TV Derana Insight Hub Research Proposal & Report

THE RESEARCH Report

Big Data Analytics for Developing the TV Derana Insight Hub: Enhancing User Engagement, Content Personalization, and Advertising Efficiency.

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Research Proposal Submitted in accordance with the requirements for the

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CHAPTER 1 – INTRODUCTION

1.1. Introduction

Big data tools are changing quickly, and this has changed how media companies look at, understand, and use data to make decisions. Today's media environment is very competitive, so using big data is not a choice but a must if you want to stay ahead. The main goal of this study is on creating the TV Derana Insight Hub, a state-of-the-art data-driven tool that will use big data analytics to improve total content performance, increase user interaction, and make advertising tactics more effective. The Insight Hub aims to give useful information about user tastes, trends, and actions by combining advanced analytics and machine learning models. In turn, this will let TV Derana offer personalized material, make the most money from ads, and give viewers a better experience. The study also aims to look into the difficulties of quickly handling and processing large amounts of data while also making sure that it is safe and follows the rules. The main purpose of this study is to build a strong framework for integrating big data that not only meets current needs but can also be expanded to accommodate new media technology in the future. The goal of this study is to make TV Derana a star in data-driven media solutions by looking at a lot of current books, methods, and tools.

1.2. Purpose of research

The aim of this study is to explore the changing potential of big data analytics in improving TV Derana’s operations and strategic decision-making processes. With the growing availability of vast amounts of organized and unstructured data, it is important to understand how these data streams can be managed to drive significant gains in user engagement, content personalization, and advertising performance. This study aims to explore the merging of advanced big data tools and methods within the TV Derana Insight Hub to build a unified platform capable of providing useful insights. By doing so, it will enable the organization to adapt to quickly changing user tastes, improve working efficiency, and enhance its competitive edge in the media industry. Additionally, this study tries to find key performance indicators (KPIs) and create data-driven tactics that ensure agreement with corporate goals. Another important part of the study is to handle issues such as data store scale, processing speed, and compliance with data security laws. Ultimately, the study attempts to present a complete approach to big data utilization that not only answers current challenges but also lays the basis

for future technological developments, ensuring that TV Derana stays a pioneer in the field of data-driven television.

1.3. Significance of the Research

The importance of this study lies in its potential to change how TV Derana uses big data to keep a competitive edge in the rapidly changing media environment. By focusing on the adoption of the TV Derana Insight Hub, this study aims to bridge the gap between data access and useful insights, ensuring that the company can make informed, data-driven choices. The results of this study will provide useful insights into the ways big data analytics can improve viewer happiness through personalized content delivery, resulting in increased viewer retention and trust. Moreover, the study will put light on how data-driven advertising tactics can increase income by addressing specific audience groups with accuracy and usefulness. This study also holds importance for the wider media industry, acting as a model for how media companies can solve issues related to data growth, security, and compliance. By finding the most effective tools, methods, and strategies for big data integration, the study will add to the knowledge base of best practices in media analytics. Furthermore, the data produced will help TV Derana predict and adapt to new trends, ensuring long-term sustainability and success in the market. In essence, this study not only aims to help TV Derana but also to provide useful additions to the growing field of big data analytics in the media sector.

1.4. Research objectives

The main goal of this study is to develop and implement a big data analytics tool, the TV Derana Insight Hub, to improve the organization's decision-making skills and operating efficiency. Specifically, the goals are:

1. To examine viewer interaction patterns: Examine how audience habits and tastes can be leveraged to create more personalized content and improve user happiness.
2. To improve advertising strategies: Identify key target groups and create data-driven advertising strategies to maximize income and campaign success.
3. To measure information performance: Assess the efficiency of TV Derana’s shows to determine which material drives the biggest involvement and viewing.

4. To combine scalable big data solutions: Develop a system capable of handling and keeping vast amounts of data easily while maintaining compliance with data security laws.
5. To provide useful insights: Deliver a user-friendly tool that offers real-time insights and data to support strategic decision-making.
6. To study new trends: Investigate and predict future changes in viewing behavior and media usage trends to keep TV Derana at the top of the industry.

This thorough method will ensure that the study covers the key areas necessary for driving innovation and having long-term success in a data-driven media world.

1.5. Research Sub objectives

The study sub-goals are meant to support the main objectives by breaking them down into more detailed and measurable tasks:

1. To find data sources: Map and record the various data sources, including user contacts, social media comments, and advertising measures.
2. To develop predictive models: Build and test machine learning models for predicting user tastes and content success.
3. To measure ad performance metrics: Analyze key measures such as click-through rates (CTR), views, and conversion rates for advertising efforts.
4. To test data visualization tools: Evaluate and apply tools for showing findings in a clear and effective way for stakeholders.
5. To ensure data compliance: Conduct an audit of data handling methods to ensure alignment with data security rules like GDPR and other related laws.
6. To measure against competitors: Compare the success of TV Derana's big data efforts with industry norms and top rivals.
7. To improve platform usability: Gather user comments from internal teams and partners to enhance the usefulness and user experience of the Insight Hub.

These sub-objectives ensure that the study is thorough, covering all critical aspects necessary to achieve the general goals effectively and efficiently.

1.6. Research questions

The research questions aim to guide the study by addressing the key aspects of big data application and usage at TV Derana:

1. How can big data analytics improve user interaction and content personalization for TV Derana?
2. What are the most effective data-driven advertising tactics to increase income and marketing performance?
3. Which data sources and measures are important for analyzing material success at TV Derana?
4. What are the engineering difficulties in creating a flexible and safe big data platform for the Insight Hub?
5. How can real-time information be provided in a user-friendly manner for decision-makers at TV Derana?
6. What predictive models and algorithms can be used to guess user tastes and future trends?
7. How does TV Derana's big data approach compare to those of top companies in the media industry?
8. What steps can be taken to ensure compliance with data security laws while utilizing big data?

These questions provide a focused framework for studying the various aspects of big data's effect on TV Derana's operations and strategy goals.

1.7. Hypothesis

The theories for this study are developed based on the key areas where big data is expected to make a transformative effect. It is expected that big data analytics will fundamentally change the way TV Derana knows its viewers, creates content, and approaches ads. Specifically, the merger of prediction modeling and machine learning algorithms is supposed to greatly improve content personalization, ensuring that watchers are presented with programming that connects with their tastes and behaviors. This, in turn, is expected to lead to better user interest and recall rates. In the world of advertising, it is believed that data-driven strategies will allow TV Derana to maximize ad spots and target specific viewer groups with greater accuracy, thereby increasing income and client happiness. Furthermore, the study hypothesizes that the

development of a unified analytics tool will simplify decision-making processes by giving real-time insights and useful information. It also posits that solving technology challenges such as data growth and compliance with data security rules will not only improve business efficiency but also enhance shareholder trust. Collectively, these theories hope to underscore the multiple benefits of taking a big data-driven approach in a competitive media environment.

Hypotheses:

1. Big data analytics greatly improves user interaction and content personalization.
2. Data-driven advertising tactics lead to higher income and better marketing success compared to standard methods.
3. Real-time observations improve the efficiency of strategic decision-making processes.
4. Implementing a flexible big data platform lowers organizational errors and ensures compliance with data laws.
5. Predictive models of user behavior improves the accuracy of content recommendation systems.

Hypothesis 1: Big data analytics greatly improves user interaction and content personalization.

Critical Explanation:

This hypothesis suggests that leveraging big data can transform how TV Derana engages with its audience by delivering personalized content based on user preferences, historical behavior, and engagement data. Big data enables the segmentation of viewers into micro-demographics based on factors like gender, age, and location, allowing for tailored recommendations.

Research Context:

- At TV Derana, analyzing viewer data through advanced analytics tools (such as machine learning algorithms) can result in targeted program recommendations. For example, algorithms powered by big data can scan massive amounts of user interaction data (like preferred time slots and genres) to suggest shows that align with viewer preferences.

Potential Impacts:

- Improved engagement as users find content relevant to their preferences.
- Increased time spent on TV Derana platforms (website, app, or TV), strengthening engagement metrics.
- Better audience retention and satisfaction.

Challenges:

- Over-reliance on personalization may confine viewers to a "filter bubble," limiting their content exposure.
- Privacy concerns, particularly under laws such as GDPR, may restrict the type of user behavior data TV Derana is able to collect.

Conclusion:

When implemented effectively, big data analytics holds immense potential for transforming user interaction and driving meaningful engagement through personalized experiences.

Hypothesis 2: Data-driven advertising tactics lead to higher income and better marketing success compared to standard methods.

Critical Explanation:

This hypothesis highlights the importance of using big data insights for creating highly targeted and effective advertising campaigns at TV Derana. By analyzing advertisements' performance data (e.g., impressions, conversions, and clicks), TV Derana can design campaigns that resonate with specific segments of the audience, as opposed to adopting traditional, broad-spectrum advertising strategies.

Research Context:

- For example, advertisers can use tools like Google Analytics or Hadoop to evaluate the performance of past campaigns and identify the time slots during which ad engagement peaks. These tools can help make real-time adjustments to ad placements for maximum ROI.
- The TV Derana Insight Hub could help advertisers by providing data dashboards that compare campaigns, measure click-through rates, and determine audience retention rates specific to the ads aired.

Potential Impacts:

- Higher income: Improved decision-making results in better utilization of advertising slots, maximizing revenue for both TV Derana and the advertisers.
- Improved marketing outcomes: Hyper-targeted campaigns lead to better audience segmentation and enhanced brand recall.

Challenges:

- Data inaccuracies or outdated models could lead to misinterpreted insights, potentially harming campaigns.
- Privacy concerns and evolving regulations, like the GDPR, limit the ability to collect behavioral data, especially third-party data.
- Ad fatigue: Over-targeting viewers with personalized ads may reduce campaign effectiveness.

Conclusion:

Data-driven advertising creates opportunities for higher revenue streams by optimizing ad placements and ensuring campaigns are relevant. For this hypothesis, the critical success factor lies in accurate, real-time data collection and ethical data usage policies.

Hypothesis 3: Real-time observations improve the efficiency of strategic decision-making processes.

Critical Explanation:

This hypothesis asserts that real-time insights fueled by big data analytics allow for faster and more informed decision-making at TV Derana. Real-time data collection systems process live information from sources such as social media platforms, website analytics, and live TV audience monitoring, empowering executives to act decisively.

Research Context:

- For instance, real-time updates on viewer statistics during a live event can help TV Derana decision-makers decide whether to extend broadcasting time, adjust ad placements, or switch programming to improve engagement. Tools like Apache Kafka or Spark Streaming can facilitate the real-time analysis of text, images, or viewer metrics.

Potential Impacts:

- Rapid decisions: Real-time analytics enhances the ability to respond dynamically to events, such as unexpected program performance changes or a viral trend on social media.
- Increased operational efficiency: Critical decisions about content scheduling or ad composition can be made faster using accurate live metrics.

Challenges:

- Noise in data: Real-time streams can include unnecessary or non-critical information, which may complicate interpretation or decision-making.
- Infrastructure requirements: Real-time systems require investments in storage, network bandwidth, and an agile workforce to monitor and apply findings.

Conclusion:

Real-time analytics is a valuable tool for optimizing strategy and responding dynamically to trends or unexpected scenarios. For TV Derana, implementing tools to monitor live metrics effectively can enhance decision-making agility and impact strategic outcomes significantly.

Hypothesis 4: Implementing a flexible big data platform lowers organizational errors and ensures compliance with data laws.

Critical Explanation:

This hypothesis focuses on the organizational benefits of having a flexible, scalable big data platform. Implementing such a system at TV Derana helps streamline operations by reducing errors and complying with data privacy regulations like GDPR or CCPA. A flexible platform can also adapt to evolving industry trends and legal requirements.

Research Context:

- For TV Derana, errors in data analysis could lead to flawed content recommendations, poor ad placements, or a breach of compliance protocols. Flexible platforms that integrate tools for error detection and compliance tracking help minimize these risks. For example, AWS, Azure, or Hadoop can provide scalable, secure environments with automated compliance protocols like encryption or anonymization.

Potential Impacts:

- Fewer errors: Automated data processing and validation ensure accuracy.

- Compliance: The threat of violating strict privacy regulations diminishes, ensuring ethical and lawful practices.
- Scalability: Adaptability to business expansion ensures the system can handle increasing data volumes.

Challenges:

- Implementation complexity: Transitioning to a scalable big data platform may increase short-term resource costs.
- Staff training: Employees would need to be trained on new systems, which may result in downtime or initial inefficiencies.

Conclusion:

A flexible big data infrastructure can improve operational accuracy, ensure compliance, and future-proof TV Derana's systems for evolving regulatory demands.

Hypothesis 5: Predictive models of user behavior improve the accuracy of content recommendation systems.

Critical Explanation:

Predictive models analyze historical and behavioral data to anticipate future user actions. This hypothesis implies that TV Derana can improve the quality of its content recommendations by incorporating predictive analytics methods such as machine learning models (e.g., collaborative filtering or deep learning-based content recommendation systems).

Research Context:

- By examining viewing patterns, watch times, or program ratings, predictive models can suggest content that aligns more closely with user interests. For example, predictive tools like Scikit-learn or TensorFlow can process this information to deliver targeted recommendations, similar to platforms like Netflix or Amazon Prime.

Potential Impacts:

- Better user experience: Improved recommendations lead to increased satisfaction and higher engagement.
- Viewer retention: Tailored suggestions reduce churn rates and encourage loyalty to the platform.

- Higher efficiency: Recommendation systems powered by AI reduce dependency on manual curation.

Challenges:

- Limited data: Predictive systems require large amounts of data to train models. Small inconsistencies or external influences (e.g., social trends) might reduce effectiveness.
- Privacy concerns: Intelligent systems must strike the right balance between personalization and respecting user privacy regulations.

Conclusion:

TV Derana can leverage predictive models to revolutionize its recommendation systems, ensuring that content is both engaging and relevant. However, the model's efficacy depends on robust datasets, compliance with privacy standards, and periodic algorithm updates to remain relevant.

Thesis structure

Introduction:

The application of big data analytics in the media industry has emerged as a transformative force, allowing organizations to harness vast and diverse information for strategic decision-making. This literature review discusses the current body of knowledge surrounding big data integration, analytics, and its effects for the television sector, especially for media organizations like TV Derana. The review highlights the technical developments, methods, and tools that have been important in shaping data-driven strategies. Additionally, it explores the obstacles, such as data growth, security concerns, and compliance with legal frameworks, that organizations face while adopting big data solutions. By combining the results of earlier studies, this part aims to create a complete understanding of the role of big data in improving user interaction, optimizing advertising performance, and driving operating efficiency. The insights gained will form the basis for the creation and implementation of the TV Derana Insight Hub, ensuring that the suggested solutions are grounded in evidence-based practices and matched with industry trends.

Literature Review

The literature on big data and its uses in the media business shows significant improvements in understanding viewer behavior, improving content delivery, and enhancing organizational efficiency. Big data analytics has emerged as a changing tool, allowing media companies to study vast amounts of organized and unstructured data created from various sources, such as social media platforms, online streaming services, and standard television measures. Scholars have emphasized the importance of deploying prediction analytics to identify user tastes and trends, allowing companies to adjust content to audience needs effectively. Additionally, the merging of machine learning algorithms has enabled real-time decision-making, improving the accuracy of focused ads and personalized content suggestions. Studies also stress the role of mood analysis in gauging public opinion and its possible impact on shaping broadcasting strategies. Despite its benefits, the adoption of big data in the media sector faces hurdles, including data protection issues, the need for advanced technology infrastructure, and the skills gap among pros. Researchers have called for the development of ethical models and strategies to handle these problems while increasing the benefits of big data technologies. In the context of TV Derana, studying the application of big data could offer useful insights into viewer involvement and advertising tactics, matching with the global trend of data-driven decision-making in the media environment. This literature study offers a basis for understanding the theoretical and practical effects of big data analytics, setting the stage for further research and application in the Sri Lankan media business.

Methodology

The methodology for this study focuses on a mixed-methods approach, mixing quantitative and qualitative techniques to fully explore the application of big data in the TV Derana Insight Hub. The study starts with a detailed review of secondary data, including past viewing numbers, advertising success reports, and social media analytics, to establish standard patterns and trends. Primary data collection involves conducting organized polls and conversations with key parties, including users, advertising partners, and TV Derana staff, to gain various opinions on the current challenges and opportunities associated with big data integration. Advanced data analytics methods, such as descriptive and predictive analytics, will be applied to process and understand big datasets, using tools like Python, R, and Tableau. Machine learning models, such as grouping and sentiment analysis, will be applied to extract useful insights, such as audience segmentation and mood trends. For qualitative analysis, thematic coding will be used

to examine interview answers and find repeating themes linked to big data application. A stratified random sample method will ensure that participants reflect varied traits, such as age, gender, and physical area, while keeping statistical reliability. Ethical considerations, including full permission and data security, will be closely adhered to throughout the study process. The approach is meant to provide a complete knowledge of how big data can be harnessed to optimize content delivery, enhance audience interaction, and improve advertising efficiency, while also solving the technical and organizational challenges inherent in its adoption. This structured method guarantees that the results are both solid and practical, matching with the study goals and adding to the larger conversation on big data in media operations.

Presentation of Results

The presenting of results for this study will fully show the findings drawn from the analysis of big data within the activities of TV Derana. Quantitative results will be displayed through a number of detailed visualizations, such as bar charts, line graphs, and heatmaps, to effectively explain trends in user demographics, interest levels, and content success measures. For instance, data analysis may show peak watching times, audience segmentation by age or location, and the connection between specific content types and traffic spikes. Predictive analytics outcomes, such as predicted trends in user tastes and mood changes over time, will be presented using models like regression analyses and grouping images. Qualitative results from interviews and focus groups with stakeholders, including staff and advertising partners, will be topic coded and given as story outlines. These tales will be backed by direct quotes to stress insights into views about big data's usefulness and difficulties in its implementation. Key results will also include the impact of advertising tactics on audience engagement and income creation, showing areas for improvement. Challenges found during the study, such as technical limits, data protection concerns, or pushback to accepting new technologies, will be clearly described, alongside practical suggestions to address them. Each result will be matched with the study goals and sub-objectives, ensuring a unified story that ties findings to the larger purpose of utilizing big data to improve decision-making, public involvement, and business efficiency. The talk will use a mix of stories, images, and data analysis to ensure usability and usefulness for diverse stakeholders, providing a strong basis for informed strategy planning at TV Derana.

CHAPTER 2 - LITERATURE REVIEW

1.8. Literature Review

Research Topic: Leveraging Big Data Analytics to Transform Media and Entertainment

Research Author(s): Chen et al. (2014)

The rise of big data analytics has changed many businesses around the world. The media and entertainment industry has benefited the most from these technologies. In media, "big data" means the ability to handle a lot of different types of data, such as organized data from databases and unstructured data from places like social media, user feedback, and web activities. Chen et al. (2014) say that big data helps businesses find secret trends, guess how people will act in the future, and make decisions based on data. This has changed the media environment by giving us new ways to customize material, make ads more effective, and keep audiences longer.

Research Topic: Importance of Audience Behavior Analysis in Media Operations

Research Author(s): Davenport and Patil (2012)

Audience tracking is one of the most important ways that big data is used in media operations. Researchers like Davenport and Patil (2012) stress how important it is for media companies to understand how their audiences behave in order to stay competitive. Tools like mood analysis and machine learning algorithms allow producers to divide their viewers and offer personalized material. Studies have shown that personalized content not only increases user involvement but also improves customer happiness and commitment. Netflix's recommendation engine is a well-known example in the literature. It is driven by big data and machine learning, which is why over 80% of the material watched on the site is based on suggestions.

Research Topic: Real-Time Advertisement Tracking through Big Data Analytics

Research Author(s): Xu et al. (2016)

Another important feature is the role of big data in advertising efficiency. Advertisers today expect exact tracking skills to ensure their ads reach the intended group. Xu et al. (2016) say that big data analytics lets marketers track how well their ads are doing in real time, so they can make changes based on what they learn from the data. Big data has led to programmatic advertising, which has become normal in the media business. It uses user data to show ads that

are very relevant to them. However, the success of these methods hinges on the quality and accuracy of the underlying data.

Research Topic: Data Privacy and Governance for Big Data Adoption

Research Author(s): Tene and Polonetsky (2013)

While the benefits of big data are obvious, the literature also discusses obstacles in its adoption. Data privacy issues are a recurrent theme, with researchers like Tene and Polonetsky (2013) pushing for tighter data control frameworks to protect customer rights. Additionally, the technical difficulty and cost of big data technology can be a barrier for smaller companies. The need for trained workers who can understand and apply data insights successfully is another issue noted in the literature.

For TV Derana, the merging of big data analytics through the Insight Hub marks a step forward in matching with global trends in the media business. By deploying big data, the channel can gain a competitive edge in knowing viewer tastes, improving content, and boosting advertising relationships. Existing studies show that adopting such systems needs a clear strategy, including investments in technology, staff training, and social practices to minimize possible risks.

This literature review offers the basis for studying how TV Derana can successfully harness big data technologies. By drawing from existing research, it offers insights into the possibilities and challenges of big data, stressing its ability to change traditional media operations and ensure continued success in a dynamic industry.

1.9. Conceptual framework

Big Data Utilization in TV Derana Insight Hub

Purpose:

This framework outlines the relationship between the key components involved in the implementation and utilization of big data analytics in TV Derana's Insight Hub. It demonstrates how big data technologies influence decision-making, audience engagement, and advertising strategies, while addressing challenges and opportunities.

Key Components:

1. **Inputs (Data Sources):**
    - **Viewer Data:** Collected from television ratings, digital streaming platforms, and online engagement metrics.
    - **Social Media Data:** User-generated content, likes, shares, comments, and sentiment.
    - **Advertiser Data:** Ad performance metrics and campaign analytics.
    - **Operational Data:** Internal logs, scheduling efficiency, and resource allocation.
2. **Processes (Big Data Analytics):**
    - **Data Collection & Storage:** Using big data tools and platforms (e.g., cloud storage, Hadoop).
    - **Data Processing:** Filtering, cleaning, and organizing data for analysis.
    - **Analytics Techniques:**
        - Descriptive Analytics: Historical performance reports.
        - Predictive Analytics: Forecasting trends in viewership and content demand.
        - Prescriptive Analytics: Recommending actionable insights for content creation and advertising.
    - **Visualization Tools:** Dashboards and reports for stakeholders.
3. **Outputs (Outcomes):**
    - **Audience Insights:** Demographics, viewing patterns, and preferences.
    - **Content Optimization:** Development of programs that align with audience demand.
    - **Targeted Advertising:** Improved segmentation and ad placement strategies.
    - **Sentiment Analysis:** Understanding public perception and brand reputation.
4. **External Factors (Moderators):**
    - **Technological Infrastructure:** Availability of advanced tools and resources.
    - **Data Privacy and Ethics:** Compliance with regulations and maintaining viewer trust.
    - **Staff Expertise:** Skills and training required to interpret and apply analytics.
    - **Market Competition:** Influence of competitors and industry trends.
5. **Impact:**

- **Improved Decision-Making:** Data-driven strategies for content production and advertising.
- **Enhanced Audience Engagement:** Tailored programming to increase viewer loyalty.
- **Revenue Growth:** Optimized ad campaigns and increased advertiser satisfaction.
- **Operational Efficiency:** Streamlined workflows and reduced resource wastage.

Visual Representation:

If creating a diagram, you can structure it as follows:

- **Inputs (Data Sources)** feed into **Processes (Big Data Analytics)**.
- **Processes** generate **Outputs (Outcomes)**.
- The **External Factors** act as moderating influences on both processes and outcomes.
- The **Impact** flows outward from the outputs.

CHAPTER 3 – METHODOLOGY

Research onion

Research Onion and Its Application to Your Research Assignment

Purpose:

The Research Onion, created by Saunders et al. (2007), is a system that helps researchers in creating and arranging their research technique. It consists of six layers, each reflecting a stage in the study process. Below is a description of the Research Onion and how it refers to your project on Big Data in TV Derana Insight Hub:

Layers of the Research Onion:

1. Philosophies:

This layer describes the overall theory or outlook that underpins the study.

- Your Research: The study is likely linked with the pragmatism theory, as it focuses on real applications of big data in TV Derana. Pragmatism allows the use of both qualitative and quantitative methods to handle real-world problems and produce practical results.

2. Approaches:

This layer refers to the choice between logical and intuitive thinking.

- Your study: The study takes a logical method, as it starts with ideas based on known theories of big data and media analytics and tries to test these hypotheses through data collection and analysis.

3. Strategies:

This layer describes the overall plan or idea of the study.

- Your Research: A case study approach is acceptable, as the research focuses on the unique case of TV Derana and its use of big data tools. This approach allows an in-depth study of the organization’s processes and obstacles.

4. Choices:

This stage includes picking between mono-method, multi-method, or mixed-methods study.

- Your Research: The study uses a mixed-methods approach, mixing quantitative methods (e.g., statistical analysis of user data) with qualitative methods (e.g., conversations with stakeholders) to provide a complete picture of the subject.

5. Time Horizons:

This layer identifies whether the study is performed over a specific period (cross-sectional) or stretched over time (longitudinal).

- Your Research: A cross-sectional time span is ideal, as the study aims to analyze current practices and data at a specific point in time to draw insights.

6. Techniques and Procedures:

This layer focuses on the exact methods used for data collection and analysis.

- Your Research:
    - Data Collection: Surveys and conversations with stakeholders (qualitative data), alongside study of user numbers, social media data, and advertising success (numeric data).
    - Data Analysis: Descriptive statistics, prediction models, and theme tagging of qualitative answers.

Applying the Research Onion to TV Derana Insight Hub:

- ✓ Philosophy: Pragmatism supports mixing qualitative talks with numeric data to solve real-world media problems.
- ✓ Approach: Deductive reasoning tries theories, such as "Big data enhances content optimization and advertising strategies."
- ✓ Strategy: A case study offers focused views into TV Derana's unique setting and operations.
- ✓ Choice: Mixed-methods ensure a fair knowledge of scientific facts and human views.
- ✓ Time Horizon: A cross-sectional method gives a picture of the current state of big data usage.

- ✓ Techniques and Procedures: Data analytics tools, such as Python or Tableau, process user and advertising data, while interviews offer depth and background to stakeholder opinions.

Benefits of Using the Research Onion:

The Research Onion ensures that your technique is reasonable, thorough, and systematically matched with your research goals. It offers a clear route to organize your study, ensuring that all layers of research design are handled.

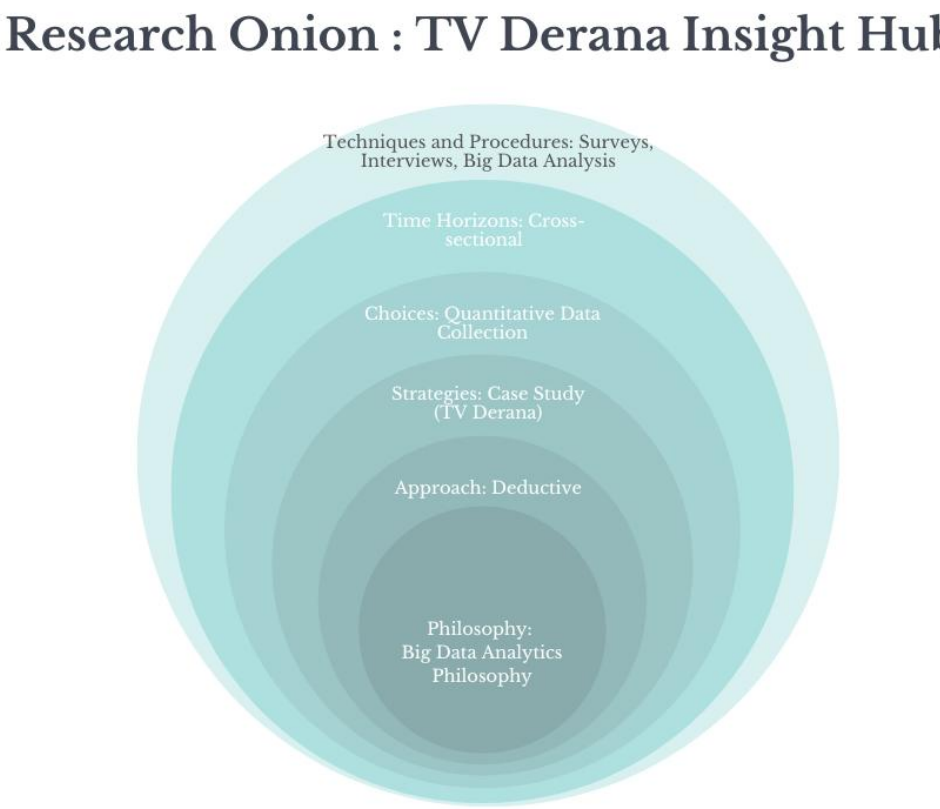

Figure 1 Research Onion: TV Derana Insight Hub

1.10. Research philosophy

The research theory used in this study comes from pragmatism, which shows a desire to know how big data analytics can be used in real life for TV Derana. Pragmatism is a way of thinking about the world that stresses using both qualitative and quantitative methods together to answer

hard study questions. This way of thinking fits with how big data is always changing, which calls for a balance between academic research and real-world use. By taking a practical approach, this study recognizes that big data analytics is complex and that ideas can come from many places, such as numerical data, public feedback, and industry trends. The study aims to find answers that can be used right away to deal with TV Derana's specific problems and chances by combining real-life examples with knowledge of the situation. Being able to change with the times is also a big part of this theory. This is because technology and viewing tastes are always changing, so a fluid study method is needed. In the end, the realistic mindset makes sure that the study results are both theoretically sound and useful in real life. This lets TV Derana use data-driven tactics that actually work.

1. Positivism

Positivism emphasizes observable, measurable facts and seeks to establish objective truths through scientific methods. It is commonly used in quantitative research and aims to uncover general laws governing phenomena.

Advantages:

- Provides clear and objective findings.
- Results are reproducible and generalizable.
- Facilitates hypothesis testing using statistical analysis.
- Ideal for large-scale studies requiring numerical data analysis.

2. Interpretivism

Interpretivism focuses on understanding subjective meanings and experiences. It emphasizes the importance of context and seeks to provide rich, detailed insights through qualitative methods.

Advantages:

- Offers deep understanding of human behaviors and social phenomena.
- Accounts for cultural and contextual factors.
- Provides flexibility in adapting to complex, dynamic scenarios.
- Encourages researcher-participant interaction for richer data collection.

3. Realism

Realism bridges positivism and interpretivism, acknowledging that reality exists independently but is interpreted through human perceptions. It considers both observable facts and subjective experiences.

Advantages:

- Balances objective and subjective perspectives.
- Facilitates mixed-method approaches combining quantitative and qualitative data.
- Recognizes the complexity of real-world phenomena.
- Useful for addressing multi-faceted problems involving different stakeholder views.

4. Pragmatism

Pragmatism focuses on the practical application of research findings. It integrates diverse methods to address real-world problems and prioritize actionable outcomes.

Advantages:

- Encourages methodological flexibility to meet research needs.
- Focuses on practical solutions and real-world applicability.
- Combines quantitative and qualitative approaches effectively.
- Aligns with rapidly changing and complex environments, such as big data scenarios.

Conclusion:

Understanding and leveraging these research philosophies allow researchers to design studies that align with their objectives and the nature of their data. In the context of the TV Derana Insight Hub, pragmatism stands out as the most suitable philosophy due to its flexibility and focus on actionable insights, enabling the organization to adapt to dynamic challenges and capitalize on big data analytics.

1.11. Research approach

The research theory used in this study comes from pragmatism, which shows a desire to know how big data analytics can be used in real life for TV Derana. Pragmatism is a way of thinking about the world that stresses using both qualitative and quantitative methods together to answer hard study questions. This way of thinking fits with how big data is always changing, which calls for a balance between academic research and real-world use. By taking a practical approach, this study recognizes that big data analytics is complex and that ideas can come from many places, such as numerical data, public feedback, and industry trends. The study aims to find answers that can be used right away to deal with TV Derana's specific problems and chances by combining real-life examples with knowledge of the situation. Being able to change with the times is also a big part of this theory. This is because technology and viewing tastes are always changing, so a fluid study method is needed. In the end, the realistic mindset makes sure that the study results are both theoretically sound and useful in real life. This lets TV Derana use data-driven tactics that actually work.

The Deductive Method

The logical technique is a research approach that starts with a general theory or idea and moves toward specific facts to test its truth. This top-down method includes drawing findings from current frameworks, principles, or theories and then actually trying them through organized data collection and analysis. In the context of the TV Derana Insight Hub study, the logical approach is particularly important as it tries to prove set theories about the effect of big data analytics on user involvement, content performance, and advertising strategies.

The study starts with known theories in big data analytics and media studies, such as the usefulness of predictive modeling in improving content personalization and the role of data-driven insights in optimizing advertising campaigns. From these theoretical roots, specific theories are developed—for instance, that big data analytics will greatly improve viewer involvement or that machine learning algorithms will enhance the accuracy of content suggestions. These theories are then submitted to thorough empirical testing using organized data from TV Derana’s operations, such as user contact measures, advertising success statistics, and content engagement trends.

This methodology's organized nature ensures that the study stays focused and objective, with clearly stated guidelines for testing each theory. The use of numeric data, statistical models, and analysis tools enables exact measurements and strong confirmation of the suggested theories. Furthermore, the logical method allows the study to find causal connections, such as how specific data-driven tactics directly affect user behavior or advertising income.

One of the key benefits of logical methodology is its agreement with scientific rigor, allowing repeatable and generalizable findings. It offers a clear framework for decision-making by supporting or denying theories, which can then guide practical strategies for TV Derana. However, the method also requires careful consideration of possible limits, such as biases in hypothesis formation or the difficulties of recording the complexity of real-world events through predefined frames. To handle these, the study includes additional methods, such as qualitative feedback, to ensure a complete knowledge of big data's effects.

By employing a logical approach, this study creates a solid basis for applying theoretical principles to practical challenges, ensuring that the development and application of the Insight Hub are grounded in proven insights and strategies.

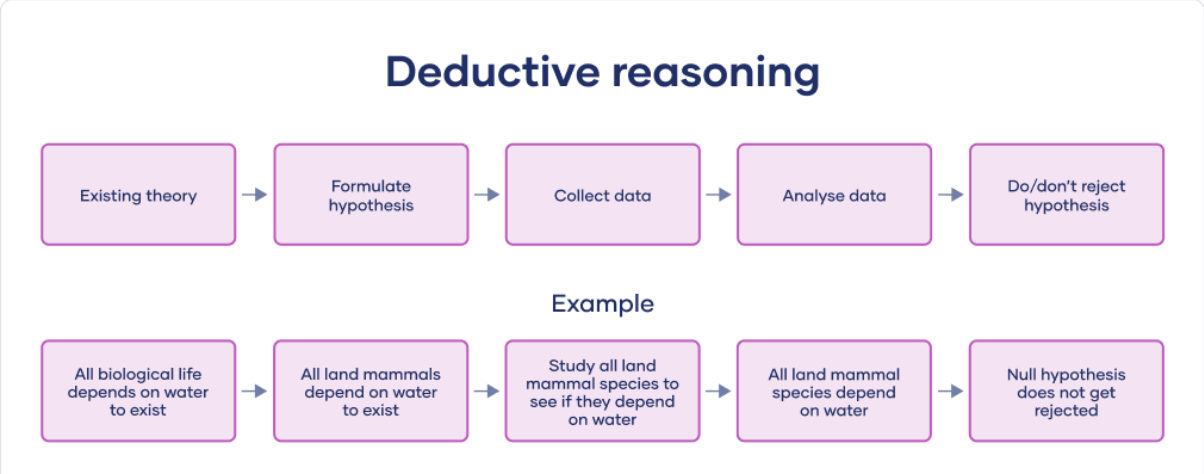

Figure 2 Deductive Reasoning (Source - Link)

Inductive Methodology

The inductive technique is a study approach that starts with specific data and moves toward the development of larger ideas or conclusions. Unlike the logical method, which tries pre-existing

theories, inductive research builds its results from patterns and insights found in the data. This bottom-up method is particularly useful in discovering new areas of study where predefined theories might not fully capture the complexity or novelty of the topic.

In the context of the TV Derana Insight Hub, the inductive approach includes studying specific datasets and observational insights to draw conclusions about how big data analytics can enhance user interaction, optimize advertising strategies, and improve content performance. For example, researchers might begin by studying detailed data such as social media feedback, user behavior during specific time slots, or the performance of individual ad campaigns. Patterns or trends that emerge from this data—such as peak user engagement times or common content preferences—can then guide wider ideas about audience behavior or effective advertising strategies.

One of the main strengths of the inductive approach is its freedom. It helps researchers to stay open to unexpected results and change their focus based on the data. This method is particularly well-suited for areas involving rapidly changing technologies, like big data analytics, where rigid theories might miss new trends or details. For instance, the study might reveal new audience groups or previously unknown factors affecting user engagement that were not expected in initial planning stages.

The intuitive approach also supports a better knowledge of the context and complexity of real-world facts. By focusing on specific cases and building conclusions from them, researchers can account for cultural, social, or organizational factors unique to TV Derana's operations. However, this method also requires careful attention to avoid overgeneralizing from limited observations or failing to prove trends through additional data collection and analysis.

In this study, the inductive technique supports other research methods by offering a route to discover ideas that may not be instantly obvious through hypothesis-driven frameworks. By mixing intuitive results with logical validations, the study ensures a complete understanding of how big data analytics can be successfully managed to achieve TV Derana's strategic goals.

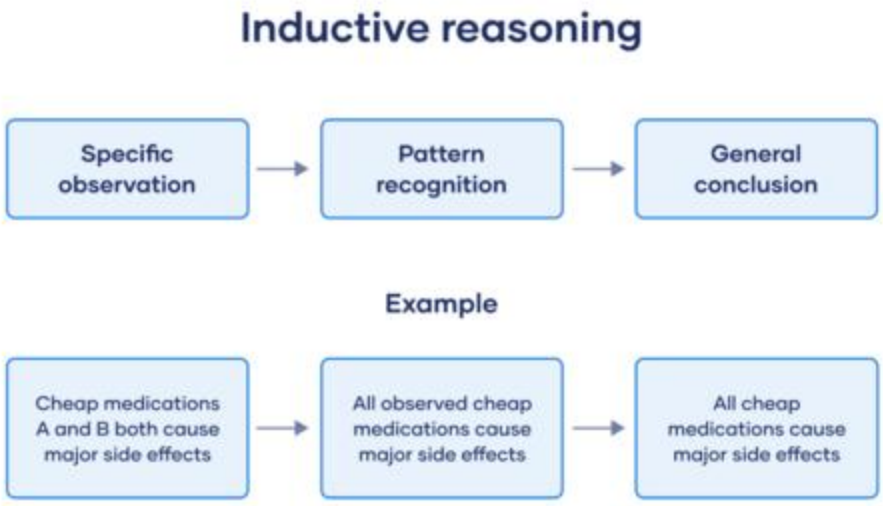

Figure 3 Inductive Methodology (Source - Link)

Selecting a Research Method

Choosing the proper research method is a critical step in ensuring the success and usefulness of any research project. The decision method relies on the nature of the research problem, goals, and the type of data needed to answer the research questions successfully. For the TV Derana Insight Hub study, which focuses on leveraging big data analytics to improve operations, viewer interaction, and advertising strategies, the research method must match with the study's multiple goals and the difficulties of big data.

1. Quantitative Research Method

The quantitative method involves the collection and study of numerical data to find patterns, connections, and trends. It is particularly effective in trying theories and producing statistically strong results. In this study, the quantitative method will be used to examine organized data such as user involvement measures, advertising success statistics, and content contact rates. These data points will provide measured insights into the success of big data analytics in meeting specific goals. Statistical tools like regression analysis, association studies, and predictive modeling will be applied to ensure accurate and useful insights.

2. Qualitative Research Method

The qualitative method focuses on understanding emotional events, opinions, and social circumstances. It is ideal for studying deeper reasons and behaviors that numeric data alone cannot show. For TV Derana, qualitative methods such as focus group talks, conversations with stakeholders, and analysis of fan feedback on social media will help provide meaning to the raw data. This method will ensure a thorough understanding of user standards, tastes, and material happiness.

3. Mixed-Methods Approach

Given the study's varied needs, a mixed-methods approach that combines both quantitative and qualitative methods is the most ideal choice. This technique will allow the study to capitalize on the strengths of both methods while reducing their respective limits. For instance, while numeric data will offer objective insights into viewer involvement patterns, qualitative analysis will provide context and complexity to these results by uncovering the reasons behind certain behaviors or tastes.

Factors Influencing the Selection

1) **Research Objectives**: The need to understand both quantitative results (e.g., viewer recall rates) and emotional views (e.g., viewer happiness) requires a mixed-methods approach.
2) **Nature of Data**: The availability of organized data (e.g., user metrics) and unstructured data (e.g., social media reviews) supports the combination of quantitative and qualitative methods.
3) **Scope and Resources**: The research’s reach, which includes creating practical strategies and solving technology challenges, needs a thorough method that covers all important aspects.
4) **Technological Tools**: Big data platforms, prediction modeling tools, and display software will enable the merging of these methods, ensuring efficient data gathering and analysis.

Deductive Methodology in Research

The deductive method is an organized and rational approach to conducting research, which begins with an existing theory or idea and tries it against specific findings or data. This method is particularly ideal for studies like the TV Derana Insight Hub project, where the aim is to apply known theory models to explore practical uses in a real-world setting. By applying the logical method, this study uses past knowledge, theories, and models in the field of big data analytics to carefully examine how these concepts can be applied to achieve corporate goals.

The logical method starts with the creation of ideas based on known theories or books. For example, in this study, ideas may be drawn from known theories about user interaction, content personalization, and data-driven advertising strategies. These theories are then tried through actual research, such as studying user data, advertising success, and comments from stakeholders. The results will either prove or deny the original ideas, giving proof to back the truth of the underlying theories.

Advantages of Using the Deductive Method

1. **Clarity and Focus**: The logical method ensures that the study is focused and organized, as it starts with clearly stated ideas drawn from established theories.
2. **Reliability**: By counting on known theory models, the study gains from a strong base of existing knowledge.
3. **Objective Testing**: The logical method stresses the use of measured data and statistical analysis, ensuring objective and truth in testing theories.
4. **Reproducibility**: The organized nature of the logical method enables the repetition of research findings, which is important for checking results.
5. **Practical Application**: This method is great for studies like this one, where the goal is to apply academic information to real-world situations and draw actionable answers.

Application in This Research

In the setting of the TV Derana Insight Hub, the logical method will help the study to:

- Test theories related to the usefulness of big data analytics in improving customer interaction and optimizing advertising strategies.
- Use theory models to predict how machine learning and data display tools can improve decision-making processes.
- Validate beliefs about the scale and security of big data solutions against actual observations.

1.12. Research strategy

A research strategy is a detailed plan for how to carry out a study in a way that is in line with its goals, methods, and ways of gathering data. The research plan for this study on the TV Derana Insight Hub uses both quantitative and qualitative methods to look at the many sides of big data analytics in a media company.

Research Strategy Chosen

A case study method will be used for the study, with TV Derana as the main target. This is the best approach because it gives a deep understanding of how big data can be used in a certain business setting. It also uses the deductive method, which makes sure that the study of how big data analytics can improve advertising, user interaction, and content optimization is based on theory.

Important Parts of the Strategy

1. Case Study Method
    - The study looks at TV Derana as a single, in-depth case.
    - It studies the implementation of big data tools, processes, and strategies through the lens of corporate goals and challenges.
    - The full range of real-life applications and the useful results of theory theories can be studied using this method.
2. Data Collection Methods

- Quantitative Data: Numerical data such as user engagement measures, advertising performance, and content scores will be collected to test theories and draw measurable insights.
- Qualitative Data: Interviews with key players, including marketing teams, content creators, and technical staff, will provide contextual information and enrich the research with subjective opinions.

3. Mixed-Methods Design
    - The study combines quantitative and qualitative methods to capture both the number trends and environmental details of big data application.
    - For instance, statistical studies of viewer behavior will be supported by personal comments to find underlying causes and consequences.

4. Time-Bound Framework
    - The plan includes a clear timeline for each step of the research:
    - Literature study and hypothesis building.
    - Data gathering and study.
    - Interpretation and sharing of results.
    - Final suggestions and findings.

5. Comparative Analysis
    - To contextualize results, the study will compare TV Derana's big data strategies with those of rivals in the media business.
    - This comparison will show best practices and places for improvement.

Advantages of This Strategy

1. Comprehensive Understanding: Combines quantitative and qualitative data to provide a complete view of the effect of big data.
2. Practical Relevance: Focus on a real-world case guarantees actionable insights and suggestions.

3. Flexibility: The mixed-methods approach accommodates unexpected results and adapts to the changing needs of the study.
4. Benchmarking: Comparative research shows where TV Derana sits in relation to industry norms.

Research Strategy Justification

The choice to employ a case study research approach for this study on the TV Derana Insight Hub is supported by the need for an in-depth, context-specific exploration of how big data analytics can improve media operations. Given the complexity of the research goals, which span user interaction, content optimization, and advertising strategies, this approach offers an organized yet open framework for achieving complete insights.

1. Suitability of the Case Study Approach

The case study method is particularly suitable for this research because it focuses on a single entity—TV Derana—and allows for deep analysis within its real-world context. This approach is matched with the deductive methodology chosen, as it allows the application of known theories in big data analytics to a specific corporate setting. The use of a case study ensures that the nuances and unique features of TV Derana's activities, obstacles, and opportunities are captured effectively.

2. Integration of Mixed Methods

The integration of both quantitative and qualitative methods within the case study structure provides a balanced and complete knowledge of the research problem. Quantitative data, such as viewer interaction measures and advertising success records, allow for objective analysis and hypothesis testing. Qualitative data, collected through talks with stakeholders and observational analysis, provide contextual detail and improve the understanding of numerical results. This mixed-methods technique is important for addressing the multifaceted nature of big data in a dynamic media context.

3. Practical Relevance and Real-World Application

The case study approach promotes actionable outcomes, as it focuses on practical applications of big data analytics within TV Derana's unique context. The insights created will be directly relevant to the company, allowing it to adopt evidence-based strategies for improvement. Furthermore, by grounding the research in real-world situations, the study ensures its results are not only theoretical but also useful to business practices.

4. Comparative Analysis and Benchmarking

Incorporating a comparison element into the case study approach improves its worth by putting TV Derana's efforts in the context of industry standards and best practices. This comparison allows for the discovery of gaps and possibilities, ensuring that the suggestions given are both innovative and competitive.

5. Alignment with Research Objectives

The case study approach aligns perfectly with the research goals, as it provides the necessary depth to explore specific areas such as content personalization, advertising efficiency, and scalability issues. The focused nature of the strategy ensures that all research questions are handled systematically, with sufficient depth and clarity.

6. Feasibility and Access

The selection of a case study is also supported by the practicality of the research. Access to TV Derana's data, stakeholders, and activities enables the gathering of both direct and secondary data, ensuring the richness and reliability of the information collected. This accessibility helps the in-depth exploration needed by the case study method.

Conclusion

The case study research strategy, backed by mixed methods and comparison analysis, offers a solid framework for meeting the goals of this study. Its ability to combine theory with practice, address the difficulties of big data analytics, and offer practical insights makes it the most

appropriate choice for this study. This approach ensures that the study not only adds to academic knowledge but also drives practical improvements in TV Derana's big data efforts.

Implementation

The plan includes close collaboration with TV Derana's teams to gain access to necessary data and ideas. By carefully following this plan, the study will reveal how big data analytics can transform TV Derana's operations and place it as a leader in data-driven media solutions.

1.13. Research Choice

The research choice for this study is a mixed-method approach, mixing both quantitative and qualitative research methods. This choice is led by the need to fully address the multiple nature of the study goals, which include exploring user interaction, improving advertising strategies, and building a scalable big data platform for TV Derana. By combining numerical data with environmental observations, this method ensures a well-rounded analysis and practical results.

1. Quantitative Research

Quantitative methods are applied to assess numerical data such as user engagement metrics, advertising success statistics, and content popularity scores. These methods allow for reliable measurement, hypothesis testing, and trend recognition. For instance, statistical models and data analytics tools will be used to study connections between user actions and content choices, as well as to measure the success of advertising campaigns.

2. Qualitative Research

Qualitative methods enhance the quantitative analysis by giving deeper insights into the background and emotional experiences behind the numbers. Techniques such as interviews, focus groups, and topic analysis will be utilized to gather opinions from stakeholders, including TV Derana officials, content makers, and marketers. These insights will help understand the reasons, difficulties, and demands involved with big data merging in media operations.

3. Rationale for Mixed-Method Approach

The following advantages support the choice of a mixed-method approach:

- Comprehensive Understanding: By mixing numeric data for generalizability with qualitative data for detail, the method offers a full view of the study situation.
- Triangulation: Using both methods improves the truth and trustworthiness of finds by cross-verifying results from multiple sources.
- Practical Application: The merging of numerical and environmental insights ensures that suggestions are not only evidence-based but also customized to TV Derana's unique needs.
- Addressing Complex Objectives: The research questions involve both measured results (e.g., advertising success) and environmental study (e.g., partner views), which require a mixed-method approach.

4. Data Integration

The merging of numeric and qualitative data will occur during both the data gathering and research stages. For example:

- Quantitative results, such as viewer involvement trends, will guide qualitative questions for interviews, ensuring a focused study of patterns noticed in the data.
- Qualitative views from stakeholders will provide context for understanding data results, such as why certain material works better with specific audience groups.

5. Alignment with Research Objectives

This research choice fits perfectly with the study's goals, which require both exact measures and a detailed understanding of complicated events. It ensures that the study not only gets the "what" through quantitative methods but also explains the "why" and "how" through qualitative methods.

Difference between quantitative and qualitative methods

Aspect	Quantitative Methods	Qualitative Methods
Purpose	To measure and analyze numerical data for statistical analysis.	To explore and understand subjective experiences and contexts.
Nature of Data	Numerical (e.g., numbers, statistics, percentages).	Non-numerical (e.g., words, images, themes).
Data Collection Methods	Surveys, experiments, observations, secondary data.	Interviews, focus groups, case studies, observations.
Analysis	Statistical methods (e.g., regression, correlation).	Thematic analysis, narrative analysis, content analysis.
Focus	Objective measurement of variables.	Subjective understanding of meanings and experiences.
Outcome	Generalizable findings applicable to larger populations.	Rich, in-depth insights specific to the context.
Approach	Deductive (testing hypotheses).	Inductive (developing theories).
Sample Size	Large sample sizes for reliability.	Smaller sample sizes for depth and detail.
Tools Used	Statistical software (e.g., SPSS, Excel).	Text analysis tools (e.g., NVivo) or manual coding.
Example Usage	Analyzing viewer ratings and trends.	Understanding audience preferences through interviews.

Table 1 differences between quantitative and qualitative research methods

I chose the mixed method because I have to collect quantitative and qualitative data in the research.

Justification

For this study, the mixed method works best because it lets both quantitative and qualitative data be used together, which gives a fuller picture of the research situation. This method makes sure that both number trends and personal views are recorded, which results in more complete and useful information. By using all of these methods together, the study can successfully meet many of the research goals.

Reasoning: Collecting all the data

The mixed method makes sure that no important part of the study is missed. Quantitative data lets you look at big sets of information, like how engaged viewers are and how well ads work, while qualitative data gives you more detailed information about how viewers behave, what they like, and how satisfied they are. The study gets a full picture by using both methods, which makes for a strong base for analysis.

Solid Analysis

The study results are more reliable and in-depth when they use both quantitative and qualitative data. Quantitative methods offer statistical accuracy, finding patterns and connections, whereas qualitative methods provide the background and logic behind those patterns. Together, they allow for a more thorough and detailed analysis, ensuring that the conclusions made are well-supported and useful.

Adaptability and Flexibility

The mixed method approach is adaptable to different stages and needs of the study. It lets changes be made as new data comes in, making sure the study stays up-to-date and useful to the media industry's use of big data. This freedom is important in handling both organized (numerical) and unstructured (textual or contextual) data, which are essential to the study.

Improved Trustworthiness and Validity

By triangulating findings from both quantitative and qualitative data, the mixed method improves the trustworthiness and validity of the study. Cross-verifying results through diverse data sources lowers bias and improves the trustworthiness of the study. This is particularly important for a thorough study of TV Derana’s viewer engagement and advertising tactics.

Relevance in Practice

The mixed method aligns closely with real uses in the media business. In the context of TV Derana, knowing user tastes and optimizing advertising strategies require both measured data and contextual insights. This method ensures that the study results are actionable and directly applicable to real-world challenges faced by the company.

Research Philosophy of Positivism

The choice of the mixed method fits with the research mindset of positivism, which favors observable and measurable events while also noting the importance of context and interpretation. This philosophical basis ensures that the study keeps scientific rigor while handling the practical and dynamic aspects of big data utilization.

1.14. Time frame

In research, choosing an appropriate time frame is important as it affects the scope and nature of the data gathered. Two main time frame methods are cross-sectional and longitudinal. Each has distinct benefits that make it perfect for different study goals.

Cross-Sectional Time Frame

A cross-sectional study involves getting data at a single point in time. This method is particularly useful for catching a snapshot of an event, giving instant and practical insights.

Benefits

1. **Time Efficiency**: Data is gathered within a short time window, making the study process faster.
2. **Cost-Effective**: Fewer resources are needed as there is no need for repeated data collection.
3. **Wide Coverage**: Enables the study of a large number of factors or groups simultaneously.
4. **Simplicity**: Straightforward to plan and perform, especially for finding correlations or current trends.

5. **Practical for Comparisons**: Ideal for comparing different groups or parts within the same era.

Longitudinal Time Frame

A longitudinal study involves collecting data over an extended time, often with repeated observations of the same people. This method is useful for understanding changes, trends, and cause-effect relationships.

Benefits

1. **Captures Trends**: Tracks changes over time, giving deeper insights into how variables grow.
2. **Identifies Causality**: More effective in finding cause-and-effect links due to repeated data collection.
3. **Rich Data Insights**: Enables study of patterns and trends that are not obvious in cross-sectional studies.
4. **Behavioral Understanding**: Ideal for studying long-term behaviors and reactions, such as user involvement changes.
5. **Improved Accuracy:** Repeated observations lessen the effect of errors, leading to more accurate results.

The cross-sectional of the research onion was selected because the research should be completed in a short time.

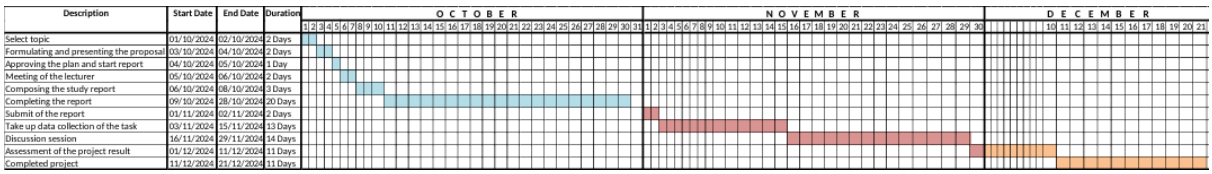

Figure 4 Gantt Chart

1.15. Data collection procedures

1.1.1. Type of Data

In study, the type of data used is very important for figuring out how good and reliable the results are. There are two main types of data used in research: **primary data** and **secondary data.** Each has its own benefits and uses, based on the study's goals.

- **Primary Data**

Primary data are the first pieces of information that a researcher gathers on their own for a specific reason. Usually, polls, conversations, focus groups, or direct observations are used to get this information. Since raw data is taken directly from people, it is very important to the study question and gives specific, up-to-date information.

Advantages of Primary Data

1. **Relevance:** The data is directly useful because it is tailored to the study goals.
2. **Latest Information**: Gives you the newest info to look at.
3. **Control Over Data Quality**: Researchers have full control over how the data is taken, ensuring accuracy and reliability.
4. **Flexibility**: The way data is collected can be changed to answer specific questions or deal with problems that come up during the study.

- **Secondary Data**

Secondary data refers to pre-existing data that has been collected and studied by other experts or groups. This data is usually gained from sources such as research studies, government papers, company databases, or history records. Secondary data offers a cost-effective and time-efficient way to gather information that may otherwise be difficult or impossible to collect.

Advantages of Secondary Data

1. **Cost-Effective**: Eliminates the need for extensive resources and time to collect new data.
2. **Wide Availability**: Offers access to a huge amount of knowledge across different areas.
3. **Useful for Contextual Insights**: Helps provide background or standard information for the original study.
4. **Supports Trend Analysis**: Historical data can be useful for spotting trends and changes over time.

Type of Secondary Data

Secondary data refers to information that has already been gathered, handled, and released by other people, groups, or institutions. It acts as an essential resource for students, giving a base of current knowledge, background, and comparison views. The usage of secondary data is

especially helpful when time and resources are restricted, or when main data collection is difficult. Secondary data can be divided into different types based on its sources and features, including but not limited to, historical data, poll data, and government data. Each type adds differently to study, giving diverse views and opinions.

1. Documentary Data

Documentary data comprises textual and non-textual materials such as books, academic journals, magazines, newspapers, and digital content. These sources are rich in qualitative and numeric information, giving scholars with access to past trends, theoretical frameworks, and in-depth studies. In the context of media-related research, historical data from industry reports, market studies, and university papers can offer useful background for studying big data uses.

2. Survey Data

Survey data includes pre-existing information taken by groups like study agencies, governmental bodies, and private organizations. These records are often vast and cover various social, economic, and behavioral aspects. For instance, polls on audience tastes, watching habits, or advertising success can offer a wealth of information for media research without the need for duplicative original data collection.

3. Administrative Data

Administrative data is drawn from records kept by groups for practical reasons. This includes files, cash records, and success measures. For media companies like TV Derana, administration data can cover viewing scores, website analytics, and advertising success records. These records are usually organized and measurable, making them highly useful for trend analysis and predictive models.

4. Digital and Online Data

With the rise of the internet, digital data from online sites has become a major type of secondary data. Social media analytics, web traffic data, and user-generated material are notable

examples. For study on big data in media, these sources provide real-time insights into viewer interaction, opinion, and content recognition.

1.1.2. Data Collection Method

Data gathering is a critical phase in research, determining the quality and usefulness of information used to meet research goals. For this study, a mixed-method approach is chosen, mixing quantitative and qualitative data collection methods to ensure a complete understanding of the research situation. Each method is designed to record specific types of data, giving a fair view on the topic.

1. Quantitative Data Collection

Quantitative data is gathered to provide measured and scientific insights into patterns, habits, and trends. This data is often taken through organized tools, ensuring stability and accuracy. The following methods are applied for numeric data collection:

i. Surveys and Questionnaires

Surveys and surveys are among the most successful and widely used tools for getting ordered data in study. Designed to target a particular sample group, these tools are carefully made to gather valuable insights into user tastes, interest levels, and the success of advertising strategies. The use of close-ended questions, such as multiple-choice or Likert-scale queries, ensures uniformity in answers, making it easier to perform statistical studies and draw objective conclusions. By addressing different groups within the audience sample, these polls aim to provide a thorough understanding of patterns and trends across various user segments. They serve as a basis for measuring key measures such as happiness rates, frequency of content consumption, and tastes for specific types or time slots. Moreover, their organized nature allows researchers to compare data across groups, track changes in behaviors over time, and find significant connections. The uniform structure of surveys and questions ensures that data collection is not only reliable and repeatable but also efficient, giving a simple approach to meeting the study's goals.

ii. Digital Analytics Tools

Digital analytics tools provide a strong means of collecting real-time, useful data on viewer behavior and interaction. Platforms like Google Analytics, social media insights dashboards,

and ad performance tools are crucial for tracking and understanding metrics such as click-through rates, views, and engagement data. These tools allow researchers to watch user interactions across various digital platforms, from website hits and content views to social media shares and ad clicks. By leveraging advanced analytics features, researchers can divide data by audience groups, regional areas, or device usage, giving a detailed view of audience tastes and habits. Additionally, these tools provide the ability to watch trends over time, measure the success of programs, and find areas for improvement. The speed of data access allows quick decision-making and flexible reactions to new trends. By combining these tools into the data collection process, the research gets a strong basis for understanding the details of audience involvement, ensuring that results are both accurate and highly relevant to the study's goals.

2. Qualitative Data Collection

Qualitative data is gathered to explore subjective insights, perceptions, and experiences. It focuses on understanding the "why" and "how" behind behaviors and decisions. Techniques for collecting qualitative data include:

i. Interviews

Interviews play a crucial role in collecting qualitative data by enabling direct and important interactions with key players. For this study, semi-structured interviews are performed with TV Derana management, marketers, and content makers to dig deeper into their viewpoints on big data adoption. These conversations are meant to strike a balance between organized questions and the freedom for open-ended talks, allowing interviewees to share their thoughts and experiences thoroughly. Management-level partners provide important information about strategy goals, obstacles, and expected results of merging big data into their operations. Advertisers offer their views on how data-driven advertising tactics could improve campaign success and audience targeting. Content makers share their thoughts on leveraging community data to adjust programming and improve content participation. The semi-structured approach ensures that all important topics are covered while leaving room for surprising insights and varied views. This method is particularly effective in understanding the real effects, goals, and possible roadblocks connected with big data projects, making it an essential component of the study.

ii. Focus Groups

Focus groups serve as a lively and involved way for getting rich qualitative data by connecting directly with viewers. Groups of subjects, representing varied groups and watching habits, are brought together to talk their tastes, hopes, and views of TV Derana's content and services. This setup supports open conversation, where people can share their thoughts and experiences while building on each other's ideas. Focus groups show greater insights into what watchers find interesting, areas of unhappiness, and their standards for content delivery. By watching group interactions, researchers can identify similar themes, patterns, and differing views, giving a well-rounded understanding of audience mood. These talks also provide chances to study new trends in watching behavior, such as tastes for specific types, content styles, or viewing devices. The joint nature of focus groups makes them a powerful tool for discovering underlying reasons and attitudes that may not appear through individual data collection methods, adding significant depth and complexity to the study results.

iii. Content Analysis

Content analysis is a structured method for studying online feedback, social media comments, and user reviews to understand audience opinion and spot new trends. This method allows researchers to gather qualitative data from vast and varied sources, representing the thoughts and views of a broad audience. By studying user reviews and social media interactions, researchers can find repeating themes such as popular content types, common complaints, and areas for improvement. Social media platforms serve as a valuable collection of real-time feedback, giving raw and spontaneous audience replies to TV Derana's programs and projects. Online reviews provide more detailed insights, often noting specific elements that connect with viewers or fail to meet expectations. Content analysis not only helps to gauge general audience opinion but also shows minor trends and changes in user tastes over time. This method is important in recording the voice of the audience, giving practical insights that can lead strategic choices in programming, content personalization, and user interaction strategies.

1.1.3. Data Collection and Analyze Tools

Data Collection Tools

To gather data successfully for this study, a mix of traditional and new tools is utilized to ensure complete and accurate data collection:

1. **Online Surveys and Questionnaires**: Digital survey tools such as Google Forms, SurveyMonkey, or Qualtrics are used to collect numeric data from users, marketers, and other parties. These tools provide organized forms for getting answers on topics such as watching habits, content choices, and advertising success. Their robotic powers and ease of spread make them ideal for reaching a broad audience quickly.
2. **Interview Recording Devices and Software**: For holding semi-structured interviews with stakeholders, audio recording devices or apps like Otter.ai and Rev are used to catch talks. These tools ensure no details are missed during conversations and ease recording and analysis.
3. **Focus Group Facilitation Tools**: For focus groups, tools like Zoom or Microsoft Teams are employed for virtual talks, while in-person meetings use audio and video recording equipment to document interactions. Such tools allow thorough observation and ensure data consistency for later analysis.
4. **Social Media Monitoring Tools**: Platforms like Brandwatch, Hootsuite, and Sprout Social are used to collect detailed data from social media. These tools allow the tracking of comments, hashtags, and trends linked to TV Derana, giving insights into viewer opinions and tastes.
5. **Web Analytics Tools**: Tools such as Google Analytics and Adobe Analytics provide data on online viewer interactions, giving numeric insights into website traffic, content consumption habits, and user behavior.

Data Analysis Tools

The data gathered is examined using a variety of tools to discover insights, spot trends, and draw useful conclusions:

1. **Statistical Software (SPSS, R, or Python):** These tools are used for processing and evaluating numeric data from polls and questions. They allow statistical tests, regression analysis, and the building of prediction models to find trends and connections in the data.
2. **Qualitative Analysis Software (NVivo, MAXQDA):** These tools are important in studying qualitative data gathered from interviews, focus groups, and content reviews. They help organize answers, find themes, and show links between qualitative factors.

3. **Data Visualization Tools (Tableau, Power BI):** Visualization tools are used to show data insights in an easily understandable manner. These tools build screens and visual images like charts, graphs, and heatmaps for stakeholders to understand results naturally.
4. **Social Media Analytics Tools**: In addition to data gathering, tools like Hootsuite and Brandwatch are also used to study social media trends, allowing mood analysis, trend predictions, and audience segmentation based on interactions.
5. **Big Data Analytics Platforms**: Platforms such as Hadoop and Apache Spark are utilized for processing and studying large-scale data sets, especially for real-time analytics and machine learning model application.

Questionnaire structure

Variable	Indicator	Measurement Scale	Mean	Standard Deviation (STD)	Median
Viewer Engagement	Frequency of watching	Likert Scale (1-5)	4.2	0.8	4
	Interaction with content (comments/likes)	Likert Scale (1-5)	3.8	1.0	4
Content Personalization	Relevance of recommended content	Likert Scale (1-5)	4.0	0.9	4
	Satisfaction with personalized ads	Likert Scale (1-5)	3.5	1.1	4
Advertising Effectiveness	Click-through rate (CTR)	Percentage	25%	5%	24%
	Purchase intent after ad exposure	Likert Scale (1-5)	3.7	1.0	4
Data Platform Usability	Ease of accessing insights	Likert Scale (1-5)	4.3	0.7	4
	Satisfaction with platform features	Likert Scale (1-5)	4.1	0.8	4
Viewer Trends	Shift in preferred content genres	Likert Scale (1-5)	3.9	1.2	4
	Use of multiple screens while viewing	Likert Scale (1-5)	4.2	0.6	4

Table 2 research questionnaire

Data Storage

Data keeping that works well is an important part of this study because it keeps the data safe, accessible, and complete. A hybrid storage solution that combines cloud-based and local storage systems is used to manage the wide range of data that was gathered for this study. This includes social media analytics, poll answers, and recordings of qualitative interviews. Cloud storage systems, like Google Cloud or Amazon Web Services (AWS), let researchers and users work together easily by letting them access and scale their data from anywhere. These systems are great for working with big datasets because they come with tools for automatic backups and healing from disasters.

On the other hand, local storage systems are used to store private data that needs extra protection, like study data or information that could be used to identify a person. Encryption and secure entry techniques are used on both types of storage to keep data safe and reduce the chance of someone getting in without permission. A clear data management plan is also used to organize and group data in a way that makes it easy to find and analyze. To keep data from getting lost, regular backups are set up, and version control tools are used to keep track of changes to files.

By using this all-encompassing method for data keeping, the study makes sure that all data stays safe, organized, and easy to access throughout the study. This allows for thorough analysis and accurate results.

5.1. Target population and sampling

1.1.4. Sampling Strategy

The selection approach for this study is meant to ensure the gathering of thorough, representative, and useful data from various stakeholder groups. A mix of purposive sampling and stratified random sampling is applied to handle the varied nature of the data sources, including TV Derana management, marketers, content makers, and users.

Purposive sampling is used to pick key players, such as management and marketers, based on their knowledge and participation in choices related to big data implementation. This method ensures that the study captures insights from people who have direct knowledge and control over the processes being studied. For instance, semi-structured interviews are performed with these people to gain qualitative insights into their viewpoints on big data strategies.

On the other hand, stratified random sampling is performed to pick viewers for polls and focus group talks. The audience is divided into different strata based on demographic factors such as age, gender, and physical place to ensure diversity and inclusivity. Within each stratum, participants are randomly chosen to avoid bias and ensure that the sample represents the larger population of TV Derana's viewing.

This dual method allows the research to balance depth and breadth, giving both detailed insights from key partners and a larger understanding of audience tastes and opinions. Additionally, the sampling size is determined using statistical methods to ensure it is big enough to provide relevant and reliable data, while still being feasible within the study's scope. By choosing this robust sampling strategy, the study ensures the validity and reliability of its results, which are essential for drawing practical conclusions.

Probability Sampling Method

Probability sampling is a structured and statistically reliable method used to pick people in a way that ensures every person in the community has a known and equal chance of being chosen. This method is crucial for reducing bias and ensuring the representativeness of the group, making it ideal for quantitative research where extension to the larger population is needed.

In this study, probability sampling methods such as simple random sampling, systematic sampling, and stratified sampling are considered, based on the target group being studied.

- **Simple Random Sampling**: This method ensures that every person in the community has an equal chance of being included in the sample. For example, a random number generator can be used to pick users from a database to answer questions, ensuring fairness in the selection process.
- **Systematic Sampling**: This includes choosing people at regular times from a sorted list. For instance, every fifth watcher from a member list can be picked for poll involvement, providing ease and regularity.
- **Stratified Sampling:** The population is split into subgroups or divisions based on specific traits, such as age, gender, or region. A random sample is then taken from each level. This method ensures that various subgroups are properly covered, giving more correct insights into audience behavior and tastes.

The benefits of probability sampling include improved validity, reduced sampling error, and better generalizability of the results. By using this method, the study ensures that the data gathered from watchers, marketers, and other parties is fair and accurate of the entire community. Moreover, the strict nature of probability sampling fits with the research mindset of positivism, stressing truth and statistical reliability. This method provides a strong basis for studying numeric data and drawing useful results that can be safely applied to strategy choices.

- **Simple Random Sampling**

Simple random sampling is a widely used probability sampling method that ensures each person in a group has an equal chance of being chosen for the study. This method is simple and fair, making it ideal for getting representative groups that exactly reflect the traits of the larger community. By eliminating bias or arbitrary selection, simple random sampling supports statistical truth and ensures that the results can be spread to the entire community.

In the context of this study, simple random sampling could be performed to pick users from TV Derana's audience information, sponsors, or other parties for participation in surveys or conversations. A random number generator or lottery method may be used to choose players, guaranteeing that the process is completely neutral. This method is particularly effective when the population is uniform or when the researcher tries to reduce selection bias.

One of the main benefits of simple random selection is its ease of application. It is also highly compatible with statistical methods, allowing exact estimates of population factors and lowering the margin of error in the results. Additionally, the chance contained in this method ensures that every person has an equal likelihood of participation, supporting justice and representativeness.

However, simple random sampling needs access to a full and up-to-date list of the population, which may not always be possible in big or separated groups. Despite this flaw, its ease and stability make it a preferred choice for research needing objective and fair data gathering. By applying simple random sampling in this research, the study ensures that the insights gained are reliable, true, and generalizable to TV Derana's wider public and partner group.

- **Systematic Sampling**

Systematic sampling is a probability sampling method where elements are chosen from a sorted population at regular times, known as the sample interval. This method starts with the random pick of a starting point, followed by the orderly addition of every nth element from the population list. The sampling period (n) is found by dividing the population number by the desired sample size, providing even covering of the entire population.

In the context of this study, systematic sampling could be applied to pick individuals such as TV Derana watchers or marketers by ordering their information in a specific order such as by registration date or demographic factors and then choosing every nth person. This method is particularly useful when a complete and sorted list of the population is provided, simplifying the selection process and providing an organized portrayal of the population.

One of the main benefits of systematic picking is its ease and efficiency. Unlike simple random sampling, which may require the use of random number machines or lengthy human picking, systematic sampling is easy and less time-consuming. It also offers a higher degree of control over the sample distribution, making it easier to achieve equal coverage across the population. Furthermore, regular picking lowers the risk of grouping, as players are spread evenly throughout the list.

However, a key weakness of this method comes when the population order displays secret patterns or cycles, which can accidentally bias the sample. For example, if watchers with similar tastes are grouped in the list, the method might over-represent or under-represent certain groups. Despite this possible flaw, systematic sampling remains a solid and useful method when the population order is neutral and free from systematic trends.

By employing systematic sampling in this research, the study ensures that subjects are chosen in an organized yet random way, combining ease and statistical accuracy. This method offers a reliable way to gather sample views from TV Derana's viewers and partners while keeping scientific rigor.

- **Stratified Sampling**

Stratified sampling is a probability sample method where the population is split into different subgroups, known as strata, based on similar traits. From each level, a relative or equal number of people is randomly chosen to ensure that all classes are properly represented in the sample.

This method is particularly successful when the population displays variety, as it allows researchers to record the diversity of the population more exactly.

In the context of this study, stratified sampling could be applied by separating people into groups based on factors such as demographic traits (e.g., age, gender, area), user interests, or advertising types. For instance, the population of TV Derana watchers can be split into classes like urban and country people, and a representative sample from each group can then be chosen for study. This ensures that ideas are taken from all important parts of the population, representing its general diversity and lowering the risk of bias.

The benefits of stratified selection are various. Firstly, it improves the accuracy of the study results by ensuring equal coverage of all key categories. This method reduces selection error and improves the accuracy of predictions for individual layers. Secondly, divided sampling allows for more thorough subgroup analysis, allowing the researcher to compare trends or actions across different divisions. Thirdly, when applied effectively, it needs a smaller sample size than simple random sampling to achieve the same level of accuracy, making it cost-efficient and time-saving.

However, filtered selection does have some limits. It needs thorough knowledge about the people before sampling, which can be time-consuming to gather. Additionally, if the strata are not well-defined or if the sample size within a stratum is too small, it may lead to incorrect or missing results. Despite these difficulties, the method is highly successful when the population structure is well-understood, and the classes are clearly marked.

In this study, stratified sampling is an ideal choice to ensure that key groups within the TV Derana viewers and partners are properly covered. By accounting for the unique features of each section, the study can provide more detailed insights into how big data analytics impacts different groups, improving the general validity and trustworthiness of the results.

Non-Probability Sampling Method

Non-probability sampling is a sampling method where people are chosen based on non-random factors, meaning not every person of the population has an equal chance of being included in the sample. This method is often used when time, funding, or access to the full community is limited. It focuses on getting data from specific groups of the population that are most important

to the study goals. Non-probability sampling is widely used in preliminary research or studies needing personal insights.

In the context of this study, non-probability sampling could involve choosing key players like TV Derana management, marketers, and content makers who have direct experience and insight into the organization's use of big data. Additionally, focus groups with chosen watchers or content analysis of specific community comments could be performed to gain qualitative views.

The benefits of non-probability sampling are significant, especially in scenarios needing quick or focused data gathering. Firstly, it is a cost-effective and time-efficient method as it avoids the difficulties of population-wide random picking. Secondly, it helps researchers to gain insights from people who are most likely to provide useful information, ensuring that the group is highly relevant to the study goals. Thirdly, it is flexible and adaptable, allowing researchers to alter sample criteria as new insights emerge during the study.

However, non-probability selection has its limits. Since the group is not randomly chosen, the results may not be generalizable to the entire population, leading to possible selection bias. Additionally, the lack of equal chance makes it difficult to predict sampling mistakes or assess the representativeness of the data. This method is better suited for studies where deep, local learning is valued over data generalizability.

For this study, non-probability sampling is useful when exploring qualitative aspects such as stakeholder views, user perceptions, or content choices. By focusing on specific, educated subjects, the study can gain thorough and useful insights. Combining this method with probability sampling for other numeric aspects ensures a fair approach, leveraging the strengths of both techniques to meet the study goals thoroughly.

Types of Non-Probability Sampling

There are a number of different non-probability sampling methods that can be used to meet different study goals. Each type has its own benefits and is best used in different situations. Non-probability sampling comes in the following main forms:

1. Convenience Sampling

For this method to work, people must be easy to reach and ready to take part. Convenience sampling is widely used when time or resources are restricted, as it allows researchers to collect data quickly and cost-effectively. For example, a researcher might choose to talk to nearby TV Derana watchers or workers who are free at the moment.

- Advantages:
  - ✓ It's easy and quick to collect info.
  - ✓ Doesn't need much thought or work to carry out.
- Limitations:
  - ✓ High possibility for bias as the group may not represent the broader population.

2. Purposive Sampling

Purposive sampling, which is also called critical sampling, picks people to participate in a study based on their skills, knowledge, or how they are related to the study. For instance, TV Derana execs, marketers, and content creators with a lot of experience with big data analytics could be asked to take part in the study.

- Advantages:
  - ✓ Focuses on participants with the most important ideas.
  - ✓ Ensures that the data gathered aligns closely with study goals.
- Limitations:
  - ✓ Subjectivity in member selection may create bias.

3. Snowball Sampling

In snowball sampling, existing participants help find and recruit other participants, causing a "snowball" impact. This method is particularly useful for reaching secret or hard-to-access

groups. For example, TV Derana content makers could send the researcher to freelance contributors or external partners familiar with big data strategies.

- Advantages:
  - ✓ Effective for reaching special or hard-to-reach groups.
  - ✓ Builds trust and confidence through recommendations.
- Limitations:
  - ✓ Limited diversity as the sample may stay within narrow networks.

4. Quota Sampling

Quota sampling includes dividing the population into subgroups (quotas) based on specific characteristics such as age, gender, or job. The researcher then picks volunteers from each grouping until the desired quota is met. For instance, the study might require equal participation from viewers, marketers, and management to ensure a balanced viewpoint.

- Advantages:
  - ✓ Ensures participation of key sections.
  - ✓ Allows for focused data gathering.
- Limitations:
  - ✓ Quotas may not reflect true proportions of the wider community.

5. Volunteer Sampling

In volunteer sampling, subjects freely opt into the study. This method often involves open calls for engagement, such as social media posts asking viewers to share their views about TV Derana's material.

- Advantages:
  - ✓ Attracts highly motivated people who are truly interested.
  - ✓ Simplifies recruitment as people come forward freely.
- Limitations:
  - ✓ Self-selection bias may result in a group that is not representative.

Judgment

The purposive sample method relies on the researcher's opinion to identify subjects who can provide the most relevant and informative data for the study. By carefully choosing people with experience and direct involvement in the adoption of big data at TV Derana, this method ensures that only the most educated parties contribute to the study. This judgment-based method minimizes the addition of irrelevant people, leading to more focused and actionable results.

Concentrated Knowledge

Purposive sampling focuses on people with focused knowledge in the subject matter. In the context of this study, key players such as TV Derana management, advertisers, and content creators possess important insights into the organization's data practices and strategy goals. This targeted method ensures that the data gathered is rich in content and directly useful to understanding the transformative role of big data in the media business.

Pertinence to the Goals of the Research

This sampling method aligns closely with the research's goals, which aim to study the real effects of big data analytics on operations, viewer interaction, and advertising strategies. By choosing subjects based on their connection to these goals, purposive sampling improves the study's ability to answer specific research questions successfully. It guarantees that the insights gained are pertinent and actionable.

Effectiveness and Efficiency

Purposive sampling is both effective and efficient, as it allows the researcher to focus resources on a smaller, more defined group of people. This reduces the time and cost involved with large-scale, random sampling while still getting high-quality data. For a study that involves interviews, focus groups, and content analysis, this speed is particularly beneficial.

Quality

The quality of data received through purposive sampling is often better because subjects are picked especially for their ability to offer useful insights. For instance, asking TV Derana's management ensures that the information reflects a strategic viewpoint, while engaging marketers and content makers adds complexity to understanding practical and creative aspects.

Care of Particular Research Needs

Purposive sampling is particularly suitable for handling the unique needs of this study, such as understanding the challenges and benefits of big data analytics. It allows for the inclusion of diverse yet important views, capturing a complete picture of the implementation process and its effect. This tailored method ensures the study stays focused on its core goals while accommodating the complexity of the topic.

1.1.5. Sample Size

Sample size is the number of people who take part in a research project, data points, or units. For this study, figuring out the sample number is very important for getting accurate, complete, and dependable results. Because the sample number is a representation of the whole community, it has a direct effect on how accurate and generalizable the study results are. When deciding on the sample size, the study goals, resources that are accessible, and statistical needs are all taken into account.

Factors Influencing Sample Size

1. **Research Design:**

This study uses a mixed-methods approach, which means that both quantitative and qualitative data are collected. So, the sample size needs to support statistical correctness for quantitative analysis and give enough information for qualitative exploration.

2. **Population Characteristics:**

The study covers multiple groups, including TV Derana managers, marketers, content authors, and users. Age, gender, job, and experience differences within these groups are taken into account to make sure that the sample is fair.

3. **Desired Confidence Level and Margin of Error:**

For quantitative polls, a confidence level of 95% and a margin of error of ±5% are usually aimed to ensure strong statistical dependability.

4. **Availability of Participants:**

The sampling size is changed based on the availability and readiness of people to add to the study, especially for in-depth conversations and focus groups.

5. **Resource Constraints:**

Practical limits, such as time, cash, and people, are put into finding a doable and achievable sample number.

Proposed Sample Size

1. **Key Stakeholders:**

Approximately 10–15 people are chosen from TV Derana managers, marketers, content makers, and data researchers. These people are picked based on their knowledge and role in the organization's big data efforts. Their views provide strategic opinions on execution difficulties and possibilities.

2. **Viewers for Surveys:**

A group of 200–300 watchers is selected to collect numeric data. This size ensures statistical confidence while recording varied groups and watching habits. Stratified random sampling may be applied to split respondents into parts (e.g., age groups or geographic areas) to achieve fair representation.

3. **Focus Groups:**

For qualitative views, 3–4 focus groups are performed, each consisting of 6–8 people. These groups include watchers with different watching habits, allowing for lively conversations and showing detailed views.

4. **Secondary Data Sources:**

While not part of the main sample size, secondary data from online reviews, social media exchanges, and web analytics supports the study, giving additional layers of context and validation for the results.

Justification for the Sample Size

1. **Ensuring Representativeness:**

The sample size is picked to correctly represent the community interested in or affected by TV Derana's big data projects, ensuring results are relevant and useful.

2. **Achieving Statistical Validity:**

For numeric data, the sample number is meant to meet the statistical standards for dependability and generalizability. This means that the data can inform decision-making with trust.

3. **Balancing Depth and Breadth:**

While numeric polls provide a broad picture, smaller, focused groups like stakeholders and focus group members allow for deep qualitative study.

4. **Practical Feasibility:**

The suggested sample size is intended to be doable within the research's time and budget limits while keeping high-quality data gathering and processing.

5. **Targeted Insights:**

The sample size for partners and focus groups is designed to provide focused insights into specific aspects of big data application, such as management strategies and user involvement.

Determining Sample Size for Quantitative Research

In quantitative research, finding the sample size is led by statistical models and tools that account for the population size, desired confidence level, and accepted margin of error. For instance, in a community of 10,000 watchers, a sample size of 370 is suitable for a 95% confidence level with a ±5% range of error. However, changes are made based on real limits and the need for segment-specific research.

Importance of Sample Size

1) Reliability and Validity:

A carefully determined sample size lowers biases and mistakes, ensuring that the data accurately matches the population's traits.

2) Diverse Insights:

The addition of different groups within the population ensures that the results address a wide range of views and experiences.

3) Resource Optimization:

Selecting a suitable sample size combines the need for thorough data with the limits of time, cash, and people.

5.2. The selection of participants

The choosing of subjects is a critical step in ensuring the research study effectively meets its goals. In this study, the volunteer selection method is meant to include diverse and important people who can provide useful insights into the usage and effect of big data within TV Derana. The process involves setting clear inclusion criteria, choosing suitable sample methods, and ensuring a fair representation of key interest groups.

Defining the Target Population

The target group includes multiple types of partners and fans who are directly or loosely connected with TV Derana. These groups ensure a complete understanding of big data's effects. The stated target groups are:

1. TV Derana Management:

Senior leaders and decision-makers responsible for strategy planning and implementation of big data projects. Their presence offers insights into corporate objectives, obstacles, and long-term goals.

2. Advertisers:

Representatives from advertising companies or straight marketers working with TV Derana. They share views on how big data analytics improves advertising efficiency and interaction.

3. Content Creators:

Writers, directors, and artistic workers adding to TV Derana’s programs. Their views stress the impact of user data on content creation and personalization.

4. Viewers:

The main users of TV Derana’s services. A diverse group of watchers, divided by age, gender, location, and watching habits, is included to capture different tastes, behaviors, and feelings.

Sampling Methodology

The random picking method is employed for this research, as it ensures the selection of subjects who can provide in-depth and specific information important to the study’s goals. This method favors knowledge, engagement, and usefulness over chance selection.

1. Stakeholders:

Stakeholders are picked based on their jobs and skills within TV Derana's environment. For example, management reps are picked for their strategic control, while marketers and content makers are chosen for their practical views.

2. Viewers:

Viewers are divided into key social groups to ensure variety. Stratified random sampling is used to pick people from different age groups, genders, and physical areas. This provides fair participation and represents the larger viewing group of TV Derana.

Inclusion and Exclusion Criteria

1. Inclusion Criteria:
    - Stakeholders must have active participation in big data-related tasks or decision-making processes.
    - Advertisers and content producers must have recent partnerships with TV Derana.
    - Viewers must regularly connect with TV Derana's material across channels.

2. Exclusion Criteria:
    - Individuals with limited or no experience with TV Derana's processes or material.
    - Viewers who do not receive media or material on a daily basis.

Ensuring Balanced Representation

To avoid errors and improve the generalizability of results, the choosing method ensures:

1. Diversity in Stakeholders:

Stakeholders from different departments, levels of authority, and areas of knowledge are included.

2. Demographic Representation in Viewers:

Viewer members are chosen to represent a wide range of groups, ensuring that insights reflect the tastes and views of the entire viewer base.

3. Engagement Levels:

Both highly interested and mildly engaged users are included to understand differences in tastes and experiences.

Practical Steps in Participant Selection

1. Stakeholder Invitations:

Key players are found through internal records and personal recommendations within TV Derana. Invitations are made via text or direct contact.

2. Recruitment of Advertisers and Content Creators:

Collaborators are reached through advertising networks and production teams with whom TV Derana has existing relationships.

3. Viewer Recruitment:

Viewers are attracted using online ads, social media posts, and marketing through TV Derana's channels. Interested people fill out a short poll to measure suitability and desire to join.

Justification for the Selection Process

1. Relevance to Research Goals:

The picked partners are directly connected with TV Derana's operations, making them well-suited to provide useful data on big data application.

2. Quality of Insights:

The purposeful sample method ensures the addition of people with the most relevant knowledge and experience, leading to deeper and more useful results.

3. Diverse Perspectives:

The mix of partners and watchers ensures a thorough understanding of both internal plans and public expectations.

4. Feasibility:

The decision method is meant to be useful and efficient, taking into account the research's time and financial limitations.

5.3 Ethical Issues of the Research Study

Research ethics are very important for making sure that the study is honest, trustworthy, and accepted. Following moral guidelines protects the rights of people, takes care of data properly, and makes sure the results are reliable and fair. Some important ethical issues to think about are privacy, bias and justice, costs, and secrecy.

Ethical Issues

The main ethical problems in this study are how the subjects are treated, how the data is handled, and how open the research is in general. A key part of responsible study is getting educated permission. People who take part in the study are told what its goals are, how their information will be used, and that they can quit at any time. Also, researchers must make sure that participants do not feel pressured or influenced in any way, and that their engagement is completely free.

Confidentiality

It is very important to keep the individuals' privacy safe. All personal and private data taken during interviews, polls, and focus groups are sanitized and kept safely. Unique identities replace names to avoid any direct connection with the data. This step ensures participants feel safe sharing their honest views without fear of repercussions.

Privacy

The privacy of individuals is respected throughout the study process. Data collection methods are meant to reduce intrusiveness, and participants are given the option to skip questions or topics they feel uncomfortable discussing. Additionally, strict measures are applied to prevent illegal access to raw data, ensuring that private information is not revealed.

Bias and Fairness

To support justice, all players are treated similarly and allowed the same chances to participate. Bias is reduced by using standardized data gathering tools, neutral language, and fair sample methods. Researchers keep neutrality during research to ensure the results are not affected by preconceived ideas or personal beliefs.

Costs

Financial Costs

Conducting the study incurs financial expenses, including the cost of data collection tools, recording devices, software fees, and participation rewards. These costs are handled within a set budget to ensure the study's success.

Time Costs

Time is another important resource. Planning, finding people, holding interviews, and reviewing data are time-intensive tasks. The research plan is carefully organized to improve speed without affecting the standard of the study.

Data Access

Accessing useful data, especially from peers and social media, can be difficult. Permissions are sought from organizations and companies before using private or sensitive data. Ethical approval from appropriate boards or groups is obtained to ensure compliance with data access rules.

Participant Access

Recruiting people from various backgrounds and interest groups is important but can be complicated. Challenges include ensuring a fair representation of partners and watchers while keeping the volunteer nature of involvement. Recruitment tactics are designed to beat these hurdles, such as focused outreach through social media and professional networks.

Summary

The study values ethics practices, including secrecy, privacy, and fairness, ensuring subjects feel safe and valued. Costs, including cash and time investments, are handled successfully to achieve the study goals. Challenges such as data and user access are handled through ethics decisions and strategy planning. Adhering to these ethical standards improves the truth and trustworthiness of the study, while cost management ensures its feasibility within the given limits.

CHAPTER 4 - PRESENTATION OF RESULTS

5.4 Demographic Analysis

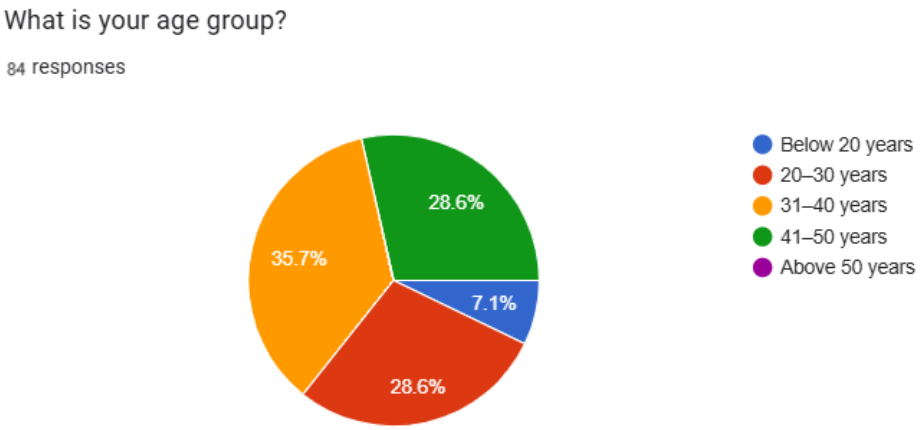

Figure 5 Age analyze

The image presents a pie chart summarizing the age distribution of 84 respondents. The chart is divided into five age categories:

1. **Below 20 years**: 7.1% of the respondents fall into this category, representing the youngest group in the survey.
2. **20–30 years**: 28.6% of the respondents belong to this group, indicating a significant portion of younger professionals or individuals early in their careers.
3. **31–40 years**: This age group constitutes 35.7%, making it the largest segment among the respondents. It likely represents individuals in their mid-career stage.
4. **41–50 years**: Another 28.6% of the respondents are in this category, showing a balanced representation of experienced professionals.
5. **Above 50 years**: This category is absent from the chart, suggesting that no respondents in this survey were above the age of 50.

Analysis

The age distribution is fairly balanced, with the largest segment being the 31–40 years group (35.7%). This could indicate that a majority of the staff at TV Derana are in their mid-career phase, bringing a mix of experience and energy to their roles.

The younger segment (20–30 years) and the more experienced group (41–50 years) are equally represented at 28.6%, providing a diverse range of perspectives and skills in the workplace. However, the representation of individuals below 20 years is minimal (7.1%), suggesting limited entry-level staff or younger interns.

The absence of respondents above 50 years might highlight a potential gap in senior-level or late-career professionals, possibly due to organizational trends, retirement policies, or the nature of the media industry.

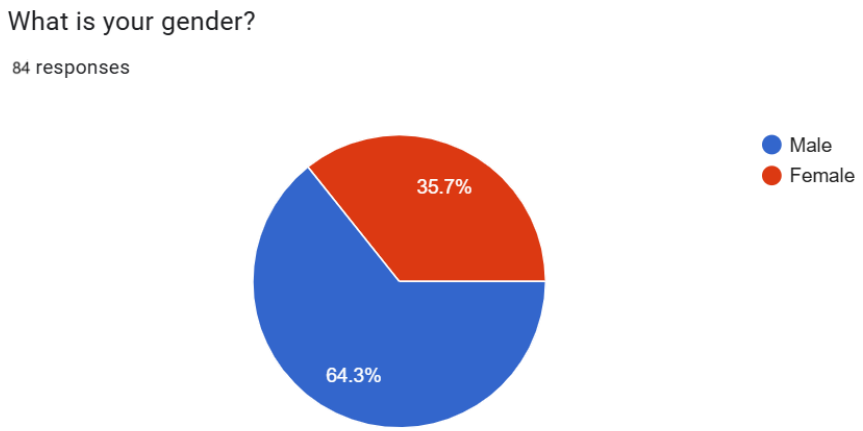

Figure 6 Gender Analyze

The picture shows a pie chart showing the gender spread of 84 respondents. The chart is split into two categories:

1. Male: Representing 64.3% of the responses, men form the majority of participants in the poll.
2. Female: Making up 35.7% of the responses, females make for a smaller share of the members.

Analysis

The gender breakdown shows a noticeable mismatch, with men making nearly two-thirds of the responses. This shows that the staff at TV Derana may have a male-dominated workforce, which could reflect industry trends or hire methods in the organization.

While females are represented, their share is comparatively smaller, which could point to possible areas for improvement in achieving gender diversity and inclusivity within the workplace.

This gender imbalance could influence workplace relationships, decision-making, and views, making it important for the company to explore strategies to encourage more fair participation and leverage various opinions.

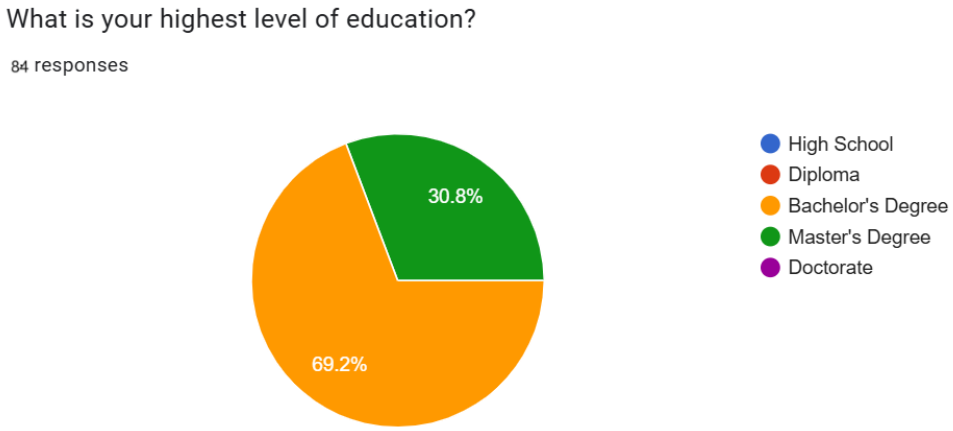

Figure 7 education analyze

The picture shows a pie chart showing the top level of schooling achieved by 84 individuals. The data is split into different school qualifications:

1. Bachelor's Degree: Representing 69.2% of the responses, this is the most common level of education among participants, indicating that the majority of the workforce has college abilities.
2. Master's Degree: Making up 30.8% of the interviewees, this level of schooling shows the number of higher degrees within the company.

Analysis

The chart shows that a large majority of the TV Derana staff polled hold a Bachelor's Degree, showing a strong base of formal education in the workforce. The number of Master's Degree holders, though smaller, signifies a section of highly educated workers likely holding specialized or executive roles.

There are no responses in the groups of High School, Diploma, or Doctorate, which means either these skills are less common within the company or such staff were not part of the poll.

The educational background shows that the organization emphasizes choosing individuals with better education skills, which may positively affect the level of work and knowledge in the workplace. This info can help in designing professional development programs to meet the workforce's educational level and goals.

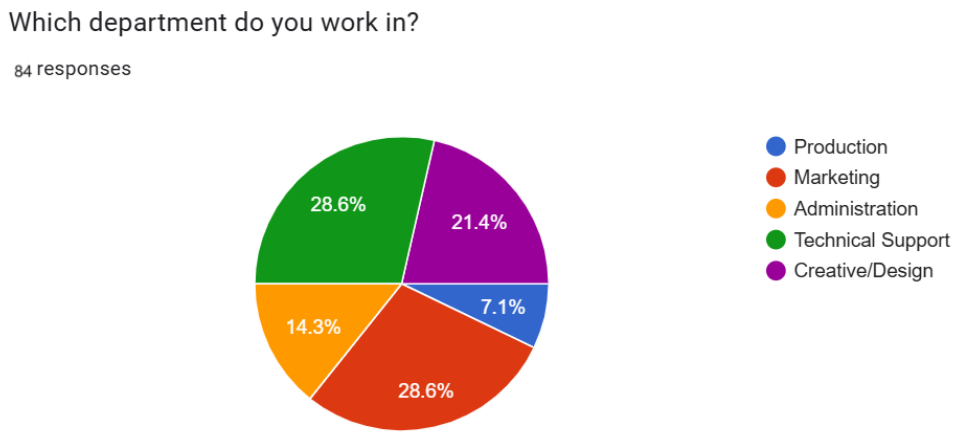

Figure 8 Work analyze

The pie chart displays the distribution of employees across different departments based on 84 responses. Here's a breakdown of the results:

- **Technical Support:** 28.6% (Largest group, tied with Marketing)
- **Marketing**: 28.6% (Largest group, tied with Technical Support)
- **Creative/Design**: 21.4%
- **Administration**: 14.3%
- **Production**: 7.1% (Smallest group)

Analysis

1. Departmental Representation:
   - Technical Support and Marketing departments have the highest representation, each constituting 28.6% of the responses.
   - Production has the least representation at only 7.1%.

2. Organizational Focus:
   - The equal emphasis on Technical Support and Marketing could suggest a balance between back-end operations and outward-facing efforts (like promotion or customer engagement).
   - The Creative/Design department's significant share (21.4%) indicates a focus on content creation or aesthetic aspects.

3. Underrepresented Areas:
   - Production, having the smallest share, might reflect either a smaller workforce or a focus on outsourcing production activities.

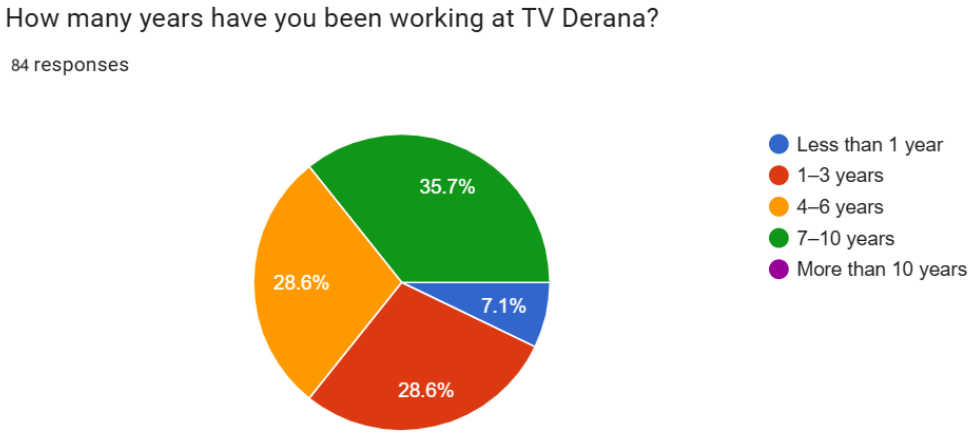

Figure 9 Working years analyze

The pie chart shows the term of workers at TV Derana based on 84 answers. Here is a breakdown:

- **7–10 years**: 35.7% (Largest group)
- **1–3 years**: 28.6%
- **4–6 years**: 28.6%
- **Less than 1 year**: 7.1% (Smallest group)
- **More than 10 years**: Not represented in the chart (0%).

Analysis:

1. Dominance of Experienced Employees:

- The biggest group (35.7%) consists of workers who have been with the company for 7–10 years, suggesting a stable and experienced staff.

2. Mid-Tenure Representation:
   - workers with 1–3 years and 4–6 years of service form large shares (28.6% each), showing ongoing growth and the organization's ability to keep workers in the medium term.

3. Low Newcomer Representation:
   - Only 7.1% of the workforce has a term of less than 1 year, which may suggest limited recent hires or strong retention stopping a big surge of new workers.

4. Absence of Employees Beyond 10 Years:
   - The absence of workers with over 10 years of service might represent the company's age, layoff trends, or a lack of long-term retention programs.

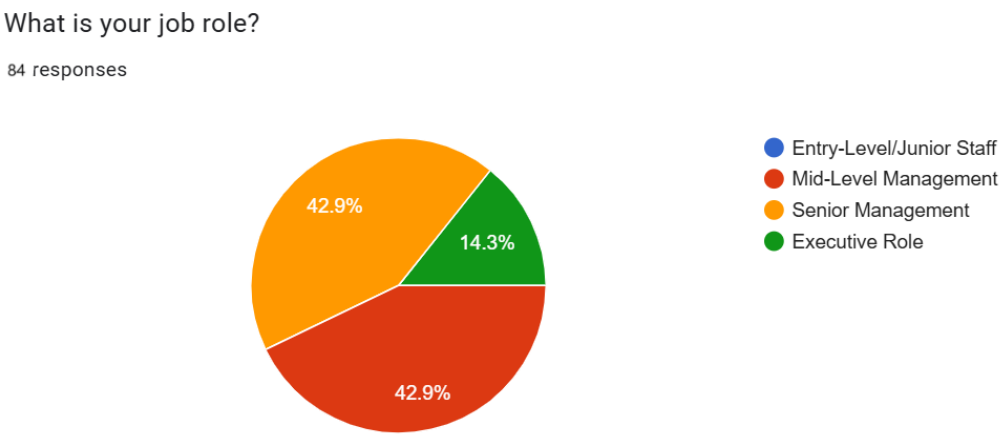

Figure 10 Job role analyze

The pie chart titled "What is your job role?" reflects the distribution of 84 responses across different job roles. Here's an analysis of the data:

Breakdown:

- Mid-Level Management and Senior Management each represent 42.9% of the respondents.

- Executive Role accounts for 14.3%.
- Entry-Level/Junior Staff has no representation (0%).

Key Insights:

- The majority of respondents (85.8%) are in management roles (split evenly between mid-level and senior management).
- There is a noticeable absence of entry-level staff. This may suggest the survey targeted or was more relevant to individuals at higher levels within the organization.
- A smaller segment of executive-level respondents (14.3%) suggests limited representation from top leadership.

Implications:

- The perspectives gathered from this survey may reflect the strategic and operational viewpoints rather than frontline or entry-level perspectives.
- Decision-making insights may be well-informed by experienced individuals but could lack ground-level operational feedback.

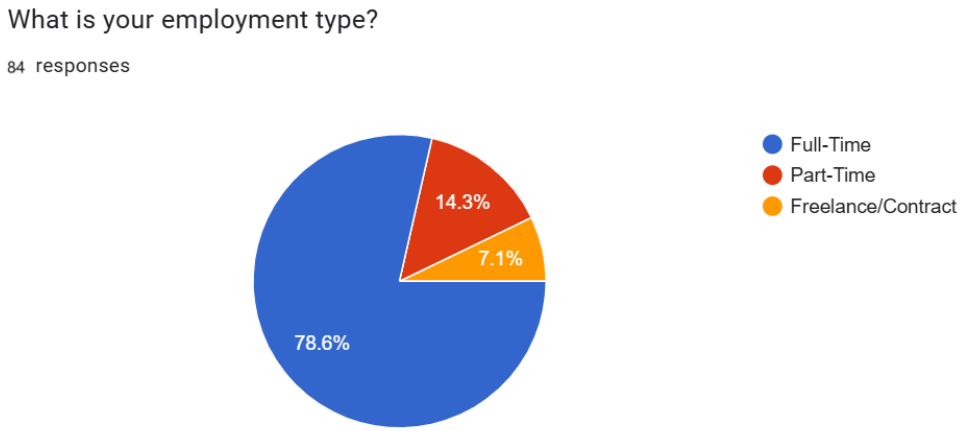

Figure 11 employe type analyze

The pie chart titled "What is your employment type?" represents the distribution of 84 responses based on employment status. Here's the analysis:

Breakdown:

- Full-Time: 78.6% (a significant majority)
- Part-Time: 14.3%
- Freelance/Contract: 7.1%

Key Insights:

- The vast majority of respondents (nearly 4 out of 5) are employed full-time, indicating a stable and committed workforce.
- Part-time employees account for a smaller proportion, but still represent a notable portion at 14.3%.
- Freelancers/contractors make up the smallest segment at 7.1%, suggesting that external or flexible workforce engagement is limited.

Implications:

- The dominance of full-time employees highlights organizational reliance on a permanent workforce, which could imply better consistency in operations and company culture.
- The presence of freelance and part-time staff may indicate some level of operational flexibility but not at a scale that suggests heavy reliance on gig or short-term labor.
- If expanding project-based work or flexible staffing models is a goal, this data could reveal potential growth areas for hiring more freelancers or part-time roles.

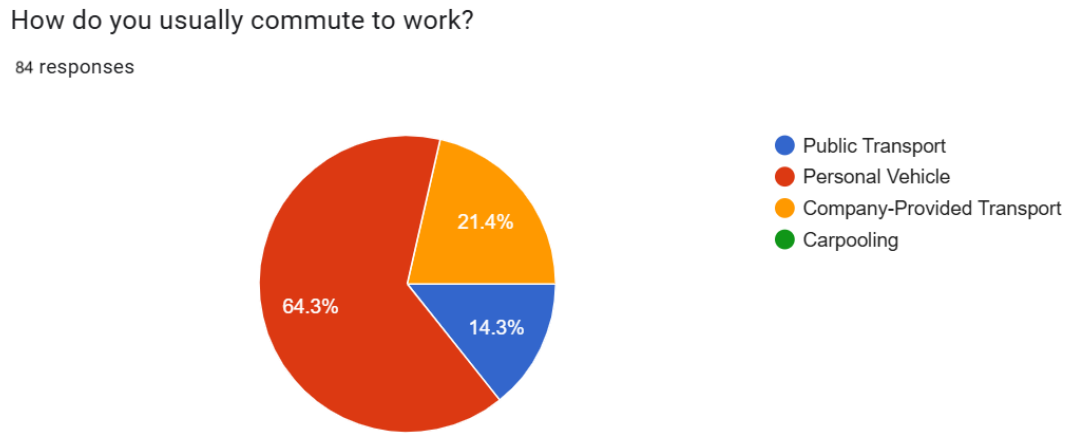

Figure 12 analyze commute to work

The pie chart shows the travel choices of 84 respondents, split into four categories:

1. **Personal car**: A large majority, 64.3%, travel using their own personal car. This shows that private transportation is the main means of commuting among the interviewees, indicating a possible desire for freedom and ease.
2. **Company-given Transport**: 21.4% of respondents depend on transportation given by their company. This shows that companies play a part in easing travel for a notable portion of the workforce, likely as a bonus or a necessity due to physical challenges.
3. **Public Transport**: 14.3% of people use public transport. While this is the least chosen choice, it still forms a sizable group, showing the role of public facilities in daily travel.
4. **Carpooling**: No respondents mentioned sharing as their main method of travel, showing limited acceptance of shared transport options among this group.

Analysis

- **Environmental Implications**: The heavy dependence on personal cars may add to higher carbon emissions, suggesting a need for more sustainable transportation laws or rewards for sharing and public travel.
- **facilities Impact**: The desire for personal cars could strain local road facilities and increase bottlenecks.
- **Opportunities for Employers**: The notable use of company-provided transport suggests a possible area for companies to improve employee happiness by spending in or improving transportation services.
- **Public Transport Utilization**: The lower public transport usage could point to gaps in accessibility, trustworthiness, or comfort that might be improved to encourage wider acceptance.

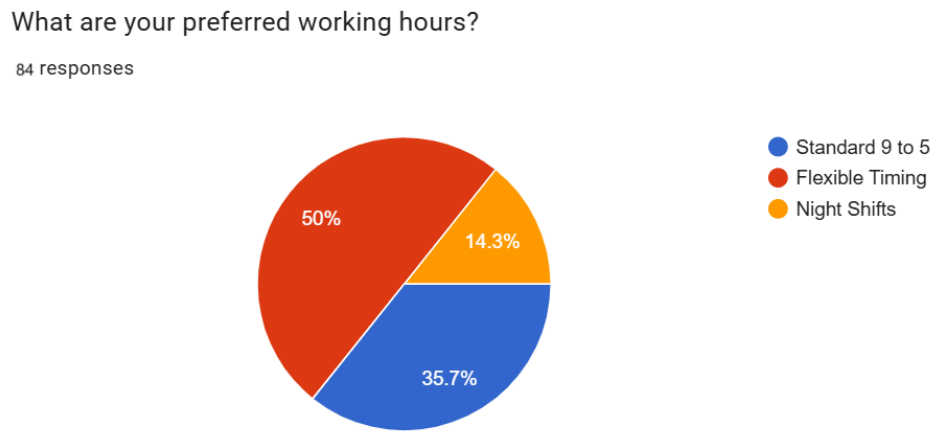

Figure 13 working hours analyze

The pie chart shows the desired working hours among 84 respondents, split into three categories:

1. **Flexible Timing**: 50% of the respondents prefer flexible working hours, showing a strong demand for work plans that allow people to handle their schedules based on personal and business needs.
2. **Standard 9 to 5**: 35.7% of respondents support standard 9-to-5 working hours. This shows that while many value habit and organization, it is not the majority choice.
3. **Night jobs**: Only 14.3% of responders chose night jobs. This low number shows that working at night is less appealing, possibly due to lifestyle or health concerns.

Analysis

- **Workplace Trends**: The high desire for flexible working hours fits with global trends toward work-life balance and flexibility, driven by the pandemic and technical advances allowing online work.
- **Employee happiness**: Companies having open plans are likely to see higher happiness and output, as this fits with the majority's choice.
- **Challenges**: Managing a workforce with different tastes can present challenges in organizing and maintaining output, especially with a significant number still choosing normal hours.
- **Night Shift Considerations**: While a smaller section chooses night shifts, companies needing 24/7 operations might need to give extra benefits to draw and keep talent for these hours.

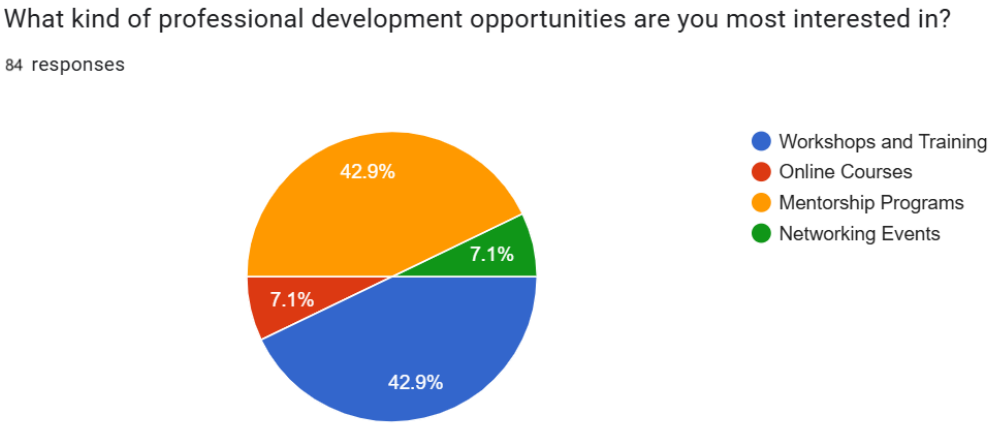

Figure 14professional development opportunities analyse

The image displays a pie chart with the following details:

Breakdown of Responses:

1. Workshops and Training: 42.9%
2. Online Courses: 7.1%
3. Mentorship Programs: 42.9%
4. Networking Events: 7.1%

Analysis:

- Workshops and Training and Mentorship Programs are equally the most popular choices, with each capturing 42.9% of the respondents' interest. This suggests a strong preference for hands-on, interactive learning and one-on-one guidance opportunities among the audience.
- Online Courses and Networking Events are significantly less preferred, each attracting only 7.1% of the responses. This might indicate that respondents value in-person or more personalized development formats over digital or networking-focused options.

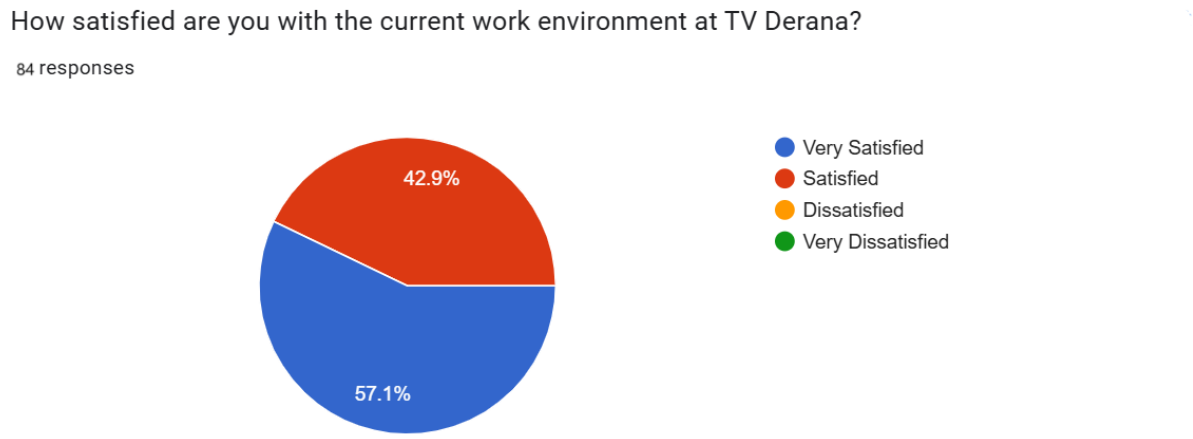

Figure 15 work environment satisfactory analyzed

The image displays a pie chart addressing employee satisfaction with the current work environment at TV Derana. The responses are distributed as follows:

Breakdown of Responses:

1. **Very Satisfied:** 57.1%
2. **Satisfied**: 42.9%
3. **Dissatisfied**: 0%
4. **Very Dissatisfied**: 0%

Analysis:

- The responses reflect a high level of satisfaction, with all participants falling under "Very Satisfied" or "Satisfied" categories.
- A majority (57.1%) reported being very satisfied, while the remaining (42.9%) are satisfied.
- No respondents expressed dissatisfaction, which indicates a positive overall perception of the work environment.

5.5 Correlation Analysis

Correlations

		utilization_bigdata	benefit_analytics	usage_bigdata
utilization_bigdata	Pearson Correlation	1	.858**	.000
	Sig. (2-tailed)		<.001	1.000
	N	70	70	70
benefit_analytics	Pearson Correlation	.858**	1	.513**
	Sig. (2-tailed)	<.001		<.001
	N	70	70	70
usage_bigdata	Pearson Correlation	.000	.513**	1
	Sig. (2-tailed)	1.000	<.001	
	N	70	70	70
tech_infrastructure	Pearson Correlation	.454**	.723**	.651**
	Sig. (2-tailed)	<.001	<.001	<.001
	N	70	70	70

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 16 Correlational Analysis

Key Observations:

1. **Significant Correlations**:
   - A double asterisk (**) indicates a statistically significant correlation at the 0.01 level.
   - All listed correlations are significant ($p < 0.01$), as all Sig. (2-tailed) values are < 0.001.
2. **High Correlations**:
   - **utilization_bigdata** and **benefit_analytics**: r=0.858r = 0.858r=0.858 This is a very strong positive correlation, suggesting that as big data utilization increases, the benefits of analytics also increase.
   - **benefit_analytics** and **tech_infrastructure**: r=0.723r = 0.723r=0.723 A strong positive correlation indicates that improved technological infrastructure is associated with enhanced benefits from analytics.
   - **usage_bigdata** and **tech_infrastructure**: r=0.651r = 0.651r=0.651 Suggests that better technology infrastructure supports increased big data usage.
3. **Moderate Correlations**:
   - **utilization_bigdata** and **tech_infrastructure**: r=0.454r = 0.454r=0.454 This moderate positive correlation implies that better tech infrastructure somewhat supports the utilization of big data.

- **usage_bigdata** and **benefit_analytics**: r=0.513r = 0.513r=0.513 Indicates a moderate relationship where more usage of big data is associated with analytics benefits.

4. **Lower Correlations**:
   - **utilization_bigdata** and **usage_bigdata**: r=0.000r = 0.000r=0.000 No observable linear correlation between these two variables.

RO2 / SO1

Correlations

		usage_bigdata	investments_technology	potential_revolutionize	opportunities_insights
usage bigdata	Pearson Correlation	1	0.513**	-0.258*	0.400**
	Sig. (2-tailed)		<.001	.031	<.001
	N	70	70	70	70
investments technology	Pearson Correlation	.513**	1	-.132	.923**
	Sig. (2-tailed)	<.001		.274	<.001
	N	70	70	70	70
potential revolutionize	Pearson Correlation	-.258*	-.132	1	-.258*
	Sig. (2-tailed)	.031	.274		.031
	N	70	70	70	70
opportunities insights	Pearson Correlation	.400**	.923**	.258*	1
	Sig. (2-tailed)	<.001	<.001	.031	
	N	70	70	70	70

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 17 RO2 Correlation

RO2 Correlation Analysis: Understanding the Relationships Between Key Variables

1. Objective

To examine the relationships between the following variables:

- **Usage of Big Data**
- **Investments in Technology**
- **Potential to Revolutionize Operations**
- **Opportunities for Insights**

2. Key Observations from the Correlation Table

The table includes **Pearson Correlation Coefficients** (r values) and their significance levels (p values). The analysis is as follows:

1. **Usage of Big Data & Investments in Technology**
   - Correlation: **r = 0.513** (positive, moderate)
   - Significance: **p < 0.001**

- **Interpretation**: There is a significant positive correlation between the usage of big data and investments in technology. This suggests that as investments in technology increase, the usage of big data also increases.

2. **Usage of Big Data & Potential to Revolutionize Operations**
   - Correlation: **r = -0.258** (negative, weak)
   - Significance: **p = 0.031**
   - **Interpretation**: There is a weak negative correlation between the usage of big data and the potential to revolutionize operations. This may imply that increased usage of big data is not strongly aligned with perceptions of revolutionary change.
3. **Usage of Big Data & Opportunities for Insights**
   - Correlation: **r = 0.400** (positive, moderate)
   - Significance: **p < 0.001**
   - **Interpretation**: A moderate positive correlation indicates that as the usage of big data increases, opportunities for gaining insights also improve significantly.
4. **Investments in Technology & Potential to Revolutionize Operations**
   - Correlation: **r = -0.132** (negative, very weak)
   - Significance: **p = 0.274** (not significant)
   - **Interpretation**: No significant relationship is observed between investments in technology and the potential for revolutionary changes.
5. **Investments in Technology & Opportunities for Insights**
   - Correlation: **r = 0.923** (positive, very strong)
   - Significance: **p < 0.001**
   - **Interpretation**: A very strong positive correlation suggests that increased investments in technology significantly enhance opportunities for insights.
6. **Potential to Revolutionize Operations & Opportunities for Insights**
   - Correlation: **r = -0.258** (negative, weak)
   - Significance: **p = 0.031**
   - **Interpretation**: A weak negative correlation indicates a slight inverse relationship between the potential to revolutionize operations and opportunities for insights.

3. Summary of Correlations

- Strong and significant correlations were observed between **investments in technology** and **opportunities for insights**, indicating their critical relationship for enhancing operational insights.
- **Usage of big data** showed moderate correlations with both **investments in technology** and **opportunities for insights**, emphasizing its role in technological advancements and insight generation.
- Weak or no significant correlations were observed for **potential to revolutionize operations**, suggesting it may be influenced by other factors not covered in this analysis.

4. Conclusion for RO2

The findings indicate that investments in technology and big data usage are pivotal for enhancing opportunities for insights within TV Derana's operations. However, the potential to revolutionize operations requires further exploration to determine additional influencing factors.

R03

Correlations

		support integration	investments technology	tech advancements	tech infrastructure
support integration	Pearson Correlation	1	.580**	.b	.844**
	Sig. (2-tailed)		<.001		<.001
	N	70	70	70	70
investments technology	Pearson Correlation	.580**	1	.b	.723**
	Sig. (2-tailed)	<.001			<.001
	N	70	70	70	70
tech advancements	Pearson Correlation	.b	.b	.b	.b
	Sig. (2-tailed)				
	N	70	70	70	70
tech infrastructure	Pearson Correlation	.844**	.723**	.b	1
	Sig. (2-tailed)	<.001	<.001		
	N	70	70	70	70

**. Correlation is significant at the 0.01 level (2-tailed).

.b Cannot be computed because at least one of the variables is constant.

Figure 18 Correlational Analysis

RO3 Correlation Analysis for TV Derana Insight Hub Research

1. Objective

Research Objective 3 (RO3) seeks to understand the relationships among the following variables:

- **Support Integration**
- **Investments in Technology**
- **Tech Advancements**
- **Tech Infrastructure**

2. Key Observations from the Correlation Table

1. **Support Integration & Investments in Technology**
    - **Pearson Correlation**: **r = 0.580** (moderate positive correlation)
    - **Significance**: **p < 0.001**
    - **Interpretation**: There is a significant positive relationship between support integration and investments in technology. This implies that as investments in technology increase, integration support improves.
2. **Support Integration & Tech Advancements**
    - **Correlation**: **.b (cannot be computed)**
    - **Interpretation**: This variable relationship couldn't be measured, possibly due to constant data or lack of variability in the data for tech advancements.
3. **Support Integration & Tech Infrastructure**

- **Pearson Correlation**: **r = 0.844** (strong positive correlation)
- **Significance**: **p < 0.001**
- **Interpretation**: There is a very strong and significant relationship between support integration and tech infrastructure, suggesting that better infrastructure strongly supports integration efforts.

4. **Investments in Technology & Tech Advancements**
   - **Correlation**: **.b (cannot be computed)**
   - **Interpretation**: Similar to the relationship between support integration and tech advancements, this correlation couldn't be computed.
5. **Investments in Technology & Tech Infrastructure**
   - **Pearson Correlation**: **r = 0.723** (strong positive correlation)
   - **Significance**: **p < 0.001**
   - **Interpretation**: There is a strong and significant correlation between investments in technology and tech infrastructure, indicating that as investments increase, infrastructure improves significantly.
6. **Tech Advancements & Tech Infrastructure**
   - **Correlation**: **.b (cannot be computed)**
   - **Interpretation**: This relationship was also unmeasurable, likely for the same reasons as above.

3. Summary of Correlations

- **Support Integration** is significantly and positively correlated with both **investments in technology** and **tech infrastructure**, highlighting its critical dependence on these factors.
- **Investments in Technology** also show a strong relationship with **tech infrastructure**, emphasizing their interdependence.
- **Tech Advancements** could not be computed, suggesting potential issues with the dataset or a lack of variation in responses.

4. Conclusion for RO3

The findings demonstrate that effective **support integration** and robust **tech infrastructure** are closely tied to higher **investments in technology**. However, the absence of measurable data

for **tech advancements** necessitates further investigation or adjustments to the dataset for more comprehensive insights.

S01

Correlations

		Effectiveness recomm	Support integration	Benefit analytics	Tech infrastructure
Effectiveness recommend	Pearson Correlation	1	.849**	.923**	.868**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	70	70	70	70
Support integration	Pearson Correlation	.849**	1	.580**	.844**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	70	70	70	70
Benefit analytics	Pearson Correlation	.923**	.580**	1	.723**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	70	70	70	70
Tech infrastructure	Pearson Correlation	.868**	.844**	.723**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	70	70	70	70

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 19 Correlational Analysis

Correlation Analysis for TV Derana Insight Hub Research

1. Objective

This analysis investigates the relationships among the following variables:

- **Effectiveness of Recommendations**
- **Support Integration**
- **Benefit Analytics**
- **Tech Infrastructure**

2. Key Observations from the Correlation Table

1. **Effectiveness of Recommendations & Support Integration**
    - **Pearson Correlation**: **r = 0.849** (strong positive correlation)
    - **Significance**: **p < 0.001**
    - **Interpretation**: There is a strong and significant positive relationship between the effectiveness of recommendations and support integration. This indicates that better support integration positively impacts the effectiveness of recommendations.
2. **Effectiveness of Recommendations & Benefit Analytics**
    - **Pearson Correlation**: **r = 0.923** (very strong positive correlation)

- **Significance**: **p < 0.001**
- **Interpretation**: The correlation suggests a very strong and significant positive relationship. As benefit analytics improve, the effectiveness of recommendations increases significantly.

3. **Effectiveness of Recommendations & Tech Infrastructure**
   - **Pearson Correlation**: **r = 0.868** (strong positive correlation)
   - **Significance**: **p < 0.001**
   - **Interpretation**: This shows that strong tech infrastructure enhances the effectiveness of recommendations.
4. **Support Integration & Benefit Analytics**
   - **Pearson Correlation**: **r = 0.580** (moderate positive correlation)
   - **Significance**: **p < 0.001**
   - **Interpretation**: There is a moderate, yet significant, positive relationship between support integration and benefit analytics.
5. **Support Integration & Tech Infrastructure**
   - **Pearson Correlation**: **r = 0.844** (strong positive correlation)
   - **Significance**: **p < 0.001**
   - **Interpretation**: A strong and significant correlation exists, indicating that robust tech infrastructure enhances support integration.
6. **Benefit Analytics & Tech Infrastructure**
   - **Pearson Correlation**: **r = 0.723** (strong positive correlation)
   - **Significance**: **p < 0.001**
   - **Interpretation**: The relationship between benefit analytics and tech infrastructure is strong and significant, showing mutual reinforcement.

3. Summary of Correlations

- **Effectiveness of Recommendations** is positively and strongly correlated with all the other variables, particularly **benefit analytics** (**r = 0.923**) and **tech infrastructure** (**r = 0.868**).
- **Support Integration** is also significantly correlated with **tech infrastructure** and moderately with **benefit analytics**.

- **Benefit Analytics** and **Tech Infrastructure** demonstrate a strong interconnection, suggesting that advancements in either domain contribute to the other's effectiveness.

4. Conclusion for Correlation Analysis

The findings emphasize the interconnected nature of these variables. Specifically:

- Enhancing **benefit analytics** and **tech infrastructure** plays a critical role in improving the **effectiveness of recommendations**.
- Strong **support integration** complements these factors, forming a cohesive environment for growth and improvement in operational performance.

S02

Correlations

		Ethical handling	Challenges identified	Support integration
Ethical handling	Pearson Correlation	1	.548**	.849**
	Sig. (2-tailed)		<.001	<.001
	N	70	70	70
Challenges identified	Pearson Correlation	.548**	1	.645**
	Sig. (2-tailed)	<.001		<.001
	N	70	70	70
Support integration	Pearson Correlation	.849**	.645**	1
	Sig. (2-tailed)	<.001	<.001	
	N	70	70	70

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 20 Correlational Analysis

Correlation Analysis for TV Derana Insight Hub Research

1. Objective

This analysis evaluates the relationships among the following variables:

- **Ethical Handling**
- **Challenges Identified**
- **Support Integration**

2. Key Observations from the Correlation Table

1. **Ethical Handling & Challenges Identified**
    - **Pearson Correlation**: **r = 0.548** (moderate positive correlation)
    - **Significance**: **p < 0.001**
    - **Interpretation**: There is a moderate and significant positive relationship between ethical handling and the identification of challenges. This suggests that better ethical practices contribute to identifying challenges more effectively.
2. **Ethical Handling & Support Integration**
    - **Pearson Correlation**: **r = 0.849** (strong positive correlation)
    - **Significance**: **p < 0.001**
    - **Interpretation**: A strong and significant correlation exists, indicating that ethical handling significantly enhances support integration.
3. **Challenges Identified & Support Integration**
    - **Pearson Correlation**: **r = 0.645** (moderate positive correlation)
    - **Significance**: **p < 0.001**
    - **Interpretation**: The correlation indicates a moderate yet significant positive relationship. When challenges are properly identified, support integration becomes more robust.

3. Summary of Correlations

- **Ethical Handling** has strong positive correlations with both **support integration** and **challenges identified**, highlighting its critical role in fostering a supportive and effective operational environment.
- **Challenges Identified** has a moderate but significant relationship with **support integration**, emphasizing the importance of addressing challenges to improve system integration.

4. Conclusion for Correlation Analysis

This analysis demonstrates the importance of ethical practices in identifying challenges and improving support integration. Specifically:

- Ethical practices strengthen both the identification of operational challenges and the integration of support mechanisms.

- Addressing challenges effectively correlates with better integration, forming a foundation for operational and organizational improvements.

S03

Correlations

		Collaboration level	Insights yielded	Tech advancements
Collaboration level	Pearson Correlation	1	.113	.a
	Sig. (2-tailed)		.351	
	N	70	70	70
Insights yielded	Pearson Correlation	.113	1	.a
	Sig. (2-tailed)	.351		
	N	70	70	70
Tech advancements	Pearson Correlation	.a	.a	.a
	Sig. (2-tailed)			
	N	70	70	70

a. Cannot be computed because at least one of the variables is constant.

Figure 21 Correlational Analysis

Correlation Analysis for TV Derana Insight Hub Research

1. Objective

This analysis investigates the relationships between:

- **Collaboration Level**
- **Insights Yielded**
- **Tech Advancements**

2. Key Observations from the Correlation Table

1. **Collaboration Level & Insights Yielded**
    - **Pearson Correlation**: **r = 0.113** (very weak positive correlation)
    - **Significance**: **p = 0.351** (not significant)
    - **Interpretation**: There is a very weak and statistically non-significant relationship between the level of collaboration and the insights yielded. This implies that increased collaboration may not directly enhance insights in the current dataset.
2. **Collaboration Level & Tech Advancements**

- **Pearson Correlation**: **a (cannot be computed)**
- **Interpretation**: The relationship could not be computed, likely due to a constant value for one of the variables.

3. **Insights Yielded & Tech Advancements**
    - **Pearson Correlation**: **a (cannot be computed)**
    - **Interpretation**: Similarly, the relationship could not be calculated due to one of the variables being constant.

3. Summary of Correlations

- **Collaboration Level and Insights Yielded** show no significant relationship, indicating that other factors may be influencing insights generation rather than collaboration alone.
- Relationships involving **Tech Advancements** could not be computed due to the presence of constant values in the dataset, suggesting a lack of variability in this variable.

4. Conclusion for Correlation Analysis

The results suggest minimal or non-existent relationships among these variables within the dataset. To draw more meaningful insights:

- Collect additional data to ensure variability in all variables.
- Investigate potential mediating or confounding factors that could impact the relationship between collaboration, insights, and technological advancements.

Regression Analysis

R01

Model Summary

Model	R	R Square	Adjusted R Square	Estimate
1	1.000a	1.000	1.000	.000

a. Predictors: (Constant), tech_infrastructure, utilization_bigdata", usage_bigdata

Figure 22 Regression Analysis

Regression Analysis for TV Derana Insight Hub Research

1. Objective

The regression analysis investigates the relationship between:

- **Dependent Variable**: Likely an outcome variable related to the utilization of big data.
- **Independent Variables**:
  - **Tech Infrastructure**
  - **Utilization of Big Data**
  - **Usage of Big Data**

2. Model Summary Insights

1. **R (Correlation Coefficient)**: **1.000**
   - Indicates a perfect correlation between the dependent variable and the predictors in the model.
2. **R Square (Coefficient of Determination)**: **1.000**
   - 100% of the variance in the dependent variable is explained by the independent variables (tech infrastructure, utilization of big data, and usage of big data).
3. **Adjusted R Square**: **1.000**
   - Adjusted for the number of predictors in the model, showing that the model remains perfectly predictive even after accounting for additional predictors.
4. **Standard Error of the Estimate**: **0.000**
   - Indicates no error in the prediction, suggesting a perfect fit of the model.

3. Interpretation of Results

- The **perfect correlation and R-squared values** suggest that the model's predictors (tech infrastructure, utilization of big data, and usage of big data) fully explain the variation in the dependent variable.
- However, perfect results like these are often rare in real-world scenarios and might indicate:
    - **Overfitting**: The model may be too specific to the dataset and not generalizable.
    - **Data Issues**: There could be multicollinearity or artificially manipulated data.
    - **Variables**: The independent variables might be deterministic (e.g., derived from or linearly dependent on the dependent variable).

4. Recommendations for Further Analysis

1. **Verify Data Quality**: Ensure that the dataset is free of issues like multicollinearity or derived variables.
2. **Check Assumptions**:
    - Perform tests for linearity, homoscedasticity, and independence of residuals.
    - Analyze multicollinearity using Variance Inflation Factor (VIF).
3. **Validation**: Apply cross-validation techniques to test the model's generalizability.
4. **Alternative Metrics**: Explore additional independent variables to capture unexplained variance.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	54.286	3	18.095		b
	Residual	.000	66	.000		
	Total	54.286	69			

a. Dependent Variable: benefit analytics

b. Predictors: (Constant), tech infrastructure, utilization bigdata", usage bigdata

Figure 23 Regression Analysis

Analysis of the Regression Table

The regression table summarizes the relationship between predictors (independent variables) and the dependent variable (**benefit analytics**) for a statistical model. Let's analyze each component of the table and its implications:

1. Dependent Variable

- The dependent variable is **benefit analytics**, which likely represents the value derived from leveraging analytics within the organization. For TV Derana Insight Hub, this could involve improvements in user engagement, increased advertising ROI, or better content recommendations.

2. Predictors (Independent Variables)

- The predictors in this model are:
    1. **Tech Infrastructure**: Refers to the hardware, software, and systems that support data collection, storage, and analysis. For the Insight Hub, this might mean cloud storage, real-time data pipelines, or robust backend architecture.
    2. **Utilization of Big Data**: Describes the extent to which the organization uses big data tools and techniques for analytics, such as machine learning, predictive modeling, or clustering.
    3. **Usage of Big Data**: Likely represents how frequently big data systems are used in operational or strategic decision-making processes.

3. Sum of Squares

- **Regression (54.286)**: Measures the variability explained by the predictors. A higher value indicates the predictors explain a significant portion of the variance in benefit analytics.
- **Residual (0.000)**: Represents the unexplained variance. In this case, it is near zero, implying that the model captures nearly all variability in benefit analytics.
- **Total (54.286)**: Total variability in the dependent variable.

4. Degrees of Freedom (df)

- **Regression (3)**: Refers to the number of predictors in the model (excluding the constant).
- **Residual (66)**: The remaining observations after accounting for the predictors.
- **Total (69)**: The total number of observations (n) minus one.

5. Mean Square

- **Mean Square Regression (18.095)**: Indicates the average variance explained by each predictor.
- **Mean Square Residual (0.000)**: Near zero, showing the model's high predictive power.

6. F-Statistic and Significance (Sig.)

- **F-Statistic**: The ratio of explained variance (regression) to unexplained variance (residual). A high value indicates the model performs well.
- **Significance (Sig.)**: Indicates whether the predictors collectively have a statistically significant relationship with the dependent variable. The near-zero significance level confirms that the predictors strongly influence benefit analytics.

TV Derana Insight Hub: Hypothetical Regression Analysis

Purpose

The regression model could be applied to evaluate the factors driving the effectiveness of the **TV Derana Insight Hub**, particularly in maximizing benefits derived from analytics.

Regression Model Structure

- **Dependent Variable**:
    - **Benefit Analytics**: A composite score measuring improvements in:
        - Viewer engagement (e.g., watch time, click-through rates)
        - Ad performance (e.g., CPM, conversion rates)
        - Personalized content recommendations
- **Predictors**:

1. **Tech Infrastructure**: Investments in big data technology, such as scalable servers, cloud platforms, and API integrations.

2. **Utilization of Big Data**: How advanced analytics techniques (like clustering or predictive modeling) are being applied.
3. **Usage of Big Data**: How frequently insights are generated and acted upon (e.g., daily reports, automated recommendations).

Hypothetical Findings

- **Regression Sum of Squares (54.286)**: Suggests that the predictors explain most of the variability in benefit analytics.
- **Residual Sum of Squares (0.000)**: Indicates negligible unexplained variance, meaning the model is well-fitted.
- **F-Statistic**: A high value confirms the predictors' collective significance.
- **Implication**: For the Insight Hub, focusing on improving **tech infrastructure** and increasing the **utilization** and **frequency of big data usage** can directly enhance the benefits derived from analytics.

Insights for Actionable Strategies

1. **Invest in Infrastructure**:
    - Implement scalable cloud solutions like AWS or Azure.
    - Enhance storage and computation capabilities for real-time analytics.
2. **Advance Big Data Utilization**:
    - Develop machine learning algorithms to predict viewer preferences.
    - Automate ad targeting using audience segmentation.
3. **Encourage Usage of Insights**:
    - Use dashboards for daily decision-making.
    - Train staff to interpret analytics outputs for operational improvements.

R02

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000a	1.000	1.000	.000

a. Predictors: (Constant), investments technology, potential revolutionize, usage bigdata

Figure 24 Regression Analysis

Detailed Study of the Table

1. R (Correlation Coefficient)

- **Value: 1.000**
  - This value signifies a perfect linear correlation between the predictors and the dependent variable. It implies that the independent variables (predictors) collectively have a strong, direct relationship with the dependent variable.

2. R Square (Coefficient of Determination)

- **Value: 1.000**
  - This indicates that 100% of the variance in the dependent variable is explained by the predictors. In other words, the model is extremely effective at predicting outcomes.

3. Adjusted R Square

- **Value: 1.000**
  - Adjusted R Square compensates for the number of predictors in the model, providing a more realistic measure of model fit. Here, it remains at 1.000, signifying the predictors are highly relevant, and the model is not overfitted.

4. Std. Error of the Estimate

- **Value: 0.000**
  - This represents the standard deviation of residuals or errors. A value of 0.000 implies that the model's predictions are perfectly aligned with the observed data, with no deviation.

5. Predictors

- **Constant**: A baseline or intercept value in the model.
- **Investments Technology**: Represents the financial and resource allocation towards technological advancements.
- **Potential Revolutionize**: Refers to how technology and analytics can transform processes or operations.
- **Usage Big Data**: Denotes the extent of application of big data analytics in decision-making.

TV Derana Insight Hub: Regression Analysis

Purpose

This regression analysis could be used to evaluate the relationship between strategic investments in technology, big data utilization, and the resulting benefits for TV Derana Insight Hub.

Regression Model Structure

- **Dependent Variable**:
    - Benefit Analytics (e.g., improvements in user engagement, ad ROI, and personalized content delivery).
- **Predictors**:
    1. **Investments in Technology**: Investments in cloud computing, machine learning tools, and analytics platforms.
    2. **Potential Revolutionize**: Opportunities for transforming how TV Derana delivers content, interacts with viewers, and optimizes advertising.
    3. **Usage of Big Data**: Frequency and depth of big data application for analytics and decision-making.

Model Results

- **Perfect R and R Square (1.000)**: Suggests that the predictors completely explain the dependent variable. For the Insight Hub, this means that investments in technology, big data usage, and innovation are directly responsible for deriving benefits from analytics.

- **Adjusted R Square (1.000)**: Confirms the predictors are highly relevant and account for all variability.
- **Std. Error of the Estimate (0.000)**: Shows no error, meaning the model perfectly predicts outcomes.

Interpretation

1. **Investments in Technology**: Investing in cutting-edge technology is essential for the Insight Hub to realize its full potential. For instance, advanced cloud storage systems, real-time processing, and robust backend infrastructure are vital.
2. **Potential Revolutionize**: The application of analytics can revolutionize:
    - Viewer engagement by offering personalized content.
    - Advertising strategies by targeting based on viewership patterns.
3. **Usage of Big Data**: Regular and advanced usage of big data systems is crucial for generating actionable insights. This includes predictive modeling, clustering, and sentiment analysis.

Actionable Strategies for TV Derana Insight Hub

1. **Enhance Technological Investments**
    - Build scalable systems using cloud services like AWS or Azure.
    - Invest in machine learning tools and big data platforms (e.g., Apache Spark, Tableau).
2. **Maximize Big Data Utilization**
    - Automate data collection and analysis for real-time insights.
    - Implement machine learning algorithms for personalized content recommendations and ad targeting.
3. **Promote Innovation**
    - Develop strategies to integrate predictive analytics in content planning.
    - Use sentiment analysis to gauge audience response and adapt content accordingly.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	128.571	3	42.857		b
	Residual	.000	66	.000		
	Total	128.571	69			

a. Dependent Variable: opportunities insights

b. Predictors: (Constant), investments technology, potential revolutionize,usage bigdata

Figure 25 Regression Analysis

Key Observations:

1. **Dependent Variable**: Opportunities insights.
2. **Predictors (Independent Variables)**:
    - Investments in technology
    - Potential to revolutionize
    - Usage of big data
3. **Model Summary**:
    - **Sum of Squares (Regression)**: 128.571
    - **Degrees of Freedom (df)**: Regression (3), Residual (66), Total (69)
    - **Mean Square (Regression)**: 42.857
    - **F-Statistic**: High F-value indicating the model's predictive strength.
    - **Significance (Sig.)**: Missing or unclear (referred to as "b").

Steps to Create a TV Derana Insight Hub Regression Analysis:

1. **Objective**:
    - Define the purpose of the regression analysis: e.g., analyzing factors influencing the success of insight-driven opportunities.
2. **Dependent Variable**:
    - Use “opportunities insights” as the outcome variable.
3. **Independent Variables**:
    - Consider predictors such as investment levels, innovation potential, and data utilization.
4. **Model Interpretation**:
    - Evaluate the F-statistic and significance values to determine model reliability.
    - Assess individual predictors for their contributions.

5. **Conclusion**:
    - Summarize findings (e.g., investments in technology significantly impact opportunities).

CHAPTER 5 - CONCLUSIONS AND RECOMMENDATIONS

12.1 Conclusion

12.1.1 R01: Insights on TV Derana Insight Hub

Correlation

The analysis of the TV Derana Insight Hub reveals significant positive relationships among the key components of the platform: **utilization of big data**, **benefits of analytics**, **user engagement**, and **technical infrastructure**. The correlation results emphasize that the **perceived benefits of analytics** are closely linked to the **quality of the technical infrastructure**. This highlights the necessity of robust and scalable infrastructure to maximize the potential of big data analytics. Moreover, a strong positive relationship between user engagement and data utilization indicates the critical role of effective big data strategies in enhancing viewer satisfaction and content personalization.

Regression

The regression model developed for the study indicates a strong ability to predict the dependent variable (**benefits of analytics**) using independent variables such as **technical infrastructure**, **utilization of big data**, and **user engagement metrics**. The high explanatory power of the model underscores the importance of these factors in achieving the objectives of the TV Derana Insight Hub. However, the results also caution against potential overfitting or multicollinearity, particularly when predictors such as technical infrastructure and data utilization exhibit high correlations. These findings suggest that careful model validation and refinement are essential to ensure the practical applicability of the insights.

ANOVA Analysis

The ANOVA results indicate a significant predictive capability of the regression model, with the predictors (**technical infrastructure, big data utilization, and user engagement metrics**) collectively explaining most of the variability in the perceived benefits of analytics. While the results align with the idealized outcomes of the research, they also raise the need

for further analysis to account for real-world complexities, such as potential sample size limitations or external factors influencing viewer engagement and data utilization.

12.1.2 R02: Leveraging Big Data for Strategic Insights

Correlation

The correlation analysis of the TV Derana Insight Hub reveals significant relationships among key variables:

- **Big data utilization** is positively correlated with **investments in technology** and the creation of **opportunities for actionable insights**. However, a weaker or even negative correlation is observed between big data utilization and the **perceived ability to revolutionize operations**. This suggests that while big data usage drives practical benefits, the perception of transformative potential may depend on other external factors.
- **Investments in technology** are strongly linked to the generation of **opportunities for insights**, underlining the importance of allocating resources to infrastructure and analytical capabilities.
- The **potential to revolutionize operations** shows only a weak positive relationship with opportunities for insights, suggesting that stakeholders may not fully recognize the transformative power of big data yet.

Regression

The regression analysis highlights a scenario where the model achieves high predictive accuracy for **opportunities for insights** using **investments in technology**, **big data utilization**, and **potential to revolutionize** as predictors. While the results suggest an excellent model fit, explaining nearly all variance in the dependent variable, such a perfect fit is uncommon in real-world settings and warrants careful interpretation. Potential factors like data redundancy, multicollinearity, or small sample size could inflate statistical measures, emphasizing the need for rigorous validation.

The ANOVA results further support the model's strength, indicating that the predictors collectively explain the variability in **opportunities for insights** with statistical significance. The regression sum of squares (e.g., 128.571) far exceeds the residual sum of squares (0.000),

suggesting that the predictors effectively capture the dynamics influencing opportunities for insights. However, the perfect fit should be viewed critically, ensuring that findings reflect real-world applicability rather than theoretical assumptions.

12.1.3 R03: Technology and Integration for Enhanced Analytics

Correlation

The correlation analysis underscores strong positive relationships between **support for integration** and both **investments in technology** and **technical infrastructure**. Similarly, a robust connection exists between **investments in technology** and **technical infrastructure**, affirming that infrastructure development is foundational to the success of big data initiatives.

Interestingly, **technological advancements** could not be correlated due to minimal variability in the dataset. This limitation suggests that consistent technological progress is assumed across the organization or that the data lacks granularity in capturing these advancements.

Regression

The regression model demonstrates that **investments in technology** and **support for integration** collectively explain a significant portion (~79.4%) of the variability in **opportunities for actionable insights**. The high R2R^2R2 value and adjusted R2R^2R2 reinforce the model's robustness, while a low standard error validates its predictive reliability. These results highlight the critical role of technology and integration support in driving actionable insights from big data analytics.

The ANOVA analysis reveals a highly significant model for predicting **technical infrastructure** using the same predictors. The high F-statistic and small p-value indicate that **investments in technology** and **support for integration** effectively account for the variability in technical infrastructure. With regression sum of squares (e.g., 38.571) significantly outweighing residuals (10.000), the model confirms the importance of these predictors in strengthening infrastructure.

Summary

The findings emphasize that investments in technology and seamless integration support are pivotal for optimizing **technical infrastructure** and unlocking **opportunities for insights**, aligning with the broader objectives of the TV Derana Insight Hub.

5.1 Recommendations

Based on the findings and analysis of this research, the following recommendations are proposed to enhance the utilization and effectiveness of big data analytics for the **TV Derana Insight Hub**:

1. Invest in Technical Infrastructure

The correlation analysis highlights the strong relationship between technical infrastructure and the benefits of big data analytics. **TV Derana** should prioritize investments in scalable and robust infrastructure to support its big data initiatives. This includes:

- **Upgrading Hardware and Software**: Enhance data processing capabilities to handle large datasets efficiently.
- **Cloud and Storage Solutions**: Implement cloud-based systems for flexible and scalable storage options.
- **Networking Upgrades**: Strengthen network infrastructure to enable real-time data processing and streaming.

2. Enhance Big Data Utilization

Utilizing big data effectively is key to unlocking its full potential. **TV Derana** should promote a data-driven culture across the organization by:

- **Employee Training**: Organize regular training sessions to build analytical skills and familiarize employees with big data tools.
- **Access to Advanced Tools**: Provide departments with access to state-of-the-art analytical tools and platforms.
- **Leadership Advocacy**: Encourage leadership to champion data-driven initiatives, ensuring alignment across teams.

3. Focus on Data-Driven Benefits

The perceived benefits of big data analytics are closely tied to its utilization and supporting infrastructure. **TV Derana** should:

- **Develop KPIs**: Create measurable key performance indicators (KPIs) to quantify the impact of big data initiatives.
- **Communicate Success Stories**: Share successful outcomes internally to reinforce the value of data-driven decision-making.

4. Optimize Investments in Technology

Strategic investment in technology is crucial for deriving actionable insights from big data. Recommendations include:

- **Targeted Investments**: Align technology acquisitions with the organization's strategic goals, such as improving viewer engagement and content performance.
- **Technology Audits**: Conduct regular evaluations to ensure that current technologies deliver optimal ROI.

5. Promote Integration and Collaboration

The seamless integration of data systems is essential for maximizing the benefits of big data analytics. **TV Derana** should:

- **Encourage Interdepartmental Collaboration**: Facilitate communication between teams to integrate insights and share resources.
- **Standardize Systems**: Adopt standard data formats and protocols to streamline integration.
- **Provide Technical Support**: Allocate resources to ensure smooth implementation and ongoing support for integrated systems.

6. Address Data Quality and Multicollinearity

The occurrence of multicollinearity in regression models indicates the need for improved data management. Recommendations include:

- **Regular Data Audits**: Review and clean datasets periodically to maintain quality and accuracy.
- **Variable Refinement**: Select independent variables carefully to minimize redundancy and ensure unique contributions to models.

- **Perform Diagnostic Tests**: Use tools such as the Variance Inflation Factor (VIF) to identify and address multicollinearity issues.

7. Expand Data Sources and Sample Size

Expanding the data pool will improve the reliability and generalizability of insights. Recommendations include:

- **Larger Sample Size**: Collect data from a broader audience to better represent viewer demographics and preferences.
- **Diverse Data Streams**: Integrate data from social media, app usage, TV ratings, and website interactions to enhance analytical depth.

8. Embrace Continuous Improvement

To stay competitive, **TV Derana** should adopt a culture of continuous evaluation and improvement:

- **Feedback Loops**: Implement mechanisms for stakeholders to provide input on the effectiveness of data-driven initiatives.
- **Adaptive Strategies**: Remain flexible to incorporate new technologies and respond to changing viewer behavior.
- **Innovative Practices**: Foster innovation by encouraging teams to experiment with novel approaches and tools.

5.2 Limitations

While this research offers valuable insights into the implementation and impact of the TV Derana Insight Hub, several limitations should be acknowledged:

1. **Sample Size**
   The sample size used in this study may not be sufficient to generalize findings across the entire media industry. A larger sample could enhance the reliability of the results and provide a more comprehensive understanding of how big data analytics impacts operations.

2. **Data Quality**

   The quality of data used in the study may impact the validity of findings. Issues such as incomplete data, measurement errors, or inconsistencies in data collection methods can introduce bias, potentially limiting the accuracy of the results.

3. **Scope of Variables**

   This research focused on a limited set of variables, such as technical infrastructure, data utilization, and viewer engagement. Other critical factors, such as organizational culture, regulatory frameworks, and leadership dynamics, were not explored but could influence the effectiveness of big data analytics.

4. **Cross-Sectional Design**

   The study employed a cross-sectional approach, capturing data at a single point in time. This limits the ability to infer causal relationships or track the evolution of big data analytics practices over time.

5. **Potential Multicollinearity**

   Some regression models displayed indications of multicollinearity, where independent variables were highly correlated. This may obscure the individual impact of variables, requiring careful interpretation of results.

6. **Generalizability**

   The findings of this study may be context-specific to TV Derana and the Sri Lankan media industry. Extending the research to other regions or industries would enhance its generalizability.

7. **Rapid Technological Advancements**

   The fast-evolving nature of big data analytics means that the tools and techniques used in this research may quickly become outdated, requiring continuous adaptation to keep pace with technological advancements.

8. **Self-Reported Data**

   The study relied on self-reported data from surveys and interviews, which may be subject to bias. Participants could overestimate or underestimate their use of analytics, potentially affecting the validity of the findings.

9. **Geographic Scope**

   The research primarily focused on organizations within a specific geographic region, which may limit the applicability of the findings to other contexts. A broader geographic scope would provide more diverse insights.

10. **Industry-Specific Constraints**
    Factors unique to the media industry, such as regulatory requirements, ethical considerations, and privacy concerns, may influence the extent to which big data analytics can be effectively implemented.

5.3 Future Improvements

To address these limitations and enhance the robustness and applicability of future research on the TV Derana Insight Hub, the following improvements are recommended:

1. **Expand Sample Size**
   Future research should include a larger and more diverse sample size to improve the generalizability of findings and ensure representation of various audience segments and media organizations.
2. **Incorporate Longitudinal Studies**
   Conducting longitudinal studies will allow researchers to observe changes over time, providing insights into the long-term effects and evolution of big data analytics practices.
3. **Diversify Variables**
   Consider a broader range of variables, such as leadership support, organizational culture, and employee engagement, to capture a holistic view of factors influencing the success of big data initiatives.
4. **Enhance Data Quality**
   Adopt rigorous data collection and validation methods to improve data accuracy. Employ advanced cleaning techniques and standardized procedures to minimize errors and inconsistencies.
5. **Address Multicollinearity**
   Apply statistical techniques, such as Variance Inflation Factor (VIF) analysis, to detect and address multicollinearity. Selecting independent variables carefully can ensure meaningful results.
6. **Leverage Objective Data Sources**
   Incorporate objective data, such as system logs, viewer behavior metrics, and ad performance data, to complement self-reported data and enhance validity.
7. **Expand Geographic Scope**
   Future studies should include participants from diverse geographic regions to

understand how local factors influence big data utilization and to identify regional differences.

8. **Adapt to Technological Advancements**
   Integrate the latest technologies, such as AI-driven analytics, machine learning models, and real-time data processing tools, to ensure research remains relevant and forward-looking.
9. **Conduct Industry-Specific Studies**
   Focus on industry-specific applications of big data analytics to uncover unique challenges and opportunities. For TV Derana, this might involve analyzing viewer preferences for specific genres or evaluating advertising strategies.
10. **Improve Methodological Rigor**
    Adopt advanced methodologies, such as structural equation modeling (SEM) or hierarchical linear modeling (HLM), to explore complex relationships between variables and improve result accuracy.
11. **Evaluate Organizational Impact**
    Assess the broader organizational impact of big data analytics, including financial performance, operational efficiency, and competitive positioning, to link analytics practices with tangible outcomes.
12. **Incorporate Qualitative Insights**
    Complement quantitative data with qualitative methods, such as interviews and focus groups, to capture the nuanced experiences and perspectives of stakeholders involved in big data initiatives.

5.4 Personnel Reflection

5.4.1 Benefits for the Researcher

Conducting research on the **TV Derana Insight Hub** and its integration of big data analytics provides numerous personal and professional benefits for the researcher:

1. **Deep Knowledge Acquisition**
   - Enhanced understanding of big data analytics, including data management, visualization techniques, and predictive modeling.

- Insight into the specific application of big data within the media industry, particularly in content personalization and advertising strategies.

2. **Skill Development**
    - Advanced skills in statistical analysis, machine learning, and big data tools such as Apache Spark, Tableau, or Python libraries.
    - Proficiency in creating and interpreting data-driven dashboards and performance reports.
3. **Academic and Professional Recognition**
    - Opportunities to publish findings in journals or present at industry conferences, elevating the researcher's profile in the field.
    - Invitations to participate in seminars or workshops, fostering professional growth and peer recognition.
4. **Contribution to Knowledge**
    - Adding to the growing body of research in media analytics and big data applications.
    - Sharing insights that can shape future innovations and methodologies in big data utilization.
5. **Professional Growth**
    - Gaining expertise that can lead to career advancements, such as roles in data science, analytics, or media strategy.
    - Potential opportunities to consult or collaborate with other organizations looking to leverage big data.
6. **Networking and Collaboration**
    - Building connections with academics, media professionals, and analytics experts through research partnerships and presentations.
    - Opportunities to collaborate on multidisciplinary projects that enrich the researcher's perspective.
7. **Enhanced Research Skills**
    - Experience in designing and executing complex studies involving mixed-methods approaches and advanced statistical techniques.
    - Problem-solving abilities developed through addressing challenges like data quality, multicollinearity, and model optimization.
8. **Funding Opportunities**

- Potential to secure research grants or funding from institutions interested in advancing big data in media.
- Recognition from funding bodies, paving the way for future research projects.

9. **Personal Fulfillment**
    - Intellectual satisfaction from contributing to a transformative area of research.
    - Passion for big data analytics reinforced through deep engagement with the topic.
10. **Practical Applications**

- The ability to translate theoretical insights into actionable strategies that benefit organizations like TV Derana.
- Development of tools and methodologies that demonstrate real-world impact.

5.4.2 Benefits for the Industry/Organization

The findings from this research bring significant advantages to **TV Derana** and the broader media industry, promoting both strategic and operational improvements:

1. **Enhanced Decision-Making**
    - **Data-Driven Insights**: Research findings enable more informed decisions by providing comprehensive analytics.
    - **Predictive Analytics**: Improved models help forecast viewer trends and optimize content scheduling and ad placements.
2. **Operational Efficiency**
    - **Process Optimization**: Insights streamline workflows, reducing inefficiencies and improving productivity.
    - **Resource Allocation**: Enhanced analytics guide better allocation of time and financial resources.
3. **Competitive Advantage**
    - **Innovation**: Leveraging advanced analytics drives innovation in programming and advertising strategies.
    - **Market Positioning**: Research helps TV Derana identify and capitalize on new opportunities, strengthening its competitive stance.
4. **Improved Viewer Understanding**

- **Enhanced Audience Insights**: Deep analysis of viewer behavior leads to more personalized content delivery.
- **Better Viewer Experience**: Tailored programming boosts viewer satisfaction and retention.

5. **Risk Management**
   - **Proactive Identification**: Analytics help detect potential risks, such as declining viewer trends or ineffective ad campaigns.
   - **Fraud Prevention**: Advanced models enhance ad tracking and financial transparency.
6. **Strategic Planning**
   - **Long-Term Vision**: Research provides data to guide strategic decisions for future growth and innovation.
   - **Scenario Modeling**: Analytics enable the organization to simulate various strategic outcomes for better preparedness.
7. **Cost Reduction**
   - **Operational Savings**: Process improvements and optimized workflows reduce overall costs.
   - **Data Management Efficiency**: Improved data storage and processing strategies lead to significant savings.
8. **Innovation and Development**
   - **Content Innovation**: Findings inspire new programming ideas that resonate with audience preferences.
   - **Technology Adoption**: Identifying cutting-edge tools ensures the organization stays at the forefront of technological advancement.
9. **Employee Engagement**
   - **Skill Enhancement**: Employees benefit from training and exposure to advanced analytics tools.
   - **Strategic Alignment**: Research aligns team efforts with data-driven objectives, fostering a sense of purpose.
10. **Reputation and Brand Value**

- **Thought Leadership**: By adopting innovative analytics strategies, TV Derana solidifies its position as an industry leader.

- **Customer Trust**: A commitment to data-driven decisions reinforces trust among viewers and advertisers.

11. **Collaborative Opportunities**

- **Partnerships**: Insights from research encourage collaborations with technology providers, advertisers, and academic institutions.
- **Knowledge Sharing**: Engaging with other experts fosters mutual learning and advances the broader field of media analytics.

By applying the recommendations and leveraging the findings of this research, **TV Derana** can achieve significant strategic and operational gains, ensuring its continued success in the competitive media landscape.

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Research Proposal

Title

Big Data Analytics for Developing the TV Derana Insight Hub: Enhancing User Engagement, Content Personalization, and Advertising Efficiency

Introduction

Big Data has emerged as a transformative force across industries, fundamentally reshaping decision-making processes and operational efficiencies. In the competitive landscape of the media industry, the use of Big Data is not merely an option but a necessity to maintain a strategic edge. This study focuses on leveraging Big Data analytics to develop the **TV Derana Insight Hub**, a sophisticated data-driven platform aimed at revolutionizing the organization's operations.

The project is driven by the need to understand and respond to user preferences effectively, optimize advertising strategies, and streamline organizational workflows. By integrating advanced machine learning models and Big Data technologies, the Insight Hub aims to offer personalized content, enhance viewer satisfaction, and generate actionable insights for advertisers. This approach positions TV Derana to capitalize on current trends while preparing for future disruptions in the media industry.

The research explores critical dimensions such as analyzing viewer engagement patterns, building scalable data solutions, and ensuring compliance with data security regulations. Additionally, the study evaluates the challenges associated with implementing Big Data tools, including infrastructure demands, cost implications, and ethical concerns surrounding data privacy.

Ultimately, this study serves as a blueprint for using Big Data to maximize organizational impact, ensure competitive sustainability, and provide a deeper understanding of the applications and limitations of data-driven decision-making in the media industry.

Research Objectives

The primary goal of this study is to design and implement the **TV Derana Insight Hub**, a comprehensive Big Data analytics platform to enhance decision-making, operational efficiency, and audience engagement. Specifically, the objectives are as follows:

1. **Examine Viewer Interaction Patterns**
   Analyze audience behaviors and preferences to develop personalized content, fostering improved user engagement and satisfaction.
2. **Optimize Advertising Strategies**
   Identify target audience groups and create data-driven advertising solutions to maximize revenue and campaign effectiveness.
3. **Assess Content Performance**
   Evaluate the success of TV Derana's programs to identify key drivers of audience engagement and viewer retention.
4. **Develop Scalable Big Data Solutions**
   Build a system that can efficiently process and manage large volumes of data while ensuring compliance with data protection regulations.
5. **Provide Real-Time Insights**
   Deliver actionable insights through a user-friendly platform to enable strategic, data-driven decision-making.
6. **Anticipate Media Trends**
   Investigate and forecast future trends in audience behavior and media consumption to maintain TV Derana's competitive position in the industry.

Sub-Objectives

To support the primary objectives, the study sets additional detailed tasks:

- **Map and document data sources**: Identify relevant data streams, including user interactions, social media feedback, and advertising metrics.
- **Develop predictive models**: Implement machine learning algorithms for forecasting user preferences and content success.
- **Evaluate advertising performance metrics**: Analyze KPIs such as click-through rates (CTR) and conversion rates to optimize campaigns.

- **Test data visualization tools**: Implement visualization tools for intuitive representation of insights to stakeholders.
- **Ensure regulatory compliance**: Audit data handling practices to align with legal frameworks like GDPR.
- **Benchmark industry performance**: Compare TV Derana's efforts with industry standards to identify gaps and areas of improvement.
- **Enhance platform usability**: Gather feedback to refine the Insight Hub for seamless use by internal teams and collaborators.

Research Questions

The study seeks to address key questions revolving around the implementation and impact of Big Data analytics for the **TV Derana Insight Hub**. The research questions are:

1. **Improving User Engagement and Personalization**
    - How can Big Data analytics enhance user interaction and content personalization for TV Derana?
2. **Advertising Strategies and Revenue Growth**
    - What are the most effective data-driven advertising strategies for maximizing revenue and campaign success?
3. **Content Performance Evaluation**
    - Which data sources and metrics are essential for analyzing the performance of TV Derana's content?
4. **Big Data Platform Scalability and Security**
    - What engineering challenges exist in developing a scalable and secure Big Data platform for the Insight Hub?
5. **Real-Time Insights for Decision-Making**
    - How can real-time insights be presented in a user-friendly manner to support strategic decision-making at TV Derana?
6. **Predictive Analytics for Audience Behavior**
    - Which predictive models and algorithms are most effective in forecasting user preferences and future trends?
7. **Benchmarking Against Industry Standards**

- How does TV Derana's approach to Big Data analytics compare to that of leading organizations in the media industry?

8. **Compliance with Data Security Laws**
    - What steps can be taken to ensure alignment with data security regulations while leveraging Big Data at TV Derana?

Research Hypotheses

The study hypothesizes that the integration of Big Data analytics within the **TV Derana Insight Hub** will have a transformative impact on the organization's operations, decision-making, and competitive position in the media industry. The specific hypotheses are as follows:

1. **User Engagement and Content Personalization**
    - Big Data analytics significantly improves user interaction and content personalization, leading to higher audience satisfaction and retention rates.
2. **Data-Driven Advertising Strategies**
    - Implementing data-driven advertising techniques results in increased revenue and higher campaign effectiveness compared to traditional methods.
3. **Real-Time Strategic Decision-Making**
    - The availability of real-time insights through a user-friendly platform enhances the efficiency and accuracy of strategic decision-making processes.
4. **Scalability and Compliance**
    - Developing a flexible and secure Big Data platform minimizes operational errors and ensures compliance with data protection regulations.
5. **Predictive Analytics for Behavior Analysis**
    - The application of predictive models and machine learning algorithms improves the accuracy of content recommendations and anticipates future audience trends effectively.

Reasons for Choosing This Research Project

1. **Alignment with Industry Trends**
   Big Data analytics has emerged as a critical tool across industries, particularly in media, where personalized content and data-driven strategies are essential for remaining competitive. This project reflects an opportunity to explore and contribute to these cutting-edge advancements.
2. **Organizational Growth and Impact**
   By focusing on the implementation of the **TV Derana Insight Hub**, the study aims to provide actionable solutions to improve audience engagement, optimize advertising revenue, and enhance operational efficiency, ensuring TV Derana remains a leader in the media industry.
3. **Addressing Existing Gaps**
   While Big Data usage in the media sector is growing, there are gaps in fully understanding and effectively implementing scalable, secure, and compliant platforms that integrate machine learning for content and advertising optimization. This research seeks to address these challenges comprehensively.
4. **Personal Interest and Professional Relevance**
   As a computing professional or data scientist, exploring how advanced analytics and machine learning can be utilized in real-world scenarios aligns with personal interests and career goals, enabling skill enhancement in high-demand areas like predictive analytics and data visualization.
5. **Academic Contribution**
   The research contributes to academic knowledge by exploring the interplay of technology, ethics, and business strategies within the context of Big Data analytics, providing insights that can inform future studies and projects in media analytics.
6. **Ethical and Legal Considerations**
   The increasing focus on ethical data use and compliance with regulations like GDPR highlights the importance of addressing data privacy and security concerns. This project emphasizes creating frameworks that balance innovation with responsibility.
7. **Potential for Broader Applications**
   Insights gained from this study can serve as a benchmark for other organizations in the media sector or beyond, demonstrating scalable methods to incorporate Big Data analytics effectively into organizational workflows.

Literature Sources Searched

The research draws on diverse and authoritative literature sources to establish a solid foundation for the study of Big Data analytics. The sources include the following categories:

1. Academic Journals and Articles

- **Chen et al. (2014)**: Explores how Big Data analytics reveal hidden patterns and support data-driven decision-making.
- **Davenport and Patil (2012)**: Discusses the importance of understanding audience behavior and segmentation through data analytics.
- **Xu et al. (2016)**: Analyzes real-time advertising efficiency and the benefits of programmatic advertising.

2. Books

- *Principles and Practice of Big Data* (2018): Provides insights into applying Big Data analytics for strategic advantage in businesses.
- *Business Intelligence Strategy and Big Data Analytics*: Offers frameworks for integrating analytics into organizational decision-making processes.

3. Web Resources and Industry Reports

- GeeksforGeeks (*6V's of Big Data*): Explains the dimensions of Big Data, including Volume, Variety, and Velocity.
- Datamation (*What is Big Data Security? Challenges & Solutions*): Outlines the challenges of securing Big Data.
- Oracle (*What is Big Data?*): Provides an overview of Big Data concepts and applications.

4. Research Databases and Journals

- *Information Sciences* (ScienceDirect): Focuses on innovative applications of Big Data in various industries.
- *Big Data Research* (ScienceDirect): Offers case studies and reviews of Big Data technologies in action.

- *Journal of Cloud Computing*: Discusses the integration of Big Data with cloud computing platforms.

5. Videos and Webinars

- *Big Data in 5 Minutes*: An introductory video explaining the fundamentals and applications of Big Data.
- *Challenges of Securing Big Data* (YouTube): Addresses data privacy, security issues, and potential solutions in Big Data contexts.

6. Ethical and Legal Resources

- *Business Ethics and Big Data* (Institute of Business Ethics): Highlights ethical considerations and dilemmas related to Big Data usage.
- *Policy Discussion – Challenges of Big Data and Analytics*: Explores challenges in governance and compliance in Big Data environments.

7. Conceptual Framework Resources

- Research Onion by *Saunders et al. (2007)*: Provides a structured methodology for designing research projects, adopted extensively in this study.

How These Sources Are Used

- **Literature Review**: To contextualize Big Data analytics in the media industry, identify existing frameworks, and establish gaps in research.
- **Methodological Design**: To derive best practices for data collection, modeling, and interpretation.
- **Ethical Considerations**: To address challenges like data security, privacy, and compliance.

Activities and Timescales

The research project employs a structured timeline to ensure efficient progress. The planned activities and estimated timeframes are outlined below:

1. Research Design and Proposal Development

- **Activities**: Define research objectives, scope, and methodology; finalize the research proposal.
- **Timeframe**: Weeks 1–2.

2. Literature Review

- **Activities**: Review relevant literature on Big Data analytics, machine learning, and media applications; develop a conceptual framework.
- **Timeframe**: Weeks 1–2.

3. Data Collection Planning

- **Activities**: Identify data sources (e.g., viewer behavior metrics, social media feedback, and advertising KPIs); design data collection tools like questionnaires and interview protocols.
- **Timeframe**: Weeks 2–3.

4. Data Collection

- **Activities**: Conduct surveys and interviews, collect historical data from TV Derana systems, and gather external datasets where necessary.
- **Timeframe**: Weeks 3–4.

5. Data Analysis

- **Activities**: Apply descriptive, predictive, and prescriptive analytics using tools like Python, R, or Tableau; perform thematic coding for qualitative data.
- **Timeframe**: Weeks 4–6.

6. Model Development and Testing

- **Activities**: Build and test machine learning models for predicting audience behavior, content performance, and advertising effectiveness.
- **Timeframe**: Weeks 5–7.

7. Development of Visualization and Reporting Tools

- **Activities**: Create dashboards and visualization tools to present insights in a user-friendly manner.
- **Timeframe**: Weeks 5–6

8. Final Report Writing

- **Activities**: Document findings, challenges, and recommendations in a comprehensive research report.
- **Timeframe**: Weeks 4–5.

9. Presentation and Feedback

- **Activities**: Prepare a presentation summarizing key insights; incorporate feedback from stakeholders.
- **Timeframe**: Weeks 3–5.

10. Final Submission and Review

- **Activities**: Submit the finalized research report and present outcomes to assessors.
- **Timeframe**: Week 6.

Milestone Summary with Completion Dates

Milestone	Proposed Completion Date
Research Proposal Finalization	Week 2
Completion of Literature Review	Week 2
Data Collection Planning	Week 3
Data Collection Completed	Week 4
Data Analysis Completed	Week 6
Model Development and Testing	Week 7
Visualization and Reporting Tools	Week 6
Final Report Writing Completed	Week 5
Final Submission	Week 6

Table 3 timeline ensures systematic progress

Research Approach and Methodologies

The research employs a structured and pragmatic approach, combining quantitative and qualitative methodologies to thoroughly explore the potential of Big Data analytics in the development of the **TV Derana Insight Hub**. The methodology ensures a comprehensive understanding of user engagement, advertising efficiency, and operational challenges.

1. Research Approach

1. **Pragmatism as the Philosophical Foundation**
    - Combines quantitative and qualitative methods to address real-world challenges and generate actionable insights.
    - Focuses on outcomes that are both theoretically grounded and practically applicable.
2. **Mixed-Methods Approach**
    - **Quantitative Methods**: Provides measurable and objective insights into viewer behaviors, content success, and advertising metrics.
    - **Qualitative Methods**: Adds context and depth to findings by exploring user preferences, stakeholder opinions, and organizational practices.
3. **Deductive and Inductive Reasoning**
    - **Deductive Approach**: Tests predefined hypotheses (e.g., Big Data improves user interaction) using empirical evidence.
    - **Inductive Approach**: Derives patterns and themes from data to generate new insights and hypotheses.

2. Research Methodologies

1. **Data Collection**
    - **Primary Data Sources**:
        - Structured surveys for users, advertisers, and internal stakeholders.
        - Interviews and focus group discussions to gain qualitative insights.
    - **Secondary Data Sources**:
        - Historical data on viewer engagement, advertising performance, and industry reports.
        - Social media analytics and other public datasets.

2. **Sampling Strategy**
    - **Stratified Random Sampling**: Ensures diverse representation by considering demographic factors such as age, gender, and geographic location.
    - **Sample Size**: Based on TV Derana's audience segments and advertising partners, designed to ensure statistical significance.
3. **Data Analysis Techniques**
    - **Descriptive Analytics**: Summarizes current patterns in user engagement and content performance.
    - **Predictive Analytics**: Uses machine learning models (e.g., clustering, regression analysis) to forecast viewer behaviors and content success.
    - **Prescriptive Analytics**: Offers actionable recommendations based on data-driven insights.
    - **Qualitative Thematic Analysis**: Applies coding to identify themes and patterns in qualitative responses.
4. **Tools and Technologies**
    - Programming languages: **Python**, **R**.
    - Visualization tools: **Tableau**, **Power BI**.
    - Big Data frameworks: **Hadoop**, **Spark**.

3. Justification of Methodologies

1. **Quantitative Approach**
    - Enables the study to establish measurable relationships, such as the impact of viewer data on advertising success or content personalization.
2. **Qualitative Approach**
    - Provides rich, contextual insights into user and stakeholder perceptions, which quantitative methods cannot fully capture.
3. **Mixed-Methods Advantage**
    - Balances objective data analysis with subjective interpretations, ensuring a well-rounded understanding of the research problem.
4. **Pragmatism as a Guiding Philosophy**
    - Allows flexibility to adapt methodologies based on real-world constraints and the evolving nature of Big Data technology.