

# CH15 - Advanced BI Techniques



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- Advanced Analytics
- Machine Learning in BI
- Natural Language Processing (NLP)
- Big Data Integration
- Data Visualization and Storytelling
- BI and IoT Integration
- Ethical and Responsible AI
- Future Trends in Advanced BI
- Conclusion

ผู้ช่วยศาสตราจารย์ ดร.สุรชาติ บัวชุม

## Advanced BI Techniques

CH15 delves into advanced techniques and methodologies in business intelligence (BI) to help organizations gain deeper insights and make more informed decisions. It covers advanced analytics, machine learning, and the integration of cutting-edge technologies in BI.

# Introduction to Advanced BI Techniques

## Introduction to Advanced BI Techniques

- **Significance:** Understanding the importance of advanced techniques in enhancing BI capabilities.
- **Applications:** Overview of various applications of advanced BI techniques in different industries.

## Advanced Analytics

- **Predictive Analytics:** Using statistical models and machine learning techniques to predict future outcomes based on historical data.
- **Prescriptive Analytics:** Recommending actions based on predictive models to optimize business processes and outcomes.
- **Diagnostic Analytics:** Examining data to understand the causes of past events and trends.

## Machine Learning in BI

- **Supervised Learning:** Training models on labeled data to make predictions or classify data.
- **Unsupervised Learning:** Identifying patterns and relationships in unlabeled data through clustering and association techniques.
- **Reinforcement Learning:** Using algorithms to optimize decision-making processes through trial and error.

# Natural Language Processing (NLP)

## Natural Language Processing (NLP)

- **Text Analytics:** Extracting insights from unstructured text data using NLP techniques.
- **Sentiment Analysis:** Analyzing customer feedback and social media data to gauge sentiment and opinions.
- **Voice-Activated BI:** Implementing voice recognition technologies to interact with BI systems using natural language queries.

## Big Data Integration

- **Handling Large Datasets:** Techniques for managing and analyzing large volumes of data from diverse sources.
- **Real-Time Data Processing:** Leveraging real-time data processing tools to enable immediate insights and decision-making.
- **Cloud-Based Solutions:** Utilizing cloud platforms for scalable and efficient data storage and processing.

## Data Visualization and Storytelling

- **Advanced Visualization Techniques:** Creating interactive and dynamic visualizations to represent complex data insights.
- **Data Storytelling:** Crafting compelling narratives around data to communicate insights effectively to stakeholders.
- **Visualization Tools:** Overview of advanced data visualization tools and their applications.



### BI and IoT Integration

- **IoT Data Analytics:** Analyzing data generated from Internet of Things (IoT) devices to gain actionable insights.
- **Predictive Maintenance:** Using IoT data to predict equipment failures and schedule maintenance proactively.
- **Smart Decision-Making:** Enhancing decision-making processes through the integration of IoT and BI.

# Ethical and Responsible AI

## Ethical and Responsible AI

- **AI Ethics:** Understanding the ethical implications of using AI in BI, including bias, fairness, and transparency.
- **Responsible AI Practices:** Implementing practices to ensure the ethical use of AI technologies in BI.

## Future Trends in Advanced BI

### Future Trends in Advanced BI

- **Emerging Technologies:** Exploring emerging technologies and their potential impact on BI.
- **Innovation in BI:** Encouraging continuous innovation to stay ahead in the competitive landscape.
- **Case Studies:** Highlighting case studies of organizations successfully implementing advanced BI techniques.

## Conclusion

CH15 emphasizes the importance of adopting advanced BI techniques to gain a competitive edge and make more informed decisions. By leveraging advanced analytics, machine learning, NLP, big data, and IoT, organizations can unlock deeper insights and drive business growth.

<https://forms.gle/LAKdhGpTKBmbB5p2A>

Q&A

