Introduction

ICT Stands for Information and Communications Technology. ICT refers to the concept of using technology to get information. ICT involves the use of computers and other electronic devices to access information easily and quickly. Examples of Information and Communications Technology include not only personal computers but also new forms of telephones, televisions, appliances, and various hand held devices. ICT refers to technologies that provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication media. ICTs assume particular significance in the light of fact that efficiency more than ever is now an indicator of competitiveness. As such, nations, private sector entities and people that find the means to become more efficient will advance and prosper. Nepal has the opportunity to make a difference by adopting and using ICT as a tool available to reduce the development divide and increase the chances of improving the quality of life of the citizens.

Subisu

Subisu cablenet Ltd. is a Nepalese Internet Service Provider company located in Kathmandu, Nepal, and was established in 2001. It is a leading Internet Protocol (IP) Based Service Provider in Nepal. The present services mainly cover Home and Enterprise clients. Its services include Home Internet & Digital TV, Enterprise Internet, Enterprise VPN Connectivity, IPLC services, Data Center Services and Cloud Services. Subisu has been in the Internet and TV business for the last 20 years providing dual service to residential users through Optical Fiber Network using FTTH. Metro Ethernet Service is a popular service among major enterprise clients in Nepal for Internet and VPN connectivity. Subisu has its presence in all of the 77 districts of Nepal and has built its Core network of 400G DWDM Network connecting to 5 border points in India with 4 major Upstream Providers. It is also connected to two (2) border points with China and Nepal.

Infrastructure of Subisu

Optical fiber cable (OFC) is used by Subisu to transmit TV channels, the internet, and fiber connect solutions. Its HFC network uses high-end coaxial cable laid with MPLS (Multi-Label Protocol Switching) and a fully redundant metropolitan access network. The network's headend is at Baluwatar, Kathmandu, and spreads across major locations of the valley. Signals from the OFC are tapped at points of service using an optical node with devices which convert light signals into Radio Frequency (RF) amplified to the desired levels using high bandwidth.

Technology used by Subisu

Data over Cable Service Interface Specifications (aka DOCSIS) 3.0 is advanced standard technology certified by Cable labs. DOCSIS 3.0 (Annex B) standard provides 42Mbit/s per

channel (theoretically) and 37Mpbs (practically) downstream per channel. Downstream can be bond up to 8 channels which increases the downstream throughput up to (37 x 8) and 27 M bit/s upstream bandwidth per channel and is the standard cable modem protocol established by MCNS to describe a protocol for bi-directional transfer of Internet Protocol (IP) traffic over cable. Subisu uses Metropolitan Access Network (MAN) technology to deliver internet/intranet and other services through optical fiber cables.

Subisu Services

The services provided by Subisu are:

1. MPLS Applications
2. Enterprise Internet
3. Broadband Internet through FTTH based on GPON
4. WAN Ethernet
5. DWDM Wavelength Services
6. EoSDH
7. Wholesale IP transit
8. Manages services
9. Network Security Solution
10. Digital Clear TV Services and Cable Internet

FTTH service

Fiber to the home (FTTH) is the installation and use of optical fiber from ISP infrastructure directly to individual buildings such as residences, apartment buildings and businesses to provide unprecedented high-speed Internet access. FTTH supports high connection speeds available to end-users. It is used worldwide now to deliver data signals like the Internet, IPTV etc.

ICT System used in Subisu

They use ICT systems for various aspects of their daily operations, including following key areas:

1. Network Management: Subisu uses advanced ICT systems for monitoring and managing their network infrastructure. These systems allow them to track and analyze network performance, including data on network traffic, bandwidth usage, and network availability. They use this data to identify potential bottlenecks and optimize network performance, ensuring that customers have a fast and reliable internet connection. They also have tools to detect and troubleshoot network issues, such as outages and slowdowns, in order to minimize customer downtime.

2. Billing and Customer Management: Subisu uses a computerized billing system to manage customer accounts and billing information. This system automates the

billing process, reducing the need for manual labor and increasing efficiency. It also allows Subisu to generate accurate invoices and bill customers on a regular basis. Additionally, Subisu provides its customers with an online portal where they can view and pay their bills, check their usage, and manage their account information. This allows customers to access their account information at any time and make changes as needed, making the process more convenient for them.

3. Sales and Marketing: Subisu uses ICT systems for sales and marketing activities. This includes creating and maintaining a website, social media presence and CRM system to engage with its customers. Subisu uses these systems to communicate with customers, answer questions, and promote new products and services. Additionally, Subisu uses ICT systems to analyze customer data and gain insights into customer behavior, which helps them to develop targeted marketing campaigns and improve customer retention.

4. Technical Support: Subisu uses ICT systems for providing technical support to its customers. This includes using remote access tools to remotely troubleshoot and resolve issues for customers. They also have a customer service portal where customers can submit their queries, track the status of their requests and get the solution. They also maintain a knowledge base of common issues and solutions, which is accessible to customer service representatives, so they can quickly and efficiently resolve customer issues.

5. Network Security: Subisu uses various ICT systems to protect their network from cyber threats. This includes firewalls, intrusion detection and prevention systems, and other security tools to monitor and protect against unauthorized access, data breaches, and other security threats. They also have data encryption and VPN (Virtual Private Network) systems in place to secure sensitive customer data and protect against data breaches. Additionally, they conduct regular security audits and vulnerability assessments to identify and address any potential security risks.

Challenges Faced by Subisu in Nepal

Some of the challenges faced by Subisu are:

1. Competition: Subisu faces competition from other ISPs and cable television operators in Nepal. This competition can make it difficult for Subisu to differentiate itself and attract new customers, leading to increased pressure on prices and margins.
2. Infrastructure: Nepal has a challenging terrain and lack of reliable electricity supply. This can make it difficult and expensive for Subisu to install and maintain

the necessary infrastructure to provide internet and cable television services to customers in all areas.

3. Government Regulations: Suisu is subject to various government regulations and policies, including those related to licensing, tariffs, and network interconnection. These regulations can be complex and difficult to navigate, and may change over time, which can create uncertainty for the company.
4. Cybersecurity: As Subisu deals with sensitive customer data and financial transactions, it is vulnerable to cyber-attacks and data breaches. These threats can come from hackers, cybercriminals and even from nation-state actors. This creates a need for constant monitoring and updating of the company's cybersecurity systems.
5. Technical Challenges: Subisu uses advanced ICT systems for various aspects of its operations, including network management, billing, and customer management. However, these systems can be complex and difficult to maintain, and can require specialized skills and expertise.
6. Natural Disasters: Nepal is prone to natural disasters such as earthquakes, floods, landslides and so on. These events can disrupt Subisu's infrastructure and operations, leading to service outages and financial losses.
7. Power Outages: Subisu needs a reliable power supply to run its operations. Power outages are common in Nepal, which can disrupt Subisu's operations, causing service outages and financial losses.
8. Lack of Skilled workforce: Subisu requires a skilled workforce to operate and maintain its advanced ICT systems. In Nepal, there is a shortage of skilled workers in the field of ICT, which makes it difficult for Subisu to find and retain the necessary personnel.

ICT areas where Subisu is Lagging:

Subisu has some shortcomings in ICT areas as follow:

1. Limited network infrastructure: Subisu may have limited network infrastructure and technology, which may affect the reliability and consistency of its services.
2. Outdated technology: Subisu may be using outdated technology, which may make it difficult for the company to compete with other ISPs and cable television operators.
3. Limited support for new technologies: Subisu may not be able to support new technologies and services, such as high-speed internet and streaming services, which may limit its ability to attract and retain customers.
4. Limited investment in research and development: Subisu may not invest enough in research and development, which may make it difficult for the company to innovate and improve its services.

5. Limited IT staff: Subisu may not have a large IT staff or enough staff with specialized expertise, which may limit its ability to troubleshoot and resolve technical issues.
6. Limited capacity for network scalability: Subisu's network may not have the capacity to handle a large number of users and may not be easily scalable to meet growing demand.
7. Limited security measures: Subisu may not have adequate security measures in place to protect its network and customers' information from cyber threats.
8. Limited disaster recovery plans: Subisu may not have a robust disaster recovery plan in place, which may make it difficult for the company to quickly recover from network outages and other disruptions.

Recommendations to Subisu to improve in those ICT areas

Some possible recommendations and suggestion that I want to give to Subisu are:

1. Invest in network infrastructure and technology: Subisu should invest in modern network infrastructure and technology to improve the reliability, consistency, and speed of its services. This will help to attract and retain customers and increase customer satisfaction.
2. Research and development: Subisu should invest in research and development to stay up to date with the latest technologies and services in the industry. This will help the company to innovate and improve its services and to stay competitive in the market.
3. Expand support for new technologies: Subisu should expand its support for new technologies and services, such as high-speed internet and streaming services, to attract and retain customers.
4. Hire and train IT staff: Subisu should hire and train a large IT staff with specialized expertise to troubleshoot and resolve technical issues.
5. Scalable network: Subisu should invest in network scalability to handle a large number of users and to meet growing demand.
6. Improve security measures: Subisu should invest in security measures to protect its network and customers' information from cyber threats.
7. Develop disaster recovery plans: Subisu should develop robust disaster recovery plans to quickly recover from network outages and other disruptions.
8. Partner with technology companies: Subisu can partner with technology companies to gain access to their technology and expertise, which will help the company to improve its services and to stay competitive in the market.

Conclusion

In conclusion, Subisu, a private company in Nepal, uses ICT systems for their daily work such as providing internet services, cable television and telephone services to its customers. However, the company faces several challenges and weaknesses with respect to technology such as limited network infrastructure, outdated technology, limited support for new technologies, limited investment in research and development, limited IT staff, limited capacity for network scalability, limited security measures, and limited disaster recovery plans. To address these issues, Subisu should invest in modern network infrastructure and technology, research and development, expanding support for new technologies, hiring and training IT staff, investing in network scalability, improving security measures, developing disaster recovery plans, and partnering with technology companies. By implementing these recommendations, Subisu can improve its services and stay competitive in the market.