

Financial Management

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MGM424

Lecture 10



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MGM424 AI & FinTech in Financial Management

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Chapter

10

AI & FinTech in Financial Management



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AI & FinTech in Financial Management

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Introduction & Roadmap

Introduction to AI and FinTech

This lecture explores how AI and FinTech are transforming financial management by integrating digital tools with traditional finance concepts such as investment, financing, dividends, and working capital. These technologies enhance decision-making processes and provide actionable insights.

Digital Tools in Finance

AI and FinTech tools offer powerful capabilities to analyze vast amounts of data, predict market trends, and automate routine financial tasks. They enable financial managers to make more informed decisions and improve overall efficiency and accuracy.

Lecture Structure

The lecture will cover the basics of AI and machine learning, their applications in financial management, and real-world case studies. It will also address the ethical considerations and regulatory challenges associated with these technologies.



Lecture Overview

We will start by reviewing the fundamentals of financial management and the key decisions financial managers make. Then, we will delve into the basic concepts of AI and data analytics and how they can be applied to financial management.

Applications and Case Studies

The lecture will explore various applications of AI in finance, such as capital budgeting, forecasting, cash management, and risk management. We will also examine real-world case studies to understand the practical implications of these technologies.



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Financial Management Core

Definition

Financial management involves planning, organizing, directing, and controlling the financial activities of a business. It focuses on how a company raises money, invests it, and returns value to its owners.

1

Key Objectives

The primary goal is to increase the value of the firm for its shareholders in a responsible way. This includes making decisions that support long-term growth, stability, and the ability to meet financial obligations on time.

2

Decision Areas

Financial management encompasses investment decisions, financing decisions, dividend policy, and working capital management. Each area plays a crucial role in achieving the overall objectives of the firm.

3

Managerial Role

Financial managers are responsible for making informed decisions that balance risk and return, ensuring the company's financial health while seizing opportunities for growth and expansion.

4

Value Creation

The main objective of financial management is to create value for the company's owners by increasing the market value of the firm over time. This involves selecting projects and financing plans that enhance profitability.

Balancing Risk and Return

Creating value requires balancing risk and return, as higher returns often come with higher risks. Financial managers must protect the company's financial health while pursuing smart growth opportunities.

Long-Term Focus

Value creation is a long-term process that involves making strategic decisions to support sustainable growth, stability, and the ability to meet financial obligations on time.

1

Capital Budgeting

Investment decisions, also known as capital budgeting, involve evaluating long-term projects such as new machinery, factories, or entering new markets. The goal is to determine whether a project will create more value than it costs.



2

Tools and Techniques

Common tools used in capital budgeting include Net Present Value (NPV) and Internal Rate of Return (IRR). These tools help estimate future cash inflows and outflows to assess the viability of investment projects.

Financing Decisions

Financing decisions involve determining how the company will raise the funds needed for its projects. This includes choosing between debt, such as loans and bonds, and equity, such as issuing shares to investors.

Capital Structure

The mix of debt and equity used to finance the company is known as its capital structure. Financial managers must consider the cost and risk associated with each source of financing.

Risk Considerations

Excessive debt can increase financial risk and the likelihood of default. Financial managers must carefully balance the use of debt and equity to optimize the company's capital structure.



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Dividend & Working Capital

Dividend Policy

Dividend decisions involve determining how much profit should be distributed to shareholders and how much should be retained within the company for future growth. A clear dividend policy signals stability and future plans to investors.



Working Capital Management

Working capital management focuses on managing short-term assets and liabilities, such as cash, inventory, and accounts receivable and payable. The goal is to maintain sufficient liquidity to meet short-term obligations while maximizing efficiency.

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AI & Data Essentials

01 Definition of AI

Artificial Intelligence (AI) refers to the ability of computers and software to perform tasks that typically require human intelligence, such as recognizing patterns, learning from data, and making predictions.



02 AI in Finance

In finance, AI can analyze large datasets to detect trends, suggest decisions, and provide insights faster than humans. It is used for tasks like sales forecasting, fraud detection, and portfolio management.

03 AI Capabilities

AI processes vast amounts of data quickly and accurately, enabling financial managers to make more informed decisions. It does not replace human judgment but enhances it by providing data-driven insights.





Definition of Machine Learning

Machine Learning (ML) is a subset of AI where algorithms learn from historical data instead of being programmed with fixed rules. The models identify patterns and use them to make predictions on new data.

Applications in Finance

In financial management, ML can support forecasting, risk scoring, and decision-making by analyzing historical data to identify trends and predict future outcomes.

Data in Finance

Data is information in a form that computers can process, such as numbers, dates, and text. In finance, data includes accounting records, market prices, customer transactions, and news articles.

Data Analytics

Data analytics involves collecting, cleaning, analyzing, and interpreting data to support decision-making. It transforms raw data into actionable insights that can guide financial strategies.

Importance of Data

Accurate and relevant data is crucial for effective financial management. Data analytics helps identify trends, risks, and opportunities, enabling managers to make informed decisions.



Traditional Finance

Traditional financial management relies on basic tools like spreadsheets and ratios for decision-making. This approach is often limited by the volume of data that can be processed manually.



Data-Driven Finance

Data-driven finance leverages advanced analytics, AI, and automated tools to process large datasets and generate more accurate and timely insights. This enhances the quality of financial decisions.

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AI in Financial Decisions

Enhanced Forecasting

AI improves capital budgeting by generating more accurate forecasts of future cash flows. It uses historical data and market trends to estimate the potential returns and risks of investment projects.



Scenario Analysis

AI models can create multiple scenarios, such as optimistic, normal, and pessimistic cases, to provide a comprehensive view of the potential outcomes of investment decisions.



Risk Assessment

By analyzing various factors, AI helps financial managers assess the risk associated with each project more accurately, enabling better-informed investment decisions.

Sales Forecasting Cash-Flow Prediction

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Sales Forecasting

AI models analyze historical sales data, market trends, and external factors to generate accurate sales forecasts. This helps companies plan production and adjust marketing strategies accordingly.

Cash Flow Prediction

AI tools can predict future cash inflows and outflows, enabling companies to manage their liquidity more effectively and avoid cash shortages or excess cash holdings.

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AI in Cash & Liquidity Management



Real-Time Monitoring

AI tools monitor bank balances and cash flows in real-time, providing up-to-date information to financial managers. This helps in maintaining optimal cash levels.



Predictive Analytics

AI models predict periods of cash surplus or shortage, allowing companies to take proactive measures such as drawing on credit lines or investing excess cash.



Actionable Insights

AI provides actionable recommendations to optimize cash management, such as suggesting when to make payments or invest idle funds to maximize returns.

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AI in Cost of Capital



Category	Item	Quantity	Unit Price	Subtotal	Total
Construction	Excavation	1000.00	\$100.00	\$100,000.00	\$100,000.00
Construction	Foundation	500.00	\$200.00	\$100,000.00	\$200,000.00
Construction	Roofing	200.00	\$150.00	\$30,000.00	\$30,000.00
Construction	Interior Finishes	100.00	\$100.00	\$10,000.00	\$10,000.00
Construction	Exterior Finishes	50.00	\$200.00	\$10,000.00	\$10,000.00
Construction	Landscaping	10.00	\$100.00	\$1,000.00	\$1,000.00
Construction	Site Preparation	5.00	\$200.00	\$1,000.00	\$1,000.00
Construction	Permit Fees	1.00	\$100.00	\$100.00	\$100.00
Construction	Insurance	1.00	\$100.00	\$100.00	\$100.00
Construction	Contingency	1.00	\$100.00	\$100.00	\$100.00
Construction	Subtotal			\$153,100.00	\$153,100.00
Construction	Grand Total			\$153,100.00	\$153,100.00

Cost Estimation

AI analyzes market interest rates, credit spreads, and company performance to estimate the cost of different financing options. This helps in making informed financing decisions.

Credit Scoring

AI-based credit scoring models evaluate a company's probability of default using various data points, influencing loan interest rates and helping managers choose the right financing mix.



Risk Identification

AI models scan large datasets to identify unusual patterns that may signal potential risks, such as market fluctuations, credit defaults, or operational issues.

Fraud Detection

AI can detect potential fraud by flagging transactions that do not fit a customer's normal behavior profile. This helps in preventing financial losses and protecting customer data.

Risk Scoring

AI assigns risk scores to customers based on various factors, helping companies make better lending decisions and manage credit risk more effectively.

Automated Analytics

AI-powered BI tools automatically calculate financial ratios, trends, and KPIs, presenting them on interactive dashboards. This provides real-time visibility into company performance.

Insight Generation

AI features highlight key drivers of profit or loss, enabling managers to take corrective actions quickly and make data-driven decisions.



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FinTech Toolkit

Definition of FinTech

Financial Technology (FinTech) refers to the use of modern technology to improve financial services, processes, and products. It includes mobile banking, digital payments, online lending, and robo-advisors.

Corporate FinTech

For corporate financial managers, FinTech means faster transactions, better data access, and more automation in tasks such as paying suppliers or collecting money from customers.

Relation to AI

FinTech is closely related to AI but also includes non-AI technologies such as simple apps and digital platforms that enhance financial operations.



Digital Payment Platforms



Digital Payment Platforms

Platforms like Stripe, PayPal, and Square allow companies to accept online and card payments from customers globally. They automate sales recording, calculate fees, and transfer funds to bank accounts.

Benefits for Finance

These tools provide real-time visibility into cash inflows, help with revenue forecasting, and simplify reconciliation processes, improving overall financial management efficiency.

Cash Management Systems

Specialized platforms like Kyriba and TreasuryXpress connect to multiple bank accounts, providing a centralized view of all cash balances and enabling efficient cash management.



Automation of Processes

These systems automate processes such as cash concentration, foreign exchange management, and short-term investments, reducing manual work and improving accuracy.



AI Integration

Some platforms use AI to forecast cash positions and recommend actions, helping companies optimize liquidity and minimize interest costs.

1

ERP and Accounting Software

Enterprise Resource Planning (ERP) systems like SAP and Oracle, and accounting software like QuickBooks and Xero, are central to financial management. They record transactions and generate financial statements.



2

AI Features

Modern ERP and accounting systems include AI features such as automatic invoice recognition and anomaly detection in expenses, reducing manual work and improving data accuracy.

Business Intelligence Tools

Tools like Microsoft Power BI, Tableau, and Google Looker Studio transform raw financial data into visual reports and dashboards, providing real-time insights into company performance.

Data Connectivity

These tools connect to various data sources, including Excel files and accounting systems, to display key metrics and trends. They enable managers to make data-driven decisions.

AI Integration

Some BI tools include AI features that automatically suggest charts, detect trends, and highlight unusual values, enhancing the analytical capabilities of financial managers.



Automated Investment Platforms

Robo-advisors are digital platforms that provide automated investment advice using algorithms and AI. They help companies manage surplus cash and pension funds efficiently.



Benefits

These platforms offer low-cost, systematic investment strategies with features like portfolio rebalancing and risk estimation, while still allowing human oversight for major decisions.

01 Open Banking

Open banking allows secure access to bank data through APIs, enabling software systems to communicate with each other and integrate financial data seamlessly.



02 Benefits for Finance Teams

This reduces manual data entry, improves the timeliness of information, and allows AI tools to work with live data, creating a more connected financial ecosystem.

03 Enhanced Connectivity

Open banking makes financial systems more responsive by enabling real-time data exchange between accounting systems, cash management tools, and bank accounts.



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Case Studies



Manufacturing Company

A medium-sized manufacturing company producing home appliances faced inaccurate sales forecasts, leading to inventory imbalances, high storage costs, and lost sales.

Problem Impact

The instability caused by inaccurate forecasts increased storage costs and led to stockouts, affecting customer satisfaction and overall financial performance.

AI Solution

The company decided to implement an AI-based forecasting solution to improve accuracy and support better production planning, cash budgeting, and financing decisions.



Implementation

The AI model used historical sales, retailer orders, promotions, and economic indicators to generate weekly 12-month forecasts with different scenarios.



Results

Within one year, forecast accuracy improved from 70% to 90%, reducing inventory levels by 20% and lowering emergency borrowing costs.



Financial Benefits

AI forecasting directly supported financial management by improving inventory control and cash flow planning, reducing costs and risks.



Human Oversight

Managers must still monitor the model's performance and ensure forecasts make sense in real-life situations, especially during unusual events.



Key Lesson

Better data and smarter models can significantly enhance financial decision-making, but human judgment remains essential.

Case 2 – Digital Payment Background

Retail Chain

A retail chain with physical stores and an online shop faced slow checkouts, delayed sales visibility, and reconciliation difficulties.

Customer Experience

Customers complained about long checkout times, and the finance team struggled with manual reconciliation and delayed cash collection.

FinTech Solution

The company adopted digital payment platforms like Square and Stripe to improve checkout speed and financial reporting.



Implementation

The digital payment platforms provided modern card readers, contactless payments, and automatic sales recording into a cloud-based accounting system.

Process Changes

Sales data flowed into real-time dashboards, and the system integrated with inventory management to update stock levels automatically.



Operational Efficiency

Checkout times decreased, leading to shorter queues and higher customer satisfaction. Daily cash reports became available within minutes.



Financial Visibility

**Bank deposits became more predictable, aiding short-term cash planning.
Reconciliation of cash and bank records improved significantly.**

Key Lesson

FinTech tools can enhance both operational efficiency and financial visibility, but require staff training and cybersecurity measures.

SME Lending

A financial company providing loans to small and medium enterprises faced slow, inconsistent underwriting and high default rates.

Loan Approval Process

Loan officers made decisions based on financial statements and interviews, leading to slow approvals and inconsistent outcomes.

AI Solution

The company introduced an AI-based credit scoring system to improve risk assessment and lending decisions.



Implementation

The AI model used financial ratios, bank transactions, payment behavior, and alternative data to assign risk scores to loan applications.



Process Changes

Loan officers received detailed risk reports and scenario analyses, speeding up the decision process and making it more consistent.



Financial Benefits

Default rates decreased, and risk-adjusted returns improved. Approval times dropped from days to hours, enhancing customer satisfaction.

**Fairness and Validation**

The company regularly validated the model to ensure it did not unfairly discriminate against certain customer groups.

**Key Lesson**

AI can greatly support risk management and lending decisions by leveraging rich data, but ethical considerations and model validation are crucial.

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Risks & Ethics

01 Data Quality

AI models are only as good as the data they are trained on. Incomplete, biased, or outdated data can lead to incorrect predictions and decisions.



02 Technical Failures

Technical issues such as software bugs or network problems can delay payments or cause wrong reports, impacting financial operations.

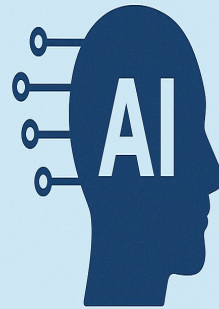
03 Backup Procedures

Financial managers must plan for backup procedures and regular checks of model performance to mitigate the risks associated with technical and data limitations.



Ethical Concerns

Ethical issues arise when AI models treat people or companies unfairly, such as by rejecting loans to certain groups more often without a valid reason.



Ethical
Concerns



Regulatory
Compliance

Ethical
Concerns

Regulatory Compliance

Regulators may require companies to explain how their AI models make decisions. Financial managers must ensure transparency, fairness, and respect for privacy when using AI and FinTech solutions.

Importance of Human Judgment

Even with advanced AI and FinTech tools, human judgment remains essential in financial management. Managers must interpret model outputs and consider qualitative factors that data may not capture.

Future Skills

Future financial managers need a mix of skills, including understanding technology, being comfortable with data, and having strong financial theory and ethics.

Collaboration

The best results come when people and machines work together, each doing what they do best. Human oversight ensures responsible and effective use of technology.



Future Manager

Imagine yourself as a future financial manager adopting AI and FinTech tools. Consider potential fears, how to address them, and the skills needed to stay relevant in a technology-driven financial world.



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Introduction to Working Capital



Thank You