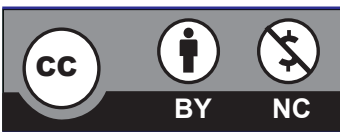


Research Article

## Demand & Perception Analysis of Nepal Telecoms' Fiber-to-the-Home (NT-FTTH) Service at Myanglung Municipality Tehrathum

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### ABSTRACT

Fiber-to-the-Home (FTTH) technology has revolutionized the internet landscape by providing high-speed and reliable internet access directly to residential premises. This research aims to conduct a demand analysis of FTTH internet services to understand the factors driving consumer adoption and the potential barriers hindering its widespread implementation in Myanglung Municipality service rendered by Nepal Telecom. The study employs a mixed-method approach, combining quantitative and qualitative interviews to gain comprehensive insights into consumer preferences, perceptions, and prices related to FTTH internet. The findings from this research will contribute to a better understanding of the market dynamics and inform internet service providers and policymakers on strategies for enhancing FTTH adoption

**Keywords:** demand, FTTH, internet, users, perception, Myanglung

## Introduction

Nepal Telecom, or NTC or Nepal Doorsanchar Company Limited, is Nepal's state-owned telecommunications service provider. Established in 1913 as the General Post and Telegraph Department (GPTD), it was later transformed into Nepal Telecommunications Corporation (NTC) in 1975. In 2004, it was further restructured and renamed Nepal Telecom. As the leading telecom operator in Nepal, Nepal Telecom offers a wide range of telecommunication services, including fixed-line telephone, mobile, internet, and data services. It provides connectivity and communication solutions to individuals, businesses, and government institutions nationwide. Nepal Telecom provides broadband connections, including ADSL (Asymmetric et al.) and FTTH (Fiber-to-the-Home). These services allow customers to access high-speed internet for various online activities.

Being a government-owned telecom operator, Nepal Telecom is crucial in connecting people across Nepal, especially in remote and rural areas where private operators might have limited reach. However, it faces competition from private telecom operators in the country. The company continuously works on expanding its network, improving service quality, and introducing new technologies to meet the evolving communication needs of the Nepalese population. Nepal Telecom (Nepal Doorsanchar Company Limited or NT) was actively providing Fiber-to-the-Home (FTTH) services in various parts of Nepal. However, the details and coverage may have changed since then, so we recommend checking the latest information from Nepal Telecom or reliable sources for the most up-to-date information.

The world's unique geographical, multi-lingual, multi-ethnic, multi-racial, and multi-religious combination of Mountain, Hill, and Terai country Nepal has more than 100 years of history in telephony service. It has been formulating appropriate policies and regulations for adopting

new technology, introducing the competitive market environment for the overall development of Information and Communication Technology (ICT) infrastructures, and applying ICT services and tools for socio-economic transformation. The Nepalese market continuously grows and has a huge demand for mobile telephony and internet subscriptions.

Nepal Telecom Launched FTTH Service in Myanglung on May 02, 2019, on the occasion of International ICT Day 2019. ADSL service based on the copper network cannot supply the demand of high bandwidth users like corporate and who have large family members. This issue and the triple-play service implementation plan of Nepal Telecom must require changing a traditional system to modern FTTH technology. The fast and most reliable wire-based internet service in the world is optical fiber-based technology.

Nepal Telecom District office in Terhathum now serves the FTTH service only in the capital city of Terhathum district; in other words, FTTH service is only available Core city of Myanglung bazaar with a total capacity of 1536 lines by installing three FDC (Fibre et al.). According to the NT information, First Cabinet was installed near the Meyanglung Bhagawati Temple in early 2078 B.S. Similarly Second Cabinet was installed near Tundikhel with a capacity of 512 users in early 2079 B.S. The third cabinet was installed near the Statue of Cat at Myanglung bus park with a capacity of 512 lines in Baisakh 2080.

## Objectives of the Research

- i. To identify the demand analysis of NT-FTTH Service in Myanglung Bazaar.
- ii. To identify NT-FTTH service users' perception in Myanglung Bazaar.

## Importance of the Study

This study report helps to make a further plan to improve the service quality and the price level of NT-FTTH service towards the policy maker of Nepal Telecom according to the customer's wants.

This study report also identifies the FTTH service delivery and maintenance work issue in a rural place with the proper implementation of allocated resources.

Another important of this study report is to decide whether the NT-FIBER is appropriate for different purposes.

This report also identifies the NT-FTTH service market and its expansion status in Myanglung bazaar.

### Limitation of the Study

- i. This report only includes the study of the FTTH Service of Nepal Telecoms in Myanglung Bazaar.
- ii. This report does not deal with other ISP and their services in Myanglung Bazaar.
- iii. This study report only covers the last three fiscal years' data of NT-FTTH due to the newly implemented system in Myanglung.

### Review of Literature

A literature review is an essential part of a case study report. It is a necessary component of academic research papers & theses. Its purpose is critically analyzing and summarizing the existing literature on a particular topic or research question. A well-structured literature review helps establish the context and significance of the research, identify gaps in current knowledge, and demonstrate the writer's understanding of the field.

FTTH Internet represents the cutting edge of broadband technology, offering incredibly fast and reliable internet access to support the increasing demands of modern digital lifestyles and emerging technologies. As the infrastructure continues to expand, it has the potential to transform the way we use the internet and access digital services. The current scenario of the world is becoming too narrow with the help of innovation in digital systems. The government's data and records digitalization work may not be complete with reliable high-bandwidth internet. Governments in various countries like

Nepal are investing in broadband infrastructure, including FTTH, as part of their digital inclusion and economic development strategies. Such initiatives further drive the demand for FTTH. The demand for higher bandwidth is driven by the increasing popularity of high-definition and 4K video streaming, virtual reality (VR) content, and cloud-based applications. FTTH can deliver the necessary speeds to accommodate these demands. Work-from-home and remote learning system is cost-effective. The COVID-19 pandemic accelerated the adoption of remote work and remote learning, highlighting the need for robust and stable internet connections. FTTH provides the necessary reliability and capacity for seamless virtual collaboration and online education. The growing number of Internet of Things (IoT) devices and smart home applications require a stable and fast Internet connection and HD-quality voice to function optimally. FTTH can handle the simultaneous data traffic from various connected devices. Consumers are increasingly looking for future-proof internet solutions that can handle emerging technologies and services. FTTH, with its scalability and high capacity, offers a solution that can meet future demands without requiring significant infrastructure upgrades. Many businesses and enterprises require reliable, high-speed internet connectivity to support their operations, particularly cloud-based services, and data-intensive applications. NT-FTTH can meet these requirements, including data, voice, and IPTV from the same fiber.

"The nationwide reach of the organization, from urban areas to the economically non-viable most remote locations, is the result of all these efforts that make this organization different from others" (Shrestha & Aale, 2019, P-44). Service quality and customer satisfaction have long been recognized as crucial to success and survival in today's competitive market. Every operator worldwide has realized that a customer is his or her lifeblood.

## Enjoy Everything from a Single Fiber

Broadband Internet, Voice Service, and Television

### How to Subscribe

1. Contact the nearest NT office to check availability at your location.
2. Fill out the service registration form for FTTH in-service counter. Available at: <https://www.ntc.net.np/downloads>
3. Check FTTH Tariff for package and price details
4. Submit the form to the concerned NT office

## Support and Complain Registration

**Complain Registration:** Dial 198 and select option 1 From NT Number

## Methodology

Demand analysis of NT-FTTH in Myanglung, a case study report, will be based on systematic and scientific academic research. This study report will be based on primary and secondary data with quantitative and qualitative approaches. This research report will be divided into five chapters: Introduction, Literature Review, Research Methodology, Data Presentation & Analysis, and the final chapter includes Summary & Conclusion.

## Data Collection

A total of 30 primary sample data were collected through a questionnaire and field survey from the total population of 681 NT-FTTH users in Myanglung. Secondary data were collected from the MIS report of Nepal Telecom Office

## Data Presentation & Analysis

**Table 1: NT-FTTH Service Line Connection**

Fiscal Year	Migrated Line From Existing Technology	New Line Connection Due to New Technology	Total
2077/78	132	28	160
2078/79	177	90	267
2079/80	128	126	254
Total	437	244	681

Myanglung, Tehrathum.

This journal research deals with data that can be measured objectively and expressed numerically. This data can be collected through surveys, experiments, and existing NT Demand and supply records datasets of NT-FTTH. Collected data are presented in a tabular and graphical format.

## Qualitative Approach

This research often contributes to theory development by generating new hypotheses or providing a deeper understanding of the demand level for NT-FTTH service in Myanglung. This type of research is widely used in social sciences, anthropology, psychology, education, healthcare, and other fields where a deep exploration of human behavior, perceptions, and emotions is essential.

## Sample Selection

A total of 30 samples will be selected among 681 populations for analysis to identify the perception and behavior of NT-FTTH users in Myanglung.

## Data Analysis Techniques

There are numerous data analysis techniques, and the choice of method depends on the type of data, research objectives, and the specific questions being addressed. In this study report, data analysis techniques are employed to average relationships, trends, and insights from the data. This report's main data analysis techniques will be statistical tools such as the Capacity to-users ratio and graphical trend analysis of service connection.

*Source: MIS Report Nepal Telecom Tehrathum*

The above table shows that the new FTTH line connection ratio is increasing. It also proves that product modification at the proper time always creates high demand. Before the cellphone was launched, NTs' traditional copper technology voice and data users history at Myanglung

was near the 750 lines with voice and data, including Jirikhimti (MIS et al. 2070 Asadh end). Comfortable and reliable services of cellphones replaced the voice and data users of the traditional copper-based system.

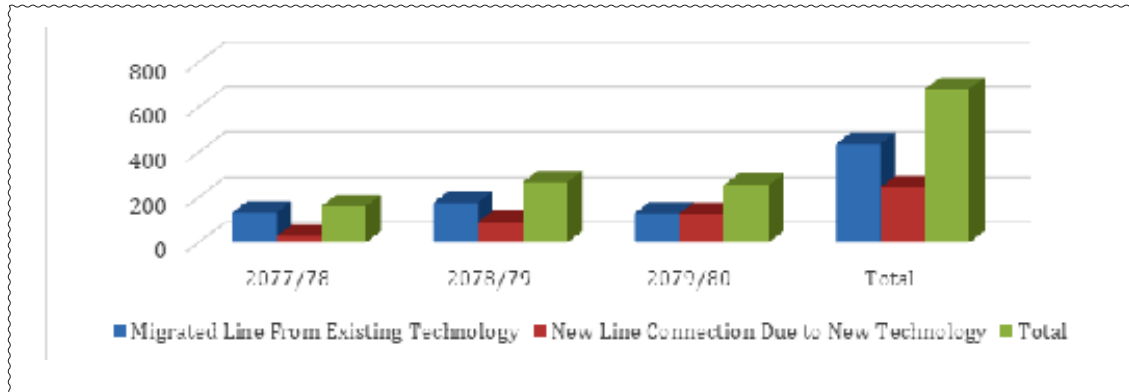


Figure 1: NT-FTTH Service Commission

The above figure shows that the FTTH Customers' demand is increasing trends. That is why NT is

expanding the FTTH system. This work can help to collect more users around the Districts.

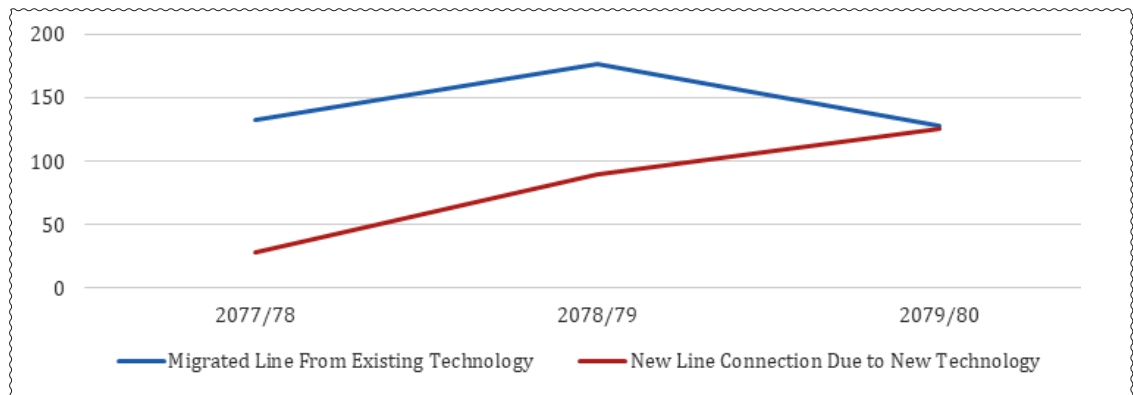


Figure 2: NT-FTTH LINE Migrate and Newly Connected Trend

Customers' demand has been in an increasing trend from the beginning of the study period. The above trendline shows that migrated from

the existing network and new connection ratio is nearly equal in F/Y 2079/80.

Table 2: NT-FTTH Service Line Disconnection, Causes of Disconnection

Fiscal Year	QOS	Migration	Office Merge	User's Death	Misc.	Total
2078/79	1	2	1	1		5
2079/80	1	3	2			6
Total	2	5	3	1	0	11

Sources: MIS Report Nepal Telecom Tehrathum

Disconnected users during the study period are too low. The main causes of disconnected lines are migration and office merge. Disconnected

cause QOS (Quality of Services) is harmful to the service provider. These features of service should be updated in time.

**Table 3: Response of 30 Sample FTTH Users, Perception Rank of Sample FTTH Users**

Questionnaire	Very Dissatisfied	Dissatisfied	Average	Satisfied	Very Satisfied
Bandwidth Cost of NT-FTTH	1	3	8	13	5
Service Connection Process	1	1	14	8	6
Behaviour of Office Staff		1	10	11	8
Complained Management System			13	7	10
NT-FTTH Service Features		2	9	12	7
NTTV Service (If Subscribed)	1	1	6	4	2
300 MB Per Day Free Mobile Data		1	18	6	5
Expired, time extension for 24 hrs. from the authenticated call,	15	10	5		

*Sources: Questionnaire Fulfillment Report of Respondents*

From the above table, users' perception level is a positive way of services. Several users' attitudes towards this service are reliable and beneficial with cost and quality. The NT office in Myanglung does not yet implement the time extension system after expiry without payment.

Users' dissatisfaction in terms of bandwidth, the behavior of staff, and NTTV service is too low. However, a time extension for a short period is not applied after the expiry by call creates a high level of dissatisfaction. This issue should be implied may correct the issue.

**Table 4: NT FTTH Service Line Connection with Capacity**

Fiscal Year	Capacity	Migrated Line	New Line	Total	Cumulative Total	Capacity used rate
2077/78	512	132	28	160	160	31.25%
2078/79	1024	177	90	267	427	41.69%
2079/80	1536	128	126	254	681	44.33%
Total	1536	437	244	681		

*Sources: MIS Report Nepal Telecom Tehrathum*

Capacity increases cause an increase in a service area that positively impacts the no. of the service user. The above table indicates that the service connection of new line demand is increasing.

services. Low bandwidth, poor service quality, and maintenance issues in copper-based fixed telephony service replacement are required in Nepal. Sample analysis of the response of FTTH service users also indicates the increasing trend of demand and service quality of Nepal Telecom. Several users are hopeful and satisfied with this technology. The service disconnection ratio is negligible. It is better for ISP and users too, but dissatisfaction with QOS and service

## Results and Discussionj

The demand level for NT-FTTH service in Maynglung is quite a better service according to the response of users and the newly connected additional line. The credit of NTC will be valued less by copper-based fixed lines and ADSL

disconnection is a great issue for the company, and additional improvement is necessary if required. Service extension for 24 hrs. subsidy period expiry should be implied. It is one of the positive features of customer retention. For Development of Nepal, project management would be only the solution for fulfilling the demand of every sector. Several research conducted in case of Nepal have been raising the question on development solution. The major problem of Nepalese development identified is procurement management also (Bahadur & Mishra, 2019; Mishra & Aithal, 2023; Mishra, 2022; Mishra, et. al. 2020). This way several feasibility study identified similar issues, which needs serious attention by public authority.

## Conclusion

Fiber-to-the-Home (FTTH) is a revolutionary telecommunications technology that provides high-speed internet, television, and phone services directly to residential homes through optical fiber cables. This chapter explores the fundamental aspects, benefits, challenges, and prospects of FTTH service. The chapter begins by explaining the customer demand and perception of users. FTTH service significantly improves the user experience by enabling seamless streaming, online gaming, and video conferencing. The chapter emphasizes how this technology has transformed how users consume and interact with digital content, increasing productivity and entertainment possibilities. It discusses how widespread FTTH deployment can boost the local economies of country, attract businesses, and enhance property values.

The NT office in Myanglung does not yet implement the time extension system after expiry without payment. Users' dissatisfaction in terms of bandwidth, the behavior of staff, and NTTV service seems poor. However, a time extension for a short period is not applied after the expiry by call creates a high level of dissatisfaction. New line of FTTH service users

are rapidly growing, dissatisfied users volume is acceptable.

The research results show that 'Customer satisfaction' depends on customer care services, promotion schemes, and network coverages. It was also found that customers of NT Myanglung are satisfied irrespective of their age group, gender, profession, and marital status. Hence, it is unnecessary to launch offers keeping because of age group, gender, and marital status. The main factors of customer satisfaction are network coverage, billing method, recharge card information, promotion, value-added schemes, Free 3000 minutes voice call for 12 months & 300Mb data per day for a year, and customer care services. It was also clear from this research that customer service impacts service quality perception and customer satisfaction.

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