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# Data Science for Managerial Decisions (MB 511)

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## Data Science for Managerial Decisions (MB 511)



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### References/Literature

- Jojo Moolayil, “Smarter Decisions The Intersection of IoT and Data Science”, PACKT, 2016.
- Cathy O’Neil and Rachel Schutt , “Doing Data Science”, O'Reilly, 2015.
- David Dietrich, Barry Heller, Beibei Yang, “Data Science and Big data Analytics”, EMC 2013
- Raj, Pethuru, “Handbook of Research on Cloud Infrastructures for Big Data Analytics”, IGI Global
- Management Information System, W.S Jawadekar, Tata Mc Graw Hill Publication.
- Management Information System, David Kroenke, Tata Mc Graw Hill Publication.
- MIS Management Perspective, D.P. Goyal, Macmillan Business Books.

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## Online Resources



## Software Resources



# Data Science for Managerial Decisions (MB 511)

## Program Overview

- Introduction to Data Science
- Information Technology An Overview
- Applications of Data Science in various fields
- MIS and Control Systems
- Data Collection and Data Pre-Processing
- Building Information Systems
- Support Systems for Management Decisions



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# MIS and Control Systems

- Introduction to MIS and Control Systems
- Design and Implementation of MIS
- Control Systems in Action
- Challenges and Future Trends



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# MIS and Control Systems

## Challenges in MIS and Control Systems – Cybersecurity and Data Privacy Concerns

Cybersecurity and data privacy concerns pose significant challenges in Management Information Systems (MIS) and control systems. These challenges have become increasingly complex with the rise of interconnected technologies, cloud computing, and the growing reliance on data for decision-making.

### Data Breaches and Unauthorized Access:

- MIS and control systems store and process vast amounts of sensitive information. A breach in these systems can result in unauthorized access to critical data, leading to financial losses, reputational damage, and legal consequences.
- Implementing robust access controls, encryption, and regular security audits are essential to mitigate the risk of unauthorized access.

### Interconnected Systems and IoT Devices:

- The integration of various systems and Internet of Things (IoT) devices enhances efficiency but also increases the attack surface. Each connected device becomes a potential entry point for cybercriminals.
- Proper segmentation, network monitoring, and regular updates to IoT devices can help mitigate risks associated with interconnected systems.



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# MIS and Control Systems

## Challenges in MIS and Control Systems – Cybersecurity and Data Privacy Concerns



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### Phishing and Social Engineering Attacks:

- Employees in organizations using MIS and control systems may be targeted through phishing or social engineering attacks. If successful, these attacks can compromise sensitive data or provide unauthorized access.
- Regular cybersecurity training and awareness programs for employees are crucial to prevent falling victim to such attacks.

### Insider Threats:

- Insiders with malicious intent or unintentional mistakes by employees can lead to data breaches. This includes employees, contractors, or third-party vendors with access to the systems.
- Implementing least privilege access, monitoring user activities, and conducting background checks can help in reducing the risk of insider threats.

### Compliance and Regulatory Requirements:

- Many industries have specific regulations and compliance standards governing the protection of sensitive data. Failure to comply with these regulations can result in severe penalties.
- Regular audits and compliance assessments should be conducted to ensure that MIS and control systems meet the necessary legal and regulatory requirements.

# MIS and Control Systems

## Challenges in MIS and Control Systems – Cybersecurity and Data Privacy Concerns



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### Data Encryption and Privacy:

- Encryption is essential for protecting data both in transit and at rest. Implementing strong encryption protocols ensures that even if data is intercepted, it remains unreadable.
- Organizations must also prioritize user privacy, ensuring that collected data is handled responsibly and in compliance with privacy regulations.

### Incident Response and Recovery:

- Despite preventive measures, security incidents may still occur. Having a well-defined incident response plan and a robust backup and recovery strategy is crucial for minimizing the impact of cyber attacks.

### Supply Chain Security:

- Organizations often rely on third-party vendors and suppliers for various components of their systems. Ensuring the security of the entire supply chain is vital to prevent vulnerabilities from entering the ecosystem.
- Conducting thorough security assessments of third-party vendors and implementing contractual obligations for security measures are critical steps.



# MIS and Control Systems

## Challenges in MIS and Control Systems – Managing the increasing volume of data



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- Managing the increasing volume of data is a significant challenge for Management Information Systems (MIS) and control systems due to the rapid growth of data sources and the complexity of information generated. Effectively addressing this challenge involves implementing **robust strategies** and **technologies to handle, process, and derive meaningful insights** from the ever-expanding datasets.
- Successfully managing the increasing volume of data in MIS and control systems requires a **holistic approach** that combines **technology, governance, and user awareness**. By implementing these strategies, organizations can effectively handle the challenges posed by the exponential growth of data and derive meaningful insights to support informed decision-making.

# MIS and Control Systems

## Challenges in MIS and Control Systems – Overcoming resistance to change within organizations



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- Overcoming resistance to change within organizations, especially in the context of Management Information Systems (MIS) and control systems, presents a unique set of challenges. MIS and control systems are critical components that help organizations adapt to **technological advancements, improve decision-making processes, and enhance overall efficiency**. However, employees may resist these changes due to various reasons such as **fear of the unknown, disruption to routine, or concerns about job security**.
- Overcoming resistance to change in MIS and control systems requires a combination of **effective communication, employee involvement, training, and a supportive organizational culture**. By addressing concerns, providing **reassurance**, and showcasing the benefits, organizations can increase the likelihood of successful adoption and integration of new technologies.

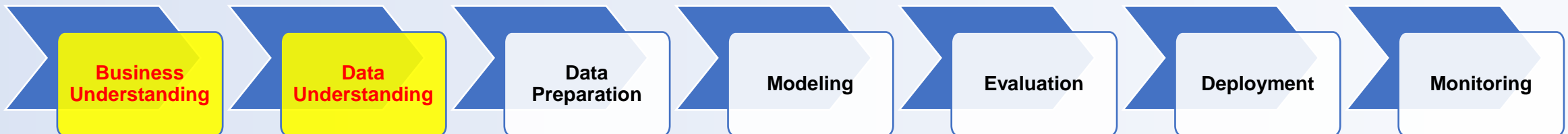
# Building Data Science Solutions

## CRISP DM Approach



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*Data is not just a piece of information, but a powerful tool that can transform businesses and drive innovation." - Unknown*



# Building AI Solutions

## Datasets

### Sales Data

<https://github.com/anantawasthi/IIT-Patna-EMBA-MB511/tree/main/Datasets/001-Sales-Data>



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## Quiz and Assignment

Dear Class your first quiz and assignment will be due as per following schedule.

Please name your submission as “MB511-Assignment-X-YYYYMMDD-Your-Name”

- **Quiz 1** February 25, 2024 (1:30 PM – 02:00 PM) – **Completed**
- **Assignment 1** February 25, 2024 (1200 AM) – March 2, 2024 (1159 PM) – [Link](#)
- **Quiz 2** March 17, 2024 (12:00 AM – 11:59 PM) – Quiz will share before the scheduled time
- **Assignment 2** March 15, 2024 (1200 AM) – March 25, 2024 (1159 PM) – [Link](#)



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**Have a question?**

**Feel Free to Reach out at**

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