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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



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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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Information Technology An Overview

- Foundations of Information Technology
- Information Systems and Management
- Project Management in IT
- Cybersecurity and IT Governance
- Future Trends in Information Technology



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Information Technology An Overview

Project Management in IT

Project management plays a crucial role in the field of Information Technology (IT) from a management perspective. It involves the **planning**, **execution**, and **control** of IT projects to achieve specific goals within defined constraints

key aspects of the role of project management in IT

- Goal Achievement
- Resource Allocation
- Risk Management
- Stakeholder Communication
- Quality Assurance
- Change Management
- Post-Implementation Review



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Information Technology An Overview

Project Management in IT



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Goal Achievement

Scope Management Clearly defining the project scope helps in understanding what needs to be accomplished. It ensures that the project team and stakeholders have a common understanding of the project's objectives.

Time Management Establishing timelines and milestones is essential to ensure that the project is completed within the specified timeframe.

Resource Allocation

Human Resources Efficiently managing human resources involves assigning tasks based on skills, experience, and availability. It also includes monitoring team performance and addressing any issues that may arise during the project.

Budget Management IT projects often have budget constraints. Project management ensures that resources are allocated wisely to avoid cost overruns.

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Project Management in IT



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Risk Management

Identification and Mitigation Recognizing potential risks and developing strategies to mitigate them is a crucial aspect of project management. In IT projects, risks may include technical challenges, changes in requirements, or external factors such as cybersecurity threats.

Contingency Planning Preparing for unexpected events helps in minimizing their impact on project timelines and objectives.

Stakeholder Communication

Clear Communication Project managers facilitate communication between team members and stakeholders, ensuring that everyone is informed about project progress, changes, and challenges.

Expectation Management Managing stakeholder expectations is vital. This includes setting realistic expectations regarding project outcomes, timelines, and resource requirements.

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Project Management in IT



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Quality Assurance

Testing and Validation IT projects often involve the development of software or the implementation of new technologies. Project management ensures that proper testing procedures are in place to validate the quality and functionality of the deliverables.

Compliance Ensuring that the project meets industry standards and regulatory requirements is crucial, especially in fields where data security and privacy are paramount.

Change Management

Adaptability IT projects often face changes in requirements or technology during the project lifecycle.

Project management involves assessing the impact of changes, obtaining approvals, and implementing modifications while maintaining project objectives.

Post-Implementation Review

Evaluation After project completion, a post-implementation review helps in assessing the project's success, identifying lessons learned, and providing insights for future projects.

Documentation Proper documentation of the project processes, decisions, and outcomes is essential for knowledge transfer and continuous improvement.

Information Technology An Overview

Project Management Methodologies

There are several project management methodologies used in business, each with its own set of principles, processes, and practices. The choice of methodology depends on the nature of the **project**, **organizational preferences**, and the **specific requirements** of the project. Here are some of the widely used project management methodologies in business

Waterfall Methodology

Sequential Approach In the waterfall model, the project progresses through a series of phases, with each phase building on the deliverables of the previous one. It follows a linear and sequential approach.

Well-Defined Requirements Suitable for projects with well-defined and stable requirements where changes are expected to be minimal.

Agile Methodology

Iterative and Incremental Agile focuses on delivering small, incremental releases of a project in short cycles. It allows for flexibility and adaptability to changing requirements.

Collaboration and Communication Emphasizes frequent communication and collaboration between cross-functional teams, including clients and stakeholders.



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Project Management Methodologies



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Scrum

Iterative Development Scrum is an Agile framework that divides the project into small, iterative cycles called sprints. It includes roles like Scrum Master, Product Owner, and the Development Team.

Daily Stand-ups Regular short meetings called daily stand-ups ensure continuous communication and alignment within the team.

Six Sigma

Process Improvement Originally developed for manufacturing, Six Sigma aims to improve process efficiency and eliminate defects. It uses statistical methods to identify and reduce variation.

DMAIC Approach Define, Measure, Analyze, Improve, and Control is a structured approach used in Six Sigma projects.

DevOps

Integration of Development and Operations DevOps is not a traditional project management methodology but a cultural and professional movement. It emphasizes collaboration and communication between development and operations teams to enhance efficiency and quality.

Continuous Delivery Aims to achieve a continuous and automated delivery pipeline for software development.

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Project Management Certifications

Project management certifications can enhance the **skills and credibility** of managers in the field. Different certifications cater to various **methodologies** and **approaches**. Here are some widely recognized project management certifications for managers

- Project Management Professional (PMP)
- Certified Associate in Project Management (CAPM)
- PRINCE2 Practitioner
- Certified ScrumMaster (CSM)
- Certified Scrum Professional (CSP)
- PMI Agile Certified Practitioner (PMI-ACP)
- Certified Project Manager (CPM)
- Certification in Risk Management Assurance (CRMA)
- Certification in Project Management (CPM)
- Managing Successful Programmes (MSP)



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Cybersecurity and IT Governance

What is Cybersecurity

Cybersecurity is the **practice** of safeguarding **computer systems, networks, and digital assets** from **unauthorized access, attacks, and damage**. It encompasses a set of **technologies, processes, and measures** designed to protect information and ensure the **confidentiality, integrity, and availability** of data.

Cybersecurity involves defending against a range of threats, including **malware, ransomware, phishing, and other cybercrimes**. It aims to create a secure digital environment, mitigating risks associated with data breaches, identity theft, and disruption of operations. In an increasingly interconnected world, cybersecurity is critical for businesses, governments, and individuals to protect sensitive information, maintain trust, and ensure the smooth functioning of digital systems.



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Information Technology An Overview

Cybersecurity and IT Governance

Introduction to Cybersecurity for Business Managers

In the contemporary business landscape, cybersecurity stands as a linchpin for success. Business managers must grasp its pivotal role in preserving the **integrity of operations**. Cybersecurity involves **protective measures** against cyber threats, **safeguarding sensitive data, financial assets, and reputation**.

As businesses increasingly rely on digital platforms, managers need to comprehend the **potential risks, legal implications, and financial ramifications** of cyberattacks. Effective cybersecurity strategies ensure not only **data protection** but also foster **customer trust, compliance with regulations, and sustained business resilience**. In a technology-driven world, business managers' understanding and prioritization of cybersecurity are instrumental in sustaining a competitive and secure business environment.



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Information Technology An Overview

Cybersecurity and IT Governance

International standards for cybersecurity

Several international standards exist to guide and establish best practices in cybersecurity. These standards are developed by various organizations to address different aspects of cybersecurity. Some prominent international standards include

- ISO/IEC 27001 Information Security Management System (ISMS)
- ISO/IEC 27002 Code of Practice for Information Security Controls
- NIST SP 800-53 Security and Privacy Controls for Federal Information Systems and Organizations
- NIST Cybersecurity Framework
- GDPR (General Data Protection Regulation)
- PCI DSS (Payment Card Industry Data Security Standard)
- CIS Critical Security Controls
- IETF RFCs (Internet Engineering Task Force Request for Comments)
- ITIL (Information Technology Infrastructure Library)
- Cybersecurity Act of the European Union



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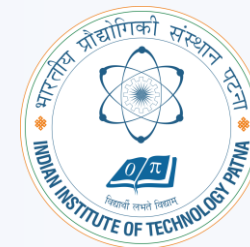
Quiz and Assignment

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

- **Quiz** February 24, 2024 (10 AM – 1030 AM) – Link will be updated soon
- **Assignment** February 25, 2024 (1200 AM) – March 2, 2024 (1159 PM) – [Link](#)



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Have a question?

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