed in Myanmar |
| 1993 | First cellular mobile system launched in Yangon |
| 1997 | Mobile capacity was "fully occupied" with 7,000 roaming subscribers in Yangon and 1,000 in Mandalay |
| 1997 | MPT offered internet email service to 138 leased line users and 5510 dialup users in Yangon and Mandalay |
| 2000 | The SEA-ME-WE-3 undersea internet cable was completed |
| 2005 | 482,128 fixed-line telephones were in use in Myanmar |
| 2013 | low-cost 1000 MMK SIM cards began to be distributed by Lucky Draw |
| 2014 | Telenor and Ooredoo were given licenses to provide mobile services |

(Source: Myanmar Posts and Telecommunications, 2014)

MPT, which is owned by the government, is the only operator in Myanmar until 2013. After that, new foreign operators will be allowed. Myanmar's telecommunications industry included one of the last underdeveloped telecommunications markets in Asia until 2013. At that time, Myanmar was a separate country with a closed economy that did not allow foreign investment. Only MPT provides fixed and mobile telephone services for Myanmar's people. The SIM cards were extremely expensive, costing between 1500 USD and 3000 USD on the market.

In 2013, the telecommunications industry experienced liberalization. Operators from Qatar and Norway, Ooredoo and Telenor, respectively, entered the market in 2014 through their local subsidiaries, Ooredoo Myanmar and Telenor Myanmar, which led to lower consumer pricing, a sharp increase in subscriber numbers, and the development of the nation's infrastructure.

The telecoms sector reform in Myanmar has the power to help millions of people escape poverty. Reform can also give the private sector in Myanmar a new method to operate during this period of transition.

Previously, the nation's monopoly was held by Myanmar Post and Telecommunication (MPT). The government began opening up the telecoms industry in 2013 by granting licenses to new service providers. The government received assistance from the consulting company Roland Berger during the tendering and liberalization processes. Ooredoo Myanmar and Telenor Myanmar, the local subsidiaries of Qatar-based Ooredoo and Norwegian Telenor, respectively, joined the market in 2014. As a result, consumer prices decreased, subscriber numbers increased quickly, and the infrastructure of the nation was expanded. Myanmar was ranked as the fourth fastest-growing mobile market worldwide by Ericsson in November 2015. Mobile phone penetration in Myanmar increased from less than 10% in 2012 to 54.6% as of June 2015. Mytel (Telecom International Myanmar Co., Ltd.) received a license to offer telecommunications services on January 12, 2017, making it the fourth operator in Myanmar.

**Table (3.9): Timeline of the Telecom Developments in Myanmar**

| Connectivity Developments and Telecom Reform in Myanmar | | |
|---|---|---|
| Licensing | 2011 August | New government |
| | 2012 January-July | Design the call for tenders |
| | 2012 August | Launch of the call for tenders |
| | 2013 June | Announcement of the Awarded Companies |
| Telecom Law | 2013 July-November | Design of the Telecom Law |
| | 2013 Nov-December | Open Consultation |
| | 2014 January | Licensing and Start of the infrastructure buliding |
| Independent Regulator | 2015 | Launching the independent Telecom Regulator |
| | 2015 Nov-December | General Election and New Government |

Source: Andrea Calderaro, Digitalizing Myanmar, 2014

### 3.4.1 Development of Telecommunication Services and Infrastructure

In order to meet the basic requirements for local and nationwide service for business and government. Domestic: System can barely provide basic service; cellular phone system is very underdeveloped, with less than 1 subscriber for every 100 people; landing point for the SEA-ME-WE-3 optical telecommunications submarine cable, which connects Asia, the Middle East, and Europe; Intelsat (Indian Ocean) and ShinSat (2007) satellite earth stations.

The government of Myanmar has invited bids for two new telecom licenses. The cutoff date was established as February 8, 2013. The licenses, which have up to 20-year contracts, were supposed to be awarded in June. After this round of bidding, it was anticipated that two more licenses would be available.

**Table (3.10): Development of Telecommunication Services and Infrastructure**

| Indicator | Before Telecom reform | After telecom reform |
|---|---|---|
| Nationwide Telecom Operator | MPT | MPT, Ooredoo, Telenor, Mytel |
| Fixed telephone | 0.61 million | >0.52 million |
| Mobile telephone | 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-MEA-WE-3 | SEA-MEA-WE-3 (2000) SEA-MEA-WE-5 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 |
| Mobile phone penetration | | 85% of total mobile handset |
| Coverage | | 87.56% (Pop)/ 55.6% (Geo) |

(Source: Country Report Myanmar Post and Telecommunications, 2016)

Government figures show that as of the end of 2012, 5.4 million of Myanmar's 60 million residents have mobile phone subscriptions, giving the nation a 9 percent

mobile penetration rate. Myanmar has 857 base transceiver stations (BTS) for 1,654,667 local GSM mobile users, 188 BTS for 225,617 local WCDMA mobile users, 366 BTS for 633,569 local CDMA-450 mobile users, and 193 BTS for 341,687 local CDMA-800 mobile users, according to government statistics published in mid-2012. With 1500 towers installed around the nation, 40% by ZTE and 60% by Huawei, the majority of the towers were built in Yangon, Mandalay, and Naypyidaw, according to Huawei.

The Norwegian Telenor Group and Ooredoo of Qatar were chosen as the winners of the two telecom licenses offered by the government of Myanmar by the Myanmar Telecommunications Operator Tender Evaluation and Selection Committee. The licenses give the operators 15 years to develop and run a countrywide wireless network. In August 2014, Ooredoo started offering low-cost SIM cards for 1.5 USD in Yangon, Mandalay, and Naypyidaw. Prior to 2012, SIM cards were priced at 1,500 USD during military control.

The fourth telecom company in Myanmar is Mytel. It is a joint venture between Star High Public Co. Ltd., which has the backing of the Myanmar Army and owns 48 percent of it, Viettel Group, which is owned by the Ministry of Defense of Vietnam, and 28 percent of it, and Myanmar National Telecom Holding Public Ltd., which is a group of 11 local businesses and has a combined 23 percent stake. At the Mytel launching ceremony on February 11, 2018, Commander-in-Chief Senior General Min Aung Hlaing announced that after erecting towers and stations around the nation, Mytel will cover 93 percent of the 2G networks and 60 percent of the 4G networks of Myanmar.

### 3.4.2   Development of Internet Services in Myanmar

Following the liberalization of the telecom industry, the government granted free access to the Internet for a period of time. A large number of people were freely utilizing the internet, frequently on publicly accessible mobile phones. Two of Myanmar's Internet service providers include the government-owned Myanmar Post and Telecommunication (MPT), Myanmar Teleport (formerly Bagan Cybertech), and Information Technology Central Services (ITCS). In the main cities across the nation, internet cafés are prevalent. Satellite Internet connections are provided by Com & Com, a VSAT provider, and Skynet, which also sells satellite TV.

MPT's official figures show that as of July 2010, there were over 400,000 Internet users in the nation (0.8% of the total population), the bulk of whom were concentrated in the country's two main cities, Yangon and Mandalay. It is difficult to acquire more recent

statistics, however given the extensive use of mobile phones and tablets with cellular modems on the 3G and 4G networks, internet usage is probably much higher than the numbers from 2010 suggest.

**3.5    Telecommunication Policy, Rule and Regulations**

In October 1885, the Myanmar Telegraph Act (India Act XIII) was announced first, and in January 1934, the Myanmar Wireless Telegraph Act (India Act XVII) was announced. The Myanmar Wireless Telegraph Act was revised in October 1993, and the State-owned Economic Enterprises Law was passed in March 1989.

The Computer Science Development Law was out in September 1996, and in April 2004, the Electronic Transactions Law was announced. In January 2011, the Myanmar Special Economic Zone Law was announced; in October 2013, the New Telecommunication Law was published; and in December of the same year, licensing rules, interconnection and accessing rules, spectrum rules, numbering rules, and competition rules were announced.

(Source: International Telecommunication Union, 2014)

**(i)    Myanmar's New Telecommunications Law**

On October 8, President U Thein Sein of the Union of Myanmar signed into effect the Telecommunications Law ("Telecom Law"). The Telecom Law was obviously written with international investors in mind as part of Myanmar's ongoing efforts to open up the country to the rest of the world and, in particular, foreign investment. In reality, the Telecom Law explicitly states that one of its objectives is to help Myanmar develop and modernize using telecommunications technology.

**(ii)    Telecom Law-covered Services**

The licensing system for high-level telecommunications service offering is established by the Telecom Law. The Telecom Law covers a wide variety of telecommunications services in its entirety. These services comprise I the provision or operation of network or infrastructure facilities, (ii) the provision of services for information transmission and reception, and (iii) the provision of services through transmission and reception. (Jones Day, Insights, 2013)

**(iii)    The Spectrum Rules**

The process for allowing the use of radio spectrum, the prerequisites for authorizing spectrum rights, and spectrum fees shall be decided by the Department

following public consultation, as per the Spectrum Rules. Radio spectrum can be sold at a set price, through a tender process, or at an auction. Spectrum licenses can only be given away or transferred with the Department's prior written consent. The recipient of the phone number is required to abide by the Telecoms Law and any additional applicable laws.

**(iv) The Licensing Rules**

The Ministry of Communications and Information Technology (now Ministry of Transport and Communications) of the Union Government (MOTC) issued Notification No. 16/2014 (Licensing Rules), which added rules and regulations regarding licensing as well as the implementing regulations to the Telecoms Law.

**(v) Services Licenses**

Companies with local or foreign investments must get a service license (service license) from the Department in order to offer network facility services, network services, and application services.

The following types of service licenses are permitted under the Licensing Rules:

(i) Network Facilities Service (Individual) License (NFSI), a top-level license that allows the licensee to engage in all activities.

(ii) Network Facilities Service (Class) License (NFSC), which is included in the NFSC license, but the license holder is entitled to apply for the NS and AS licenses.

(iii) Network Service License (NS), which allows for the development and upkeep of switches, routers, and processing devices but is restricted to telecom network infrastructure.

(iv) Application Service License (AS), which allows license holders to only conduct activities covered by the AS License. Additionally, a license for telecommunications equipment must be obtained in order to operate and possess certain telecommunications equipment. (Ministry of Transport and Communications, and Article: Charlton's Sites, 2020)

# CHAPTER IV

# SURVEY ANALYSIS

## 4.1 Research Design

The telecommunications sector is a key communication system for the development of the whole country. When players engage with one another via technology, this is known as telecommunication. Students also have the option of not leaving their homes in order to attend any course or institution; rather, those institutions use telecommunication to provide a number of courses that students can join from the comfort of their homes. They are able to save a lot of money that would have been spent on hostel lodging, transportation, and other expenses. As user demand for new technology grows, better quality telecommunication is required. Better telecommunication contributes to well-being in ways such as learning development and access to information and knowledge, and it has a significant impact on modern education and knowledge learning.

Changes to improve the quality of services are affected in many ways by how satisfied users are with the current communications system. Mobile phone users demand more reliable, more convenient, and more stable service, which will ensure the user's satisfaction. This research is based on the satisfaction and perceptions of mobile phone users who are attending regular courses and executive programs at the Human Resource Development Center of the Yangon University of Economics.

The target population of this study is over 20 to over 65 in age in order to cover both regular students and executive students who attend the current opening courses from Yangon University of Economics. The age group of mentioned above was chosen since individuals in this group typically experienced and most likely use the mobile devices such as mobile phones and laptops to attend the regular and executive courses.

## 4.1.1 Sampling Design

These studies were collected about the data of the perceptions from students as

the primary survey and the secondary data is obtained from the ministry of transport and communication (MOTC), the statistical database from the Central Statistical Organization (CSO), governmental websites, internet and Journals. The primary data use to analysis satisfaction of the mobile phone users. The quality of the mobile services was gathered through a face-to-face interview and online questionnaires with simple random method amongst the day students and executive students. The survey was carried out from September to October 2022. The survey was primarily conducted on both all the weekdays and all weekend. This survey is to analyze the user satisfaction and perception on the mobile technology usage and its impacts on the learning community. Using quantitative data analysis and to measure Five-Point Likert Scale for the satisfaction of the mobile phone users. The survey result shows descriptive methods, frequency statistics and percentage, graphs and reliability analysis for the mobile phone users' satisfaction on the distance mobile learning of the courses at Yangon University of Economics.

**Table (4.1) Sample Size Allocation**

| Master Program | Number of Students | Number of Selected Students |
|---|---|---|
| MDevS | 137 | 23 |
| MBA | 196 | 34 |
| MAS | 28 | 5 |
| MBF | 105 | 18 |
| MMM | 38 | 6 |
| MHTM | 11 | 2 |
| MPA | 143 | 25 |
| MSESI | 39 | 7 |
| **Total** | **697** | **120** |

(Source: Survey Data, October, 2022)

### 4.1.2 Sample Size Determination

In this study, a stratified random sampling was used to carry out a sample survey. Stratified random sampling involves dividing the entire population into homogenous groups called strata. Samples are randomly selected from each stratum. In this study, mobile technology usage and its impacts on community in Master program of Yangon University of Economics. There are eight Master Program and 697 master students in Yangon University of Economics. In line with the proposed sampling design,

sample students from each master program was randomly taken in a number proportional to the stratum's size compared with the population. The required minimum sample size was calculated using the following formula (Cochran, 1977).

$$n = \frac{Z^2 \, p \, q}{E^2} = \frac{1.96^2 \times 0.5 \times 0.5}{0.09^2} = 119$$

The master students were 697 and the selected students were 119. Since sample size exceeds 5% of the population (697× 0.05=35 students), the final sample size was calculated. Therefore, the final sample size becomes as followed.

$$n = \frac{n_0}{1 + \frac{n_0}{N}} = \frac{119}{1 + \frac{119}{697}} = 102$$

In many education and social research surveys, the response rates are normally well below 100%. In this study, the response rate was assumed 95%. The minimum sample size was (102÷0.85=120). Therefore, the required minimum sample size was 120 master students.

### 4.1.3   Questionnaire Design

The questionnaire was divided into four parts. Part one is about the demographic characteristics of mobile phone users and has nine questions. Part two is about general mobile phone usage and consists of 15 questions about usage and experiences. Part three is the general information of usage of Laptop and MacBook consisting of 13 questions that can be measured the usage and experiences. Part four consists of three particular facts, and the first one is about measuring the students' satisfaction with using mobile phone technology, which consists of 11 facts that have contributed to the whole society with positive effects and attitudes. The second one consists of 23 facts that are about the experiences and satisfactions of learning by mobile phone and laptop for online classes, which can be measured in terms of their effectiveness and impacts on the learning society using several virtues. Third one consists of 12 particular facts which are for the satisfaction on mobile service quality during online class which can be considered whether current mobile services quality and services are well enough for attending online class. Respondents were surveyed to rate their satisfaction with the item of overall satisfaction and 46 items in specific experiences, including satisfaction with mobile phone usage and usefulness. Five-point Likert-scale ratings ranged from strongly disagree, disagree, neither agree nor disagree (neutral), agree, and strongly agree.

**4.2 Data Analysis**

Well-developed computer software programs, such as the Statistical Package for the Social Sciences (SPSS) for quantitative data analysis, can decrease the workload of a researcher and grant objectivity in record selection. This data analysis software application can also assist researchers in discovering patterns for the generalization of lookup findings. A questionnaire is the most common device to check for comparable aims. The facts that were accrued will be analyzed through the use of statistical methods. Statistical tools (SPSS) were used for information input and analysis.

Data analysis consists of three steps. First, a statistical analysis was undertaken to measure frequency and percentage. The second is an overall satisfaction analysis that was performed with the aim of measuring five variables. Data analysis was carried out in two ways. The first was to measure all the data collected to investigate the students' general usage of the mobile phone at the YUEco. Reliability and general satisfaction are the essential ideas of quantitative approaches. Data were acquired from trustworthy sources, and survey questions were created after reading the relevant literature. A measure's reliability is its constancy. The "reliability analysis statistics" feature of SPSS program. The characteristics of measurement scales and the components that make them up can be studied through reliability analysis. The reliability analysis technique computes a variety of frequently used scale reliability measures and also gives data on the correlations between the scale's constituent items.

**4.2.1 Reliability Analysis**

The reliability analysis determines the percentage of a systematic variance in a scale by analyzing the correlation between the results from various scale administrations. As a result, if the correlation in the reliability analysis is high, the scale produces reliable outcomes and is thus reliable. If the alpha is 0.70 or greater, the instrument is regarded as being reliable.

**Table (4.2)   Cronbach Alpha Analysis**

| No. | Variable | No. of item | Cronbach Alpha |
|-----|----------|-------------|----------------|
| 1 | Student's satisfaction on General Usage | 11 | 0.913 |
| 2 | Student's satisfaction on Mobile Learning | 23 | 0.937 |
| 3 | Student's satisfaction on Service Quality | 12 | 0.772 |

(Source: Survey Data, October, 2022)

Table (4.2) shows that internal consistency is measured by Cronbach's alpha, which indicates how closely linked a group of items are to one another. The lowest related range is the acceptable 0.700 because a minimum correlation coefficient of 0.7 or more is acceptable. The Cronbach Alpha value of general mobile usage is 0.913, mobile learning is 0.937, and mobile service quality is 0.772. The Cronbach Alphas' value for all variables is greater than 0.7, so this result is acceptable.

**4.2.2 Demographic Characteristics of the Students**

The following table (4.3) shows the demographic characteristics of the students attending at the Yangon University of Economics. Part one of the questionnaire is the demographic characteristics of the regular and executive students based on nine questions.

**Table (4.3)   Demographic Profiles of Respondents**

| No. | Description | Particular | Frequency | Percentage (%) |
|-----|-------------|------------|-----------|----------------|
| 1. | Gender | Male | 45 | 37.5 |
|    |        | Female | 75 | 62.5 |
| | **Total** | | **120** | **100** |
| 2. | Age | 20 to 28 | 27 | 22.5 |
|    |     | between 29-34 | 33 | 27.5 |
|    |     | between 35-44 | 41 | 34.2 |
|    |     | between 45-54 | 16 | 13.3 |
|    |     | between 55-64 | 2 | 1.7 |
|    |     | Over 65 | 1 | 0.8 |
| | **Total** | | **120** | **100** |
| 3. | Generation | Silent (1928-1945) | 1 | 0.8 |
|    |            | Gen X (1965-1980) | 25 | 20.8 |
|    |            | Gen Y (1981-1996) | 78 | 65.0 |
|    |            | Gen Z (1997-2012) | 16 | 13.3 |
| | **Total** | | **120** | **100** |
| 4. | Race | Bamar | 97 | 80.8 |
|    |      | Kachin | 1 | 0.8 |
|    |      | Kayah | 1 | 0.8 |
|    |      | Karen | 3 | 2.5 |

| | | Chin | 3 | 2.5 |
|---|---|---|---|---|
| | | Mon | 1 | 0.8 |
| | | Rakhine | 7 | 5.8 |
| | | Shan | 7 | 5.8 |
| **Total** | | | **120** | **100** |

Source: Survey Data (October, 2022)

According to the table (4.3), all respondents consisted of 45 men and 75 women. The percentage of the women is 62.5% more than the percentage of the men of 37.5%. This result is the most of respondents in the university, students, and professionals are women. The age range of respondents were age 20-28 with 22.5%, age 29-34 with 27.5%, age 35-44 with 34.2%, age 45-54 with 13.3%, age 55-64 with 1.7%, and only one has no answer. The 35-44 age group measured for the highest number of respondents with 34.2%.

For the generation statement, the highest respondents were 65% of generation Y (millennials) born within 1981 to 1996, the second higher respondents were 20.8% of generation X born within 1965-1980, below that, 13.3% of generation Z were the second most lowest respondents and the rest 0.8% of Silent Generation were the lowest respondents.

At the Race & Ethnicity, the lowest respondents were 0.8% each of Kachin, Kayah and Mon while Karen and Chin were the second lowest respondents with 2.5% each, the second largest respondent groups were Shan and Rakhine with 5.8% each and Bamar were the giant group of respondents with 80.8% among all others respondents.

**Table (4.4) Demographic Profiles of Respondents in Professionals**

| No. | Description | Particular | Frequency | Percentage |
|-----|------------|-----------|-----------|-----------|
| 1. | Marital | Single | 66 | 55.0 |
| | | Married | 51 | 42.5 |
| | | Divorced | 1 | 0.8 |
| | | Other | 2 | 1.7 |
| | **Total** | | **120** | **100** |
| 2. | Education | Bachelor's Degree | 74 | 61.7 |
| | | Graduate Degree | 39 | 32.5 |
| | | Other | 7 | 5.8 |
| | **Total** | | **120** | **100** |
| 3. | Income Level | Under 300,000 MMK | 24 | 20.0 |
| | | 300,001-400,000 MMK | 20 | 16.7 |
| | | 400,001-500,000 MMK | 14 | 11.7 |
| | | 500,001-600,000 MMK | 9 | 7.5 |
| | | Above 600,000 MMK | 14 | 11.7 |
| | | Above 1,000,000 MMK | 39 | 32.5 |
| | **Total** | | **120** | **100** |
| 4. | Occupation | Government Service | 30 | 25.0 |
| | | Private Sector | 60 | 50.0 |
| | | NGO/INGOs | 8 | 6.7 |
| | | Students | 5 | 4.2 |
| | | Unemployed | 4 | 3.3 |
| | | Retired | 2 | 1.7 |
| | | Part-time Employed | 5 | 4.2 |
| | | Others | 6 | 5.0 |
| | **Total** | | **120** | **100** |
| 5. | Attending Program | MDevS | 23 | 19.2 |
| | | MBA | 34 | 28.3 |
| | | MAS | 5 | 4.2 |
| | | MBF | 18 | 15.0 |
| | | MMM | 6 | 5.0 |
| | | MHTM | 2 | 1.7 |
| | | MPA | 25 | 20.8 |
| | | MSESI | 7 | 5.8 |
| | **Total** | | **120** | **100** |

(Source: Survey Data, October, 2022)

Table 4.4 shows that, for marital status, the lowest respondents were divorced persons (0.8%), 1.7% of the respondents had another marital status, 42.5% of the respondents were married persons, and 55.0% of the respondents were the largest group of single students. So, most of the students were single.

At the education level, the lowest respondents were 5.8% unidentified in their level of education, 32.5% were students with some type of graduate degree, and 61.7% had a bachelor's degree. Although most of the students are graduates, most of the students are also educated. As a result, the majority of respondents (61.7%) are well-educated and attend Yangon University of Economics' executive master's degree program.

The majority of the 120 respondents to the survey, 60 respondents (50%) have professional lives working in the private sector, followed by 30 respondents (25%) working in the government sector.6.7% of the respondents, or 8 respondents, are working at NGO/INGOs, and 5 respondents are unemployed, while the other 5 respondents are still students. Retired people are the fewest in number (2), accounting for only 1.7% of all respondents. Part-time employed persons are also one of the lowest in quantity, at 5, and they represent 4.2 % of the total respondents while 6 respondents (5.0%) of the survey mentions others like UN agencies & family business owners, etc.

The range of monthly income levels under 300,000 kyats was 20.0%; 16.7% of the respondents with a sample size of 20 have incomes between 300,001 and 400,000 kyats; and 11.7% of the respondents with a sample size of 14 have incomes between 400,001 and 500,000 kyats.7.5% of the respondents (nine in total) have between 500,001 and 600,000 kyats, while 11.7% of the respondents (14 in total) have more than 600,000 kyats. The majority of the total respondents, 39 in number, and 32.5% of the total respondents, have a monthly income of more than 1,000,000 Myanmar Kyats.

The majority of respondents (28.3%), with a total of 34 respondents, are enrolled in an MBA program, while the second majority (20.8%), with a total of 25 respondents, and are enrolled in an MPA program. The third majority of the respondents, 19.2%, with a total of 23 respondents, are attending the MDevS program, and 15% of the total respondents, with a total of 18 respondents, are from the MBF program. MSESI Program attendees are 7 in quantity and 5.8% in percentage; MMM Program students are 6 in quantity and 5.0% in percentage; MAS Program attendees are 5 in quantity and 4.2% of the total respondents; and MHTM Program students are only 2 respondents and 1.7% of the total respondents.

**4.2.3    Descriptive Analysis for the Patterns of General Usage of Mobile Devices**

Table 4.5 describes that all the 120 students have mobile phones and using for business and also in learning process as well.

**Table (4.5)    General Information of Usage of Mobile Phone**

| No. | Descriptions | Category | Frequency | Percentage |
|-----|--------------|----------|-----------|------------|
| 1. | Using Mobile Phone | Yes | 120 | 100% |
| | | No | 0 | 0% |
| | **Total** | | **120** | **100** |
| 2. | Connect with Personal Email | Yes | 112 | 93.3% |
| | | No | 8 | 6.7% |
| | **Total** | | **120** | **100** |
| 3. | Mobile Service Provider | MPT | 95 over 120 | 79.2% of total |
| | | Ooredoo | 32 over 120 | 26.7% of total |
| | | Telenor | 56 over 120 | 46.7% of total |
| | | MyTel | 27 over 120 | 22.5% of total |
| 4. | Wi-fi/ FTTx Service Provider | DomePyan(MPT) | 26 | 21.7% |
| | | MyanmarNet | 17 | 14.2% |
| | | 5BB | 17 | 14.2% |
| | | Telenor | 8 | 6.7% |
| | | MBT | 7 | 5.8% |
| | | Ooredoo | 5 | 4.2% |
| | | Welink | 5 | 4.2% |
| | | Unilink | 3 | 2.5% |
| | | YTP | 2 | 1.7% |
| | | MyanmarLink | 2 | 1.7% |
| | | KineticMyanmar | 2 | 1.7% |
| | | Ananda | 1 | 0.8% |
| | | StreamNet | 1 | 0.8% |
| | | TureNet | 1 | 0.8% |
| | | OceanWave | 1 | 0.8% |
| | | Others | 22 | 18.3% |
| | **Total** | | **120** | **100** |

(Source: Survey Data, October, 2022)

**Figure (4.1) General Information of Mobile Operator Usage**
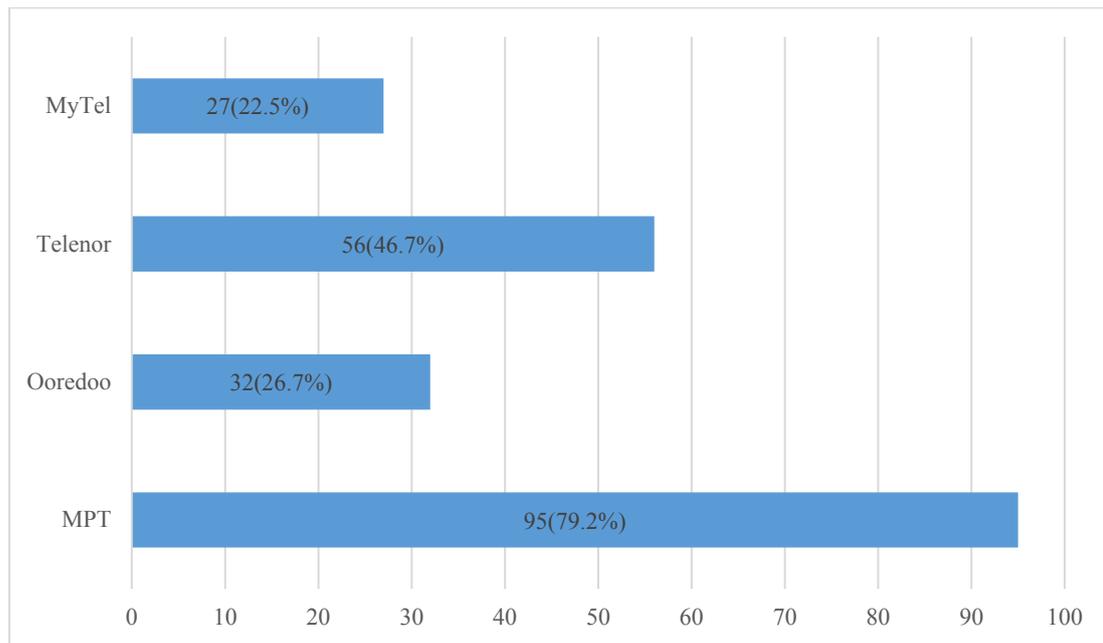


(Source: Survey Data, October, 2022)

Among 120 respondents, 112 respondents of the total are using their mobile phones with connecting and registering with their personal email address for the sake of emergency case and to restore and backup their personal contacts over the email servers. The majority of the respondents are using MPT network and the quantity is 95 respondents and 79.2% with the highest score. Telenor is the second most popular network operator, with 46.7% of the 56 respondents using it. The third most use operator is Ooredoo and the 32 respondents with the percentage of 26.7% are using. For the Wi-Fi services, MPT is the first well known and largest Wi-Fi provider among other operators and 26 respondents are using with the 21.7% of the total Wi-Fi users. The second and third most use Wi-Fi operators amongst the students are Myanmar Net and 5BB with the same amount of 17 respondents each are using with 14.2% of the total respondents. After these, Telenor is the forth rated Wi-Fi operator of 8 respondents using with 6.7% of the total respondents. After that, Ooredoo, Welink, Unilink, YTP, MyanmarLink, KineticMyanmar, Ananda, StreamNet, TureNet, OceanWave and Others are followed with 1 respondents to 5 respondents respectively.

**Table (4.6) General Information of Mobile Phone Users Profile**

| No. | Descriptions | Category | Frequency | Percentage |
|---|---|---|---|---|
| 1. | Number of Mobile Phone each students using | 1 | 50 | 41.7 |
|  |  | 2 | 59 | 49.2 |
|  |  | 3 | 9 | 7.5 |
|  |  | 4 | 2 | 1.7 |
| **Total** |  |  | **120** | **100** |
| 2. | Reasons why using more than one SIM card | Travelling | 10 | 8.3 |
|  |  | Just In case | 33 | 27.5 |
|  |  | Due to Network | 12 | 10.0 |
|  |  | Weak Signal | 5 | 4.2 |
|  |  | Call Quality | 6 | 5.0 |
|  |  | Data & Call | 37 | 30.8 |
|  |  | Others | 17 | 14.2 |
| **Total** |  |  | **120** | **100** |
| 3. | Usage in a week | Everyday | 118 | 98.3 |
|  |  | 5days a week | 1 | 0.8 |
|  |  | 2-3 days a week | 0 | 0 |
|  |  | Occasionally | 1 | 0.8 |
| **Total** |  |  | **120** | **100** |
| 4. | Mobile Phone Brand | Apple | 50 | 41.7 |
|  |  | Samsung | 30 | 25.0 |
|  |  | Huawei | 3 | 2.5 |
|  |  | Mi, Oppo, etc. | 37 | 30.8 |
| **Total** |  |  | **120** | **100** |
| 5. | Mobile Operation System OS | iOS | 50 | 41.7 |
|  |  | Android | 70 | 58.3 |
| **Total** |  |  | **120** | **100** |
| 6. | Billing amount of mobile phone per Month | < 5,000 MMK | 15 | 12.5 |
|  |  | 5,001-10,000 MMK | 32 | 26.7 |
|  |  | 10,001-25,000 MMK | 40 | 33.3 |
|  |  | 25,001-50,000 MMK | 26 | 21.7 |
|  |  | > 50,001 MMK | 5 | 4.2 |
|  |  | >100,000 MMK | 2 | 1.7 |
| **Total** |  |  | **120** | **100** |

(Source: Survey Data, October, 2022)

Table 4.6 shows some of the respondents are using more than one SIM card to meet their needs. Among the 120 respondents, the majority of the respondents—59 persons—are using 2 mobile SIM cards, representing 49.2% of the total respondents. 41.7% of respondents (50 people) use only one SIM card, 9 respondents (7.5%) use three SIM cards, and 2 respondents (1.7% of the total) use four SIM cards. Many respondents use more than one SIM card, with one SIM primarily used for internet data and the other for calls; the majority of respondents, 37 in total, represent 30.8% of the total respondents. Second, 33 respondents (27.5%) use more than one SIM card just in case.17 respondents (14.2%) are using more SIMs for other reasons; 12 respondents (10%) are using more SIMs due to the network reception area; and 10 respondents (8.3%) are using more SIMs because they are working in other cities and traveling around the country. 5 respondents (4.2%) are because of a weakness in signal strength, and 6 respondents (5%) mention the call quality while they are using calls.

The majority of respondents (118) use their mobile phones on a daily basis, accounting for 98.3% of the total. One respondent (0.8%) uses a cell phone on occasion, while another (0.8%) uses it five days a week. According to Table 4.6, 50 of the total respondents (41.7%) use Apple mobile devices, 30 of the total respondents (25.0%) use Samsung brands, 37 respondents (30.8%) use various brands such as Mi, Oppo, and so on, and the three remaining respondents (2.5%) use Huawei brands. The Android mobile operating system is used by the majority of respondents (70 respondents (58.3%), while iOS is used by 50 respondents (41.7%).

According to the table (4.6), the majority of respondents, 33.3% (40), pay a monthly phone bill of 10,001-25,000 Myanmar Kyats, while the second majority, 26.7% (32), pay a monthly bill of 5,001-10,000 Myanmar Kyats. The third majority of the respondents, 21.7%, which have a total of 26 respondents, are paying 25,001–50,000 Myanmar Kyats monthly, while 12.5% of the total respondents, which have a total of 15 respondents, are paying only under 5,000 Myanmar Kyats monthly for the mobile phone billing. Some 5 respondents (4.2%) have a monthly bill of more than 50,001 Myanmar Kyats, while the two lowest respondents (1.7%) have a monthly bill of more than 100,000 Myanmar Kyats.

**4.2.4   Descriptive Analysis for the Patterns of General Usage of Laptop/MacBook**

**Table (4.7)   General Information of Usage of Laptop/ MacBook**

| No. | Descriptions | Category | Frequency | Percentage |
|-----|-------------|----------|-----------|------------|
| 1. | Using Laptop or MacBook | Laptop | 105 | 87.5 |
| | | MacBook | 7 | 5.8 |
| | | Using Both | 6 | 5.0 |
| | | Not have | 2 | 1.7 |
| **Total** | | | **120** | **100** |
| 2. | Computer Operating System Windows or iOS | Windows7 | 11 | 9.2 |
| | | Windows8 | 15 | 12.5 |
| | | Windows10 | 65 | 54.2 |
| | | Windows11 | 16 | 13.3 |
| | | iOS Version | 11 | 9.2 |
| | | Not have | 2 | 1.7 |
| **Total** | | | **120** | **100** |
| 3. | Experiences of using laptop or MacBook | Under 3 years | 24 | 20.0 |
| | | Within 3 years | 12 | 10.0 |
| | | Above 3 years | 10 | 8.3 |
| | | Above 5 years | 23 | 19.2 |
| | | Within 10 years | 11 | 9.2 |
| | | Above  10 years | 34 | 28.3 |
| | | Almost use to it | 5 | 4.2 |
| | | No Experience at all | 1 | 0.8 |
| **Total** | | | **120** | **100** |
| 4. | Time of use in a week | Everyday | 81 | 67.5 |
| | | 5 Days a week | 20 | 16.7 |
| | | 2-3 Days a week | 10 | 8.3 |
| | | Occasionally | 8 | 6.7 |
| | | No Use at all | 1 | 0.8 |
| **Total** | | | **120** | **100** |

(Source: Survey Data, October, 2022)

According to the table (4.7), the majority of respondents, 87.5%, with a total of 105, use laptops, while 5.8% of respondents with a total of 7 use MacBook, 5% of respondents with a total of 6 use both laptops and MacBook, and only two respondents (1.7%) do not own laptops or MacBook but have some experience using laptops, personal computers, and Mac devices.

According to the table (4.7), the majority of respondents (54.2%) use the Windows 10 operating system, with a total of 65 respondents, while the second largest group of respondents (13.3%), with a total of 16 respondents, and use the Windows 11 operating system. The third majority of respondents, 12.5%, with a total of 15 respondents, use Windows 8, 9.2%, with a total of 11 respondents, use Windows 7, and the same number and percentage of respondents use the iOS operating system. Only two respondents (1.7%) do not use both Windows and iOS systems but may have few experiences with simple office work.

In table 4.7, the most experienced respondents are 4.2% of the respondents, with 5 respondents; the majority, 28.3% of the respondents, with 34 respondents, is well-experienced and influential in using laptops; and the second-most influential respondents are 9.2% of the respondents, with 11 respondents. The respondents (19.2%) and 23 respondents have experience older than 5 years, and the respondents (8.3%) and 10 respondents have experience older than 3 years. Another 10% and 20% of the quantity of 12 and 24 respondents are less experienced in using laptops under 3 and within 3 years, and 0.8% of respondents, which represents 1 respondent, have no experience using laptops or MacBook.

The majority 67.5% of respondents, with 81 in quantity, use a laptop or MacBook every day for their working and learning needs, and the second majority, 16.7%, with 20 in quantity, use them mostly on weekdays as working hours. The 10 respondents, which represents 8.3%, are using only 2 or 3 days in a week, and some 6.7% of the respondents, totaling 8 persons, are using occasionally, but only one respondent does not use at all.

**Table (4.8)   General Information of Type of Using Laptop or MacBook**

| No. | Descriptions | Category | Frequency | Percentage |
|---|---|---|---|---|
| 1. | Laptop or MacBook is mostly used for | Office Work | 74 | 61.7 |
| | | Making Design | 6 | 5.0 |
| | | Processing Word | 6 | 5.0 |
| | | Dictation | 4 | 3.3 |
| | | Record for Meeting | 10 | 8.3 |
| | | Revision Lectures | 5 | 4.2 |
| | | Email | 4 | 3.3 |
| | | Music | 1 | 0.8 |
| | | Gaming | 1 | 0.8 |
| | | Project Planning | 2 | 1.7 |
| | | Reading eBooks | 4 | 3.3 |
| | | Working Excel | 2 | 1.7 |
| | | Printing Work | 1 | 0.8 |
| | **Total** | | **120** | **100** |
| 2. | Using Internet through Mobile phone connection with | Not At All | 17 | 14.2 |
| | | Both Wi-Fi & USB | 12 | 10.0 |
| | | Wi-Fi hotspot | 45 | 37.5 |
| | | USB Tethering | 42 | 35.0 |
| | | Bluetooth Tethering | 3 | 2.5 |
| | | Others | 1 | 0.8 |
| | **Total** | | **120** | **100** |
| 3. | Using Connect with CCTV & Security System | Yes | 20 | 16.7 |
| | | No | 100 | 83.3 |
| | **Total** | | **120** | **100** |
| 4. | Data transferring between Laptop and Mobile phones | Once A week | 21 | 17.5 |
| | | Twice A week | 8 | 6.7 |
| | | Many times a week | 25 | 20.8 |
| | | Everyday | 11 | 9.2 |
| | | Not Transfer at all | 54 | 45.0 |
| | | Not have | 1 | 0.8 |
| | **Total** | | **120** | **100** |

(Source: Survey data, October, 2022)

In table 4.8, the majority 61.7% of the total with 74 respondents uses laptops for office work, and the second majority 8.3% with 10 respondents uses them for online meetings and classes with lecture recording. Each 5.0% of respondents with 6 respondents use word processing and design work, while the 4.2% of respondents with 5 respondents use it to re-vision lectures and homework. In terms of quantity, 3.3% of the four respondents use laptops and MacBook for dictation, email, and eBooks, while 1.7%, or two students, use them for project planning and spreadsheet creation. Every 0.8% of respondents with 1 respondent use it to listen to music, play games, and print documents.

The majority (37.5%) of respondents, or 45 people, connect to the internet via Wi-Fi hotspot from their mobile phones when using the Internet via a mobile phone connection. The second majority 35% of the 42 respondents are using the internet with connections via USB tethering connected with a USB cable, and 10% of the 12 respondents are using both Wi-Fi and USB tethering. For safety and security, 14% of respondents in quantity 17 do not connect both cable and Wi-Fi hotspot at all, and 0.8% of respondents in quantity one use Bluetooth as the safest method of tethering.

The majority 83.3% of respondents with a total of 100 respondents do not use laptops to connect with home security systems like CCTV, and the minority of 16.7% of respondents with 20 respondents only connect laptops to security systems.

The majority of 45% of respondents (54 in total) do not transfer data between laptops and mobile phones at all, 25% of respondents transfer data several times per week, and 9.2% of respondents (11 in total) transfer data between laptops and mobile phones every day. Some 21% and 8% of respondents transfer data once or twice a week, respectively. One person represents 0.8% of those who do not transfer data using a laptop.

**Table (4.9)   General Information of Using Cloud, Mobile Apps and Social Media**

| No. | Descriptions | Category | Frequency | Percentage |
|---|---|---|---|---|
| 1. | Using Laptop and Mobile data storing online Cloud servers | Google Drive | 99 | 82.5 |
| | | pCloud | 4 | 3.3 |
| | | DropBox | 2 | 1.7 |
| | | OneDrive | 6 | 5.0 |
| | | Others | 8 | 6.7 |
| | | Not Use at all | 1 | 0.8 |
| **Total** | | | **120** | **100** |
| 2. | Browsing Internet and Services through | Websites | 24 | 20.0 |
| | | Mobile Application | 56 | 46.7 |
| | | As depends | 39 | 32.5 |
| | | Not Use at all | 1 | 0.8 |
| **Total** | | | **120** | **100** |

(Source: Survey data, October, 2022)

There are numerous online cloud storage options for storing data safely and securely, including learning lectures and recorded lessons. Table (4.9) describes that the majority of respondents, 82.5%, which represents 99 respondents, are using Google Drive, and the other internet cloud servers are pCloud, Dropbox, OneDrive, etc. as 3.3%, 1.7%, 5.0%, and 6.7%, respectively. For browsing internet services, the majority (46.7%) of the respondents (56 persons) are using mobile applications, and 20% of the respondents (24 persons) are still using websites.

**Figure (4.2) General Information of Using Social Media Services**
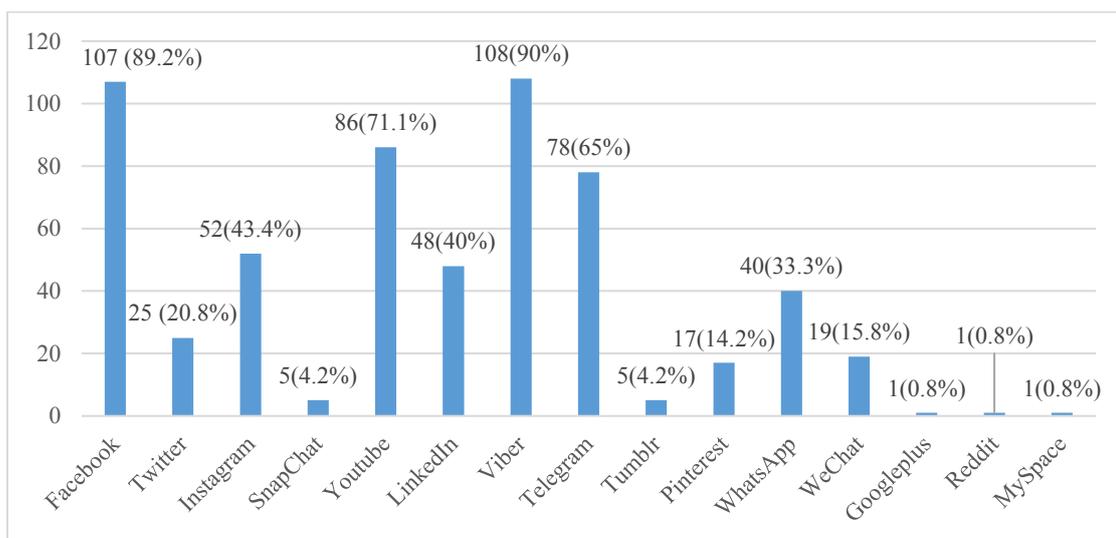


(Source: Survey data, October, 2022)

According to Figure (4.2), the most popular social media service among YUEco students is Viber, with 90% of respondents using it, rather than Facebook, with 89.2% using it. Even though Facebook is the most popular social media platform for mobile phone and tech users today, 71.1% of respondents use YouTube regularly, making it the third most popular social media platform. Telegram is the fourth most popular app, with 65% of respondents using it on a regular basis. Following these platforms are 43.4%, 40%, 33.3%, 20.8%, 15.8%, 14.2%, and 4.2%, respectively. Instagram, LinkedIn, WhatsApp, Twitter, WeChat, Pinterest, Snap Chat, and Tumblr are the next platforms.

With 0.8% of the respondents, one respondent each uses Google Plus, Reddit, and Myspace.

**Figure (4.3) General Information of Using Messenger Services**
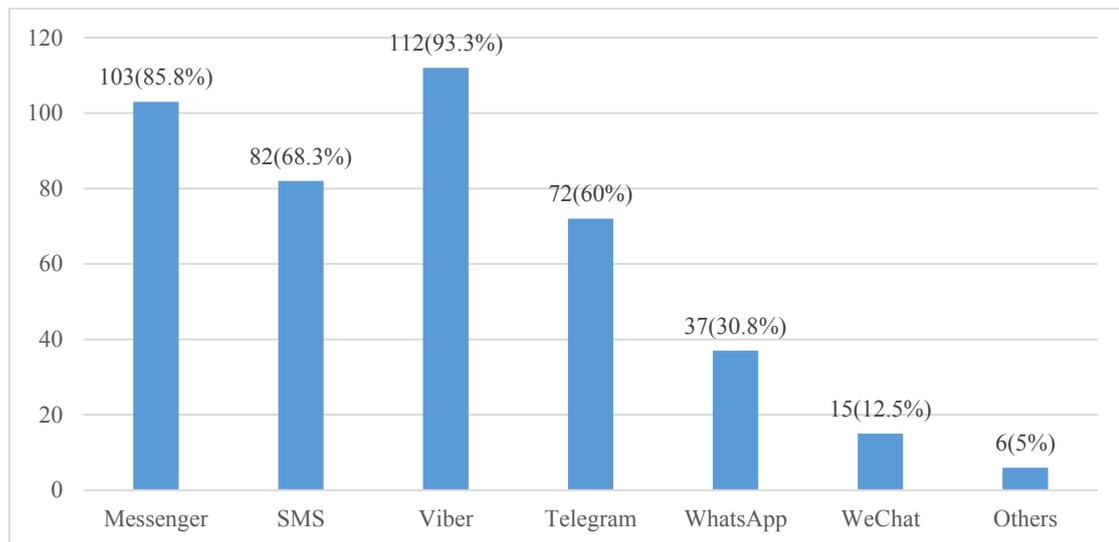


(Source: Survey data, October, 2022)

In Figure (4.3), the majority of the respondents are Viber users, with 93.3% and 112 respondents in quantity, and the second majority are Messenger users, with 85.8% and 103 respondents in quantity. The third and fourth largest groups are Short Message Service and Telegram users, with 68.3% and 60%, respectively. For the minority, 30.8%, 12.5%, and 5% of the respondents are on WhatsApp, WeChat, and Other Messenger, respectively.

**4.3        Descriptive Analysis of Survey**

This analysis consists of Student's satisfaction of general usefulness of mobile phones. It can analysis the overall Students' satisfaction on usefulness which shows the good impacts on society, Long distance Communication, Good for Education, Health and Morality, Saving Time, Easy Learning & Easy Knowledge with mobile phones and Positive effects is more than Negative effects with mobile phone services and technology. It can provide to remark the current condition and satisfaction of user side to network operator as well.

**4.3.1        Students' Satisfaction on General Usefulness of Mobile Phones**

Descriptive analysis presents student's satisfaction on general usefulness as part three of the whole item. It analyses the student's satisfaction on general mobile phone usefulness about good impacts on society, Long distance Communication, Good for Education, Health and Morality, Saving Time, Easy Learning & Easy Knowledge with mobile phones and Positive effects is more than Negative effects with mobile phone services and technology. It can be analyzed through Table (4.10) and Figure (4.4). According to the descriptive analysis, Students' satisfaction on general usefulness of mobile phones can be presented by frequency and percentage of question concerned.

**Figure (4.4)Student's Overall Satisfaction on General Usefulness**
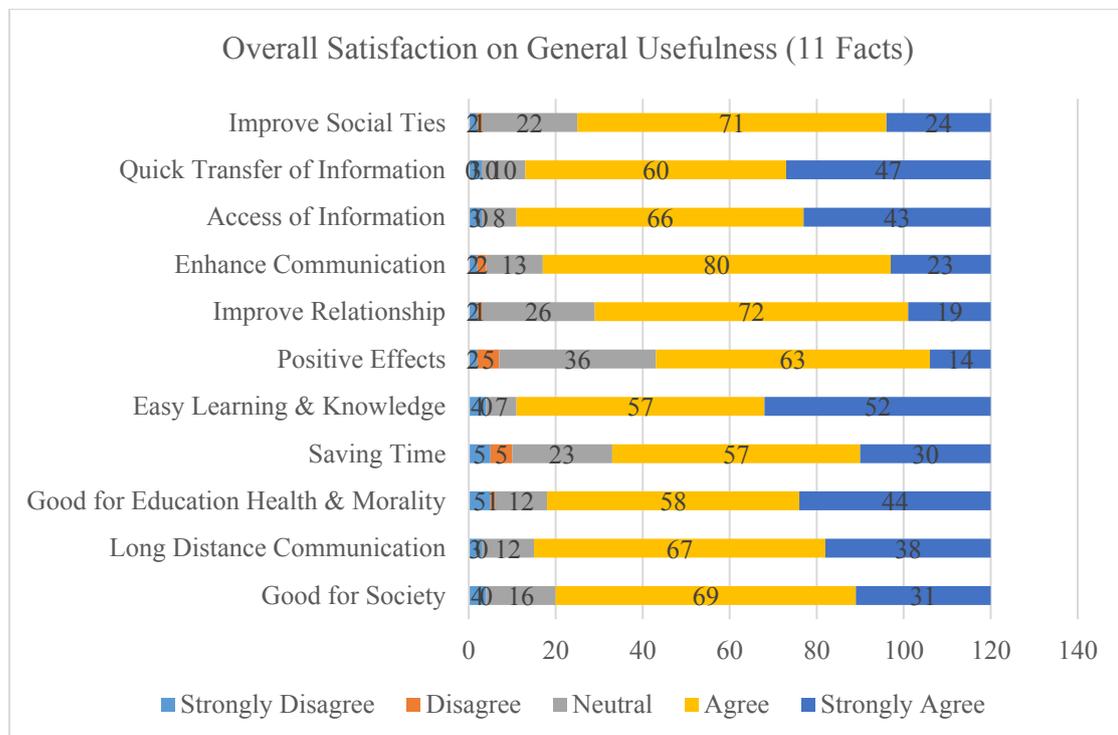


Source: Survey data (October 2022)

**Table (4.10) Frequency and Percentage of General Usefulness**

| No. | Questions | | Strongly Disagree | Disagree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| 1 | Good for Society | N | 4 | - | 16 | 69 | 31 |
| | | % | 3.3 | - | 13.3 | 57.5 | 25.8 |
| 2 | Long Distance Communication | N | 3 | - | 12 | 67 | 38 |
| | | % | 2.5 | - | 10.0 | 55.8 | 31.7 |
| 3 | Good for Education , Health & Morality | N | 5 | 1 | 12 | 58 | 44 |
| | | % | 4.2 | 0.8 | 10.0 | 48.3 | 36.7 |
| 4 | Saving Time | N | 5 | 5 | 23 | 57 | 30 |
| | | % | 4.2 | 4.2 | 19.2 | 47.5 | 25.0 |
| 5 | Easy Learning & Knowledge | N | 4 | - | 7 | 57 | 52 |
| | | % | 3.3 | - | 5.8 | 47.5 | 43.3 |
| 6 | Positive Effects than Negative | N | 2 | 5 | 36 | 63 | 14 |
| | | % | 1.7 | 4.2 | 30.0 | 52.5 | 11.7 |
| 7 | Improve Relationship | N | 2 | 1 | 26 | 72 | 19 |
| | | % | 1.7 | 0.8 | 21.7 | 60.0 | 15.8 |
| 8 | Enhance Communication | N | 2 | 2 | 13 | 80 | 23 |
| | | % | 1.7 | 1.7 | 10.8 | 66.7 | 19.2 |
| 9 | Access of Information | N | 3 | - | 8 | 66 | 43 |
| | | % | 2.5 | - | 6.7 | 55.0 | 35.8 |
| 10 | Quick Transfer of Information | N | 3 | - | 10 | 60 | 47 |
| | | % | 2.5 | - | 8.3 | 50.0 | 39.2 |
| 11 | Improve Social Ties | N | 2 | 1 | 22 | 71 | 24 |
| | | % | 1.7 | 0.8 | 18.3 | 59.2 | 20.0 |

Source: Survey Data (October, 2022)

According to table (4.10), the answer of 120 respondents' satisfaction on general usefulness, mobile phone usefulness is positive than negative (5.9%), Enhance communication (3.5%), Good for education, health & morality (5%) and Saving time (8.4%) are disagreed and strongly disagreed respondent. Good for society (83.3%), quick transfer of information (89.2%), enhanced communication (85.9%), easy learning and knowledge (90.9%), and access to information (90.8%) are all agreed or strongly agreed upon by the respondent. Therefore, eleven questions about the general usefulness, almost

all questions are strongly agreed and some few questions are little disagreed, assumed that the general usefulness of mobile phone can greatly effect to the society. The effectiveness and usefulness of mobile phones depend on their users' proper usage.

**Table (4.11) Students' Satisfaction on General Usefulness of Mobile Phones**

| No. | Statement | N | Mean | Std. Deviation |
|------|---------------------------------|-----|-------|----------------|
| GU1 | Good for Society | 120 | 4.03 | .835 |
| GU2 | Long Distance Communication | 120 | 4.14 | .792 |
| GU3 | Good for Edu, Health & Morality | 120 | 4.13 | .931 |
| GU4 | Saving Amount of Time | 120 | 3.85 | .984 |
| GU5 | Easy Learning & Knowledges | 120 | 4.28 | .850 |
| GU6 | Positive Effects than Negative | 120 | 3.68 | .799 |
| GU7 | Improving Relationship | 120 | 3.88 | .740 |
| GU8 | Enhanced Communication | 120 | 4.00 | .722 |
| GU9 | Access of Information | 120 | 4.22 | .780 |
| GU10 | Quick Transfer of Information | 120 | 4.23 | .807 |
| GU11 | Improving Social Ties | 120 | 3.95 | .754 |
| | **Overall mean** | | **4.036** | **.818** |

Source: Survey Data (October, 2022)

As shown in Table (4.11), most of the questions about the general usefulness of mobile phone are greatly satisfied. The associated means that the general usefulness attributes demonstrated that the students were satisfy with the current usefulness (M = 4.0). Table 4.11 summarizes the distribution of responses. The mean of overall mean also indicate that customers are neutral on general usefulness of mobile phones (M=4.036, SD=0.818).

**4.3.2 Students' Satisfaction on Learning by Mobile Phones**

Descriptive analysis presents student's satisfaction on learning by mobile phones as part four of the whole item. It analyses the students' satisfaction on new way of learning, flexibility, interactions, effective tool, Useful contents, efficiency, achievement and recommendations. It can be analyzed through Table (4.12), Table (4.13), Figure (4.5) and Figure (4.6). According to the descriptive analysis, students' satisfaction on learning by mobile can be presented by frequency and percentage of questions concerned.

**Figure (4.5) Students' Overall Satisfaction on Mobile Learning (Fact 1 to 13)**
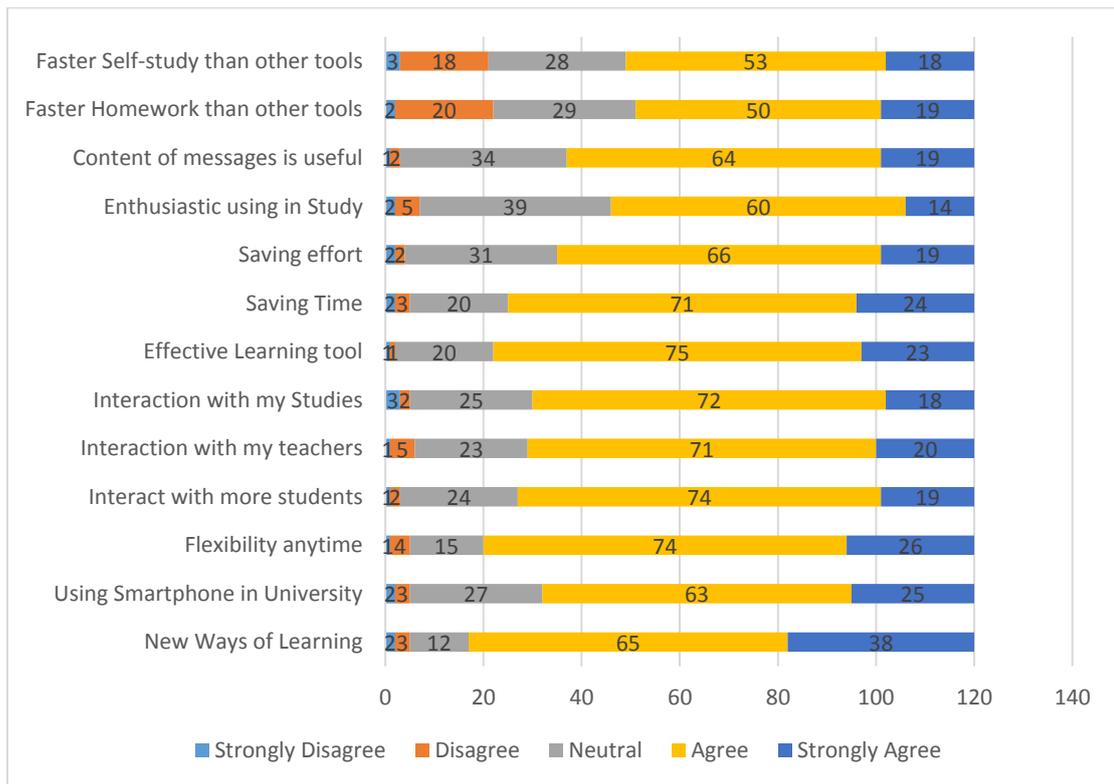


(Source: Survey Data, October, 2022)

**Figure (4.6) Students' Overall Satisfaction on Mobile Learning (Fact 14 to 23)**
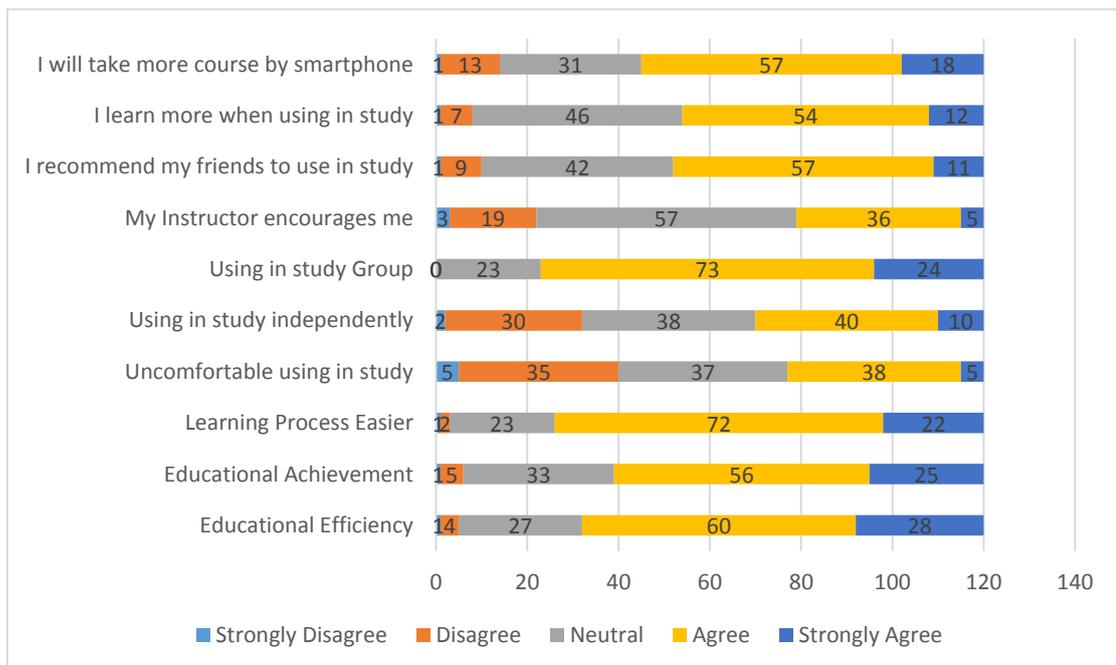


(Source: Survey Data, October, 2022)

**Table (4.12) Frequency Statistics of Satisfaction on Mobile Learning (1 to 13)**

| No | Questions | | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|----|-----------|---|-------------------|----------|---------|-------|----------------|
| 1 | New way of learning | N | 2 | 3 | 12 | 65 | 38 |
| | | % | 1.7 | 2.5 | 10.0 | 54.2 | 31.7 |
| 2 | Satisfied using in university | N | 2 | 3 | 27 | 63 | 25 |
| | | % | 1.7 | 2.5 | 22.5 | 52.5 | 20.8 |
| 3 | Flexibility at anytime | N | 1 | 4 | 15 | 74 | 26 |
| | | % | 0.8 | 3.3 | 12.5 | 61.7 | 21.7 |
| 4 | Interaction with more students | N | 1 | 2 | 24 | 74 | 19 |
| | | % | 0.8 | 1.7 | 20.0 | 61.7 | 15.8 |
| 5 | Interaction with my teachers | N | 1 | 5 | 23 | 71 | 20 |
| | | % | 0.8 | 4.2 | 19.2 | 59.2 | 16.7 |
| 6 | Interaction with university studies | N | 3 | 2 | 25 | 72 | 18 |
| | | % | 2.5 | 1.7 | 20.8 | 60.0 | 15.0 |
| 7 | Effective learning tools | N | 1 | 1 | 20 | 75 | 23 |
| | | % | 0.8 | 0.8 | 16.7 | 62.5 | 19.2 |
| 8 | Saving the time | N | 2 | 3 | 20 | 71 | 24 |
| | | % | 1.7 | 2.5 | 16.7 | 59.2 | 20.0 |
| 9 | Saving the effort | N | 2 | 2 | 31 | 66 | 19 |
| | | % | 1.7 | 1.7 | 25.8 | 55.0 | 15.8 |
| 10 | Enthusiastic using in study | N | 2 | 5 | 39 | 60 | 14 |
| | | % | 1.7 | 4.2 | 32.5 | 50.0 | 11.7 |
| 11 | Content of message is useful | N | 1 | 2 | 34 | 64 | 19 |
| | | % | 0.8 | 1.7 | 28.3 | 53.3 | 15.8 |
| 12 | Faster homework than other tools | N | 2 | 20 | 29 | 50 | 19 |
| | | % | 1.7 | 16.7 | 24.2 | 41.7 | 15.8 |
| 13 | Faster Self-study than other tools | N | 3 | 18 | 28 | 53 | 18 |
| | | % | 2.5 | 15.0 | 23.3 | 44.2 | 15.0 |

(Source: Survey Data, October, 2022)

**Table (4.13) Frequency Statistics of Satisfaction on Mobile Learning (14 to 23)**

| No | Questions | | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|----|-----------|---|----|----|----|----|----|
| 14 | Educational efficiency | N | 1 | 4 | 27 | 60 | 28 |
| | | % | 0.8 | 3.3 | 22.5 | 50.0 | 23.3 |
| 15 | Educational achievement | N | 1 | 5 | 33 | 56 | 25 |
| | | % | 0.8 | 4.2 | 27.5 | 46.7 | 20.8 |
| 16 | Learning process easier | N | 1 | 2 | 23 | 72 | 22 |
| | | % | 0.8 | 1.7 | 19.2 | 60.0 | 18.3 |
| 17 | uncomfortable in study | N | 5 | 35 | 37 | 38 | 5 |
| | | % | 4.2 | 29.2 | 30.8 | 31.7 | 4.2 |
| 18 | Use in study independently | N | 2 | 30 | 38 | 40 | 10 |
| | | % | 1.7 | 25.0 | 31.7 | 33.3 | 8.3 |
| 19 | Using in study group | N | 0 | 0 | 23 | 73 | 24 |
| | | % | 0 | 0 | 19.2 | 60.8 | 20.0 |
| 20 | My instructor encourages me | N | 3 | 19 | 57 | 36 | 5 |
| | | % | 2.5 | 15.8 | 47.5 | 30.0 | 4.2 |
| 21 | Recommend my friends to use | N | 1 | 9 | 42 | 57 | 11 |
| | | % | 0.8 | 7.5 | 35.0 | 47.5 | 9.2 |
| 22 | Learn more with using in study | N | 1 | 7 | 46 | 54 | 12 |
| | | % | 0.8 | 5.8 | 38.3 | 45.0 | 10.0 |
| 23 | Will take more courses | N | 1 | 13 | 31 | 57 | 18 |
| | | % | 0.8 | 10.8 | 25.8 | 47.5 | 15.0 |

(Source: Survey Data, October, 2022)

According to table (4.12) and figure (4.5), 120 respondents disagreed or strongly disagreed with mobile learning, faster homeworking (18.4%), and faster self-studying tools (17.5%).The agreed and strongly agreed respondent responses are: new way of learning (85.9%), satisfied using in university study (73.3%), flexibility (83.3%), interaction with more students (77.5%), interaction with my teacher (75.0%), interaction with university studies (75%), effective learning tools (81.7%), saving time (79.2%), saving effort (70.8%), enthusiastic using in university study (61.7%), and contents of messages being useful (69.1%).

As a result, eleven questions about mobile learning are strongly agreed with and two questions are slightly disagreed with, implying that mobile learning can have a significant impact on the learning society at YUEco. Mobile learning makes students' lives more accessible and effective. Besides, applying mobile phones to learning added more flexibility and readiness to the learning process, and it was assumed that it thoroughly changed the way teachers, universities, and students communicate.

According to table (4.13) and figure (4.6), 120 respondents' satisfaction with mobile learning was as follows: uncomfortable in study (33.4%), use in study independently (26.7%), and my instructor encourages me (18%).Educational efficiency (73.3%), educational achievement (67.5%), making the learning process easier (78.3%), using in study (80.8%), recommending it to a friend (56.7%), learning more with using in study (55%), and taking more courses (62.5%) are all important factors for the agreed and strongly agreed respondents. As a result, seven questions about mobile learning in class are strongly agreed upon, while only three are slightly disagreed upon, indicating that it is assumed that learning via mobile phones can have positive effects on learning. The majority of the respondents agree that learning on mobile phones could make the process easier and agree that students should learn more using mobile phones in their studies and will take more courses in the future.

As shown in Table 4.14 below, Uncomfortable with using a mobile phone in class, my instructor encourages me to use it in class, but using it independently in class barely suffices. Other items are mostly satisfied. The associated means that all mobile learning experiences demonstrated that YUEco students were neither dissatisfied nor satisfied with mobile learning (M > 3).

**Table (4.14) Students' Satisfaction on Mobile Learning**

| No. | Statement | N | Mean | Std. Deviation |
|---|---|---|---|---|
| LM1 | New way of learning | 120 | 4.12 | .812 |
| LM2 | Using mobile phone in University | 120 | 3.88 | .822 |
| LM3 | Flexibility at any time | 120 | 4.00 | .745 |
| LM4 | Interact with more students | 120 | 3.90 | .703 |
| LM5 | Interact with my teachers | 120 | 3.87 | .766 |
| LM6 | Interact with my studies | 120 | 3.83 | .792 |
| LM7 | Effective Learning Tool | 120 | 3.98 | .686 |
| LM8 | Saving Time | 120 | 3.93 | .786 |
| LM9 | Saving Effort | 120 | 3.82 | .778 |
| LM10 | Enthusiastic using in study | 120 | 3.66 | .804 |
| LM11 | Content of messages in useful | 120 | 3.82 | .745 |
| LM12 | Faster homework than other tools | 120 | 3.53 | 1.004 |
| LM13 | Faster self-study than other tools | 120 | 3.54 | 1.003 |
| LM14 | Educational Efficiency | 120 | 3.92 | .816 |
| LM15 | Educational Achievement | 120 | 3.83 | .837 |
| LM16 | Learning process easier | 120 | 3.93 | .719 |
| LM17 | Uncomfortable using in study | 120 | 3.03 | .974 |
| LM18 | Using in study independently | 120 | 3.22 | .972 |
| LM19 | Using in study group | 120 | 4.01 | .628 |
| LM20 | My instructor encourages me | 120 | 3.18 | .837 |
| LM21 | Recommend my friend to use | 120 | 3.57 | .796 |
| LM22 | Learn more when using in study | 120 | 3.58 | .785 |
| LM23 | Will take more course by MP | 120 | 3.65 | .895 |
| | **Overall mean** | | **3.730** | **.813** |

(Source: Survey Data, October, 2022)

Table 4.14 summarizes the distribution of responses. The mean of overall satisfaction also indicate that some few students are neutral but the majority respondents are satisfy with the learning by mobile phones (M=3.730, SD=0.813) on attending online courses from YUEco.

### 4.3.3 Students' Satisfaction on Mobile Service Quality

Descriptive analysis presents Student's satisfaction on Mobile Service Quality as part five of the whole item. It analyses the students' satisfaction on Network signal availability, Stability, Strength, Wi-Fi connection, Internet Speed, Online Class, Online Examination, Public Wi-Fi, VPN Using, Sharing Program's information and Online class during COVID19 period. It can be analyzed through Table (4.15) and Figure (4.7).

**Figure (4.7) Student's Overall Satisfaction on Mobile Service Quality**
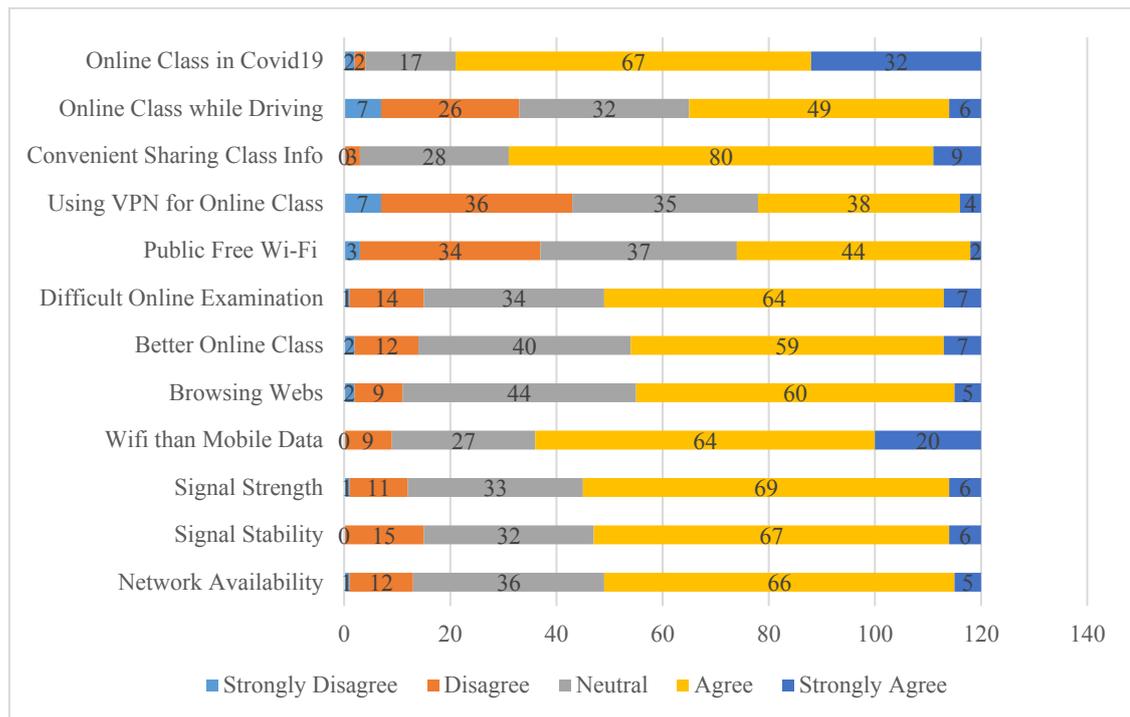


Source: Survey Data (October, 2022)

**Table (4.15) Frequency and Percentage Statistics of Mobile Service Quality**

| No | Questions | | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 1 | Network Signal Availability | N | 1 | 12 | 36 | 66 | 5 |
| | | % | 0.8 | 10.0 | 30.0 | 55.0 | 4.2 |
| 2 | Well Signal Stability | N | - | 15 | 32 | 67 | 6 |
| | | % | - | 12.5 | 26.7 | 55.8 | 5.0 |
| 3 | Well Signal Strength | N | 1 | 11 | 33 | 69 | 6 |
| | | % | 0.8 | 9.2 | 27.5 | 57.5 | 5.0 |
| 4 | Wi-Fi than Mobile data | N | - | 9 | 27 | 64 | 20 |
| | | % | - | 7.5 | 22.5 | 53.3 | 16.7 |
| 5 | Better Browsing Webs | N | 2 | 9 | 44 | 60 | 5 |
| | | % | 1.7 | 7.5 | 36.7 | 50.0 | 4.2 |
| 6 | Better Online Class | N | 2 | 12 | 40 | 59 | 7 |
| | | % | 1.7 | 10.0 | 33.3 | 49.2 | 5.8 |
| 7 | Online Examination | N | 1 | 14 | 34 | 64 | 7 |
| | | % | 0.8 | 11.7 | 28.3 | 53.3 | 5.8 |
| 8 | Public free Wi-Fi for Class | N | 3 | 34 | 37 | 44 | 2 |
| | | % | 2.5 | 28.3 | 30.8 | 36.7 | 1.7 |
| 9 | Using VPN on Class | N | 7 | 36 | 35 | 38 | 4 |
| | | % | 5.8 | 30.0 | 29.2 | 31.7 | 3.3 |
| 10 | Convenient Sharing info | N | - | 3 | 28 | 80 | 9 |
| | | % | - | 2.5 | 23.3 | 66.7 | 7.5 |
| 11 | Online Class While Driving | N | 7 | 26 | 32 | 49 | 6 |
| | | % | 5.8 | 21.7 | 26.7 | 40.8 | 5.0 |
| 12 | Effective during COVID | N | 2 | 2 | 17 | 67 | 32 |
| | | % | 1.7 | 1.7 | 14.2 | 55.8 | 26.7 |

Source: Survey Data (October, 2022)

Table 4.15 shows that 120 respondents disagreed or strongly disagreed with the quality of mobile network service, using VPN for online classes (35.8%), online classes while driving (27.5%), and public free Wi-Fi being better than mobile data (30.8%) and online exams (12.5%), respectively. Effective Online Class during the COVID19 period (82.5%), Convenient Sharing of Class Information (74.2%), Better Wi-Fi than Mobile

Data (70%), Signal Strength (62.5%), Signal Stability (60.8%), and the rest are agreed and strongly agreed upon.

As a result, nine of the twelve questions about mobile service quality were strongly agreed upon, while three were slightly disagreed upon, implying that the network service quality of mobile phones can have a significant impact on the ease of learning at YUEco.

**Table (4.16) Students' Satisfaction for Mobile Service Quality**

| No. | Statement | N | Mean | Std. Deviation |
|-----|-----------|---|------|----------------|
| SQ1 | Network Availability | 120 | 3.52 | .767 |
| SQ2 | Signal Stability | 120 | 3.53 | .777 |
| SQ3 | Signal Strength | 120 | 3.57 | .764 |
| SQ4 | Better Wi-Fi than Mobile data | 120 | 3.79 | .809 |
| SQ5 | Better Browsing Webs | 120 | 3.48 | .767 |
| SQ6 | Better online class | 120 | 3.48 | .820 |
| SQ7 | Online Examination | 120 | 3.52 | .809 |
| SQ8 | Public Wi-Fi for online class | 120 | 3.07 | .905 |
| SQ9 | Using VPN for online class | 120 | 2.97 | .995 |
| SQ10 | Sharing class Information | 120 | 3.48 | .820 |
| SQ11 | Attending online class while driving | 120 | 3.52 | .809 |
| SQ12 | Effective online class during COVID | 120 | 3.07 | .905 |
| **Overall mean** | | | **3.417** | **.829** |

Source: Survey Data (October, 2022)

Table 4.16 shows that some respondents' responses to the questions "Using VPN for online class, Online class while driving, public free Wi-Fi better than mobile data, and Online Examination" are unsatisfactory. Effective Online Class during the COVID19 period, convenient sharing of class information, better Wi-Fi than mobile data, signal strength, signal stability, and the rest are nearly satisfied. Students were neutral with the level of service quality provided by operators, as related to all mobile and Wi-Fi service indicators (M is over 3.0). Table 4.16 indicates how the responses were divided according to the overall satisfaction mean (M = 3.417, SD = 0.829).

**4.4    Overall Students' Satisfaction on Impacts of Mobile Phones**

This research is described about the overall student satisfaction on the impacts of mobile phones usage. Each variable show student respondents as mean score.

**Table (4.17) Overall Student's Satisfaction on Impacts of Mobile Phones**

| No. | Description | Mean Score |
|-----|-------------|------------|
| 1 | Student satisfaction on General Usefulness | 4.036 |
| 2 | Student satisfaction on Learning by mobile phones | 3.730 |
| 3 | Student satisfaction on Mobile Service Quality | 3.417 |
| | **Overall mean value of satisfaction on Impact of Mobile Phones** | **3.728** |

Source: Survey data (October, 2020)

Table 4.17 displays students' overall satisfaction with their community impacts. Student respondent is related to satisfaction with the general usefulness of mobile phones (mean = 4.036), satisfaction with mobile phone learning (mean = 3.730), and satisfaction with mobile service quality (mean = 3.417).The overall satisfaction with the impact of mobile phone usage on the community is 3.728, indicating that at YUEco, the impacts of mobile phones on the community are either satisfactory or not satisfactory (neutral).

According to the overall results, the mean value of satisfaction with the general usefulness of mobile phones can be assumed to be high, indicating that mobile phones can have positive effects on society in terms of education, health, and morality, and thus can provide an opportunity to obtain information, positive effects, and improve social ties. The mean value of satisfaction with learning via mobile phones indicates that studying lectures via mobile phones assists students in discovering a new way of learning and provides satisfaction. The technology of mobile phones gives the flexibility to use anytime in study; learning through a mobile phone is an effective interactive tool that saves time and effort, allows for easy attendance at distant learning at home, and increases efficiency in self-study. But the mean value of satisfaction on mobile service quality means that attending an online class with the mobile signal from a public area and using a VPN to join a class are not convenient, and that shows the requirements and weakness among other values of satisfaction. So, the students attending the course at Yangon University of Economics should follow up on the opportunity for good learning by using mobile phones in order to achieve better efficiency in distant learning.

# CHAPTER V
# CONCLUSION

Over the past few years, there have been significant developments in Myanmar's telecommunications infrastructure. Myanmar Posts and Telecommunications was entirely responsible for managing communications until around the year 2012. (MPT). When attempting to do business in Myanmar, the low quality of the telecoms environment became an issue. However in 2013, Myanmar's government granted licenses to Telenor of Norway and Ooredoo of Qatar to operate as telecom providers there, and KDDI started offering technical assistance to Myanmar Posts and Telecommunications. This significantly changed the situation.

Since then, there has been constant investment in telecommunications infrastructure, leading to significant advances in the telecommunications environment. Foreign firms effectively control Myanmar's telecommunications sector. Infrastructure associated to mobile phones is receiving particular attention. The number of landline subscribers first decreased by about 10,000, and the landline diffusion rate decreased from 1.00% to 0.94%. In Myanmar, the typical private home does not have a landline, and even enterprises only have one or two phones on their property. Three new competitors—MPT, Telenor, and Ooredoo—who entered the market, contributed to the growth of Myanmar's mobile market. Market competition has significantly risen as a result.

After the introduction of a fourth operator, Mytel, in 2019, the mobile market was on the verge of saturation and was seeing greater rivalry over data prices. People often equate being online with being on Facebook, the main digital communication platform with over 22 million users and the focal point of news, events, promotion, and marketing. Small businesses and corporations may not have websites, but they almost always have Facebook pages. With approximately 25 million active users and use by local government and lawmakers, Viber has an even wider audience. Operators are offering packages with free Facebook data access and making necessary changes to their data plans, such as increasing the "bucket size" or allowing unlimited data for a brief period

of time, as a result of learning how and why people use their phones in particular ways and how these habits develop over time. Some companies also provide limitless long distance calls.

In addition, the COVID-19 has changed industrial conditions globally, creating the ideal environment for digital e-commerce and m-commerce to flourish. Data traffic is moving from urban and office locations to suburban and rural areas. Geographical pressure on the network changes as more individuals work from home. Many markets are experiencing an increase in voice traffic over 2G, 3G, and 4G networks due to quarantine and travel restrictions. Since the COVID-19 outbreak, there has been a discernible rise in fixed and mobile broadband access, leading to an increase in indoor leisure activities, virtual conferences, and video talking with friends and family.

Currently, the country is lacking a proper legal framework or regulation on privacy protection. The Post and Telecommunications Department (PTD) issued an order in early 2020 to go into SIM cards registry and use them legally with ID. Besides privacy controversy, there were direct orders from the communication industry to four of its mobile operators to block access to over 200 specified websites under Article 77 of the Telecommunications Law, according to Telenor. As tech and government grow more comfortable with each other, they'll face the temptation to indulge their shared instincts especially when both possess an intrusive power that can change public behavior. Active collaboration between the public and private sectors and proactive regulatory approaches are crucial to unlocking the needed investments in digital infrastructure and fostering the integrity of data and being transparent about how data is used should evolve as a responsible will.

The main objective of this study is to determine the factors that influence student satisfaction on the impacts on community with mobile learning with the general use, internet speed, mobile phone portability and the satisfaction of students of YUEco and examine the general experiences of the students in using mobile phones and laptop as well as MacBook. In conclusion, this study showed that students in regular and executive programs were satisfied with using mobile phones in learning. The results revealed that female students were more satisfied with learning by mobile than male students. In addition, students from all programs were satisfied with mobile learning.

## 5.1    Findings

This study examines the factors that influence YUEco student satisfaction with the services they receive from the wireless industry. Most people say that the first service he should change his provider because the network is not very good and the call charges are too high. We also found that on average, more than 50% of his college students were satisfied with their wireless service provider.

This study shows that students' satisfaction is necessary to determine the impact on the learning community at YUEco and to provide a better teaching and learning system for reform. This study found that most of the people who answered the survey (61.7% of women and 37.5% of men) were between the ages of 35 and 44 (34.2%), and most of them were taking regular or executive courses at YUEco. 50% are from the private sector, and 25% are from government service, resulting in an income level of 32.5% with a maximum salary of over 1,000,000 Myanmar kyats. The majority of respondents are MBA, MPA, and MDevS program students, with 28.3%, 20.8%, and 19.2%, respectively. 55.0% of those polled were single students, while 42.5% were married.

In the sample of 120 respondents, 112 respondents of the total are using their mobile phones to connect and register with their personal email addresses for the sake of emergency situations and to restore and backup their personal contacts over the email servers.

The majority of the respondents are using the MPT network, and the total quantity is 95 respondents, with 79.2% having the highest score. For the Wi-Fi services, MPT is the first well-known and largest Wi-Fi provider among other operators, and 26 respondents are using it, representing 21.7% of the total Wi-Fi users.

The majority of respondents (59 people) use two mobile SIM cards, accounting for 49.2% of all respondents, and 118 people use a mobile phone every day, accounting for 98.3% of all respondents. 50 respondents, or 41.7% of the total, use Apple mobile devices; 30 respondents, or 25.0% of the total, use Samsung brands; and 1.7% of the total use mobile phones with monthly billing of more than 100,000 Myanmar Kyats. The majority, 67.5% of respondents with 81 in quantity, use laptops or MacBook every day for their working and learning needs, and the second majority, 16.7% with 20 in quantity, use them mostly on weekdays as working hours. The majority of respondents (82.5%), which represents 99 respondents, are using Google Drive, and the most popular social media service is Viber, which 90% of respondents use (108 respondents), instead of

Facebook, which 89.2% of respondents use (107 respondents).

Concerning students' satisfaction with the general usefulness of mobile phones, 83.3% agree that they are good for society; 89.2% agree that it is a quick transfer of information; 85.9% agree that mobile phone technology is modern and improves communication; 90.8% agree that mobile phones support access to information; and 90.9% agree that it is easy to learn and easy to obtain knowledge. Therefore, mobile phones are very useful to the society at Yangon University of Economics.

Regarding the students' satisfaction with learning by mobile phones, 85.9% agree that mobile learning is the new way of learning, 83.3% agree that using mobile phones in learning has flexibility at any time, 79.2% agree that it saves time to learn at a distance, 75% agree that learning by mobile phones has good interaction with communicating with the study groups, lectures, and students, and 73.3% agree that learning by mobile phones can give the community the efficiency of education.

Regarding the students' satisfaction with mobile service quality, 82.5% agreed that internet with mobile networks supports attending lectures during the COVID-19 period and is effective in lectures; 74.2% agreed that sharing class information is convenient; 70% agreed that it is better to use Wi-Fi than mobile data to join the class; 62.5% said mobile signal strength is enough; and 60.8% assured signal stability for attending online class. Therefore, the network service quality of mobile phones can greatly affect the ease of learning at YUEco.

Factors influencing student satisfaction are critical for positive learning experiences with mobile smartphones. According to the summarized results, students are most agreeable with the positive outcomes of the overall factors. For the future development of the learning system, it was found that mobile phones were used for a variety of learning and teaching methods during online classes and meetings. Therefore, the students of the modern age would be interested in learning more and more courses provided by the Yangon University of Economics.

## 5.2    Suggestions

It have an effect on the boom of telecom provider commercial enterprise in Myanmar. The most of respondents they are agree in medium, therefore the government need to be enhance and make up telecom carrier or industry for business betters for next time, it should be have an vision to develop the human resource as perception of education industry to be standard and quality to better service provider with grant and

demand to support to the students' needs and balance for mobile phone users or modern commercial enterprise with the stability would like to run commercial business and needs about the best telecom provider from organization or enterprise as policy from government that support them all time.

These of using telecom service in station: according to respondent mostly they are agree medium, in this case, however telecomm industry or company should be improve and support on service quality to achieve among who are customer and customer with better in their performance that telecom service focus on operation to development higher service to customer in market place.

Advantages and disadvantages of using telecommunications services in relation to the economic aspects of everyday life: In this case, most respondents agree with the media, so the telecom service is for business people and those who want to use the telecom network for their relationships with others, and for business people who want to connect to her day. You must have a strategy to improve a person. , they themselves and in need of communication services very quickly. Additionally, telecommunications can provide knowledge, experience, and skills if you choose to use them in your daily life. Therefore, you can acquire skills in technology business such as mobile phones and social networks related to technology in Myanmar society.

The respondents agreed that they can do their business and they used telecom service to communicate with others like mobile phone, fixed phone, and smartphone. That is why, it is a very important tools to social media network and the tools for business in modern today, therefore, telecom service should be expand and provide various kind of services and give benefit to the students, peoples or business man as their development in daily life and also who is studying at Yangon University of Economics.

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# APPENDIX - QUESTIONNAIRE

## "Telecommunication in Myanmar
## (Case Study - Mobile Technology Usage and Its Impact on community at YUEco)''

| For Research team use only | (Form Number - _____) |
|---|---|
| Date of the Interview | _____ - Oct - 2022 |
| Interviewer's Name / Roll No. : | / |
| Interviewer's Programme : | |
| Interviewer's Contact Number | 09- |
| Interviewer's Email Address | @ |

## I.　　Demographics Profile

Age (radio buttons)
- ○ Under 20
- ○ 20-28
- ○ 28-34
- ○ 35-44
- ○ 45-54
- ○ 55-64
- ○ 65+
- ○ Prefer not to answer

What generation are you a part of?
- ○ The Silent Generation: Born 1928-1945
- ○ Baby boomers: Born 1946-1964
- ○ Generation X: Born 1965-1980
- ○ Millennials: Born 1981-1996
- ○ Generation Z: Born 1997-2012

Gender (radio buttons)
- ○ Male
- ○ Female
- ○ Other

Race & Ethnicity
_____

Marital Status
- ○ Single
- ○ Married
- ○ Partnered
- ○ Separated
- ○ Divorced
- ○ Widowed
- ○ Other (please specify_____)
- ○ Prefer not to answer

Study Program & Year at YUEco
:_____

Level of Education
- ○ High School diploma or equivalent
- ○ Some College
- ○ Bachelor's degree
- ○ Graduate degree
- ○ Other Degree: _____

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Level of Income (per Month)
○ Under 300,000 MMK  ○ 300,001-400,000 MMK ○ 400,001-500,000 MMK
○ 500,001-600,000 MMK ○ Above 600,000 MMK  ○ Above 1,000,000 MMK

Occupation / Employment Status
○ Government Service/Public Sector  ○ Private Sector/Company ○ NGOs/INGOs
○ Students      ○ Unemployed  ○ Retired      ○ Employed Part-Time
○ Other (_____)

---

## II.      General Information of Usage of Mobile or Cell Phone

1. Do you currently have a working mobile or cell phone, or not?
☐ Yes, I do    ☐ No, I do not

2. Do you currently have an email account registered with a mobile or cell phone service provider, or not?
☐ Yes, I do    ☐ No, I do not

3. Which of the following mobile or cell phone service providers do you use? (Please select all that apply.)
☐ MPT      ☐ Ooredoo   ☐ Telenor   ☐ Mytel    ☐ Others : _____
☐ my cell phone service provider is not listed above.

4. Which of the following Wifi/ FTTX service providers do you use? (Please select all that apply.
☐ MPT      ☐ Telenor   ☐ Ooredoo   ☐ YTP     ☐ MBT     ☐ YiMax
☐ Ananda    ☐ SpeedNet  ☐ StreamNet ☐ Myanmar Net    ☐ Myanmar Link
☐ TrueNet   ☐ Welink    ☐ NetCore   ☐ Fortune     ☐ Ocean Wave
☐ VNet     ☐ 5BB      ☐ UniLink   ☐ Kinetic Myanmar
☐ Others : _____    ☐ My service provider is not listed above.

5. How many working mobile or cell phones do you currently have? Why?
Answer : _____

6. Why do you use more than one SIM/ Network?
☐ Travelling around      ☐ Just In Case    ☐ Due to the Network Reception
☐ Weak Signal Strength    ☐ Call Quality    ☐ One for Data, another for Call
☐ Other reason : _____

7. How often do you use your mobile phone?
☐ Everyday    ☐ 5 days a week    ☐ 2-3 days a week    ☐ occasionally
☐ I do not use much        ☐ other: please explain

8. Which mobile phone(s) brand / model do you use? _____/_____

9. What is your current android or iOS Software Version? _____

10. In a typical month, about how much money, in Myanmar Kyats, do you spend on your mobile or cell phone service?

○ Less than 5000MMK    ○ 5000-10000MMK    ○ 10000-25000MMK
○ 25000-50000MMK    ○ More than 50000MMK ○ About 100000MMK

11. What do you mostly use your phone for? (Check all that apply)

☐ Financial           ☐ Travel            ☐ Word processor    ☐ Dictation
☐ Record information such as meetings    ☐ Lectures          ☐ Conversations
☐ Email               ☐ Video             ☐ Music             ☐ Social Media
☐ Gaming              ☐ Shopping          ☐ Watch TV          ☐ Phone Calls
☐ Video Calls         ☐ Text Messages
☐ other: In what areas of everyday life do you use a phone? _____

12. Which of the following activities do you do on your mobile or cell phone? (Check all that apply)

☐ Take photos            ☐ Make or receive phone calls      ☐ Send or receive emails
☐ Send or receive messages  ☐ Play videos (other than games)  ☐ Record videos
☐ Send or receive videos    ☐ Send or receive texts      ☐ Play music ☐ Play games
☐ Purchase products or services      ☐ Play podcasts
☐ General internet use (other than using social networking webs)   ☐ Send or receive photos
☐ Use social networking websites      ☐ other (please specify _____)

13. In a typical weekday, which of the following activities do you do on your mobile or cell phone most often? (Check all that apply)

☐ Purchase products or services      ☐ Play podcasts        ☐ Send or receive videos
☐ General internet use (other than using social networking websites)
☐ Send or receive instant messages   ☐ Record videos        ☐ Play videos (other than games)
☐ Play games              ☐ Send or receive texts        ☐ Make or receive phone calls
☐ Play music              ☐ Send or receive emails       ☐ Send or receive photos      ☐ Take photos
☐ Use social networking websites      ☐ other (please specify _____)

14. If you could use your mobile or cell phone for only one of the following activities, which activity would you choose? (Check all that apply)

☐ Send or receive emails      ☐ Play games        ☐ Purchase products or services
☐ Send or receive photos      ☐ Play music        ☐ Send or receive instant messages
☐ Play videos                 ☐ Take Photos        ☐ Make or receive phone calls
☐ Send or receive texts       ☐ Record videos      ☐ Play podcasts
☐ Send or receive videos      ☐ General use        ☐ Use social networking websites
☐ Other (please specify _____)

15. What accessibility settings do you use on your mobile phone? (Multiple choice)

☐ Screen reader such as Voiceover or Talkback    ☐ Zoom              ☐ Text size
☐ Invert colors        ☐ Color contrast settings   ☐ Speak text        ☐ On/off labels
☐ Hearing aids         ☐ Subtitles & Captioning    ☐ LED Flash for Alerts
☐ Mono Audio           ☐ Noise Cancellation        ☐ Guided Access     ☐ Switch Control
☐ Assistive Touch      ☐ Custom Gestures           ☐ Speech to Text
☐ Other: please tell us what you use? _____

_____

### III. General Information of Usage of Personal Computer and Laptop

1.  Do you use a laptop or desktop computer?
☐ Yes, I use a PC      ☐ Yes, I use a MAC   ☐ Yes, and I use both a PC and a MAC
(If yes, then ask the following)                ☐ No

2. Name your existing windows system and hardware capacity as much as you know.
_____

3. How much do your existing PC/Laptop cost?
☐ Under 5 Lakhs      ☐ 5 Lakhs-10 Lakhs   ☐ Above 10 Lakhs     ☐ Above 20 Lakhs
☐ Other : _____

4. How many years did you use your desktop or laptop or MAC?
☐ Under 3 years      ☐ Within 3 years      ☐ Above 3 years      ☐ Above 5 years
☐ Within 10 years    ☐ Above 10 years      ☐ Almost use to it    ☐ Other : _____
5. How often do you use your PC or Laptop or MAC?
☐ Everyday    ☐ 5 days a week      ☐ 2-3 days a week          ☐ occasionally
☐ I do not use accessibility features  ☐ other: please explain

6. What do you use your PC or Laptop or Mac for?
☐ Office Work          ☐ Design          ☐ Word processor    ☐ Dictation
☐ Record information such as meetings    ☐ Revision Lectures  ☐ Conversations
☐ Email                ☐ Video            ☐ Music              ☐ Social Media
☐ Gaming               ☐ Project Planning ☐ eBook              ☐ Art Work
☐ Video Calls          ☐ Excel            ☐ Printing           ☐ Animation
☐ Other: In what areas of everyday life do you use a PC/ Laptop?
Please describe _____

7. Do you connect internet with you Laptop/Mac via your mobile phone or tablet sharing hotspot?
☐ No          ☐ Yes, If Yes, Please select one which you mostly use.
              ☐ Wi-Fi Hotspot        ☐ USB Tethering
              ☐ Bluetooth Tether    ☐ Other _____

8. Do you use a Laptop/ Mac as a control for other appliances (e.g. TV, CCTV, thermostat, security system)?
☐ Yes          ☐ No / Please comment [_____]

9. How many times in a week do you transfer your personal data between your mobile device and your Mac/laptop connected through Data Cable?
☐ Once a week        ☐ Twice a week      ☐ Many times a week        ☐ Everyday
☐ Not transfer through cable as possible

10. Do you use internet cloud services to save your personal data and which one do you use?
☐ GoogleDrive          ☐ pCloud        ☐ MEGA       ☐ DropBox     ☐ OneDrive
☐ Koofr                ☐ Sync.com     ☐ IceDrive    ☐ Others: _____

11. If you have a choice between a mobile web and a mobile application, which would you typically choose?
☐ Mobile Website ☐ Mobile Apps ☐ Don't Know, as depends

12. Which type of social media do you use to connect with?
☐ Facebook ☐ Twitter ☐ Instagram ☐ SnapChat ☐ Youtube ☐ LinkedIn
☐ Viber ☐ Tumblr ☐ Telegram ☐ Pinterest ☐ WhatsApp ☐ WeChat
☐ GooglePlus ☐ Reddit ☐ MySpace ☐ Other: _____

13. Which kind of messenger Apps do you use to connect with?
☐ Messenger ☐ SMS ☐ Viber ☐ Telegram ☐ WhatsApp ☐ WeChat
☐ Other: _____

_____

**IV. Students Satisfaction on Mobile Phone**

Likert Scale
1= Strongly Disagree
2= Disagree
3= Neutral
4= Agree
5= Strongly Agree

### A. Students' Satisfaction on General Usefulness of Mobile Phone

| No. | Particular | 1 | 2 | 3 | 4 | 5 |
|-----|-----------|---|---|---|---|---|
| 1. | Good for society | | | | | |
| 2. | Maintain long-distance communication | | | | | |
| 3. | Good impact on education, health and morality | | | | | |
| 4. | Saving Amount of Time | | | | | |
| 5. | Easy Learning and easy knowledges | | | | | |
| 6. | Positive effect than negative effect personally | | | | | |
| 7. | Improving relationships | | | | | |
| 8. | Enhanced communication | | | | | |
| 9. | Access of information | | | | | |
| 10. | Quick transfer of information | | | | | |
| 11. | Improving Social Ties | | | | | |

### B. Students' Satisfaction on learning by Mobile Phone

| No. | Particular | 1 | 2 | 3 | 4 | 5 |
|-----|-----------|---|---|---|---|---|
| 1. | Using a mobile phone helps me find new ways of learning at the university | | | | | |
| 2. | I feel satisfied using a mobile phone in my university's studies | | | | | |
| 3. | A mobile phone gives me flexibility to use it any time | | | | | |

| 4. | I interact more with students when using a mobile phone | | | | | |
|---|---|---|---|---|---|---|
| 5. | Using a mobile phone increases my interaction with my teacher in comparison with old methods | | | | | |
| 6. | Using a mobile phone increases my interaction with my university's studies in comparison with old methods | | | | | |
| 7. | Learning through a mobile phone is an effective interactive tool in the learning process | | | | | |
| 8. | Using a mobile phone in my university's studies saves me time | | | | | |
| 9. | Using a mobile phone in my university's studies saves me effort | | | | | |
| 10. | I feel enthusiastic using a mobile phone in my university's studies | | | | | |
| 11. | I am satisfied with the content of the message when using the mobile phone because it is concise and useful | | | | | |
| 12. | A mobile phone helps me do my homework faster than other tools, including the computer | | | | | |
| 13 | A mobile phone helps me do my self-studying faster than other tools, including the computer | | | | | |
| 14 | Using a mobile phone in my university's studies increases my educational efficiency | | | | | |
| 15 | Using a mobile phone in my university's studies increases my educational achievement | | | | | |
| 16 | Using a mobile phone in my university's studies makes the learning process easier | | | | | |
| 17 | I don't feel comfortable when using the mobile phone in my university's studies | | | | | |
| 18 | I can use a mobile phone in my university's studies independently, without the need of others | | | | | |
| 19 | I can use a mobile phone in my university's studies in groups (like WhatsApp) | | | | | |
| 20 | My instructor encourages me to use a mobile phone in my classes | | | | | |
| 21 | I recommend to my friends that they use a mobile phone in their university's studies | | | | | |
| 22 | I learn more when using a mobile phone in my university's studies | | | | | |
| 23 | I will take more courses in the future that depend on a mobile phone | | | | | |

## C. Student's Satisfaction on Mobile Service Quality during Online Class

| No. | Particular | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1. | Network Signal availability is well enough for Online class in mobile service area. | | | | | |
| 2. | Signal Stability is well enough for Online class in mobile service area. | | | | | |
| 3. | Network Signal Strength is well enough for joining online class or online meeting. | | | | | |
| 4. | Connectivity with Wi-Fi is more reliable than Connectivity with Mobile Network Data in my area. | | | | | |
| 5. | Internet Speed for browsing web is better than before. | | | | | |
| 6. | Internet Speed for Online Class is better than before. | | | | | |
| 7. | Using Mobile Data, Online Examination and submitting answers in-time have some difficulties. | | | | | |
| 8. | Using Network Speed from Some Public free Wi-Fi area, Online Class could be attended with ease. | | | | | |
| 9. | Especially this time, Switching VPN is convenient while learning and online class | | | | | |
| 10. | Sharing and receiving Program's information among online students is convenient for all class members. | | | | | |
| 11. | Attending Online class while driving car or going somewhere is sometimes at ease. | | | | | |
| 12. | After Covid19, using Mobile Phone or Internet, online class or meeting is effective somehow instead of isolating and doing nothing in progress. | | | | | |