



Tech Saksham

Case Study Report

Data Analytics with Power BI

“Power BI Powered Global Terrorism Dataset Analysis”

“ THE M.D.T HINDU COLLEGE ”

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ABSTRACT

✚ Power BI offers a vast array of visualization options, including charts, graphs, maps, and tables, allowing users to create compelling visual representations of their data. These visuals can be customized to suit specific needs and preferences. Users can create interactive dashboards and reports by combining multiple visualizations into a single canvas. These dashboards and reports can be shared with others within the organization or embedded into websites and applications. Power BI seamlessly integrates with other Microsoft products and services, such as Excel, SharePoint, Dynamics 365, and Azure, providing a unified experience and extending its capabilities. Power BI offers mobile apps for iOS, Android, and Windows devices, enabling users to access their data and insights on the go and stay connected to their business metrics from anywhere.

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CHAPTER 1

INTRODUCTION





1.1 Problem Statement

"Global terrorism presents an ongoing and multifaceted challenge to international peace, security, and stability. Despite efforts by governments, international organizations, and civil society, terrorism continues to evolve, adapt, and proliferate across borders, posing significant threats to lives, economies, and societal cohesion worldwide. The complexity of the problem is exacerbated by various factors, including ideological extremism, geopolitical tensions, socioeconomic inequalities, and technological advancements. As a result, addressing global terrorism requires a comprehensive understanding of its root causes, dynamics, and manifestations, as well as effective strategies for prevention, counteraction, and resilience-building. Moreover, the interconnected nature of modern society demands coordinated and collaborative approaches at the national, regional, and international levels to mitigate the impact of terrorism and safeguard global security."

2.1 Proposed Solution

International Cooperation: Enhance international cooperation and collaboration among nations, regional organizations, and international bodies to share intelligence, coordinate. **argeted Counterterrorism Measures:** Implement targeted counterterrorism measures, including border controls, financial regulations, and law enforcement actions, to disrupt terrorist financing, recruitment, and logistics. Utilize advanced technologies, such as artificial intelligence and data analytics, to identify and track terrorist activities. **Address Root Causes:** Address the root causes of terrorism, including political instability, governance failures, poverty, marginalization, and social injustice. Invest in education, job creation, social services, and community engagement programs to empower vulnerable populations and address grievances that terrorists exploit.

2.2 Feature

-  **Global Threat Assessment Dashboard:** A centralized dashboard providing real-time updates on global terrorism threats, including recent attacks, emerging trends, and hotspots. This would help policymakers and security agencies to prioritize resources and responses effectively.
-  **Intelligence Fusion Center:** A platform for integrating and analyzing intelligence data from various sources, including government agencies, international organizations, and open-source intelligence. This would facilitate the identification of terrorist networks, their tactics, and potential threats.
-  **Border Security Solutions:** Advanced border security technologies, such as biometric screening, facial recognition, and risk assessment algorithms, to detect and intercept individuals associated with terrorism or on watchlists.
-  **Public Awareness and Vigilance:** Raising public awareness about the threat of terrorism through public information campaigns, emergency preparedness training, and reporting mechanisms for suspicious activities.

2.3 Scope

-  **Ideological Scope:** Global terrorism involves a diverse range of ideological motivations, including religious extremism, political separatism, ethnonationalism, and ideological extremism. Understanding the ideological underpinnings of terrorist groups is crucial for formulating effective counterterrorism strategies.
-  **Social Scope:** Terrorism impacts societies at multiple levels, including individuals, communities, and institutions. It generates fear, disrupts social cohesion, undermines trust in government institutions, and can lead to polarization and social unrest.
-  **Technological Scope:** The scope of terrorism has expanded with advancements in technology, including the use of social media for radicalization and recruitment, cyberattacks on critical infrastructure, and the proliferation of weaponized drones and other emerging technologies by terrorist groups.





Legal and Political Scope: Global terrorism involves complex legal and political challenges, including jurisdictional issues, extradition treaties, human rights considerations, and diplomatic relations between countries. Developing international legal frameworks and political consensus is crucial for addressing terrorism effectively.


CHAPTER 2

SERVICES AND TOOLS REQUIRED

○ 2.1 Services Used

 **Data Collection and Storage Services:** Utilizing automated data collection tools, web scraping techniques, APIs (Application Programming Interfaces), and data feeds, these services gather structured and unstructured data from multiple sources in realtime or at regular intervals.

 **Data Processing Services:** Data cleaning and preprocessing techniques are applied to address inconsistencies, errors, and missing values in the dataset. This may include deduplication, standardization, imputation, and outlier detection to ensure data quality and accuracy.

 **Machine Learning Services:** Machine learning services select appropriate models based on the characteristics of the data and the specific tasks at hand. Commonly used models for terrorism analysis include supervised learning models (e.g., classification, regression), unsupervised learning models (e.g., clustering), and hybrid models.

○ 2.2 Tools and Software used

Tools:

- **PowerBI:** The main tool for this project is PowerBI, which will be used to create interactive dashboards for real-time data visualization.

- **Power Query:** This is a data connection technology that enables you to discover, connect, combine, and refine data across a wide variety of sources.

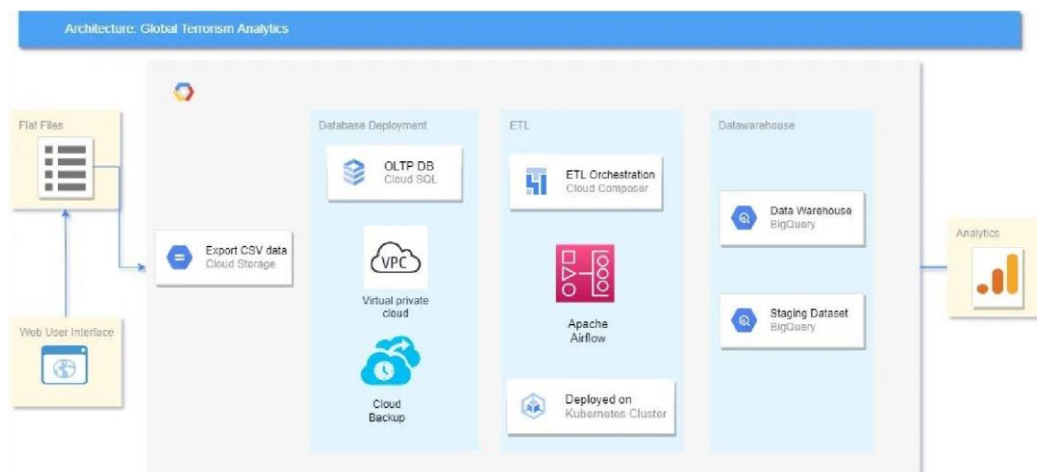
Software Requirements:

- **PowerBI Desktop:** This is a Windows application that you can use to create reports and publish them to PowerBI.
- **PowerBI Service:** This is an online SaaS (Software as a Service) service that you use to publish reports, create new dashboards, and share insights.
- **PowerBI Mobile:** This is a mobile application that you can use to access your reports and dashboards on the go.

CHAPTER 3

PROJECT ARCHITECTURE

3.1 Architecture



Here's a high-level architecture for the project:

O Data Sources:

- Identify and gather data from various sources such as databases (SQL Server, MySQL, etc.), spreadsheets, cloud services (Azure, AWS), APIs, etc.
- Ensure data quality and consistency across sources. Perform necessary data cleansing and transformation as required.

O Data Storage:

- Store the collected and transformed data in a data repository. This could be a data warehouse, data lake, or simply a structured database depending on the volume and variety of data.

O Power BI Services:

- Utilize Power BI as the reporting and visualization tool.
- Develop Power BI reports, dashboards, and data models based on business requirements.
- Leverage Power BI Desktop for report authoring and Power BI Service for publishing, sharing, and collaboration.

O Data Modeling:

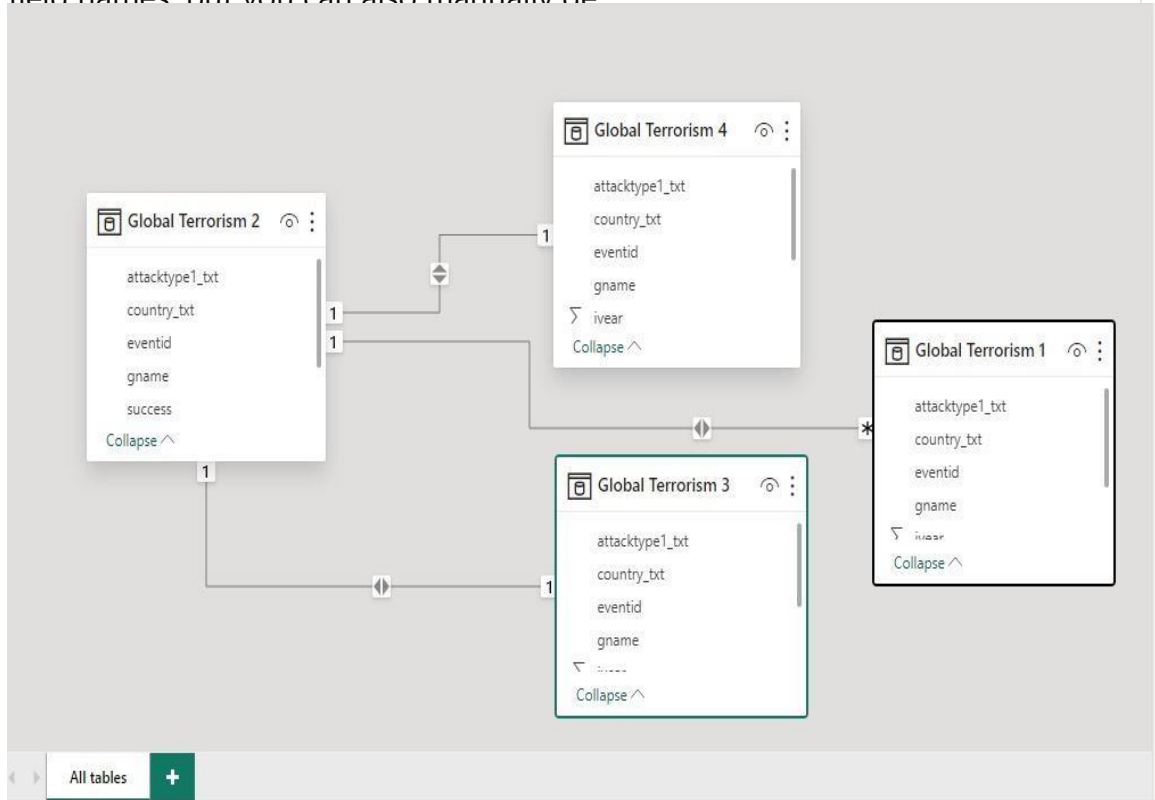
- Design efficient and optimized data models within Power BI to provide a foundation for analysis and visualization.
- Utilize techniques like star schema, snowflake schema, and DAX calculations for building complex models.
- Develop interactive dashboards and visualizations to present the analysis results effectively.
- Utilize visualization tools such as Tableau, Power BI, or Python libraries like Matplotlib and Plotly for creating visualizations.
- Design dashboards that provide actionable insights and allow users to explore the data interactively.

CHAPTER 4

MODELING AND RESULT

Manage relationship

- In Power BI Desktop, go to the "Model" view.
- Click on "Manage Relationships" from the ribbon.
- Click "New" to create a new relationship.
- Choose the primary and related tables, as well as the corresponding fields for each.
- Power BI automatically detects and suggests potential relationships based on field names, but you can also manually define relationships.



fine relationships.

Manage relationships ✕

Active	From: Table (Column)	To: Table (Column)
<input checked="" type="checkbox"/>	Global Terrorism 1 (eventid)	Global Terrorism 2 (eventid)
<input checked="" type="checkbox"/>	Global Terrorism 3 (eventid)	Global Terrorism 2 (eventid)
<input checked="" type="checkbox"/>	Global Terrorism 4 (eventid)	Global Terrorism 2 (eventid)

Create relationship

Select tables and columns that are related.

Global Terrorism 1

eventid	year	country_txt	region_txt	success	attacktype1_txt	gname
201401010007	2014	Iraq	Middle East & North Africa	1	Bombing/Explosion	Unknown
201401010038	2014	Iraq	Middle East & North Africa	1	Bombing/Explosion	Unknown
201401010044	2014	Iraq	Middle East & North Africa	1	Bombing/Explosion	Unknown

Global Terrorism 3

eventid	year	country_txt	success	attacktype1_txt	targettype1_txt	gname	weaptype1
201401020015	2014	Iraq	1	Bombing/Explosion	Private Citizens & Property	Unknown	Explosives
201401020016	2014	Iraq	1	Bombing/Explosion	Private Citizens & Property	Unknown	Explosives
201401020025	2014	Iraq	1	Bombing/Explosion	Private Citizens & Property	Unknown	Explosives

Cardinality

One to many (1:*)

Cross filter direction

Both

☒ Make this relationship active
 ☐ Apply security filter in both directions

☐ Assume referential integrity

OK

Cancel

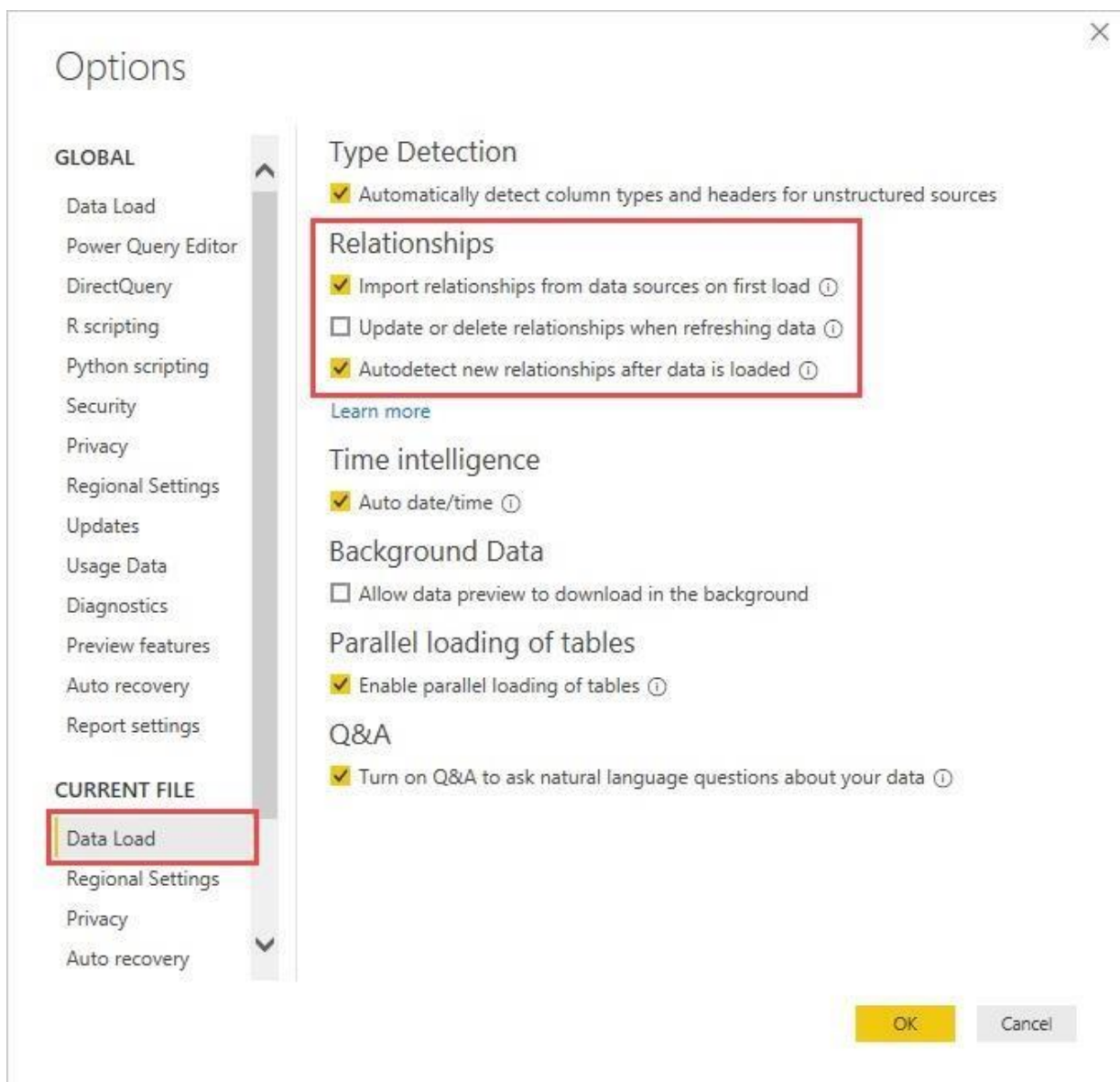
Modelling for Country and Success data

Each row in this table represents a distinct country.

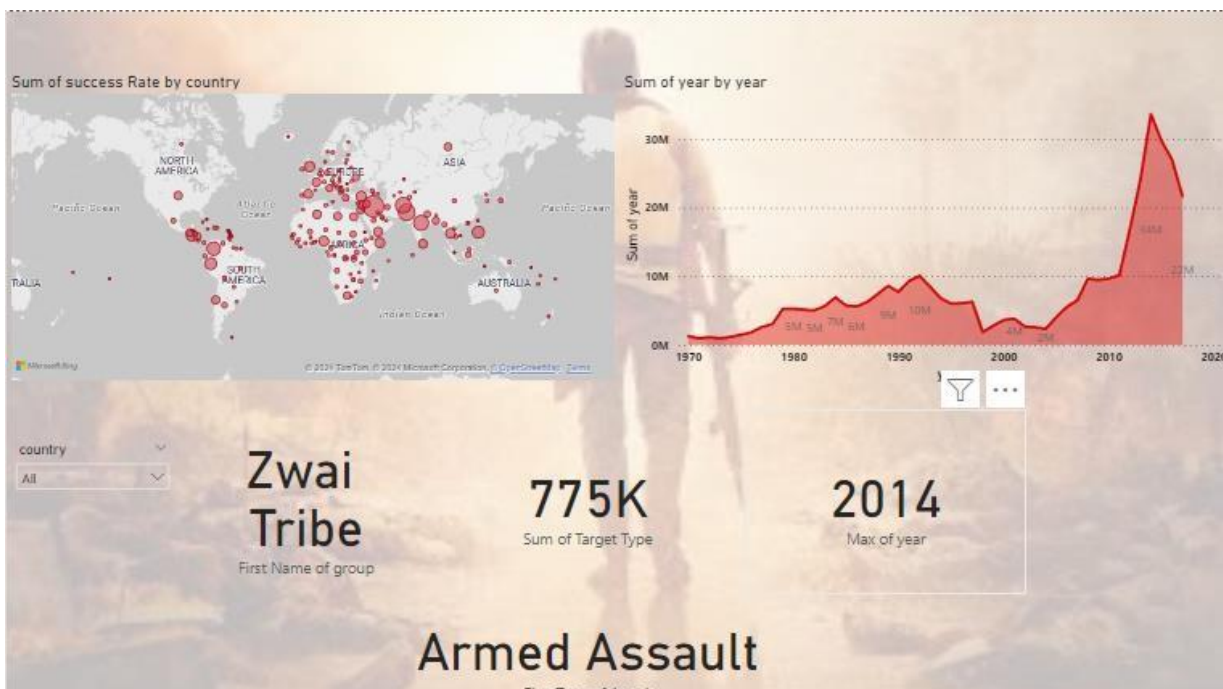
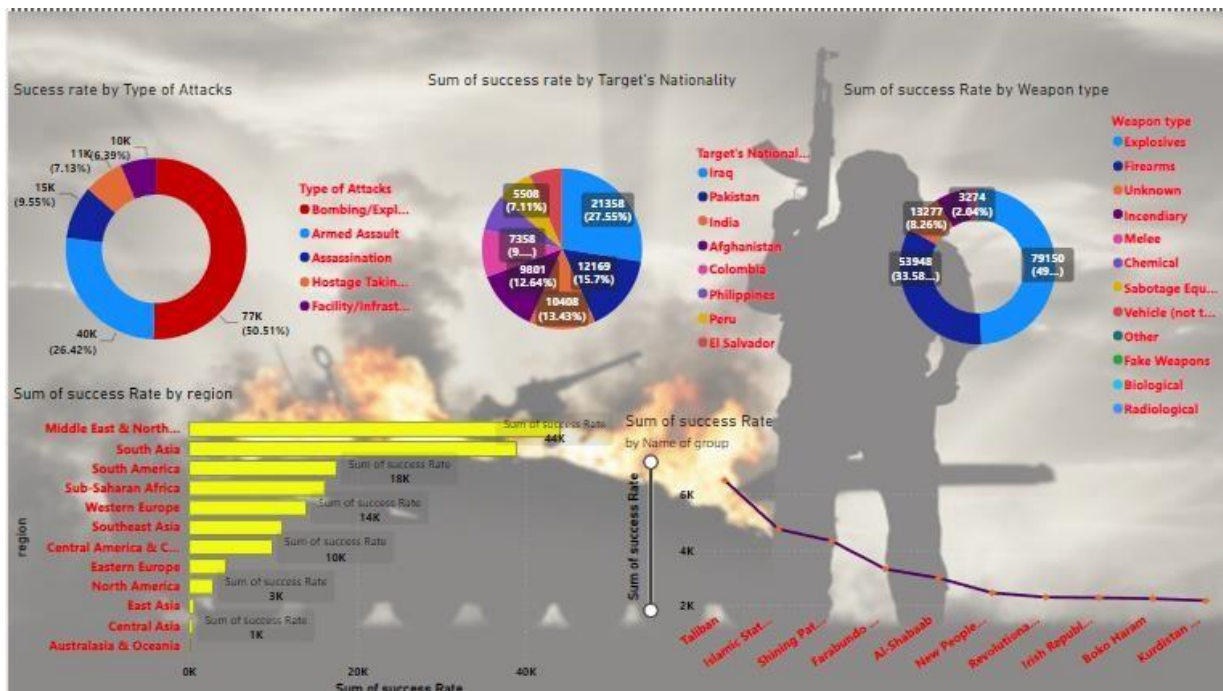
Create a fact table to store information about terrorist attacks. This table will contain detailed data about each attack, such as attack date, location, casualties, and other relevant metrics.

Automatic relationship updates:

- You can manage automatic relationships in the "Manage Relationships" dialog in Power BI Desktop.
- This dialog allows you to view existing relationships, edit their properties, or delete them if necessary.
- You can also disable automatic relationship detection in the Power BI options if you prefer to manually define relationships.



Dashboard



CONCLUSION

Our analysis revealed that certain regions, such as the Middle East, South Asia, and Sub-Saharan Africa, experience a disproportionately high number of terrorist incidents.

These regions often face complex socio-political challenges, contributing to the prevalence of terrorism. By examining trends over time, we observed fluctuations in terrorist incidents, with some regions experiencing periods of heightened activity followed by relative calm. Understanding these temporal patterns can help policymakers and security agencies anticipate and respond to emerging threats. The analysis also highlighted the devastating impact of terrorism on human lives and infrastructure. The visualization of casualties, including fatalities and injuries, underscores the urgency

of addressing terrorism as a global security concern.

FUTURE SCOPE

Power BI's vibrant community will play an essential role in driving innovation and knowledge sharing. Microsoft will continue to engage with the Power BI community through forums, user groups, and events, soliciting feedback and fostering collaboration among users, developers, and partners. Overall, the future of Power BI is centered around empowering organizations to

derive actionable insights from their data more efficiently, effectively, and securely. As data volumes grow and the demand for analytics capabilities expands, Power BI will continue to evolve to meet the evolving needs of businesses across industries. Power BI's mobile app will continue to evolve, offering improved performance, usability, and offline capabilities. This will enable users to access and interact with their data on the go, even in environments with limited or no internet connectivity. Power BI is likely to deepen its integration with AI and machine learning capabilities. This includes features such as automated insights generation, predictive analytics, and natural language processing for querying and data interpretation. Augmented analytics, which combines machine learning and natural language processing with traditional analytics, will become more prevalent in Power BI. This will enable users to uncover insights more easily and make data-driven decisions faster.

REFERENCES

<https://www.novypro.com/project/terrorism-data-analysis-power-bi->

LINK