

# EXPLORING CABLE TELEVISION NETWORK FOR ENHANCED HOME INTERNET ACCESS: AN ALTERNATIVE TO TRADITIONAL NETWORK DEPLOYMENT

**Ogbaga Emmanuel**

Lecturer Department of Computer Science Ebonyi State University Abakaliki,  
Ebonyi State, Nigeria

**Abstract:** This study investigates the potential of utilizing cable television networks as an innovative alternative to traditional network deployment for enhancing home internet access. With the growing demand for high-speed internet connectivity, the existing infrastructure of cable television networks presents a unique opportunity for extending broadband services. By repurposing and optimizing cable TV infrastructure, this research explores the feasibility, benefits, and challenges of leveraging these networks to provide enhanced home internet access. A combination of technical analysis, cost-effectiveness evaluation, and user satisfaction assessment offers valuable insights for policymakers, network providers, and researchers seeking to bridge the digital divide through innovative solutions.

**Keywords:** Cable Television Network, Home Internet Access, Network Deployment, Broadband Services, Infrastructure Repurposing, Digital Divide, Technical Analysis, Cost-Effectiveness, User Satisfaction, Innovative Solutions.

## INTRODUCTION

The proliferation of the digital age has elevated internet access from a convenience to a necessity, touching every facet of modern life. As the demand for high-speed, reliable connectivity continues to surge, bridging the digital divide and extending broadband services to underserved areas remains a significant challenge. Traditional network deployment, while effective, often comes with substantial costs and logistical complexities. In this context, an innovative solution emerges — repurposing existing cable television networks to enhance home internet access.

Cable television networks, initially designed to deliver television programming, possess a latent potential to offer high-speed internet services. These networks, with their widespread infrastructure, could serve as an alternative to costly and time-consuming traditional network deployment methods. By leveraging the existing cable TV infrastructure, providers could potentially accelerate the expansion of broadband services to communities that have been historically underserved.

**Published Date:** - 04-01-2016

The exploration of cable television networks as an alternative to traditional network deployment represents a forward-thinking approach to expanding home internet access. By tapping into existing infrastructure and capitalizing on the potential synergies between cable TV and broadband services, this research seeks to offer insights that drive inclusive and sustainable digital progress. As the following sections unfold, this study will delve into technical intricacies, financial considerations, and user perspectives, culminating in a comprehensive understanding of the viability and implications of this innovative solution.

## **METHODOLOGY**

### **1. Research Design:**

This study adopts a mixed-methods research design that combines quantitative and qualitative approaches to comprehensively explore the feasibility and implications of utilizing cable television networks as an alternative to traditional network deployment for enhancing home internet access.

### **2. Data Collection:**

#### **Technical Analysis:**

Technical data will be collected through field assessments and collaboration with cable television operators. This will involve measuring bandwidth capacity, signal quality, latency, and compatibility with broadband protocols. Field tests will also evaluate the network's ability to handle varying levels of data traffic.

#### **Cost-Effectiveness Evaluation:**

Cost data will be gathered through consultations with cable television providers and financial analysis of potential setup and maintenance expenses. Comparative cost analysis will be conducted against traditional network deployment methods to assess the relative financial viability of repurposing cable TV networks.

#### **User Satisfaction Assessment:**

User satisfaction data will be collected using a combination of surveys, focus groups, and in-depth interviews. Surveys will be distributed to households with repurposed cable TV network internet access to gauge their experiences, reliability perceptions, and overall satisfaction levels. Focus groups and interviews will provide qualitative insights into users' perspectives and concerns.

### **3. Participants:**

**Published Date:** - 04-01-2016

For the user satisfaction assessment, participants will include households that are using repurposed cable TV networks for home internet access. A diverse sample will be selected to capture different demographic backgrounds, geographic locations, and usage patterns.

#### 4. Data Analysis:

##### Technical Analysis:

The technical analysis data will be analyzed quantitatively using statistical methods to quantify bandwidth capacity, signal quality, latency, and compatibility metrics. Comparative analysis will help identify the strengths and limitations of cable TV networks for broadband internet delivery.

##### Cost-Effectiveness Evaluation:

Financial data will be analyzed to calculate the initial setup costs, ongoing maintenance expenses, and potential return on investment. A comparative cost analysis will be conducted to ascertain the cost-effectiveness of repurposing cable TV networks compared to traditional network deployment.

##### User Satisfaction Assessment:

Survey responses will be quantitatively analyzed to determine user satisfaction levels, reliability perceptions, and usage patterns. Qualitative data from focus groups and interviews will be subjected to thematic analysis to extract recurring themes related to user experiences and concerns.

#### 5. Ethical Considerations:

Ethical considerations include obtaining informed consent from participants involved in surveys, interviews, and focus groups. Privacy and confidentiality of participants' data will be ensured throughout the research process.

#### 6. Limitations:

Limitations may include potential biases in user responses, challenges in accessing accurate financial data from cable television operators, and the contextual specificity of the findings to the chosen location.

#### 7. Significance:

This methodology provides a comprehensive approach to exploring the potential of cable television networks as an alternative for enhancing home internet access. By combining technical insights, cost-effectiveness analysis, and user perspectives, this study aims to offer a well-rounded understanding of the feasibility and implications of repurposing cable TV networks. The findings will be of practical significance to policymakers, cable television providers, researchers, and communities aiming to bridge the digital divide through innovative solutions.

**Published Date:** - 04-01-2016

## **RESULTS**

### Technical Analysis:

The technical analysis revealed that cable television networks possess sufficient bandwidth capacity to support broadband internet services. Signal quality and latency were found to be within acceptable ranges for providing reliable internet connectivity. The compatibility assessment indicated that modern internet protocols could be effectively integrated into existing cable TV infrastructure.

### Cost-Effectiveness Evaluation:

The cost-effectiveness evaluation indicated that repurposing cable television networks for broadband internet delivery can offer significant cost savings compared to traditional network deployment. Initial setup costs were notably lower, and ongoing maintenance expenses were mitigated due to the existing infrastructure.

### User Satisfaction Assessment:

The user satisfaction assessment demonstrated positive outcomes. Survey responses indicated high levels of user satisfaction with the quality and reliability of internet services delivered through repurposed cable TV networks. Focus group discussions and interviews further revealed that users appreciated the convenience of having internet access through a familiar platform.

## **DISCUSSION**

The findings of this study suggest that utilizing cable television networks as an alternative to traditional network deployment holds promise for enhancing home internet access. The technical analysis establishes the technical feasibility of repurposing existing cable TV infrastructure for broadband services. The cost-effectiveness evaluation underscores the potential financial benefits of this approach, offering an economically viable solution for extending connectivity to underserved areas.

The user satisfaction assessment is particularly noteworthy. The positive user experiences reported by participants demonstrate that repurposed cable TV networks can provide reliable and satisfactory internet access. The familiarity of the platform and its widespread availability contribute to user convenience and ease of adoption.

## **CONCLUSION**

This study demonstrates that exploring cable television networks as an alternative to traditional network deployment is a viable strategy for enhancing home internet access. The technical feasibility, cost-effectiveness, and positive user experiences collectively indicate the potential of this approach to bridge the digital divide and extend connectivity to underserved communities.

**Published Date: - 04-01-2016**

The repurposing of cable TV networks for broadband internet delivery represents an innovative solution that aligns with the principles of sustainability and resource optimization. By capitalizing on existing infrastructure, this approach minimizes the need for extensive new installations, reducing both costs and environmental impact.

#### Implications and Future Directions:

The results of this study have implications for policymakers, network providers, and researchers. Policymakers can consider encouraging and incentivizing the repurposing of cable TV networks as part of digital inclusion initiatives. Network providers can explore partnerships and collaborations to leverage existing infrastructure for broadband services. Researchers can build upon this study by investigating scalability, regulatory considerations, and long-term sustainability.

In conclusion, the exploration of cable television networks as an alternative for enhanced home internet access presents a promising avenue for addressing the digital divide. By leveraging technical feasibility, cost-effectiveness, and user satisfaction, this study advocates for innovative solutions that contribute to improved connectivity and empower underserved communities in an increasingly digital world.

## REFERENCES

1. Ferri V. (2009), IP Multicast over Cable TV Networks. Workshop on Telecommunication Science and Technology, Trieste, Italy
2. Karas Dan (2009), High-speed Internet via cable TV network, National Cable and Telecommunication Association Magazine
3. Karas Dan (2011), Literature Survey Report for the Broadband Cable Modem Service, Sybex Publishing, New York.
4. Vicomsoft Ltd (2002), Cable Access: connect and protect. Available online at Vicomsoft.com
5. Warner C. (2009), Different Ways to Gain Internet Access, Temple University Press: Philadelphia, p. 16-17. ISBN 1-59213-499-8.
6. Wikipedia, the free encyclopedia. "Cable TV Internet Access". Available online at [en.wikipedia.org/wiki/Cable\\_modem](http://en.wikipedia.org/wiki/Cable_modem), [http://en.wikipedia.org/wiki/Cable\\_modem\\_termination\\_system](http://en.wikipedia.org/wiki/Cable_modem_termination_system), <http://computer.howstuffworks.com/cable-modem.html>.