

Digital Transformation (DT) and Innovation

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Course Framework: Course Overview

- **Why Study Digital Transformation**

- ❖ The imperative for digital leadership and the 70% failure rate challenge.

- **Definition & Impact of DT**

- ❖ Individual, corporate, and societal dimensions of digital transformation.

- **Historical Evolution**

- ❖ Five Historical Evolutions: accelerating pace of technological change.

- **From Industry 4.0 to 5.0**

- ❖ Platform economics to human-centric, sustainable value creation.

- **Three-Tier Progression Model**

- ❖ Digitisation → Digitalisation → Digital Transformation.

Course Framework: Course Overview, Cont.

- **The Three Pillars Framework**

- ❖ Technology, organisation, and value as the foundation of DT strategy.

- **Core Principle:**

- ❖ Digital transformation is not merely about technology adoption—it is a fundamental reimagining of how organisations create, deliver, and capture value in an interconnected world.

The Imperative : Why Study Digital Transformation?

The Critical Challenge:

- Every organisation today is a technology organisation—whether it sells coffee, manufactures automobiles, or delivers healthcare. Yet **70% of digital transformations fail** , not due to technology limitations, but because organisations struggle to transform structures, cultures, and business models.
- This course addresses the **single greatest point of failure** : the communication gap between business leaders (who lack technical fluency) and technologists (who lack strategic context).
- **70% Value Creation by 2030** :Will be based on digitally enabled platform business models.
- **87% Executive Skill Gap** :Report digital leadership skill gaps within their organisations.

The Imperative : Why Study Digital Transformation?, Cont.

What You Will Learn:

- **Lead, not follow:** Diagnose digital opportunities and lead transformation initiatives.
- **Bridge the gap:** Build fluency on both business and technology sides.
- **Navigate shifts:** Understand AI, cloud, and platform ecosystems as structural changes.
- **Avoid hype:** Distinguish genuine transformation from "innovation theater".

Unifying Framework:

DT connects strategy, operations, marketing, and finance—transforming isolated concepts into an integrated business system view.

Definition & Impact - Impact of Digital Transformation: Three Dimensions

- **Individual Impact:** DT fundamentally alters daily behaviors, consumption patterns, and personal interactions with services and organisations.

❖ **Reflection Questions:**

- Think about the last five things you paid for. How many involved a physical transaction?
- How did you and your family book travel 10 years ago versus now?

❖ **Key Shift:** From physical to digital-first interactions in commerce, communication, and services.

- **Corporate Impact:** organisations face both opportunities and risks—successful DT creates competitive advantage; failed DT destroys value and customer relationships.

❖ **Positive Impact :** Enhanced efficiency, personalised customer experiences, new revenue streams.

❖ **Negative Impact :** Loss of human connection, brand dilution, operational failures.

❖ **Reality Check:** 70% failure rate means most DT initiatives fail to deliver expected value.

Definition & Impact - Impact of Digital Transformation: Three Dimensions, Cont.

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❖ **Key Shift:** From physical to digital-first interactions in commerce, communication, and services.

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Definition & Impact - Impact of Digital Transformation: Three Dimensions, Cont.

- **Societal Impact** : DT drives structural shifts raising critical questions about equity, resilience, and privacy in the digital age.
- ❖ **Equity Concerns** : Social exclusion, economic stratification—can all members access essential services digitally?
- ❖ **Resilience Issues** : Vulnerability to internet outages, power disruptions, cyber attacks
- ❖ **Privacy Risks** : Government surveillance utilizing private data, data misuse
- ❖ **Critical Question**: Can elderly, rural populations, and small businesses access essential services without relying on digital payments?

Corporate Case Studies : Corporate DT Impact: Lessons from Success & Failure

Starbucks: Siren System Failure- The Automation Push That Destroyed Connection.

- **What Happened:** Starbucks implemented automated drink machines to streamline production and reduce labor costs, aiming for faster service and greater efficiency.
- **Negative Outcomes:**
 - ❖ Customers felt the experience was cold and transactional.
 - ❖ Destroyed the emotional connection that built brand loyalty.
 - ❖ The famous "3rd place" café vibe was lost.
 - ❖ Technical faults in machine design were not easily fixed.
- **Lesson Learned:** Technology must enhance, not replace, human-centered experiences.
- **Solution:** Put back the human-centered operation.

Corporate Case Studies : Corporate DT Impact: Lessons from Success & Failure, Cont.

Starbucks: Mobile App Success-Personalisation at Scale

- **What Happened:** Starbucks developed one of the world's most successful digital loyalty programs, deeply integrated with Starbucks Rewards and mobile ordering.
- **Success Factors:**
 - ❖ **Order ahead:** Skip the line by placing orders before arriving.
 - ❖ **Personalised offers:** AI tracks behavior for targeted promotions.
 - ❖ **Geofencing:** Notifications when near a store.
 - ❖ **500+ customisation options:** "True No Sugar" personalisation.
- **Key Insight:** Technology that enhances customer agency and personalisation while maintaining brand essence drives loyalty.

Corporate Case Studies : Corporate DT Impact: Lessons from Success & Failure, Cont.

TikTok: The Platform That Lost Its Soul

- With ownership changes, TikTok became flooded with brand sponsorship and TikTok Shop aggressive commercialisation. The platform alienated its core Gen Z user base by prioritizing ads over authentic content.

Result: Users felt the "For You" algorithm became more about pushing products than discovery. A 2026 survey showed 80% of users missed the old days, and uninstalls rose by 150%.

Lesson: Ignoring user experience for monetisation destroys authenticity and platform value.

Societal Dimension - Societal Impact: Equity, Resilience & Inclusion

- **The Inclusion Challenge:** Digital transformation often creates **structural shifts that may not be socially inclusive**, raising critical questions about who benefits and who is left behind.
- **Vulnerable Groups:**
 - ❖ Elderly populations
 - ❖ Remote rural areas
 - ❖ Undocumented immigrants
 - ❖ Small businesses
 - ❖ Street vendors
 - ❖ Rural cooperatives
- **Critical Question:** Can all members of society—regardless of age, income, or technological literacy—access essential goods and services without relying on digital payments?

Societal Dimension - Societal Impact: Equity, Resilience & Inclusion, Cont.

Nepal's eSewa : Inclusive Digital Payment Platform

- Launched in 2009 as Nepal's first digital wallet, eSewa pioneered utility bill payments, mobile top-ups, and government services.

Innovation: Developed QR code payments specifically for **informal and small businesses** , enabling street vendors and micro-enterprises to accept digital payments.

10M+ Users	30M Population	33% Coverage
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SOCIETAL DIMENSION - Societal Impact: Equity, Resilience & Inclusion, Cont.

India's JIO : Transforming National Digital Infrastructure

- Founded in 2016 by Ambani, JIO solved India's mobile internet problem and created a customer base for an entire digital ecosystem (JIOMart, JIOCinema).
- **Impact:** Accessible to **low-income populations** . Rural internet subscribers grew by 44% (2021-2025), adding nearly 130M new users.

500M+ Subscribers	50% Market Share	+130M Rural Users
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Three Key Concerns:

- **Equity** : Social exclusion, economic stratification.
- **Resilience** : Vulnerability to disruptions.
- **Privacy** : Government surveillance risks.

Historical Context- Historical Evolution: Five Industrial Revolutions

We are currently in transition from the 4th to the 5th Industrialisation. **Digital Transformation is enabling this transition.** The more revealing question is: how did each revolution change the way value was created, delivered, and captured?

- **1.0 (1760s-1840s)**

- ❖ **Steam & Mechanisation:** Steam engine, Water power, Textile manufacturing, Factory system.

- ❖ **Value:** organisation and scale substituted for individual craft skill.

- **2.0 (1870s-1914)**

- ❖ **Electricity & Mass Production:** Electric motor, Steel production, Assembly line, Telegraph/telephone.

- ❖ **Value:** Integration, vertical control, and mass market creation.

Historical Context- Historical Evolution: Five Industrial Revolutions, Cont.

- **3.0 (1960s-2000s)**

- ❖ **Computing & Internet:** Transistor, Microprocessor, Personal computer, World Wide Web.

- ❖ **Value:** Information processing and knowledge economy emergence.

- **4.0 (2010s-Present)**

- ❖ **AI, IoT & Platforms:** Artificial intelligence, Cloud computing, Big data analytics, Platform ecosystems.

- ❖ **Value:** Data networks, learning systems, and platform economics.

- **5.0 (2020s-Present)**

- ❖ **Human-Machine Symbiosis:** Explainable AI, Collaborative robots, Bio-cognitive interfaces, IIoT

- ❖ **Value:** Human-centric, sustainable, and resilient value creation.

Historical Context- Historical Evolution: Five Industrial Revolutions, Cont.

- **Accelerating Pace:**

- ❖ Time between revolutions is shrinking dramatically: 110 years → 90 years → 50 years → 10 years.
- ❖ Each transition adds new value layers while shifting where primary competitive advantage resides.

Value Evolution- Industry 1.0-3.0: From Skill to Information

Industry 1.0 (1760s-1840s): Steam, Mechanisation, and the Birth of the Factory

- **Pre-Industrial Value Logic:** Value created through **craft skill and time** , embedded in individual workers. Production was slow, variable, and limited by human capacity.
- **New Value Logic:** Value moved from individual skill to the **system** —machinery, factory organisation, input/output management.
- **Scale as advantage:** Cost per unit fell dramatically.
- **Standardisation:** Created new markets with affordable goods.
- **Capital over labor:** Machine owners captured disproportionate value.
- **Key Insight:** organisation and scale could substitute for skill.

Value Evolution- Industry 1.0-3.0: From Skill to Information, Cont.

Industry 2.0 (1870s-1914): Electricity, Steel, and Mass Markets

- **The Constraint:** Large factories could produce enormous volumes, but distribution and coordination became the fundamental constraint.
- **New Value Logic: Mass production required mass consumption.** Value created by producing efficiently AND creating/sustaining mass markets.
- **Ford's Model T:** Assembly line reduced production from days to 93 minutes.
- **Rockefeller's Standard Oil:** Vertical integration controlled 90% of refining.
- **Taylorism:** Scientific management optimised every motion.
- **Brand emergence:** Coca-Cola invested more in advertising than any company.
- **Key Insight:** Scale, integration, and market creation were inseparable.

Value Evolution- Industry 1.0-3.0: From Skill to Information, Cont.

Industry 3.0 (1960s-2000s): Computing, Internet, and Information as Value

- **The Shift:** Unlike previous revolutions focused on **physical goods**, Industry 3.0 transformed the production, storage, processing, and communication of **information**.
- **New Value Logic:** Information itself became an asset. Competitive advantage shifted from physical assets to knowledge, data, and intellectual property.
- **Automation of cognitive work:** IBM mainframes processed payroll, inventory, financial data.
- **Knowledge economy:** Peter Drucker's "knowledge worker" emerged.
- **Software as value:** Microsoft's Windows ran on 90%+ of PCs.
- **World Wide Web:** Amazon, eBay, Google created new value models.
- **Key Insight:** Ability to process and leverage information creates competitive advantage.

Value Evolution- Industry 1.0-3.0: From Skill to Information, Cont.

Evolution of Value Creation:

- From **skill embedded in craftspeople** → **scale embedded in factories** → **integration in supply chains** → **intelligence in information systems** .
- Each layer adds new sources of value.

Industry 4.0: Intelligence, Connectivity & Platforms

The Platform Economy Era: Industry 4.0 is not about any single technology but about the **value created when technologies work together in integrated systems** —AI, cloud, IoT, big data, and blockchain.

- **Data as Primary Raw Material:** Data does not deplete when used—it becomes **more valuable as it accumulates**, creating powerful network effects. Amazon's recommendation engine exemplifies this logic.
- **Platform Economics:** Platforms create value by facilitating interactions between groups rather than producing goods directly:
 - ❖ **Airbnb:** No hotels owned
 - ❖ **Uber:** No cars owned
 - ❖ **Alibaba:** No inventory held
- Value created by reducing transaction costs between buyers and sellers.

Industry 4.0: Intelligence, Connectivity & Platforms, Cont.

Key Value Creation Mechanisms:

- **Personalisation at Scale:** Industry 4.0 dissolves mass markets by enabling tailoring to individual preferences without mass customisation cost penalties.
- **Cyber-Physical Systems:** Smart factories where machines communicate, supply chains managed by AI, and production adjusts automatically to conditions.
- **Network Effects:** More users → better predictions → more users → more data, creating self-reinforcing competitive moats.
- **Value Capture Strategies:**
 - ❖ **Transaction Fees:** Percentage of each transaction.
 - ❖ **Premium Access:** Charging for enhanced features.
 - ❖ **Data Monetisation:** Selling insights from interactions.

Industry 4.0: Intelligence, Connectivity & Platforms, Cont.

- ❖ **Advertising:** Monetizing aggregated attention.
- **China's Advanced Expression:**
- ❖ **WeChat Super-App:** Messaging → payments → medical appointments → government documents → investments.
- ❖ **CATL Lighthouse Factories:** AI, digital twins, IIoT for exceptional productivity, quality, and sustainability.
- **Key Insight:**
- ❖ The most valuable assets are no longer physical or informational—they are **relational and predictive**.
- ❖ Value accrues to those who aggregate connections and learn continuously from data.

Industry 5.0: Human-Centric & Sustainable

The Paradigm Shift: Industry 5.0 moves beyond Industry 4.0's automation to redefine the **relationship between humans and technology**. It is characterised by **collaborative intelligence**, where advanced tech augments human capabilities rather than replacing them.

- **European Commission Vision (2021):** Called for a model aligning technological capabilities with a "**sustainable, human-centric, and resilient**" agenda—placing human well-being and ecological sustainability at the core of innovation.

• **Sustainable**

Human-Centric

Resilient

How Value is Created:

- **Sustainability as Strategy:** Circular economy principles—modular products for easy repair and recycling minimise waste and create competitive advantage.
- **Human Skills as Premium Assets:** As machines handle repetitive tasks, uniquely human skills—empathy, creativity, ethics, adaptability—become primary innovation drivers.
- **Purpose-Built Technology:** AI in healthcare analyses patient data, allowing doctors to focus on compassionate care—creating value through improved outcomes.

Industry 5.0: Human-Centric & Sustainable, Cont.

Enabling Technologies:

- **Collaborative Robots (Cobots):** Work alongside humans, handling mundane tasks to free workers for creative thinking.
- **Explainable AI (XAI):** Transparent systems where humans understand AI logic, fostering genuine collaboration.
- **Digital Twins:** Virtual replicas for safe experimentation and predictive maintenance with human oversight.
- **IIoT & Distributed Ledgers:** Real-time sustainability tracking and blockchain transparency in circular supply chains.

Challenges & Drawbacks:

- **Digital Divide:** Technological exclusion between those who can access digital tools and those who cannot.

Industry 5.0: Human-Centric & Sustainable, Cont.

- **Ethical & Privacy Risks:** AI misuse, facial recognition, biased decision-making, privacy violations
- **Regulatory Lag:** Laws outpaced by innovation speed, creating accountability vacuums

A Call to Action:

- Industry 5.0 asks us to steer technological progress not just for greater efficiency, but for greater humanity —ensuring progress is both intelligent and responsible.

Three-Tier Progression: From Conversion to Reimagination

- **Digitisation, Digitalisation, and Digital Transformation** are often used interchangeably, but they represent **distinct concepts and levels of impact**.
- Understanding the difference is fundamental to any DT strategy.

Digitisation (Converting):

- **Definition:** Converting **analog information into digital format**. Purely technical—nothing about how work is done actually changes.
- **Examples:**
 - ❖ Scanning a paper document.
 - ❖ Entering a paper ledger into a spreadsheet.
 - ❖ Converting photos to digital files.
- **Scope:** Information is now digital, but the logic is identical.

Three-Tier Progression: From Conversion to Reimagination, Cont.

Digitalisation (Improving):

- **Definition:** Using **digital data and tools to improve or automate existing processes**. The process changes and becomes more efficient.
- **Examples:**
 - ❖ Online payment system replacing cash counter.
 - ❖ Hospital software managing patient records.
 - ❖ E-commerce platform for existing retail.
- **Scope:** Process optimisation, but business model remains the same.

Definition: A **fundamental rethinking of how an organisation creates and delivers value**, using digital as the enabler. This is reinvention, not improvement.

Three-Tier Progression: From Conversion to Reimagination, Cont.

- **Examples:**

- ❖ Restaurant → "personalised food experience business".
- ❖ AI-powered app with subscription model.
- ❖ Business model, value proposition, and customer.
- ❖ relationship fundamentally reinvented.

- **Scope:** organisational structure and culture shift too.

Restaurant Analogy:

- **Digitisation:** Replace paper notepad with digital tablet for taking orders
- **Digitalisation:** Full POS system sending orders to kitchen, tracking inventory, analyzing sales data.
- **Digital Transformation:** Launch AI-powered app learning preferences, cashier-less entry, subscription mode.

Strategic Framework: The Three Pillars Framework

Digital transformation requires a holistic approach across **three interconnected pillars** . Success depends on aligning technology capabilities, organisational readiness, and customer value creation.

Technology: Knowledge of Technology.

- **The Trigger:** Leaders must have **digital know-how** to make informed decisions. It's not just about buying tools, but understanding their strategic potential.
- **Key Technologies:**
 - ❖ Artificial Intelligence
 - ❖ Cloud Computing
 - ❖ Internet of Things (IoT)
 - ❖ Blockchain
- **Impact:** Companies with digitally savvy boards achieved a **17% increase in profits**.

Strategic Framework: The Three Pillars Framework, Cont.

Organisation: Change in Capabilities.

- **The Human Side:** Addresses **human and structural change**. Requires fast skill acquisition and viewing the organisation as an interconnected system.
- **Key Capabilities:**
 - ❖ Agility and adaptability
 - ❖ Cross-functional collaboration
 - ❖ Continuous learning culture
 - ❖ Systems thinking
- **Alignment:** Strategy, structure, and culture must support new digital ways of working.

Strategic Framework: The Three Pillars Framework, Cont.

Value: Customer-Centric Focus.

- **The Ultimate Goal:** Technology and organisational changes must converge to create **measurable value** , most often defined by enhanced customer experience.
- **Value Creation:**
 - ❖ Enhanced customer experience
 - ❖ Data-driven insights
 - ❖ Operational optimisation
 - ❖ New value propositions
- **Focus:** Using data and insights to improve customer relationships and deliver new value.

Strategic Framework: The Three Pillars Framework, Cont.

Integration is Key:

- The three pillars are interdependent.
- Technology without organisational change fails.
- organisational change without customer value is pointless.
- Customer value without technology is unsustainable.

Learning Journey: Course Structure & Learning Journey

Course organisation:

This course is organised around the three pillars of Digital Transformation , providing a comprehensive framework for understanding and leading DT initiatives.

Platform Business Model

- Value / Customers

Design Thinking & Agile Management

- Organisation / Management & Culture

Technology and Strategy

- Technology / Data

Learning Journey: Course Structure & Learning Journey, Cont.

AI and Its Impact

- Technology

Ethics

- Value /Culture

Conclusion & Assignment Discussion

- Entrepreneurship Project

Learning Journey: Course Structure & Learning Journey

What You Will Achieve

- **Lead Transformation**

- ❖ Diagnose digital opportunities and lead transformation initiatives, not merely execute tasks.

- **Bridge the Gap**

- ❖ Build fluency on both business and technology sides—the single greatest point of failure in DT.

- **Navigate Shifts**

- ❖ Understand AI, cloud, and platform ecosystems as structural shifts, not mere trends.

- **Avoid the Hype**

- ❖ Distinguish genuine transformation from "innovation theater"—a skill that saves billions.

Final Deliverable: Entrepreneurship Project applying DT framework to real-world business challenge.

Key Takeaways

- **Digital Transformation is not a trend**—it's the latest chapter in a 300-year pattern of technological disruption.
- **Value creation logic has shifted** from skill → scale → integration → intelligence → learning embedded in networks.
- **Bridge the business-technology gap**—the single greatest point of failure in digital transformation initiatives.
- **Navigate Industry 4.0 to 5.0** with human-centric principles—sustainable, empathetic, and resilient innovation.
- Success requires understanding where value is now created and captured in a world defined by Industry 4.0-5.0 logic, and making the changes in technology, business model, culture, and leadership necessary to participate in that new value landscape.

Ready to Lead the Digital Revolution?

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Thank you



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