Product & Service Design Unit 1_V3.docx

Product & Service Design_BBA_3

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trn:oid:::3618:127370056

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File Name

Product & Service Design Unit 1_V3.docx

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Unit 1: Foundations of Product & Service Design

Learning Objectives

1. Distinguish between product design and service design both in terms of outcomes, user experiences, and their processes.
2. Use lifecycle thinking to evaluate the life cycle business and environmental implications of design decisions.
3. Explain the fundamentals of human centered design and how it can be used to solve complex, real world problems.
4. Drill down into case studies and see the best practices for services and products
5. innovation.
6. Employing frameworks such as the Double Diamond, VPC and BMC to workaround my design process.
7. You can use a simple service blueprint and business model canvas to model UX experiences and your value proposition.

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1.0 Introductory Caselet

Café Nova by Crossroads: Design for Taste or Experience?

Background:

Novadine is active in several U.S. cities. Working its way with sophisticated concoctions and sleek designs, the label has made a niche with professionals as well as little ones. But as the competition heats up, there's a change of heart from Café Nova's management.

Recent customer feedback appears to go both ways: “Yes, the coffee is great,” some people say; for others it’s about the atmosphere as much as anything else (the small bites and friendly baristas). And now management has a choice – keep spending on product innovation (eg, elusive beans and new brew methods or sustainable packaging) or quality experience (eg, train customer employees to design services, change the store layout, build more app functionality)?

For Camé Nova, its product-development team must decide which of these two roads to follow and do a little soul-searching about their company’s brand values, long-term growth plans and customer satisfaction ambience.

Critical Thinking Question:

As a product designer how you, guide Café Nova on the balancing of product innovation and service innovation? Which frameworks or applications might help to identify what is important for customers and link these to business objectives?

1.1 Product vs Service Design

Design is fundamental to how businesses deliver value to customers. No matter whether it is a physical product, digital tool or intangible service, the principles of design can be used to be sure that what you offer meets user needs. However, the design of a product and a service are different disciplines with other methodological ways to work on, aims and outputs.

The two concepts and relationship between them are explained in detail in the following sections.

1.1.1 Definition of Product Design

Product design is a strategic and creative process that revolves around envisioning, planning, and creating a product – be it tangible or digital – that bridges a gap in the market by resolving an issue for its intended users. It's a process that spans all the way from exploring an idea to manufacturing, including researching, ideating and iterating upon prototypes. The practice draws on many different disciplines, including engineering, aesthetics, psychology, and human-centered design to provide solutions that are easy to use (user-friendly), effective and visually appealing.

Product design is intrinsically a user-centred activity, and the wants, needs and constraints of users should be taken into account throughout the design process. A good product design combines user satisfaction with technical viability and economic profitability.

Key Aspects of Product Design

Product design stakeholders often fixate on a tiny minority of the important stuff that results in product development:

• Usability: How easy and practical the product is to use.

• Performance: Does it do the job?

• Appearance: How dainty the product looked, how fancy it felt.

• Comfort and Safety: The comfort, safety as well as interaction ease with the product.

• Sustainability: How much materials and manufacturing methods are committed to, or not committed to, the environment.

• Effective: Quality on time and in budget.

• Production practical: The solution can be made using the available technology and resources.

Figure 1.1

Categories of Product Design

Generally, product design can be divided into three maintypes:

Industrial/Physical Product Design: Design of physical products including electronics, appliances, tools and consumer goods.

Digital Product Design: The design of digital interfaces and experiences for software that runs on mobile apps, websites, or digital platforms.

Service and System Design: It covers the design of workflows processes, systems in service based settings (e.g., transportation system, healthcare services).

Examples of Product Design

• A stylish, ergonomically designed smartphone that comes with high performance.

• A perfect portable insulated water bottle that durable, portable and thermal.

• A mobile app designed with a user interface that is clean and easy to use, intuitive access points, and seamless navigation.

• SAFE, SIMPLE, AFFORDABLE MEDICAL DEVICE.

Methods and Tools in Product Development

Nowaday product designers have different tools that help design the process using:

• Detailed design and analysis software – such as CAD.

• Wireframes and Mockups – to design and visualize interface structures.

• Prototyping with 3D printing or digital tools for form and function testing.

• User Testing and Feedback Loops to iterate on the design with real-world use.

Importance of Product Design

Great product design is crucially important to improving user experience, differentiating your product in the market, and ensuring the success of your company. It is the bridge between technology and human need, ensuring that solutions are not only possible, but also worth creating. In addition, good design often leads to higher levels of customer satisfaction, lower production costs, and a more powerful brand image.

1.1.2 Definition of Service Design

Service design is an interdisciplinary approach seeking to develop, plan and organize people, infrastructure, communication and material in order to improve the quality and the interaction between the service provider and customers. In the end, we want to build services that are valuable, usable and delightful for users while being efficient, scalable and effective from our company's perspective.

Service design is distinctive from product design in being more experience and interaction focussed. It takes a system thinking approach to services, seeing them as whole systems that we see (in the dimensions that users interact with) and do not see (the things happening in the background).

Key Characteristics of Service Design

Service design is based on human-centered and systems thinking. Some of its key features are:

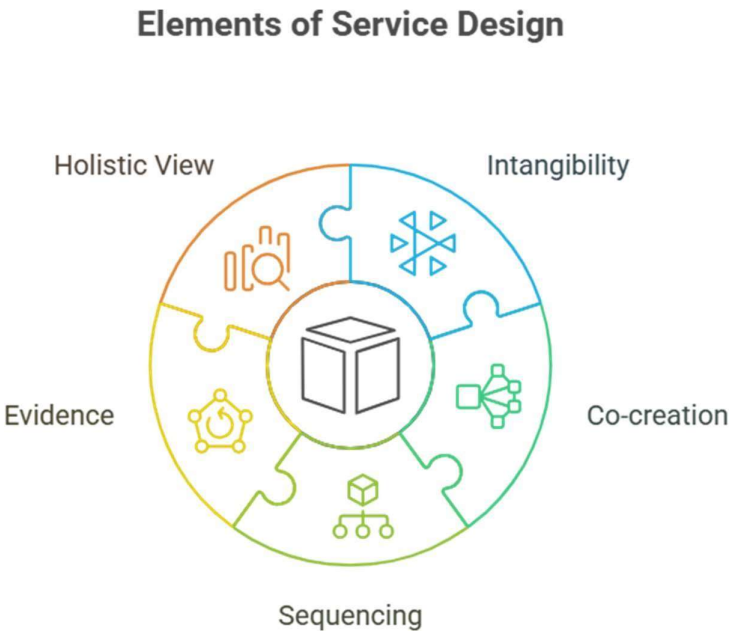

Figure 1.2

• Intangibility: Services are not physical goods, but forms of action or performance.

• Co-design: involving users, stakeholders and providers in design to make it relevant and usable.

• Sequencing: Services happen over the course of time, usually involving several steps or stages as customers progress through them.

• Evidence: Though services cannot be physically felt, evidence of their delivery is often apparent (e.g., invoices, tickets, timesheets).

• Systemic (or Holistic) perspective: Service design considers the entire ecosystem of a service; so does this include both frontstage, and backstage (like all supporting activities such as staff work routines and tech infrastructure).

Key Aspects of Service Design

Service designers also narrow the focus down to a specific set of factors that significantly influence the service experience:

• Customer Journey Map: A user and product or service interaction visualisation, that emphasises pain points and opportunities for improvements.

•Touchpoints: Proximity of potential clients to the service (e.g. a mobile app, help desk and email).

• Backstage Processes: These are the internal processes, policies and behaviors of the staff that is necessary to delivering a service that remains hidden from the customer.

• User Personas: Fictional characters that are research based but generalized representations of target customers and what they need.

• Service Blueprints: Detailed diagrams about how a service is being delivered in front stage as well as backstage, that aid towards finding dependencies and bottlenecks.

Importance of Service Design

Service design is one of the components needed to establish unified, frictionless and effective experiences across channels and touchpoints. In the current global and more service-oriented economies, which are becoming increasingly competitive with the passage of time, it is definitely the design of organizations around which well designed services need to revolve:

• Improve customer satisfaction and loyalty

• Reduce operational inefficiencies

• Enhance employee experience and engagement

• Promote creativity through a close understanding of clients' requirements

• Provide services that are inclusive and accessible Service Design Case Uses

Airport check-in flow: Making the experience at airport right from exception cases between baggage drop-in and post security checks with lesser wait times and clearly signposted segments.

• Hospital Patient Journey: Improving the patient experience from appointments, through diagnostics and to discharge with better scheduling and communication.

• Retail Customer Support: Establish a multi channel support within it, in which you can move between chat, phone, and email that has the same level of quality.

• Banking Solutions: Rethinking the online and branch experience to deliver seamless hand-off from digital banking to in-branch and vice-versa.

Public transport: Synchronizing scheduling, mobile applications, signage and ticketing in a manner that enhances both accessibility and user mobility.

Methods and Tools for Service Design

In order to provide service-focused and effective services, the creative people use a variety of tools and methods:

Tool	Purpose
Personas	Represent target user types, their goals, and behaviors
Journey Maps	Visualize user experience across all service stages
Service Blueprints	Map frontstage and backstage elements of a service
Stakeholder Maps	Identify all actors involved and their roles
Scenario Building	Explore different use cases and outcomes
Prototyping	Test service concepts before full-scale implementation
Workshops and Co-Creation Sessions	Involve stakeholders in ideation and problem-solving

There is an increasing significance of service design across various sectors, such as health, transport, finance, education and digital services - where users have high expectations and competition is strong. A well- designed service doesn't just help the user, however, it creates value that businesses can measure.

1.1.3 Contrasts between Products and Services

While both product and service design intend on satisfying user needs, they are different in many ways:

Aspect	Product Design	Service Design
Tangibility	Deals with physical or digital items	Deals with intangible experiences
Deliverable	A final product (e.g., phone, app)	A process or experience (e.g., customer support)
User Interaction	User interacts with the object or interface	User interacts with people, systems, and environments
Ownership	User owns the product	User accesses or consumes the service
Consistency	Product is usually consistent once produced	Service may vary depending on people or time
Production and Delivery	Produced before use	Delivered at the same time as consumption

For example, buying a phone is a product experience, while calling customer support after purchase is a service experience.

1.1.4 Overlaps and Integration of Product & Service Design

1.1.4 Interactions and Integration of Product C Service Design

Today the distinction between product design and service design is getting less clear in the world of business. Though customer requirements are not so easy to manage, companies are no longer selling it customers products or services – they‘re providing them with integrated solutions that incorporates both. This intersection is fuelled by a shift to experience-driven value creation focused on the end-to-end customer journey, not just in isolated touchpoints.

The combined approach is more common in digitally-enabled or technology-heavy industries, and many companies now physically create goods as well as peripheral products that tie in with their tech offerings.

services. Consequently, a Product-Service System (PSS) – an integrated offer of product and service —is created that can be value-added.

Understanding the Integration

Product vs Service Design The design of products and services used to serve separate purposes:

• Other designer artifacts, physical or digital.

• Experience and its provisioning systems are designed at the service level.

But in reality there is a great deal of overlap among these functions. Effective integration assures that the visible and invisible intersect seamlessly-the user-related needs are fulfilled in all phases of interaction (pre-use, use, post-use).

Key Drivers of Integration

• Consumer Centricity: The modern customer wants frictionless, always-on experiences.

• Technology(Digital Transformation): Today technology based products/services similar to an app do not lie idle as one sees them in their hand like an old generation product, it is “always on”.

• Subscription and Platform Business Models -Recurring services attached to physical or digital products.

• Sustainable Aspirations: PSS support ought to be centred on a conspicious non-consumption (my sentence) – we have not failed despite the purchasing failure.

Examples of Product-Service Integration

Examples of Product-Service Integration

Product	Integrated Service	Description
Fitness Tracker (e.g., Fitbit)	Mobile app with health analytics, coaching, and social sharing	Enhances user engagement and adds value beyond the device itself
Smart Car (e.g., Tesla)	Over-the-air updates, roadside assistance, navigation, and autopilot features	Combines cutting-edge technology with personalized service support
E-Commerce Platform (e.g., Amazon)	Delivery, tracking, customer support, returns, and Prime services	Product and service are part of a single ecosystem

Consumer Electronics (e.g., Apple devices)	iCloud storage, AppleCare, and device syncing	Seamless experience through integration of hardware, software, and services
Home Appliances (e.g., smart refrigerators)	Mobile app control, energy monitoring, customer support	Enables better management and servicing of the product

The Role of Product-Service Systems (PSS)

And PSS is a business or design model in which products and/or services are integrated to provide more comprehensive solutions for the customer. Product Ownership vs Access and Use to reframing away from the (disposable goods) model The idea is to aim for a model where value flows through into service(s) around [the initial] product.

Types of PSS:

Product-centric: Product only, with optional services offered (e.g. maintenance plans).

Usaged-Based: The product is owned by the company and used through a rental or sharing (carsharer) arrangement.

Outcome-based: You will be paid for the outcome and not for product, (e.g. Managed Printing Services.

Benefits of Integration

• Improved UX – Smooth integration between product and service learnings.

• Better Customer Retention: The more that customers continue to engage with services, the more loyal they tend to be.

• Barriers to Entry: Full-service solutions are harder to replicate act as a market differentiator.

• Sustainability and performance: Encourages reuse, repair and performance based consumption.

• Platform/subscription Scalable Models: scales functional or recurrence models are built in to the business through subscription & platform strategies.

Challenges in Integration

• Collaboration: It requires a cross-functional effort, with design and marketing working jointly with engineering and customer service.

• Complexity in Designing: Design for (a) physical; and (b) psychological suggests the complexness in designing.

• Consistent Branding: Product /Service in sync with brand values and expectations of the user & target audience.

Designing for the complete user experience

A home run mix depends on an intimate knowledge of the full user journey that could include discovery, purchase, usage and support through renewal. Designers must be accountable for mapping every single journey and ensure that all those are balanced with the product/service boundary; making it coherent and valuable.

Tools commonly used:

• Customer Journey Maps

• Touchpoint Matrices

• Service Blueprints

• Experience Prototypes

• Cross-disciplinary Design Sprints

1.2 Lifecycle Thinking C Business Impact

A Life Cycle view on the other hand is a strategic approach to model and analyse an entire life cycle of a product or service. From this perspective, companies have a seat at the table and can slice the bread differently through yes/no decisions that take into account profit history, customer value generation and sustainability. As we understand how products and services change over time, we can cut waste, keep costs in line build systems that are more resilient and responsible.

1.2.1 Concept of Lifecycle Thinking

Life Cycle Thinking LCT is a systematic approach that helps considering potential environmental and social impacts at every stage of the life cycle of a product, service or system. This is alternative to processes which collectively consider all stages, say from cradle to grave or more and more from cradle to cradle [industrial domain] rather than focusing separately on a single stage, say manufacture or use.

It usually includes: Extraction of raw materials Design and development Manufacture Production Packaging Distribution Use Maintenance

End-of-life disposal, recycling, or repurposing

A lifecycle view also colorsthat decision by offering leaders a way to anticipate impacts and choose before they invest in unsustainable, more costly or even unjust alternatives.

Key Aspects of Lifecycle Thinking

LCA thinking extends the range of analyses to:

• Environmental effects: Energy usage, carbon output, water consumption and recycled; materials extraction; waste production; pollutants.

• Economic: Total cost of ownership, maintenance and logistics, product recall and resource optimisation.

• Social: Working conditions, local effects, user well-being, availability of product and customer happiness.

Importance of Lifecycle Thinking

Life cycle thinking is required in many industries and for several reasons, when it can be demonstrated that these “delayed” effects are concealed in the past linear planning convention. It is especially relevant in:

• Product Design and Development: Assists with the design of long-lasting, repairable and recyclable products.

• Supply Chain Sustainability Strategy: Determines those parts of the supply chain where environmental impact can be reduced.

• Policy and Regulation: Resides with the Environmental Policy to ERT (Extended Manufacturers Responsibility To Tolero).

• Corporate Social Responsibility (CSR): Couples products and services to ethical employment and sourcing.

• Buying and Finance: Allows responsible procurement decisions as well as life cycle costing.

Lifecycle Stages and Examples of Impact

Lifecycle Stage	Example of Impact
Raw Material Extraction	Deforestation, energy consumption, biodiversity loss

Manufacturing	Emissions, toxic byproducts, labor practices
Transportation and Distribution	Fuel use, carbon footprint, packaging waste
Use Phase	Energy efficiency, maintenance needs, user safety
End-of-Life	Waste disposal, recycling potential, landfill impact

Among the tools and frameworks that promote a life cycle approach, several are those in which:

• LCA (Life Cycle Assessment) : A systematic technique to assess the environmental aspects and potential impacts associated with a product, by identifying and understanding the energy and material flows through each stage of a product life cycle.

• Carbon Footprint: A total amount of greenhouse gases produced directly and indirectly to support a product or service.

• Material Flow Analysis (MFA): Describing the flow of materials from one location to another in a system, usually with an eye on finding wastage, inefficiency or environmental intrusion.

• Life Cycle Cost (LCC): The total of all costs associated with acquition, operation and disposal.

• Social Lifecycle Analysis (S-LCA): Considers cultural and human issues throughout the lifecycle.

Benefits of Lifecycle Thinking

• Balanced decision making: Lets justification of the balance between trade-offs among the three dimensions of sustainability (i.e. environmental, economic and social).

• Green Innovation: Assists in development of products and services with reduced overall impact.

• Regulatory: Contributes to fulfilling environmental regulations and international standards (ISO 14040).

• Early risk exposure: It provides identifying risks of not performing or losing reputation at early stage in lifecycle.

• Competitive differentiation: Separates your product, brand or market from the rest through responsible design.

Real-World Application Example

• Motor Vehicles: Lifecycle thinking is incorporated to consider not only the emissions a vehicle releases during use (known as tailpipe emissions) but also in production (energy-intensive processes), material extraction or sourcing (either materials such as steel, or raw materials of materials like lithium for batteries), and end-of-life recycling.

• Electronics: Phone makers weigh material selections, energy consumption while charging and recyclability of parts to minimize impact along the product life cycle.

• Construction – Life Cycle Building products can be evaluated from a lifecycle perspective, that is, when one considers the impacts of raw material extraction (for example quarrying cement), through to demolition & disposal where appropriate raw materials are recovered for reuse or diverte to landfill.

1.2.2 Product and Service Life Cycle Phases

Products and services usually have few easily discernible stages. Although the model may differ by industry, there are generally the following stages:

Stage	Description
1. Design & Development	Conceptualizing the idea, research, prototyping, and planning.
2. Production/Launch	Manufacturing (for products) or implementation (for services).
3. Market Introduction	Bringing the offering to customers; often involves marketing and sales.
4. Growth	Demand increases; processes scale up to meet market needs.
5. Maturity	Sales level off; competition is high; emphasis on efficiency.
6. Decline	Use or demand decreases; the offering may be phased out or redesigned.
7. End-of-Life/Retirement	Product is disposed of, recycled, or replaced; services are redesigned or discontinued.

For services, additional attention is paid to **touchpoints** and **process updates**, as service delivery may evolve more dynamically than physical products.

1.2.3 Business Implications of Lifecycle Management

Strategy, operation and customer can be substantially influenced by lifecycle management. Key impacts include:

Cost Management – BMS budgeting are helped by understanding Lifecycle costs (Initial, Operational and Disposal).

Strategic Planning: Forecast the end of a product or service life cycle to plan for new strategies and redesigned products while avoiding obsolescence.

Risk Management: Being able to identify what could be lifecycle headaches (e.e. End of life, regulation changes) is a form of managing your day-to-day risks.

Customer retention: Building services that evolve over time, making it more likely the customer is using them years down the line.

Revenue: Lifecycle thinking can enlighten subscription models, maintenance contracts and any upgrades to extend value.

Asset Utilization: When you're dealing with expensive machinery, a lifecycle strategy can vastly improve uptime and provide higher ROI.

Brand Reputation: Sometimes, responsibly repairing or recycling LVC will not only save organizations money, but also enhance their brand.

1.2.4 Sustainability and Circular Economy Considerations

Cycle thinking and sustainability are associated with the idea of a circular economy. In contrast to typical linear economic model ("take–make–dispose"), a circular economy model aims to minimize the waste and maximize the reuse of value at all stages.

Key sustainability considerations include:

• Build things to last: “Products and services should be designed for longevity, use combined with ease of repair or upgrading.

•Resource saving : Reduced use of material and energy in production and during operation leads to less environmental impact.

• End-of-Life Planning: Considering what becomes of stuff that nobody wants anymore.

• Supply Substitution: Less material can be used if physical ownership can be replaced with services (e.g. leasing models, sharing models).

1.3 Human-Centred Design Principles

Human-Centred Design (HCD) is a way of problem solving and innovation that puts people at the center, considering the human needs, preferences, behaviors etc when designing a product or service. HCD doesn’t begin with features or technical requirements; it begins by understanding the mind of the human being and never loses sight of that perspective.

The approach is rooted in empathy, collaboration and iteration so that solutions are not only valid but also meaningful and usable by real users.

1.3.1 Importance of User Research, Persona and Empathy

User Research is a cornerstone of human-centred design. It means captures some of the experiences, motivations, and pain-points of target users using interviews (among other methods), observations, surveys and usability tests.

Personas are made-up, not real people, but based on actual user research. They are general users of the product or service, and they assist designers in concentrating on particular requirements, behaviours, and goals while designing.

Empathy is the capacity to recognize and feel emotions experienced by another person. In HCD, empathy allows designers to see the world as users do and reveal hidden needs or pain points that would otherwise receive less attention.

These three elements help teams:

• Avoid assumptions about users

• Keep your eye on what you can really fix

• Share user insights with the team

For example, a healthcare app team can develop a persona that is an older user who has weak vision and doesn't have much experience with digital technology. This helps the team carve more inclusive and approachable features.

1.3.2 Iterative Prototyping and Feedback Loops

In human-centered design the solutions rarely get built all at once. Instead, designers rely on what is called prototyping — creating bare-bones models or representations of the product or service, testing ideas and how effectively they work early in the process.

Iterative CI The process of building, testing and improving in loops. Each stitch has field-tested user feedback, for a solution that keeps costly errors from happening in the first place.

Key benefits of this approach:

• Health forecasts: It can spot problems early and get them to the doctor faster.

• Encourages creativity and experimentation

• Builds user trust through co-creation

Feedback loops may be formal (such as usability testing), or informal (watching how users actually use the product). They're also an important way of checking that the end product still matches up with what users want.

For example, let's say we are making an application for public transportation and you might go through several designs and then decide on a userfriendly map interface that can be scanned with the eye in short time pressure.

1.3.3 Usability, Accessibility, and Inclusivity

Human-Centred A human-centered product or service is one that is usable, accessible and inclusive:

• Usability is the degree to which something is able to be used as it has been designed. It's based on clarity, simplicity, high level of efficiency and user's experience.

• Accessibility means that individuals with disabilities can use the product or service. That means not only in all manners of seeing, hearing, moving and thinking. That could include a screen reader or voice commands, but also a high-contrast mode.

• Inclusive goes beyond accessible to design with diversity in mind. It's designed for diverse audiences, including people from different cultures and ages who speak different languages, as well as people with (and without) disabilities.

Using these principles in construction:

• Broadens the user base

• Promotes fairness and equity

• Reduces legal and reputational risks

Example: An inclusive banking app might have multi-language support, a user-friendly onboarding process and screen reader support for users with visual impairments.

1.3.4 Tradeoff Between User Needs and Business Goals

As much as human-centred design is about the user first, it has also got to serve what comes before: profit, scale and brand position. A good design is where user desirability, technical feasibility and business viability meet.

This balance is achieved by:

• Working on high-impact user issues that also correspond to market demand

• Using availability to verify (or disprove!) user behavior and business outcomes assumptions

•Getting cross-functional teams (marketing, engineering, finance) in early on the design processDesigners make trade-offs—such as its way to starting a new project.

enhance usability, no matter how long it takes to ship a product. They are keeping an eye on the human aspect, but also on the business one. They design solutions that last without sagging.

Example: A ride-sharing app may want to provide a simplified experience for new users, but once they are comfortable using the service, give them access to premium options like a luxury car or an advanced feature set. This approach works for quite a lot of user types and assists in reaching out doing financial targets.

1.4 Case Discussion

Dynamic In this section, the real–life examples such as product design and service design are taken using two men's revolutionising companies Apple and Swiggy. Despite these differences, nevertheless the principles of human centricity and life cycle based innovation in all stories the following take place: humans are central, compan ies develop competitive advantages and the customer is happy!

1.4.1 Product Design Case: iPhone (Apple's Human-Centred Product Innovation)

Apple's iPhone is often talked about as a benchmark for design of product not only because of its tech, also how it reflects humanity. From its start in 2007, the iPhone set the standard for beautiful and easy to use hardware with an elegant relationship between device and software.

Key Design Elements:

User interface simplicity: Apple chose ease of use over the old typewriter on buttons approach. First-time users could become comfortable with it quickly thanks to its intuitive design.

Minimalist Design: The design of the product received as much attention as the functionality, resulting in a cutting-edge device that is just as clean and ergonomic on your table. These visual and tactile qualities inspired an intense emotional attachment to users.

• An Integrated Ecosystem: It's important to remember that iPhone wasn't created as a standalone product, but rather part of an ecosystem (iOS, App Store – and later on, iCloud) that made you love your other devices just as much.

• Accessibility: Apple built in screen reading tool VoiceOver as well as haptic feedback and zoom into their device right from the start, so accessiiblity features were never a post script of people with disabilities.

• Iterative Design and Feedback Loops: Apple iteratively designed its smartphone based on user feedback, usage analytics,lets say a cooler feature like the emergence of Face ID, better camera or longer battery life as time went on and evolving market conditions.

Design Impact:

What Apple has mastered is the user centred design for a product and has molded what users perceive as they expect from a particular brand. The iPhone broke out of the box as a communications device, and that was critical to Apple's broader business actions.

1.4.2 Service Design Case: Swiggy (Platform and Consumer Experience)

Swiggy is a leading Indian food delivery company and it states that most of its success comes down to great service design focused on customer experience, operational efficiency and digital palatability."

Key Service Design Features:

• Full Stack Journey Mapping: Swiggy's end to end user journey was mapped where the UI testing covered from search for restaurants order food delivery C feedback. It allowed the team to isolate and iterate around every aspect of customer touch points.

• On-the-Go Tracking: For the first time, users could track their deliveries GPS in real time with the app. And it provided a level of trust, easing worry about when the product would arrive.

• In-app Help C Chat support: Integrated contact centres and chat systems have been rolled out to resolve queries speedily in order to facilitate quick service recovery.

• Considering the rider, and everyone else in the chain: Service design is about everyone in that delivery mix. For Swiggy, the ability to create features like navigation maps, earnings tracking and safety alerts could mean better service quality as well as happier drivers.

Personalization and recommendation Customization of restaurant suggestions, deals, reorder options: The system personalized restaurant recommendations (based on past behavior) thus enhancing engagement and repeat usage.

Design Impact:

The service design of Swiggy exemplifies the manner in which technology, logistics and human connect can be made to dance together. By serving customers and delivery agents as users, the company built a scalable service that worked in many cities and for many use cases.

1.5 Design Thinking

Design Thinking is a people-centred, problem-solving process that creatively implements empathy and the act of listening along with more traditional analytical thinking. It is applied in both product and service innovation to develop useful, usable and human–centric solutions. Design thinking, as opposed to conventional linear problem-solving approaches, is iterative and collaborative which creates an environment for experimentation and user feedback.

1.5.1 Origins and Philosophy of Design Thinking

Design thinking evolved from the work of mid-20th-century industrial and product designers. It became formalized into a repeatable process for innovation and problem-solving in fields beyond design over time.

Institutions like Stanford University's school, design houses like IDEO were instrumental in molding and popularizing the method.

Key to the design thinking ideology are the following beliefs:

•Human-Centricity: Solutions should be based on a deep understanding of the needs, wants and experiences of people.

• Collaboration: Heterogeneous teams from across functions offer a fuller spectrum of views for solving problems.

• Experimentation: First tries and iterations are better than planning or intuition.

• Creativity: Creativity is not the domain of designers only, but it can be taught to or inculcated by everyone.

• Bias Towards Action: Building and testing is more effective than continual hypothesizing.

1.5.2 Stages: Empathize, Define, Ideate, Prototype, Test

Design thinking is generally considered as five stage non-linear process. These stages are often cyclical, since teams continue to learn more about the problem and users.

Empathize

This phase requires identifying users needs, behaviours and motivations through direct field contact methods such as interviews, observations and immersion. The idea is to see into the user's pants (world).

Define

Findings from the empathy phase are organized into a focused problem statement evident or

point of view. This is helpful because it makes the design challenge about what users actually care about.

Ideate

During this phase, design teams generate a large volume of creative solutions – aiming for quantity over quality at first. It often deploys tools like mind mapping, "How Might We" questions and role-playing.

Prototype

Designers make cheap, easy versions of ideas that can be tested quickly. Prototypes might be a physical model, sketch, role play, digital wireframe or mock service flow.

Test

Prototypes are subjected to real users and the feedback that is necessary, weaknesses and new findings can be obtained. Testing is not the be-all and end-all; quite often it takes you back to redefining the problem or developing better ideas.

This is not a linear, but an iterative process. Teams can iterate backwards and revisit earlier stages as they learn more.

1.5.3 Applications in Product and Service Innovation

Design presence is a generic, inter-industrial capability to optimally integrate design in the innovation process. Flexibility allows not only tangible product development but also intangible service improvement.

Applications in Product Innovation:

- Designing user-friendly consumer electronics
- Producing user-friendly mobile and web applications
- Creating medical devices that address the patients and practitioners needs

Applications in Service Innovation:

- Redesigning patient experiences in hospitals
- Enhancing customer support in telecom services
- Improving the on-boarding experience in digital banking solutions

Design thinking has also been employed by organizations to address internal challenges, such as boosting employee engagement, streamlining operations or revamping corporate training.

The main selling factor here is that solutions are based on real user insights, making them more likely to be adopted and succeed in the long-term.

1.5.4 Limitations and Critiques of Design Thinking

While design thinking has become popular, it is also critiqued and limited in the following ways:

Superficial Adoption

In many companies, design thinking is stripped down to a workshop or checklist item, rather than something more deeply embedded in culture or strategy.

Lack of Rigour

Critics have claimed that, in isolation, it can lack analytical rigour or evidence-based methodology.

Not Always Scalable

What we get out of a small design sprint doesn't always translate easily to large complex systems, or organisations.

Time and Resource Intensive

Real user research and iterating on the prototype take time, resources, and access to users that are not always available.

Misalignment with Business Goals

Heavy user focus may be at odds with business realities like cost, regulation or strategy.

It is not to say that design thinking can't be a useful tool if used judiciously and in concert with other business, engineering, or research methods.

Did You Know?

"In someplaces, Design Thinking has been condemned as "colonial. Critics suggest that the use of Western-centric design conventions in non-Western or indigenous cultures—without reflecting local ways of knowing and doing—can lead to shallow, or even harmful, solutions." Accordingly, many practitioners today call for the decolonisation of design thinking through locally responsive and participatory methodologies.

1.6 Double Diamond Framework

The Double Diamond Model is a graphic depiction created by the UK Design Council that illustrates key stages of the design process. It reinforces two types of thinking: divergent (i.e. expansive with ideas) and convergent (i.e. narrow down into specifics), used twice—once to define the problem, next to devise the solution.

8 Making meantime interval SIM/Human (i.e.\ the average time between operations) The framework is heavily employed in product and service design, notably within human-centered and design thinking methods due to its simplicity and iterative nature.

1.6 Double Diamond Framework

The Double Diamond shows two phases of divergence and convergence.

•Divergent thinking is also about having more to consider. It's all about gathering insights, generating ideas and looking at things in many ways.

•Convergent thinking is an act of reduction. This involves vetting, prioritizing and selecting the most promising ideas or problems to tackle.

These two ways of thinking are switched:

- Diamond one: Diverge (understand user needs) → Converge (reformulate the problem)

- Second diamond: Diverge → Converge

This patterned oscillation helps guard design teams against running off prematurely in one direction or another by keeping them in a phase of exploration long enough to consider a broad range of alternatives.

1.6.2 Discover vs Define Phases

The first part of the Double Diamond concentrates on understanding the problem:

Discover (Diverge)

This stage consists of collecting information related to the user, the situation, and the bigger.

environment. Techniques such as interviews, ethnography, surveys and observation are applied in order to understand user behaviours and identify unmet needs.

Goals of this phase include:

o Gaining empathy for users

o Identifying hidden patterns or challenges

o Avoiding assumptions

Define (Converge)

Following collection of insights, the team aims to synthesise the data into a concise problem statement. This phase focuses the field of inquiry by pinpointing the primary question worthy of investigation.

Tools used may include:

o Affinity mapping

o Insight synthesis

o Point-of-view (POV) statements

o Problem framing techniques

The result of this step should be a clear problem statement that reflects actual needs from the user's perspective and is bounded by business problems.

"Exercise: Do a Small Size Double Diamond

Pick an issue in your school or community (such as long lines for the canteen, not enough mental health services).

Investigate: Interview or observe three individuals who are affected by the problem. Note their experiences and challenges.

DEFINE: Integrate the insights into one clear and concise problem statement (no more than 2 lines).

Upload an image (bullet points, mind map, simple diagram) of your Discover-Define process along with the problem statement.

(Optional: Present your problem statement to the class and have peers provide feedback if it accurately addresses the needs of users).

1.6.3 Develop vs Deliver Phases

The second part of the Double Diamond is all about addressing the problem:

Develop (Diverge)

Here, the team creates as many potential solutions to a problem as they can. Brainstorms, sketching, rapid prototyping and ideation workshops are techniques often used. Innovative and cooperative efforts are required to take into account wide range of perspectives.

Characteristics of this phase:

o Testing multiple ideas

o Embracing experimentation

o Encouraging innovation without immediate judgment

Deliver (Converge)

This was the part where you refine and test ideas that we'd selected. So at least with me this is how the process works: Prototypes are tested on users and feedback is given, to then be incorporated in said prototype. Once verified, the solution is deployed or released.

Activities include:

o User testing

o Iterative refinement

o Finalising specifications

o Deployment and scaling

This step is desigend to ascertain the selected solution will be viable, desireable and possible.

1.6.4 Managing Divergence and Convergence

This sober dance between divergence and convergence in design management is part of what makes the roles so unique. Too much divergence can cause confusion, uncertainty with prematurely converging and value creation left on the table or users out of sync.

Effective management involves:

• Establishing clear time frames for exploration and deciding

• Encouraging open-minded thinking during divergence

• Evidence/Criteria to drive to convergence

• Make room for team discussion to align on insights and priorities

Design leaders frequently facilitate, helping teams move between modes of thinking - expansive and focused.

1.6.5 Applying Double Diamond to Iterative Design

The Double Diamond is not a linear, one-off process. Iteration It is used a lot in iterations, especially when working in an agile or lean design environment. If a solution is tested in the Deliver phase and new user feedback arises we could go through another discovery process beginning the cycle once again.

What are common practice in repeated use?

• Re-evaluating previous stages when new information becomes available

• Leveraging feedback loops to iterate on problem definitions and solutions

• Running several design sprints using a Double Diamond process.

In iterative projects, teams might even do small double diamonds as cycles within a larger one to concentrate on individual sub-problems or features.

This is the iterative aspect that helps continually improve and better match user needs and business goals over time.

1.7 Value Proposition Canvas (VPC)

The Value Proposition Canvas (VPC) is an aid in developing product strategy authored by Alexander Osterwalder. It is for making sure that a product or service revolves around the values customers expect. The VPC deconstructs the fit between a business' value proposition and target customer segments.

There are two main aspects of the canvas:

Customer Profile – records knowledge of the customer

Value Map – how the business generates value

The objective of applying the VPC model is to match what the business provides with what the customer desires.

1.7.1 Customer Profile: Jobs, Pains, Gains

The Customer Profile delineates who the customer segment is, and what this segment expects. It includes three key elements:

Customer Jobs

These are the tasks, problems or needs you're aiming to solve for customer. Jobs can be:

o Functional (e.g., commuting to work)

o Motivational (e.g., feeling competent working with others) ♣ Social (e.g., being seen as competent in a professional setting)

o Emotional (i.e., feeling safe, not getting anxious)

Customer Pains

These are negative experience or pains the customer encounters when they are trying to get a job done. They can include:

o Undesired costs (e.g., too expensive)

o Negative emotions (e.g., frustration)

o Fear or something uncertain (i.e., a decision may be wrong)

Customer Gains

These are the benefits or results that the customer wants. Gains can be:

o Required (e.g., minimum expectations)

o Wanted (e.g., things we think would benefit customers) o Unwanted (e.g., features the customer does not want).

o Surprising (e.g., pleasant surprises, innovations)

It explains what is in it for the customer, so companies can concentrate on practical needs, bringing them to the imagination and reality of its users.

"Exercise: Customer Profile Canvas"

Choose a service that you use often (food delivery, online learning, banking) 4.Consult at least one user of the service, and determine:

· Three actual jobs they are attempting to do with the service

· Two emotional or social duties that shape their choices

Three terrible pains they're currently feeling with X:

· What three profits they appreciate or wish

Use the results of this analysis to create a Customer Profile Canvas, specifying jobs, pains, and gains. Write a brief reflection (150 – 200 words) on how this experience might have altered your concept or understanding of user needs and expectations.

1.7.2 The Value Map: Pain Relievers, Products and Gain Creators

Value Map – Explains how the product or service creates value with respect to customer profile. It includes three elements:

Products and Services

The exact services that a company offer which assist customers in doing their jobs. These may be:

o Physical products

o Digital products

o Services or experiences

Pain Relievers

These describe how the product or service solves particular customer pains. Examples include:

o Reducing cost or effort

o Remove one risk or one frustration

o Breaking down a complicated process.

Gain Creators

These explain how the product or service achieves customer gains. Examples include:

o Improving results

o Adding convenience

o Making the new possible

The value map forces teams to start thinking hard about how their offerings contribute directly to the customer experience.

1.7.3 Finding Fit between Customer Needs and Value Proposition

A good value proposition is when Value Map matches Customer Profile. This is referred to as problem-solution fit or product-market fit, depending on the developmental stage.

Types of fit include:

· Problem-Solution Fit (early stage) There are smiles and handshakes – somehow the customers love you– this is innovation that will continue to develop even faster.

The company has proof that their product or service meets a market need: that it's linked to real customer jobs, pains and gains.

· Product-Market Fit (growth A++ phase):

There's real usage and love for the product, suggesting demand and delight are infectious.

Achieving fit requires:

· User research to prove and disprove assumptions as quickly as possible

Iteratively validating and refining value proposition

· Hitting the market with modified offerings based on feedback

Even if well designed, products can fail without a fit, because they don't solve the important problems that potential customers have.

1.7.4 Application of VPC to Cases Case 1: Uber -Urban Mobility

· Customer Jobs: Move from point A to point B; fast and cheap.

· Pains: Inability to hail a taxi, unpredictable prices and unsafe.

· Gains: Convenience, reliable arrival times, cashless payment.

· Value Map:

o Product: Ride-sharing as and when you need it app.

o Pain Reliever: Shows you how close the nearest ride is, estimate pricing, database of drivers.

o Gain Creator: Booking with a single tap, discount and availability round the clock.

Case 2: Airbnb – Travel and Stay situation

· Customer Jobs: Search for cheap and cozy accommodation when travelling.

· Pains: Costly hotels, no personal experience, weak local connection.

· Pros: Special properties, immersion in a local community, varying price points.

· Value Map:

o Product: Online marketplace for temporary housing.

o Pain Reliever: Lower prices, upgraded amenities, communication with hosts.

o Gain Creator: Cultural exploration, local experiences, flexible durations.

These examples show that connecting the value proposition to particular customer segments results in scaling business models and loyal customers.

1.8 Service Blueprinting Basics

Service blueprinting is an organized visual tool designed to help service organizations to gain insights on how to create and provide a better experience of service. It enables organisations to grasp the way services are provided, showing connections between users actions and system-mediated delivery across stages of a service journey.

Service blueprints are commonly used in service design, customer experience management, and operations strategy since they were first described by Lynn Shostack in 1984. They enable transparency, coordination and optimization of service processes – particularly complex ones with multiple constituents.

1.8.1 Service Blueprints: Objective and Elements

Service blueprints are extensive visualizations that offer another way to map out the delivery of your service. Their main goal is to illustrate the service experience — both customer facing and backstage. A service blueprint describes each action in the step-by-step process of delivering a service, and helps firms develop, analyze and improve their processes. They are particularly useful in revealing absences, inefficiencies and potential service system failure points. They also serve as a means to better coordinate with different functional areas such as marketing, customer support, IT and operations to ensure these teams are all working from the same understanding of how the service part should function. In the end, all service-touch-point and back-end processes are well orchestrated and managed by means of service blueprints in order to provide excellent customer experience.

The essential parts of a service blueprint model are covered in this core. The first element is the customer actions that are recognized to be the different behaviors of customer in the provided service. These tasks form the basis for designing the service and reflect the user's experiences. Following are the frontstage (manifest contact) actions that type inhabits-the ones that exist in/through all customer-provider interaction and which a customer can observe, such as talking to an employee, receiving a confirmation email or reading onscreen displays in relation to web site use. These encounters are the direct experience and perception of service by the customer.

Backstage (invisible contact) — what happens behind the scenes or backstage of a customer transaction, away from the front line, where employees and support processes are common. These can be an agent who looks up the internal records, makes appointments or updates databases. Backing these backstage activities are the support processes, which typically involve internal departments or outside partners contributing to the service provision. For instance, IT systems upkeep, keeping track of stock or working with suppliers. Physical evidence is another essential element, which includes physical items or the materials that the customers receive during the service process, which includes receipts, signage and so forth.

packaging, or emails. These are tokens of exchange and an aid to transmit the brand or quality of service.

In order to arrange these components so they make sense, service blueprints need three partitioning lines. The line of interaction denotes a distinction between the customer's performed actions and the visible interactions with the service provider. The sightline separates what the customer sees (frontstage) from that which he does not see (backstage). Lastly, rest of line interactions divide the backstage from the depths of support. These lines of division help define responsibilities and roles, as well as borders between various layers in the service ecosystem.

Service blueprints can be applied in industries such as healthcare, retail, education, banking and finance, hotel and public services. In healthcare, for example, the service blueprint could cover all touchpoints of the patient journey from scheduling an appointment to treatment and follow-up. In e-commerce, it could show the journey from browsing an online store to placing an order to receiving the goods and (possibly) returning them. The blueprint in both cases helps stakeholders visualize how each aspect of the processes contributes to the overall customer experience, so that they can more easily find inefficiencies, improve operations, and craft services which are all-together better designed for users.

In other words, service blueprints are useful as they add visibility and clarity to complicated service systems. They cover the complete range of customer interactions and internal operations, accelerating more strategic service design and reducing breakdowns and silos between departments. Their structured yet adaptable nature makes them a must-have for organizations that want to provide consistent, high-quality service.

1.8.2 Frontstage vs Backstage Processes

Frontstage Processes:

These are the aspects of the service that can be seen by the client. They include:

• Face-to-face communication (such as a waiter receiving an order)

• Transaction Type (e.g., booking via mobile app)

• Physical environment (store layout or front desk design for example)

These features model the customer's image of the service and have a strong relationship with satisfaction and trust.

Backstage Processes:

These are the behind-the-scene operations that do not turn up. Examples include:

• Order preparation in a kitchen

• Automated data processing

• Inventory management

• Staff coordination or internal communication

Smooth operations behind the scenes are what make for consistency and quality "front of house".

Did You Know?

"In service design, practitioners have even adopted a "service camouflage" in certain industries where the back stage is designed to feel like the front stage intentionally. For instance, open kitchens in restaurants or order preparation counters of coffee chains make you share the transparency and build trust — so while you still control efficiency, it's managed. The combination of back-stage and front-stage in this case is a deliberate tactical move for customer perception.

1.8.3 Mapping Touchpoints and Customer Journey

Service blueprinting is about mapping critical points of interaction throughout the customer journey. Touchpoints are defined as any interaction between the customer and the organisation, either human or digital.

Steps in mapping touchpoints:

Eye on the prizeStep 2: Map the user journey – What is the beginning and end of the experience—using the service (finding a ride to paying for one).

Document the customer journey – Disassemble the service into single user steps.

Link frontstage and backstage actions – For every customer action, identify the staff movements or system activities.

Map physical evidence: Record the evidence that customers see or interact with at each of their touchpoints.

Focus on pain points – Determine the process steps that cause mistakes, bottlenecks or lack of clarity. This mapping is an opportunity for improvement, automation or even thrown away and redesigned.

1.8.4 Improving Service Delivery through Blueprinting

Have you ever asked yourself if service blueprints can serve not only as a documentation but also for the innovation and improvement of services? Zooming out and looking at the system as a whole, teams are able to recognize:

- Repetitions of procedures, or actions by staff
- Service congestion no domestic server (e.g., heavy traffic, long lines)
- Breakdowns in communication or technology
- Uncertainty customer's expectation and service fulfilment Enlarg:eriiet by:
- Redistributing activities between frontstage and backstage
- Redesigning user interfaces
- Automating repetitive processes
- Creating or deleting touchpoints for better flow

Blueprints also foster cross-functional collaboration by generating a common view of how the service operates among departments.

Example:

In a health clinic, for example, such a blueprint might show that long wait times stem from poor coordination between reception and lab technicians. When done correctly, redesigning appointment scheduling and internal alerts makes the patient experience so much better.

1.9 Business Model Canvas (BMC)

The Business Model Canvas (BMC) is a visual framework used for developing, analyzing and innovating business models. Created by Alexander Osterwalder, the BMC strips away from clumsy business plans, zooming in on nine linked building blocks that illustrate how an organisation develops and delivers value.

It's the tool trusted by businesses of all sizes to visualise business ideas, testing assumptions and getting everyone on board with an amazing idea.

1.9.1 Nine Building Blocks of BMC

The Business Model Canvas has nine components, often represented visually through a one-page canvas. These blocks are:

Customer Segments – The types of people or organisations the company caters for.

Value Proposition – The package of products and services that create value to a specific segment of customers in solving their problems.

Channels – How the value proposition is delivered to customers.

Customer Relationships – The kind of relationships a company wants to establish and maintain with its customer segments.

Sources of revenue – The list of how the business makes money from its customer segments.

Key Resources – The most important assets needed to make the value proposition.

Key Activities: The most important things the company needs to do to make its business model work.

Key Partnerships: The external partners who can help the business deliver value to customers (e.g., suppliers, distributors, partnerships).

Costs – Everything of cost related to running the business model.

These elements are linked and should be addressed as part of a system, not separately.

1.9.2 Customer Segments, Value Proposition and Channels

Customer Segments:

This cube lists which the unispheres business targets. Everything can be segmented by demographics, geographics, behaviour or psychographics. Types of customer segments include:

• Mass market (e.g., consumer electronics)

• Niche market (e.g., luxury goods)

• Sliced (for example—student vs. working professional banking services)

• Diversified (i.e., Amazon has both consumers and third-party sellers)

• Multi-homogenous sides/platforms (e.g., Airbnb is a mutli-sided platform where the guests are alike with respect to hosts)

Value Proposition:

This is the combination of products, services and experiences that deliver value to a segment. A strong value proposition addresses:

• Functional value (e.g., performance, cost-saving)

• Affective value (e.g., brand image, status)

• Value in society (e.g.,pressure from peers, connection)

Channels:

Channels are how the business talks to and delivers value to customers. This includes:

• Communication (e.g., advertising, email)

• Channels (e.g., offline, online)

• Mode of service delivery (e.g., apps, call centres)

Good channel design: supports a compelling customer journey is clear, consistent and simplified across the brand experience.

1.9.3 Revenue Streams and Cost Structures

Revenue Streams:

This section describes the company's revenue model. Revenue can come from:

• Product sales

• Subscription fees

• Usage fees

• Licensing

• Advertising

• Brokerage or commission fees

Each of the streams should be associated with a customer segment and value proposition.

Cost Structure:

This is apart from any of the business operating costs. Costs may be:

• Fixed (e.g., salaries, rent)

• Variable (e.g., shipping, production)

• Economies of scale (the more you produce the less each unit costs)

• Economies of scope (the cost advantages from the variety of products)

Knowing where costs comes from allows businesses to discover the key drivers of cost and optimize them.

1.9.4 Applications in Startups and Corporates

In Startups:

It is a common tool used by startups to experiment and pivot business ideas affordably. Instead of devoting hours or even weeks to creating an extensive business plan, entrepreneurs can now utilize the canvas to:

- Hypotheses about the business model to visualize
- Identify risks and assumptions
- Conduct customer discovery and validation
- Pivot or Adapt from market feedback

This mindset often goes hand in hand with Lean Startup ideas where rapid learning and adjustment are key.

In Corporates:

The BMC is used by larger companies for:

- Creating new business lines or services
- Exploring digital transformation strategies
- Unifying fragmented cross-functional teams around common goals
- Unveiling the weaknesses and limitations of current models

Corporates can also leverage the BMC to explore and evaluate competitor business models or test responses to market disruption.

The BMC can help drive better decision-making and business agility across all industries through a shared language of strategy and innovation.

Knowledge Check 1

Choose the correct option:

Which of the following illustrates how product design differentiates from service design?

A.Product design is about the customer journey; service design is not.

B. When a service is designed there is always something physical at the end of the design process

C. Products provide physical goods; services provide mental effects / feelings

D. Service design is applicable in the hospitality and healthcare sectors only

Which one of the following is accurately presenting phase 1 in the Double Diamond Framework?

A. Define

B. Develop

C. Discover

D. Deliver

"Pains" in the Value Proposition Canvas are:

A. Tasks that customers enjoy doing

B. Problems/Negatives customers have experienced or encountered

C. Product Delight Features

D. Company cost structure problems

In the Business Model Canvas, which building block shows how a company interacts with or accesses its customers?

A. Key Resources

B. Channels

C. Revenue Streams

D. Customer Relationships

Which of these represents a frontend activity on service blueprint?

A. Back-end inventory management

B. A simple delivery man receiving a box

C. Payment gateway encryption

D. Internal employee chat system

1.10 Summary

ϖ In this module, the major frameworks and perspective in contemporary design practice have been introduced – such especially relevant for product / service innovation. It examined the boundaries and intersections between product and service design, lifecycle thinking's contribution to value, the discipline of human-centered design. Several methodologies such as design thinking, the Double Diamond Framework, Value Proposition Canvas (VPC), Service Blueprinting, and Business Model Canvas (BMC) were also presented as tactics for aligning the wants of users with a business' objectives.

ϖ Use-case discussions like Apple's iPhone, Swiggy and Airbnb were used to demonstrate application of these concepts in real-life situation. These methodologies and mentalities are necessary for companies to be able to innovate in a responsible and sustainable way, especially within competitive environments.

1.11 Key Terms

Product Design - Constructing physical or digital products to address user needs.

Service Design The design/guided planning of people, infrastructure, communication and material components of a service to improve its quality.

Lifecycle Thinking – Considering a products or services entire life history in design.

Human-Centered Design (HCD) – Process that keeps the needs of the human being at the center.

Design Thinking - A five step iterative approach for creative problem solving from the users perspective.

Double Diamond - A graphic showing that problem and solution development has divergent and convergent stages.

Value Proposition Canvas - A device for fitting a product/service's features and qualities in relation to customer jobs, pains and gains.

Service Blueprint: A graphic depiction of service operations and customer contact.

Business Model Canvas - A strategic tool that's used to describe, design and analyse an existing or new business model.

1.12 Descriptive Questions

What is the main difference between product design and service design? Provide real-world examples.

What is lifecycle thinking and how does it affect design and business?

Why is empathy important for the effectiveness of human-centered design processes?

Explain the significance of prototyping and feedback in design thinking.

Explain the stages of Double Diamond Framework and how it encourages iterative design.

Briefly describe the elements of Value Proposition Canvas and their relationship with each other.

How can service blueprinting be used to enhance customer experience and operational efficiency?

How do startups and corporates benefit from a Business Model Canvas?

Compare and contrast what is meant by usability, accessibility and inclusivity in designing.

How do customer segment, revenue streams and cost structure affect business model?

1.13 References

Brown, T. (2009). Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation. Harvard Business Press.

Stickdorn, M., and Schneider, J. (2012). This is Service Design Thinking. BIS Publishers.

Osterwalder, A., & Pigneur, Y. (2010). Business Model Generation. Wiley.

UK Design Council (2005). The Double Diamond (also known as the 'Design Council Model') is a commonly referenced model on the phases of design.

IDEO. org (2015). The Field Guide to Human Centered Design. IDEO. org.

Shostack, L. (1984). Designing Services that Deliver. Harvard Business Review.

Ries, E. (2011). The Lean Startup. Crown Publishing.

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Submission ID

trn:oid:::3618:127363253

Submission Date

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Feb 2, 2026, 3:05 PM GMT+5:30

File Name

Product & Service Design Unit 2_V3.docx

File Size

100.5 KB

31 Pages

7,364 Words

43,944 Characters

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Unit 2: Design Research & Problem Theory

Learning Objectives

1. Explain how to define and prioritise real-world problems that are worth solving using user-centred methods.
2. Describe the role of Problem Theory and the Theory of Change (ToC) in shaping socially impactful design solutions.
3. Apply contextual inquiry and ethnographic research techniques to gather deep insights from user environments.
4. Differentiate between user acquisition and retention strategies in the context of design and innovation.
5. Plan and conduct field research ethically and effectively to validate assumptions and understand user behaviour.
6. Synthesize qualitative data into meaningful patterns and user insights that inform design direction.
7. Evaluate real-world case studies to identify best practices in problem framing and research-driven innovation.

Content

2.0 Introductory Caselet

Rehan's Ride: A Rural Maharashtra Story of Transport Dilemma

Background:

Rehan sells this tamarind in his schoolDon Rehan is a 23-year-old school teacher at a village in rural Maharashtra. Each morning, he commutes nearly 12 km to the government school where he teaches. There is no written bus route and the buses are unreliable. At the moment he catches a lift with a farmer in his village on a motorbike, but this is unreliable — particularly during the monsoon. So it's really difficult if he's late or has to cancel (classes), affecting students' attendance and performance, she said.

In a recent meeting, local NGO proposed to the community that they would get them transport. There were a number of suggestions, like giving bicycles to teachers, launching a shared auto-rickshaw service, or petitioning the local transport authority for another bus. But the NGO team quickly realised that they did not know what problem they were addressing—and, moreover, whether it was a transportation issue, scheduling or something more profound about infrastructure and policy.

This example is a reminder about how we have to understand the problem before jumping to solutions.

Critical Thinking Question:

What would be your approach/ recommendation if you were the NGO to describe the problem at hand in Rehan's case, before proposing a solution? How might they know if it was the right one to solve in the first place?

2.1 Defining Problems Worth Solving

Wait a minute, is that even the right problem? The thing is: one of the most important parts of design and innovation work is in framing the challenge, or as I often call it "finding the real question"—which represents a need worth addressing that users have. A lot of projects don't get off the ground, not because they have a bad solution,

but because they are solving to wrong problem or solving an unknown. Thus, problem framing is an intentional and formalized act that precedes ideation and idea development.

Importance of Problem Definition

Problem definition helps to:

• Solution bias, where groups rush to fix symptoms not causes

• Coordinate stakeholders around a common definition of what is being addressed

• Allocate time and resources to what is really relevant for users

Unearth Underlying Cause Not mere Symptoms

Characteristics of Problems Worth Solving

Not all problems are those which need solving in a design or business space. A problem is eligible "to be solved" if it has the following features:

User-Driven: It impacts a real population of users whose needs are not met or under-served.

High Impact: Solving this would make a big positive difference— culturally, economically or in terms of life experience.

Feasibility: The issue is able to be dealt with using existing resources, knowledge and tools.

Strategic importance: it is consistent with the needs and goals of an organization or society.

Frequency or Urgency: It happens frequently or the experience, satisfaction and/or efficiency is very low.

Common Pitfalls in Problem Framing

Framing the Problem Too Broadly

Example: “Improve education in rural India” is too broad and unfocused.

Framing the Problem Too Narrowly

Example: “Gift a bicycle to Rehan” jumps to one specific solution without investigating other causes.

Treating Symptoms, Not the Root Causes

Example: Dealing with lateness without looking at transportation, schedule or policy holes.

User Not Engaged Early Enough

The problem may be the result of assumption and not real user need, if you don't have first hand user insight.

Methods and Tools for Characterizing Problems

\item 5 Whys: Identify Root Cause — This technique, used to identify the cause of a problem in order to develop preventative measures, simply demands that you ask "why" five times.

• How Might We (HMW) Questions: Rephrases insights into areas of opportunity to explore.

• Problem Statement Templates: E.g.,

"User X wants to Y, so that Z".

• Stakeholder Mapping — Therefore, what will map out who are impacted by the problem space and who impact it.

• Journey Mapping: Helps in visualizing the end-to-end experience by focusing to find pain points.

2.1.1 Identifying Real-World Problems vs. Surface-Level Symptoms

In every design and innovation process, it is crucial to be able to different real or root causes of problems with the symptoms that flow from them. Many treatments are not effective as they focus on what is visible, rather than addressing the root causes.

Surface-Level Symptoms

Symptoms are the evidence of a necessary explanation. They are also the things that users complain about, or designers see first.

Examples:

• Long queues at a hospital

• Dropout rates for an online class

• Low app usage in rural Very little app use from rural users

All of these are real challenges, but they may not be the underlying problems. Real-World Problems

Underneath symptoms are the root causes, which are real problems. You need to investigate, observe and do some user research to find them!

Root problem examples:

• Cues for hospital due to inefficient appointment scheduling systems

• Break off due to no access of mobile data and language barriers

• Poor digital literacy or unfamiliarity with the user interface resulting in low app usage

Brief Guide to Root Cause Analysis: 1. Key Techniques for Discovering Underlying Problems:

• 5 Whys Method: Asking "why" over and over until a root cause is found

• Task Analysis: Examining what users do in a particular context • Observations: Watching the users to see how they interact.

• Stakeholder Interviews: Interviewing individuals involved in the product or service life cycle

Also, Designers will make their solution meaningful if they fix the root problem.

2.1.2 Frameworks for Problem Definition

Work in a structured framework to lay problems out the open and focused way. These structures help teams to transition from wide ideas to specific design challenges.

Common Frameworks:

Problem Statement Template

A straightforward and succinct description of a problem to be solved.

Format:

[User/Stakeholder] wants to [do something] but [unpleasant consequence].

Example:

Rural teachers require consistent means of commuting because current transportation is unreliable and affects attendance.

Point of View (POV) Statement

Applied in design thinking to framing the problem from the user's perspective.

Format:

[User] needs [need] because [insight].

How Might We (HMW) Questions

Open-ended prompts for making insights into design opportunities.

Example:

How can we support teachers to travel at the mercy of monsoon in rural India?

Problem Tree Analysis

Visual map of the core issue, what causes it and what affects it to see the full ecosystem.

Theory of Change (ToC) Lens

(See Section 2.2) Identifies issues in context with long-term impact objectives. These frameworks are key not only to help teams identify what problems they're trying to solve but also to be sure that they stay true to users' needs.

2.1.3 Prioritizing Problems Based on Impact and Feasibility

Not every problem can or should be solved all at once! Prioritisation makes sure we're focused on the things that have the biggest impact.

Key Prioritisation Criteria:

User Impact

o Does the world become a better place if this problem is solved?

o How many users are affected?

Business Relevance

o Does it meet organisational objectives?

o Does it add to efficiency, retention or revenue?

Feasibility

o Is it within the team's reach to solve with available time, resources and skills)?

o Are there any limiting laws, technologies or logistics?

Urgency and Frequency

o How frequently does the problem occur?

o Is it time critical or is there a business need for the information?

Tools for Prioritisation:

• Impact-Feasibility Matrix

Plot issues on a 2x2 graph of Impact versus Feasibility. Start with high- impact, high-feasibility problems.

• MoSCoW Method

Categorise problems into:

o Must Have

o Should Have

o Could Have

o Won't Have (for now)

By implementing these tools, design teams can make intelligent, strategic decisions.

2.1.4 Linking Problems to User and Business Needs

A problem is worth solving only if it's meaningful for users and lucrative for the business. Design that neglects one side of this equation is unlikely to withstand reality.

User Needs

These are based on first-hand research and observation. Common types of needs include:

• Instrumental (e.g., availability of reliable transportation)

• Affective (e.g., sense of safety or being respected)

• Social (for example, feeling connected or having someone acknowledge you)

Knowing these needs helps to make the problem relevant and desirable for users.

Business Needs

These represent what an organization needs to do to succeed:

• Growth and revenue

• Customer acquisition and retention

• Operational efficiency

• Brand reputation

Aligning User and Business Perspectives:

For successful design, the noted problem needs to:

• Address a genuine pain point of users

• Support a measurable business outcome

• Be brought to life as a shared objective for the cross-functional teams (design, marketing, operations, etc.)

Example:

For example, a ridesharing company may determine that it has an issue with low driver retention.

• User need: Drivers want more support and income.

• Business problem: The business needs to cut back on driver churn.

• A well-articulated problem statement: How can we enhance the driver experience to increase retention and lower cost of operations?

2.2 Problem Theory and Change Theory (ToC)

In the work of design and innovation, especially in social and public realms, understanding symptoms or apparent problems is not enough. Understanding the theory of something (as in, why you want to change) and planning for it is critical for meaningful/long term results. We describe two basic models in this section:

• Problem Theory: Aimed at understanding the form and logic of problems

• Theory of Change (ToC) – details how intervention activities will cause the change and impact desired

Combined they enabled teams to better root their design work in deeper analysis and evidence-inspired reasoning.

2.2.1 Introduction to Problem Theory

Problem Theory is a filigree in which Design Thinking, Systems Thinking and Disciplines for Decision Making are meshed. The representation emphasises the way in which issues are perceived, framed, categorised and analysed prior to any proposed or enacted solutions. Instead of hurrying to fix things, the problem theory regards it as crucial that we inquire about the essence, history, and complexity of a problem. Such vantage point ensures the addition of higher levels of strategy and effectiveness when it comes to innovation and creating solutions in contexts dominated by ambiguous or multi-dimensional challenges.

A central concept of problem theory is well-defined versus ill-defined (or wicked) problems. Clearly defined problems have goals, clear system states and measurable criteria. These are generally technical and can have solutions using off-the-shelf techniques or algorithmic approaches. e.g. fixing a deadlink on a web page, or tuning up some database query are well defined problems. By contrast, ill-defined or wicked problems are open-ended, dynamic, and frequently contested with no single “correct” solution. They are complicated in that there are many competing interests and ambiguous objectives. This might be in the form of better urban transport systems,

lower school dropout rates or initiatives to tackle climate change. In the latter, question forms can also be a matter of dispute.

The problem space An important notion in problem theory is the idea of the problem space which is the context or larger field in which a problem subsists. This encompasses the technical components comprising both system and process, as well as the users, stakeholders, organizational constraints, socio-cultural contexts and issues external to the problem which impact upon or are impacted by it. The problem space is important to understand because interventions that ignore context in these situations risk producing unintended consequences or have little impact on a root cause.

A further differentiation can be made at the level of framing a problem and its solving. Framing is more about determining and stating what the problem is than it is about solution seeking: what exactly is the issue, whose issue is it, and how shall we address it? Solving, by contrast, would be post-problem framing and entail creating, testing and applying tential solutions. In the real world of problem solving, ineffective solutions are a result of bad problem framing; were addressing the problem all wrong anyway. Thus, considering what we know about problems already, one of the most important facts to be aware of is that time spent on understanding and defining the problem separates useful improvisation from wasting time on bad ideas.

Crucially, problem perception is subjective. Depending on people's values, priorities and understanding others information will be understood differently by different individuals or groups. For instance, a city's traffic jams might be experienced by its daily commuters as a question of transportation, by urban planners as one of zoning or land use, and by environmentalists as a question of sustainable development. Consequently, one of the key responsibilities for designers and innovation teams is to be able to bring all these voices in a discussion in order to align different perspectives on the problem. It's often qualitative research, stakeholder mapping, ethnographic observation and co-creation workshops.

Problem theory encourages problem solvers and those who plan to solve problems like designers or policy makers ask questions such as: What sort of a problem is it? Who defines it? What does it engage with? What assumptions are being made? These questions inform a more reflective, integrative and flexible model of solving problems. Instead of thinking of problems as discrete things to be solved right and proper, problem theory encourages us to think of them as complex systems that change over time, and that we adapt to.

In conclusion, the theory of problems offers an important tool to respond in a conscious and systemic manner to complex challenges. By paying attention to how problems are depicted and understood before rushing to solutions, it supports

effective innovation work that is purposeful. This is also increasingly significant in our world of rapid change and interconnections, where challenges are seldom uni-dimensional and instead require evidence-based, multi-disciplinary people- or context-centric solutions.

2.2.2 Mapping Cause-and-Effect Chains

To solve complex problems, it is necessary to understand the entangled relationship between different components. One technique that can be used to trace the origin of a problem and uncover where intervention will have the most impact, is becoming familiar with cause-and-effect chains.

What is a Cause-and-Effect Chain?

A chain of cause and effect is a connected pattern that details how one consideration produced the problem that occurred. It is commonly represented as a logic model or problem tree.

Example:

Phenomenon: Decrease of rural schools after the Kominkan system was enacted.
Solution Observed symptom: Not enough attendance at school in rural district

Possible Chain:

• Substandard roads → Poor access to transportation → Inconsistent teacher attendance → Low quality of learning environment → Little student motivation and class participation→ Low enrollment

This is sequence facilitates identification of several different points of intervention, for example:

• Transport improvements

• Teacher incentives

• Student engagement programs

Tools for Mapping:

• Problem Tree Analysis

o Roots = causes

o Trunk = core problem

o Branches = effects

• Fishbone Diagrams (Ishikawa)

o Classifies causes in terms of categories such as people, process, environment etc Knowing the relationship between cause and effect prevents “band-aid” solutions and promotes lasting impact.

2.2.3 Theory of Change: Outcomes, Impact, Assumptions

Theory of Change (ToC) is a planning and evaluation approach which describes the necessary causal pathway of how and why change should occur in a given context. This method is commonly applied in social innovation, policy-making and non-profit work.

Core Elements of ToC:

Input- Resources, manpower, money, and tools carried toward the project.

Activities – Description of specific activities or interventions (e.g., training session, workshop, digital platform development).

Outputs – Direct products of activities (e.g., users trained).

OUTCOMES -If any structural short- to medium-term changes of behavior, knowledge or opportunities (e.g., for job readiness) (melee jours pumps).

Impact – Long-term systemic impact (e.g. Youth unemployment is reduced)

Importance of Assumptions:

ToC is based on certain assumptions:

- How participants will respond to the intervention
- Context and the Nature of Forces Outside the System
- What needs to be in order and what kind of resources have to be there for that change to happen

By documenting those assumptions, you can test them and pivot strategies when necessary.

Did You Know?

"The Theory of Change (Toc) was an approach developed in the 1990s by NGOs working in international development—not designers. It was developed to design and assess long-term social impact in complex systems, such as education, health, and poverty. “Today, designers and innovators are taking ToC to structure impact-oriented projects—particularly when the work doesn’t lead to outcomes that can be immediately seen.

2.2.4 Application of Toc in Design Projects

Design teams can use the Theory of Change model to:

- Mobilize stakeholders around shared vision for change

•Design interventions that have clear relationships between actions and outcomes

• Track movement toward outcomes, not just outputs

• Find and fix logical gaps or unreal assumptions before doing work.

How can ToC be applied to a Design Process:

Define the Impact Goal

What long-lasting change would you like to see?

Work Backwards to Identify Outcomes

What shift in behavior, access, or systems is required to make a difference?

Plan Activities and Outputs

What actions are required to catalyse these results?

Validate Assumptions

What does have to be true for the plan to succeed?

Visualise the ToC

Develop a visual representation of how you will get from inputs to impact.

Application Example in a Digital Education Project:

• Impact Goal: Improved digital, literacy and education among rural women

• Outcomes:

o Increased use of smartphones for information and services among women

o Increased confidence in using apps

• Activities:

o Mobile literacy workshops

o User-friendly app design

• Assumptions:

o Participants have access to phones

o Cultural norms permit mobile usage

o Community support is available

With ToC, the team is able to develop an intervention and test it, improve upon it and also concentrate on long-term change.

2.3 Contextual Inquiry & Ethnographic Research

People need to be understood deeply in a natural context to design human centred solutions. Formal interviews and desk research can give you good data, but it's hard to capture contextual behavior, unstated needs, or real world constraints this way.

This is where the importance of conducting a contextual inquiry and ethnographic research comes into play. They are a set of techniques for observing and comprehending users in action with structures, instruments, services in the course of their everyday existence.

2.3.1 Principles of Contextual Inquiry

Contextual Inquiry is a one of four user research techniques that involve observing, interviewing and recording users as they work in their environment—usually completing real tasks. It is a mix of observation and semi-structured conversing, to help researchers get at-the-moment workflow, behaviour and intent.

Key Principles:

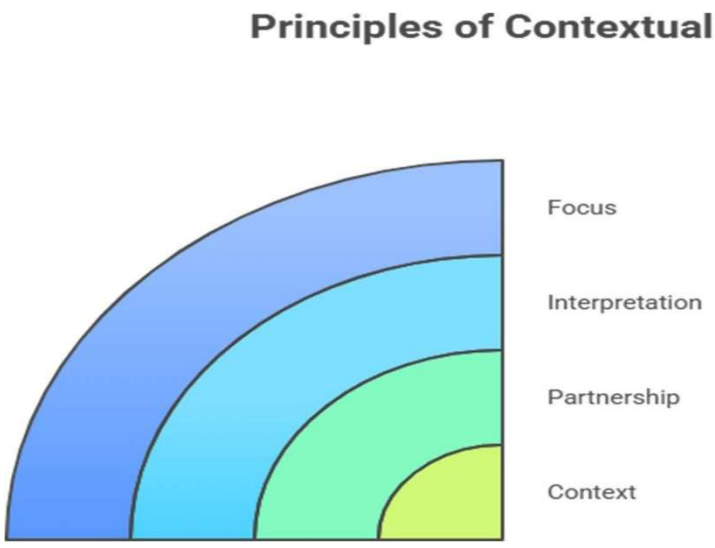

Figure 2.1

Context

Follow users in the context in which work or activity actually occurs (e.g., office, kitchen, field). This way, environmental factors are not forgotten.

Partnership

The user's role is a partner or expert for their research. The researcher converses, he does not just passively observe.

Interpretation

Insights are extracted not only from what users say, but also how they behave. The researchers read behaviour in a contextual manner and validate their ebhaviours wherem can with users if its e.

Focus

The investigation is shaped by a specific design or research focus (e.g., the ways in which people handle household finances) but may also be adapted to unanticipated findings.

Application Example:

Examining the process of working with patient information in a rural clinic, with an observation of healthcare workers' routines, means and constraints over work shifts.

2.3.2 Ethnographic Research in Design

An ethnographic is a qualitative research methodology embraced from anthropology; it relies on long-term and deep study of people's behaviours, cultures, and environments. In the design space, ethnographic research is modified as a tool for developing rich, human-centered insights for user needs and systemic resistances.

Characteristics of Design Ethnography:

• Is the actual observation of the user in his or her environment (often for days or even weeks)

• Focuses on the meaning, motivation and cultural context

• Devoted to nonverbal behaviors, instruments, procedures and social time

• Uses field notes, photography and video to document data when possible

Benefits:

• Articulates and clarifies implicit knowledge that users may not be able to verbalize

• Reveals actual constraints (physical space, social norms, digital access)

• Can prevent the common pitfall of assumption-based design by grounding them in personal experiences

Example:

Why do some rural households join the government health schemes, while others spend time in community, attending local gatherings and learning about informal healthcare practices?

Did You Know?

“Ethnographic research is so potent that it put the Swiffer mop on the map. Researchers at Procter & Gamble noticed that people were never truly happy after mopping — they would take to the floor once more with paper towels. This behavior was not reported in interviews, but observed. That inspired the design of Swiffer as a quick, throw-away shield around the floor that eliminated separate mopping and wiping.”

2.3.3 Observational Methods: Shadowing Users

Shadowing is a concentrated observational method in which the researcher shadows the user for a day or during some other typical work runthrough to see what they do, how they do it, and how their work gets complicated.

How It Works:

• The researcher remains an observer following a non-intrusive behavior as he see the user in real time

• May be silent, can include occasional clarification questions

• Perfect for recording workflow, interruptions, workarounds and tool usage

When to Use:

• When specific step-by-step comprehension is required

• When people can’t explicitly articulate their process or problems in interviews

• When there is a difference between what users say and do in terms of behavior

Example:

Riding along with a driver for an entire route to learn about timing, navigation challenges, phone use, customer interaction and periods of fatigue.

Tips:

• Require consent from a user in advance

• Jot down copious notes and observations with time stamps

• Dignity, privacy & ceasing observation in situations requiring sensitivity

2.3.4 Surveys and Quantitative Data Collection

Where deep is good—Qualitative methods, such as contextual inquiry and ethnography are wonderful—wide can also be useful; quantitative methods like surveys can get a researcher breadth of data from large numbers of people to see where patterns emerge or whether something seen elsewhere might stand another's scrutiny.

Key Characteristics of Surveys:

• Structured and standardised questions

• Administered through online questionnaires, on paper, by mobile apps or interviews

• Results are quantitatively analyzable (e.g., percent, mean, correlation)

Designing Effective Surveys:

What are your aims?

Articulate your question well – Free from bias, jargon, or leading language

Pick the Right Type – Leveraging scales (i.e., Likert), multiple choice, ranking and so on.

Pilot the Survey – Test with a small group to find confusing questions

Ensure ethical data collection – Anonymize and get consent.

Example Use Cases:

*Analyzing user satisfaction for having used a digital product

• Gathering demographic information for the purpose of user segmentation

• Confirming hypotheses informed by observations in the field

Limitations:

• Their ability to understand why users act as they do is a bit limited

• Can fail to capture nuance if poorly structured or read uncritically in isolation

In practice, surveys work best as a counterpoint to (not substitute for) qualitative methodologies in triangulation trials that are designed to obtain both depth and generalisability.

2.4 Differentiation & Retention Models

If it is to attract customers in the competitive market, any product or service must be unique and achievable. That is it has to provide something that differentiates itself (differentiation) and that keeps users around over a period of time (retention). It's clear that understanding how user needs link back to business objectives and returning value is key to creating lasting solutions.

2.4.1 Distinguishing User Problem and Business Problems

User problems and business Problems are similar, but not the same. The differentiation between the two is also crucial for designing desirable and feasible solutions.

User Problems:

The end-users or customers are confronted with these as needs, frustrations or barriers.

Examples:

• Difficulty navigating an app interface

• Long wait times for service

• Distrust of a payment network

Business Problems:

They are the organisational barriers that stand in the way of objectives like sales, market share, or reduced operating costs.

Examples:

• Low customer retention rates

• High support costs

• Trial to paid user conversion is low

Why the Distinction Matters:

Solving for business alone denies the user. Building against only user problem 'calls' might not be sustainable. The successful ones will often straddle those two, looking for where user needs converge with business outcomes.

Example:

If a subscription app is abandoned by users after the first week (user problem: lack of clarity and value; business problem: churn) redesigning onboarding flows can solve for both.

2.4.2 Model of Customer Retention and Engagement

Customer retention is the ability to hold onto users over time whereas engagement is how a product or service encourages its users to actively and meaningfully engage with it. Engagement leads to retention A high retention usually comes after a strong engagement.

Key Retention Models:

AARRR Framework (Pirate Metrics)

o Acquisition – A: How did users come to know your product?

o Activation: First positive experience

o Retention – Re-use the product

o Referral: Recommending to others

o Revenue: Generating business value

This model enables teams to track and optimise the entire user lifecycle.

Hook Model (Nir Eyal)

Four stages that focus on habit creation:

o Trigger (internal or external)

o Action (user behavior)

o Variable Reward (inconsistent satisfaction)

o Investment: (congruence style) (putting in effort, increases future use)

RFM Model (Recency, Frequency, Monetary)

Used in marketing and CRM:

o Recency: When was the last time a user was active

o Frequency: How often they interact

o Monetary: How much they spend

These frameworks help inform where and how to invest in general retention-related efforts.

2.4.3 Linking Differentiation to Value Proposition

“There is a point of differentiation between the core product and the experience that you need to focus on. It's an intrical part of the VPC and BMC.

Types of Differentiation:

Functional Differentiation

o Distinguishing characteristic, better, unique feature or improved performance or speed

o Example: Google’s fast and clean search results insurgency.

Emotional Differentiation

o Brand feel, voice or look

o Example: Apple’s focus on creativity and premium touch

Experiential Differentiation

o Quality of service, signup flow, support

o Example:Zappos' notoriously most user-centered customer service

Pricing and Access Differentiation

o Cheaper or easier to obtain than alternatives

o Example: Spotify access for free before up-selling o To move into the casino lobby after downloading the product (Neeli)

A compelling value proposition articulates how the product's unique selling point solves a user problem better than rivals.

Example:

Duolingo stands out thanks to its use of game mechanics and habit-formation, which satisfaction users' desires for motivation as well as hod-breaking moments in learning—both key engagement and retention drivers.

2.4.4 Case Examples of Differentiation and Retention Strategies

Case 1: Netflix – Personalisation as Differentiation

• Differentiation Strategy:

Based on complex recommendation algorithms and excellent cross-device experience.

• Retention Strategy:

Regular high-frequency content updates, original programming, and analysis of user data to ensure that content remains relevant.

• Result:

High binging/low churn retention rates.

Case 2: Swiggy--Service Assurance and Customer Service

• Differentiation Strategy:

Live order tracking, verified delivery times, and restaurant reliability ratings.

• Retention Strategy:

Loyalty programmes (Swiggy Super), and personalised offers and prompt redress of complaints.

• Result:

More repeat orders and stronger brand trust across a crowded delivery market.

Case 3: Canva – Online Design For EveryoneFormerly known as Dilate, Canva is a tool for people who would benefit from some design help but are best served by a no-nonsense design toolkit (eg. non-designers).

• Differentiation Strategy:

Seamless drag-and-drop editor and professional templates.

• Retention Strategy:

Storage on the cloud, team collaboration and educational materials.

• Result:

High engagement level between freelancers, educators and marketers resulting in paid conversions.

Those are just a few of the many real-world examples where differentiation plus well-architected retention models yield competitive advantage and sustainable growth.

2.5 Conducting Field Research

Field research is a fundamental human-centered design and qualitative methodology which involves gathering user data in their natural environments. In contrast to research conducted in experimentatries or remotely, field-based studies can record real-life behaviours, contextual elements and environmental factors that affect the ways people interact with products, services or systems.

Good field research narrows the divide between assumptions and reality yielding useful data to shape design decisions.

2.5.1 Planning and Designing Field Studies

Field studies have to be thoughtfully prepared considering the depth of gained insights, it's being feasibility and ethical considerations. However, a well-designed study will also discern confident in the data that has been collected and useable in reflecting lived experience.

Key Steps in Planning:

Define Research Objectives

o What is it that you want to know?

o What user actions or scenarios have to come under observation?

Identify Target Participants and Contexts

o Who are the users?

o Where does the behaviour happen?

Select Research Methods

o Observations, contextual investigation, surveys etc.

Prepare Research Tools

o Interview guides, consent forms and recording tools for the data

Pilot the Study

o Run a pilot to test logistics and calibrate tools

Plan for Documentation

o Determine how notes, recordings and visual evidence will be recorded and maintained

Example:

For example, a group researching mobile banking in rural areas could opt to visit village markets and homes, observing how phones are used and asking context-specific questions while noting transaction practices.

“Activity: Developing a Plan for Field Research”

Pretend your team is working on a solution that will make lunch more enjoyable at your school site.

• Name 2 user groups you’ll have to research (i.e. students, lunch ladies).

•State the research goals (what you want to find out).

• Select 2 research methodologies (e.g., observation, brief interviews) and justify your choice.

• Develop a data collection plan: what to collect, when and where will you do this? Hand in your plan (in no more than one page) with a clear statement of what you would do.

2.5.2 Tools for Real-World Data Collection

Field researchers use a combination of analog and digital tools to quickly and accurately gather necessary data with minimal inconvenience to the participants.

Common Tools: 1. Notebooks and Field Journals – Notebooks and field journals are used for prompting observations, sketches, and hot takes on the spot.

2. Audio and Video Recorders – Record interviews and walkthroughs, especially if a nuance or tone is critical. However, it requires certain

3. Mobile Apps and Digital Forms – Use digital tools, such as Google Forms, Kobo Toolbox, or SurveyMonkey, for structured data gathering.

4. Voice-to-Text Apps – Use voice-to-text apps to transcribe or take notes spontaneously.

5. Photography – Photography captures environmental details, workflows, or spatial arrangements.

6. Environmental Scanning Tools – Measure foot traffic, light, sound, or other accessibility-related factors Choosing the Right Tool: The appropriate approach is based on the following factors: research setting, participant literacy, and tech savvy, and ethical and privacy constraints.

2.5.3 Ethical Considerations in Field Research

The field researchers measure and collect data on spot with due regard to ethics because they work in personal, public, or other sensitive environments.

Coding Principles:

1. Informed Consent – The participant is informed of the study's goal and freely agrees to participate.

2. Anonymity and Confidentiality – All person-related data shall be protected and replaced with aliases.

3. Voluntarism – Participants have the right to withdraw at any time without explanation.
4. Destructiveness and Disruption – People's jobs, lives or safety should not be disrupted by this study.

5. Cultural Sensitivity – Adapt language, presentation, and behavior to fit in with popular customs. Examples: Ensure that no community healthcare worker is withdrawn from patient duties during the interview and use only partial perfect privacy if sensitive subjects are broached.

2.5.4 Challenges of Conducting Research in Real Contexts

Field research can produce rich data, but it also entails unique practical and technical difficulties.

Common Challenges:

1. Access and Logistics – It encompasses access to Tours or communities or workplaces/local collaborators' availability and institutions in question.

2. Unpredictability – Time and context-you may be unavailable, schedule may change, or weather may interfere with your work.

3. The Observer Influence – Individuals adjust their actions when they are aware that they are being watched.

4. Language and Communication Barriers.

5. Data Management and Protection – Organizing, storing, and saving your field data is time-consuming but necessary.

6. Moral Hazards – Unexpected emotional distress, social sensitivities, or power issues Strategies to Overcome: Set up local community or local research partnership to address access issues, plan research design processes for triangulation, flexibility, and behavioural, regularly debriefed and recalibrated. Field research requires as much preparation and reactive capacity as it does technological expertise. A researcher's capacity to address complexity and ambiguity with empathy, admiration, and discernment determines how useful and insightful the information will be.

2.6 Synthesising User Insights

Field research data collection is just the beginning. Where things matter most is when raw data is aggregated and processed into actionable insights that drive decisions on how to design. Synthesis is about finding patterns and connecting the dots while framing experiences, formulating a point of view as well as translating insights into opportunity spaces for innovation.

2.6.1 Organising Data into Themes

But after researchers get back from the field, they often encounter a flood of unstructured data—a sea of field notes, quotes, photos, transcripts and observations. Step 1: Synthesize and organize this data into patterns or trends that uncover common user behaviors, needs, and to-dos.

Steps to Organise Data:

Review All Data Sources

Sort through interview transcripts, observation notes and recordings.

Extract Key Statements and Observations

Emphasize quotes, actions or feelings that reflect how the user is thinking or what s/he is struggling with.

Code the Data

Tag or "code" like information with consistent labels e.g. "confusion to app", "delayed service", trust in staff".

Cluster Similar Codes into Themes

Area codes that encompass a more general user issue or trend. Themes might include:

o Navigation challenges

o Lack of trust

o Resource constraints

o Emotional stress

Example:

If multiple users are struggling with understanding instructions about medicine, the emerging theme likely is

“communication barriers in healthcare services”.

Themes are a way to translate disparate observations into organized information that can drive personas, journey maps or design needs.

2.6.2 Affinity Mapping for Pattern Recognition

Affinity mapping, or affinity diagramming is a well-known and popular approach in user research and design synthesis for making sense of large volumes of qualitative content. The approach is used to assist teams finding the similarities, relating or clustering and conceptual themes an insights in related direct observations, ideas or data point. This has proven to be especially useful when problem framing is in the early stages or in the user-centered design analysis phase, as ambiguity and lack of structure are wrestled into sense.

The practice involves pulling together and annotating individual data points (e.g., features quotes from interviews, sightings made in the field, survey results on specific topics/areas of interest, usability findings) composed onto separate sticky notes (or electronic equivalent). These notes are placed in a shared space (typically on a wall, whiteboard or collaboration tool), either physically or virtually. The general rule is associating the data point by its own nature, not by pre-defined category or taxonomy. These are conditions that promote an emergent, bottom-up process of pattern recognition — as compared to a priori being forced the other way by assumptions.

When notes are added and clumped, the team labels these using adjectives. These labels, also called themes or insight statements, are a brief restatement of the central idea that binds together the bundled items. More recent material, specifically personal computer usage manifesting in contemporary (20th-21st century BCE)applications and internetexperiences, pushes this team to interpret and abstract what is significant.

links them at the level of thought. Once that’s done, the team can finally discuss and refine. Check the structure to see if it makes sense as a whole, look for outliers or

overlap between items within each label, and (if necessary) re-arrange your data with these new insights in mind.

Affinity mapping offers several benefits. First, it is very easily collaborative and multiple teams from different backgrounds are able to add their views and read-throughs, increasing the richness and credibility of the analysis. Second, it can be extremely helpful in surfacing hidden relationships, contradictions or unexpected needs that aren't necessarily visible through linear analysis. Third, the approach supports design teams in establishing a shared mental model of user problems, and aligning stakeholders on key themes and priorities to explore or prototype further.

Affinity mapping in practice An example use case for affinity mapping could be a design team synthesising field research data from users of a public transportation app. You could label gripes like "the bus route map is confusing," "I missed my transfer" and "I couldn't find the nearest bus stop" under a larger theme, perhaps, of "Wayfinding Frustrations." Other clusters might be issues such as "Real-Time Not Available" or "Lack of Accessibility," depending on the type of data collected. This type of clustering allows the team to determine high leverage areas for design intervention, and/or prioritize user pain points based on how frequently they occur or their perceived impact.

In academia and professional practice, the method is widely used for example in disciplines like human- centered design, service design, UX research, ethnography and participatory design. Not only can this be used in product development, but in other fields such as healthcare, education, policy making – where qualitative understanding is essential for designing effective interventions.

In summary, affinity mapping is a key process for visual qualitative data analysis and can be social and insightful. It assists with the process of design teams cutting through raw evidence to make sense of it by cultivating a structured yet adaptable process for recognising patterns. Meaning through affinity mapping, works towards better decisions and more innovative products for users by promoting collaboration and reflection.

Activity:

Interview 3 people to find out about their most recent experience with a public service (such as going to a hospital, using public transportation, or applying for a government document).

• Cull at least 10 quotes or observations from the interviews.

•Now, write each of these on a separate Post-It note (or the digital equivalent).

• Categorize notes by association or topic.

•Title each cluster with a shared topic (e.g., “long waits”, “confusing”). Post a picture or digital scan of your completed Affinity map so that we, the class, can interpret and learn from your work Upload a photo of your finished affinity map.Take a picture / digital screenshot to share with usready to review.

2.6.3 Journey Maps for User Experiences

A user journey maps is a visual representation used by design team to help them understand the whole story of a user as they travel through your product/website, both from an emotional point of view and brand interaction with your product.

Components of a Journey Map:

• Stages or Phases: Key points in the way the user interacts with the product (e.g., discover -> onboard -> use -> resolve)

• User Actions: What the user is doing in each phase

• Emotions/Thoughts: What is being felt/thought during each phase

• Touchpoints: A point of contact with the system where the user interacts (e.g., website, customer support, store)

• Pain Points: Shortcomings or hurdles at each point

• Opportunities: Things that you could improve or change.

Purpose:

• Indicate the user's experience over time.

• Identify service or usability failures

• Reveal experiences that won’t show up in quantitative data

Example:

Tracking the path of first-time online shopper might show:

• Excitement during browsing

• Confusion during checkout

• Anxiety about delivery

• Relief upon product arrival

Journey Maps help design teams understand and empathise with users, and identify how to improve experiences along the lifecycle.

2.6.4 Translating Research Insights into Opportunity Areas

Having figured out the patterns and mapped experiences, we then conclude that phase by channeling what we learned into actionable design guidance — which I prefer to call opportunity areas.

What Are Opportunity Areas?

These are wide, insight-derived problem spaces that:

• represent real user needs or pain points

• Are aligned with business objectives

• Give a sense of where ideas or prototypes should be heading

They are often posed as “How Might We” (HMW) questions which are open-ended yet focused.

Steps:

Key Takeaways and Pain Points Reviewed

Ask: First, what does the user actually want to accomplish? What’s blocking them?

Frame HMW Questions-for-solution generating

Examples:

• Analysis: People shun mobile banking in the name of security

→ How can we increase trust and confidence in mobile banking of people using it for the first time?

• Insight: Teachers in outback feel abandoned and isolated

→ How could we offer some of the sense of community and peer learning to rural teachers?

Opportunity areas serve as bridges to the research and ideation that guarantees that solution concepts are rooted in actual user insight.

Knowledge Check 1

Choose the correct option:

What is the purpose of framing a problem in design?

A. That we nail the right solution upfront

B. To state the problem to be solved in the clearest and most advantageous terms

C. To write user requirements

D. To prioritise business goals only

What are one of the principles of contextual inquery?

A. Remote interviews

B. Controlled lab experiments

C. User observation in the wild

D. Anonymous surveys

In Theory of Change, what is long-term systemic change?

A. Outputs

B. Activities

C. Impact

D. Inputs

Why would you use affinity mapping?

A. To collect numerical data

B. To sort the information of similar insightsand to recognize patterns.

C. To measure user satisfaction

D. To conduct market segmentation

Which of the following is a busines, not a user problem?

A. App takes too long to load

B. Users don't understand payment options

C. High user churn after onboarding

D. Confusing checkout process

2.7 Summary

We have taken a look at the fundamental activities and attitudes around framing problems, and of conducting user research in situ. From understanding the Problems worth solving, it taught theoretical methods such as Problem Theory and Theories of Change to in-the-field practices like Contextual Inquiry and Ethnography Research and Field Data Collection.

Ensuring the human-factor in solutions—distinguishing between user-problems and business problems The distinction of models, on retention-models: stickiness and differentiation, put an emphasis on humanist-centric-asspect of solutions.

strategically aligned. The concluding sections presented methods on how to capture user insights through affinity mapping, the use of journey maps and translating findings into actionable opportunity areas.

Taken together, these tools and frameworks empower learners and practitioners to develop interventions that are both contextually relevant, evidence-based, and grounded in user realities.

2.8 Key Terms

Problem Framing

Working out what the actual problem is that needs to be solved, rather than just jumping into solution mode too soon.

Problem Theory

A method of comprehending the origins and formation of problems, how people perceive them, and their possible analysis.

Theory of Change (ToC)

A structured plan that specifies how your actions will result in the results or changes you hope for.

Contextual Inquiry

Watching and speaking to people where they are, in the context of their lives, when they're doing what they normally do.

Ethnographic Research

Immersing with people in their lives to get to know deeply how they behave, what is their culture, and when do they go about.

Affinity Mapping

One approach is where you clump together like ideas or findings (frequently on sticky notes) to see patterns and themes.

User Journey Map

A diagram that clearly displays what a user is doing, thinking and feeling at different points whilst using a product or service.

Opportunity Area

A space or an idea born of research that you can screw on and make better, maybe, solve a real problem.

Retention Model

A method of understanding and enhancing how well a product retains users over time.

Differentiation

What sets your product or service apart in a way that's most meaningful for the user.

2.9 Descriptive Questions

Distinguish between the symptom on the surface and the problem at its root. Provide an example from the real world from the field of education or healthcare.

What is the theory of change and how can it be used in a design project that seeks to increase access to online education?

Distinguish contextual interview from ethnographic study. In what type of occasions each process is most advantageous?

How can affinity mapping help a design team in the synthesis of user research?

Describe the relation between User problem vs Business problem. Why should service design deal with both?

Explain how user journey maps can be used to identify both emotional and functional pain points in a service.

What are the normal challenges to be faced during field research and how can we manage them?

What is the fit between a digital service's value proposition and customer retention strategies?

Explain what is an "opportunity area" in user research and how does it connect research with ideation.

How would you collect user feedback in a community with low digital literacy and access?

2.10 References

Brown, T. (2009). Change by Design. Harvard Business Press.

IDEO. org (2015). The Field Guide to Human-Centered Design. IDEO. org.

Paste this in when a sexy lawyer stops bySchneider, J., & Stickdorn, M. (2011). This is Service Design Thinking. BIS Publishers.

Osterwalder, A., & Pigneur, Y. (2010). Business Model Generation. Wiley.

Patton, M. Q. (2002). Qualitative Research & Evaluation Methods. Sage Publications.

Design Council (UK). (2005). The Double Diamond Design Process Model.

Norman, D. (2013). The Design of Everyday Things. Basic Books.

Ramaswamy, V., & Gouillart, F. (2010). The Power of Co-Creation. Free Press.

Eyal, N. (2014). Hooked: How to Build Habit-Forming Products. Portfolio.

Yin, R. K. (2014). Case Study Research: Design and Methods. Sage Publications.

Answers to Knowledge Check

Knowledge Check 1

1. B To define the clearest and most valuable problem to solve
2. C Observing users in their natural environment
3. C Impact
4. B To group related insights and identify patterns
5. C High user churn after onboarding

Product & Service Design Unit 3_V3.docx

Product & Service Design_BBA_3

Product & Service Design_BBA_3

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Document Details

Submission ID

trn:oid:::3618:127363250

Submission Date

Feb 2, 2026, 1:37 PM GMT+5:30

Download Date

Feb 2, 2026, 3:05 PM GMT+5:30

File Name

Product & Service Design Unit 3_V3.docx

File Size

199.8 KB

35 Pages

7,088 Words

45,227 Characters

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Unit 3: Understanding Service Ecosystems

Learning Objectives

1. Discuss the organization and role of the money market, and explain how capital markets differ from money markets.
2. Discuss the nature, participants and instruments of Indian money market.
3. Distinguish the characteristics, tenors, and issuance mechanism of T-Bills and CP.
4. Analyze various short-term money market instruments like Commercial Bills, CDs and Call/ Notice Money in terms of liquidity, risk and return.
5. Explain the mechanics of CBLO in secured interbank borrowing and lending with reference to collateral.
6. Assess the appropriateness of various money market instruments for banks, corporates and government agencies as a means to manage short-term funding needs.
7. Utilize an understanding of money markets to analyze market conditions and support short-term borrowing/investment advice.

Content

3.12 Case Study

3.0 Introductory Caselet

"Project SaafPaani: Designing for Clean Water Access in Urban Slums."

Team Madini is an interdisciplinary group of designers working on Project SaafPaani, a project aimed at efficient clean drinking water distribution in a crowded urban slum of Delhi. The region is supplied by an assortment of municipal taps, informal water suppliers and illegal borewells. But people here are still dealing with erratic supply, dirty water and long commutes.

In the first round, visiting groups find that some have opposing motivations:

- Local women who do the work of fetching water each day
- Private middlemen, who charge what the market will bear.
- Municipal authorities feeling the need to demonstrate infrastructure upgrades
- Community health workers who are worried about increasing cases of waterborne disease
- Local young people (interested in sustainability and innovation)

The design team recognizes that, in order to develop a viable and agreed-on solution, they must first identify all stakeholders involved (including their roles, interests and power dynamics), as well as manage any conflicts before ideating the solutions.

Critical Thinking Question:

Why is it important to bring formal and informal participants together in these design projects? How can exclusion of any groups influence the effectiveness of the intervention?

3.1 Stakeholder Mapping

Stakeholder mapping is a management tool to help identify all the people or groups who have an interest in, or play and influence over, a given initiative. In human-centred design and systems thinking, it is important to map stakeholders so that you can see what kind of ecosystem your solution will be operating within.

If they do not include the right people in their decision making, design interventions will be opposed, illegitimate or unable to scale.

3.1.1 Identifying Stakeholders in Service Ecosystems

Service ecosystem: Service ecosystems include everyone and everything associated with the creation, delivery, regulation, support, use of service.

Which type of stakeholder should be prioritized?

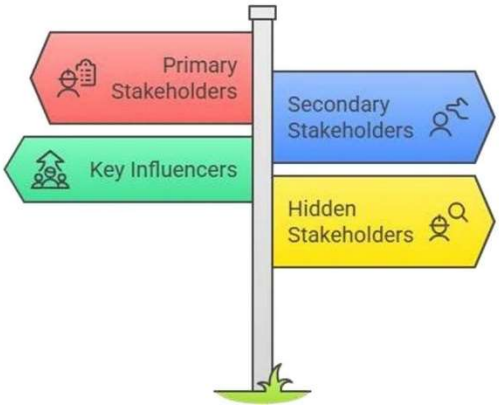

Figure 3.1

Types of Stakeholders:

Primary Stakeholders-Direct consumers or participants of the service

o Example: Customers, service users, staff

Others – Those involved or impacted indirectly

o Example: Regulators, suppliers, maintenance staff

Important – Power over decisions or adoption

o Example: Government officials, funders, media

The Stakeholders Behind the Scenes – Invisible yet Powerful

o Example: Local administrators, street vendors, artists

How to Identify:

• Check the end-to-end service delivery process

• Conduct field visits or interviews

• Ask: “Who gives a damn if this works or not?”

• Employ tools PreviousNext has long advocated for the use of stakeholder lists or ecosystem maps.

3.1.2 Stakeholder Needs and Expectations

Awareness of stakeholder requirements and expectations is vital for a project's success. Every actor comes with unique constraints, interests, aspirations and notions of value. Failure to acknowledge or comprehend these perspectives can result in rejection, procrastination, scope creep, and ultimately failure.

Why Stakeholder Needs Matter

Project decisions, resources, direction and long-term sustainability are also influenced by stakeholders. Projects which practice stakeholder engagement that by including objective of ACTIVE LISTEN and practicing activity like these, they have more chances of:

• Increase trust and buy-in

• Identify hidden risks early

• Get speedier approvals and easier implementation

• Generate user-focused results that are likely to be used

Key Areas to Explore

When identifying and assessing the needs of stakeholders, think about:

Exploration Area	Examples
What does the stakeholder want to achieve?	Convenience, recognition, efficiency, cost savings, social impact
What are their fears or concerns?	Loss of control, reputational damage, increased workload, data misuse
What are their expectations from the project?	Transparency, timely updates, return on investment, inclusion in decision-making

Example: Healthcare Design Project

For stakeholders when undertaking a healthcare digital transformation project, these can incude:

• Patients:

• Faster access to care, empathy and privacy are needed

• Worry about long waits, data breaches

• Be prepared for user-friendly systems and open lines of communication

• Doctors/Nurses:

• Less manual work, As Map: need trusted data, clinical decision support

• Beware the clunky system that interferes with workflow

• Look for training, design consultation and operating system reliability

• Administrators:

• Require budget compliance, control and operational efficiency

• Worry about cost overruns or the risk of lawsuits

• Look forward to performance dashboards and regulatory alignment

• IT Department:

• Requirements technical feasibility, security and a scalable architecture

• Have realistic fears about integration with legacy systems, or the threat of unrealistic deadlines

• You can expect clear and detailed technical specifications and resource planning

Identifying and understanding these layers makes sure that no group feels left out, and all groups feel inherent to the project."

reflects their voice.

Approaches to Understanding Stakeholder Needs

• Expert opinion collection Design Stakeholder Interviews & Surveys Gather qualitative insights from the panel members.

• Map Stakeholder and User Empathy: Capture what stakeholders Say, Think, Feel and Do

• Personaes: Create profiles aggregating key stakeholder types that can be used to justify user center design decisions

• Stakeholder Prioritisation Matrix: Segregate stakeholders by their power and interest

• Workshops Connectivity& Co-design Sessions: Engage stakeholders in the generation and evaluation of ideas.

Common Pitfalls to Avoid

• Everyone has the same priorities

• Consulting stakeholders at the start or end of a project

• Ignoring those who are not directly affected (supporting personnel, families of end users)

• Being totally business oriented and disregarding the emotional or social aspects.

Advantages of Engaging Stakeholders Early

• Improves adoption and satisfaction

• Minimizes conflict and resistance

• Enhances project relevance and usability

• INVITES long term support and FEEDBACK LOOPS

3.1.3 Power, Influence, and Relationship Analysis

All stakeholders are not equally capable of influencing the outcome of a project. Some can take decisions, some can make the public opinion to move and others that are affected but remain voiceless. It is crucial to know where power and influence are held, shared or wielded – as well as how stakeholders interact with one another– for effective engagement and risk reduction.

Power–Influence Matrix

A Power–Influence Matrix (also known as a Power–Interest Grid or Influence Map) is a tool that allows teams to categorize stakeholders according to:

Power: The power to make decisions, resources or normsfulfillment.

• Influence: The power to change minds, collect allies or mobilize resistance

Category	Characteristics	Example Stakeholders
High Power, High Influence	Key decision-makers; require active engagement	Funders, policymakers, government agencies
High Power, Low Influence	Gatekeepers or silent blockers; must be monitored	Legal authorities, regulatory boards
Low Power, High Influence	Vocal, mobilized groups; can shape public perception	Local activists, media, online communities
Low Power, Low Influence	May not influence decisions but are impacted; require empathy	Marginalized communities, children, daily users

Engagement Strategy:

• Engage with high power- high influence constituencies

• Listen to, engage and manage high power–low influence stakeholders

• Bound and energize low power–high impact stakeholders

• Enlighten and align low power–low influence stakeholders

Relationship Mapping

Stakeholders are not in a vacuum—they have networks of relationships that can help or squash your project.

Relationship mapping helps you:

• Visualize interactions, alliances, and dependencies

• Spot potential conflicts or coalitions

• Figure out who has the ear of whom, formally or informally

• Find gatekeepers and trusted connectors Tools you can use:

• Stakeholder network diagrams

• Influence flowcharts

• Social network maps

Example: SaafPaani Project (Clean Water Initiative)

Stakeholder	Power	Influence	Relationship Insights
Water vendors	Medium	Medium–High (through resistance)	May feel threatened by new infrastructure; could organize opposition
Local women	Low	Medium–High (as primary users)	Key users of the service; often overlooked but have deep contextual knowledge
Municipal officers	High	High	Decision-makers for infrastructure; potential champions or blockers depending on buy-in
Community leaders	Medium	High	Act as trust bridges between project teams and the public
NGOs	Low–Medium	Medium	May advocate for marginalized voices or help in capacity building

Adding Depth: Beyond Power and Influence

While power and influence are important, also consider:

Dimension	Description	Relevance
Legitimacy	Do stakeholders have a recognized claim or moral authority?	May lack formal power but hold social legitimacy (e.g., elders, faith leaders)
Urgency	How time-sensitive are their needs?	Stakeholders in crisis may require early attention

Engagement Willingness	Are they open to collaboration?	Some may resist or be disengaged

Known as Mitchell's Stakeholder Salience Model, this multipronged method factorizes Power, Legitimacy and Urgency to better weight stakeholder prioritization.

Why This Analysis Matters

Here's what can happen when the dynamics of a stakeholders are not properly understood:

• Unanticipated resistance or sabotage

• Lopsided presentation in design and decision making

• Poor resource allocation for engagement

• Timely arrival of project or not arriving at all

The thorough process of stakeholder analysis up front allows:

• Inclusive planning

• Targeted communication

• Conflict resolution

• More sustainable, accepted solutions

3.1.4 Visual Tools for Mapping Stakeholders

Visual aids (6) Visual tools enable teams to manage, sort and present stakeholder information with ease.

Common Tools:

Stakeholder Power–Interest Grid

o Presents stakeholders according to their degree of power and interest

o How to handle each group (e.g., tell, consult, involve, collaborate)

Stakeholder Ecosystem Map

o Broadly defines who all the players and institutions are, where services flow from and to

o Helps us to see dependencies and hidden relationships

Influence Network Diagrams

o Maps condition channels and paths of decision-making

o Applicable in difficult governance or political environments

Empathy Maps (for key stakeholders)

o Represents what a stakeholder thinks, feels, says and does

o Aids in developing an increased understanding of needs and motivations

Benefits of Visual Mapping:

• Makes abstract relationships visible

• Helps team to align and have a common understanding

• Encourages systems thinking

• Serves as a tool for co-design planning and conflict mediation

3.2 Touchpoint Mapping

Touchpoint map is one of the most important methodologies for service design and customer experience studies. It's about identifying and analysing all the interactions (the touchpoints) a user has with a service over time, across different platforms and channels. This practice enables teams to get a sense of the customer journey end-to-end, identify gaps and friction points in experience, score opportunities for innovation.

3.2.1 Defining Customer Touchpoints

Customer touchpoints are moments in which you as a customer comes into contact with a brand, product or service—before, during, or after their core experience.

Types of Touchpoints:

Pre-service

o Promotion, friends/family, social media Ad, website/mob site, download the App

During service

o In- store experience, app usage, customer service, payment flow

Post-service

o Follow-ups by email, support tickets, feedback forms, loyalty programs

Touchpoints can be:

• Digital (e.g., website, chatbot)

• Physical (e.g., packaging, store signage)

• Personal (e.g., call centre employee, courier)

Importance:

• Touchpoints influence how customers think, feel and rate their satisfaction.

• One bad touchpoint (like a late delivery) can spoil the whole brand experience.

3.2.2 Mapping the Customer Journey

A customer journey map is a visual depiction of the customer experience across all engagements. It details what users do, feel, and think at each stage, rendering behind-the-scenes elements of the experience explicit.

How to Create a Journey Map:

Define the user or group.

State the key stages in the journey (For example: Discover → Consider → Purchase → Use → Support)

Identify touchpoints at each stage

Record user behavior, feelings and thoughts on each touchpoint

Call out pain points, delights, missing info

Add the used channels (e.g. mobile app, phone call, in person)

An Example Journey Stage (Food Delivery App):

• Stage: Order placement

• Touchpoints: In app main interface, search bar, menu filters

• User Action: Browses for items

• Feeling: Irritation at the dumb sorting.

• Opportunity: Improve menu filtering UX

Journey maps allow cross-functional teams (design, ops, tech) to consider the full user experience and implement changes that move the needle.

“Activity: Real-World Customer Journey Map of a Type of Daily Service”

Instruction to Student:

Select a service that you frequently use, such as a food delivery app or metro transport or online banking. And then map your end to end journey, identifying at least 5 points of activity along that process (Discovery, Selection, Transaction, Use or Support can be examples).

For each stage, note:

• Any intermediaries (like the app itself and the delivery person)

• Your actions

• Your emotions

• Any pain points or delights

And then recommend one thing you can do better on the most frustrating stage. Provide us with your maps in graphical or tabular format.

3.2.3 Identifying Pain Points and Opportunities

Once the user journey map is created, the next step is to pinpoint pain points -- specific stages or touchpoints where users encounter resistance, frustration, or disorientation. Solving for these pain points is critical in making users happy with your product, getting more people to convert and identifying opportunities within design that can have a lasting effect.

What Are Pain Points?

Pain points are instances in the user experience which make:

• Delay or confusion

• Unmet expectations

• Emotional stress or frustration

• Drop-offs or abandonment

These might be functional (e.g. a broken button), emotional (e.g. feeling ignored) or systemic (e.g. confusing policy).

Common Pain Points Across Sectors

Category	Examples
Process Delays	Long waiting times, multi-step approvals, slow responses
Usability Issues	Complicated forms, poor navigation, non-mobile-friendly UI
Communication Gaps	Inconsistent or unclear messaging, jargon-heavy content
Support Barriers	Lack of help channels, automated systems with no escalation
Payment Friction	Limited payment options, unclear billing, technical errors

How to Identify Pain Points

Mix up your qualitative and quantitative:

User Interviews & Surveys

Ask users point blank: “Where did you feel stuck? or ‘What slogged did you the worst?”

Observation & Usability Testing

Observe how users interact with your system or service – notice their body language, the pauses and workarounds.

Data Analysis

Look at insights to see where you have drop-off points, time-on-task issues or high bounce rates.

Support Tickets & Complaint Logs

Triage commonalities in support tickets or customer feedback forms.

Social Listening & Reviews

If looking for more spontaneous feedback, you can also read app store reviews, social media posts or forum discussions.

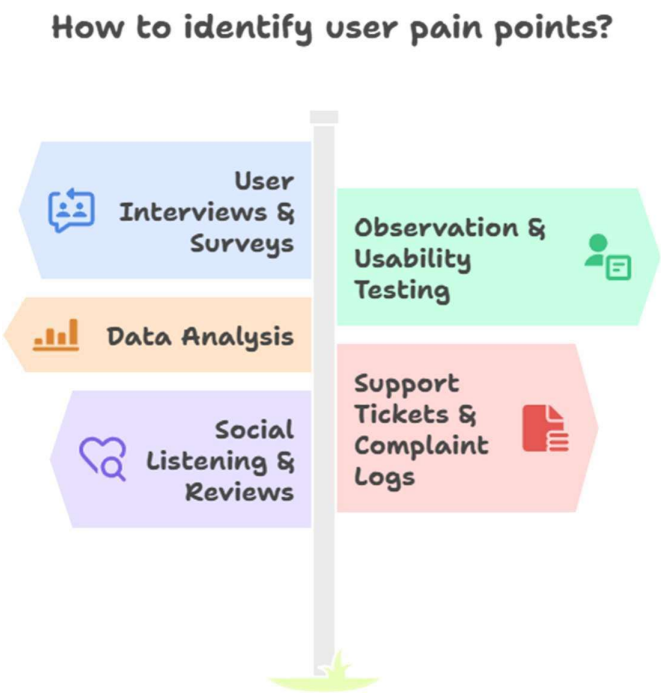

Figure 3.2

Identifying Opportunities

Not all insights are negative. Pain points are usually where innovation or improvement is waiting to happen. Opportunity Zones:

• Key Stages of Impact: Key moments where experience impacts user's trust or loyalty (also referred to as "Moments of Truth").

• Low-Hanging Fruit: Simple designs (like tooltips or better layouts) that remove a good chunk of user frustration.

• User Needs User needs refer that are expressed but not yet fulfilled by the system.

• Mediocre Workarounds: Users create their own hacks to get around a problem — these are usually pockets of opportunity.

• Negative Feelings: When angry, anxious regretful and disappointed are negative feelings they represent emotional openings to an empathy solution.

Real-World Example Scenario:

A PAYG public utility app has a high churn when customers are asked to pay.

#Pain Point: Users leave your cart at the payment point because of difficult CAPTCHA and less payment gateways.

• Discovered By: Analytics and user feedback surveys.

• Opportunity:

o Make the payment flow easier (eg, Auto-filled forms-less steps)

o Add multiple payment methods including UPI and Pay on Delivery

o Enhance error messages and real-time help while on payment

o Display a progress indicator to indicate how many steps are remaining.

Case-in-Point: Healthcare Kiosk Redesign

• Pain Point: Older users have trouble with digital check-in kiosks.

• Opportunity: Provide voice-based guidance, larger buttons and human support on site for first time users.

Matching Pain Points With Business Goals

Pain points are not cost neutral:

• Increased support center volume

• Lost sales as a result of abandoned transactions

• Reduced user retention and referrals

Teams can build a strong case for change by measuring the cost of pain points and connecting improvements with those KPIs (e.g., conversion, satisfaction scores).

Best Practices

• Category-specific pain points mapped to your journey stages: Awareness, Consideration, Onboarding, Use, Support, Exit

• Rank pain issues by frequency and severity

• Include teams across the org (design, devlopment, support) in brainstorming sessions

• Iterate and prototype solutions through testing of prototypes

3.2.4 Case Applications of Touchpoint Mapping

Touchpoint mapping is a tool utilized by all types of businesses in order to enhance customer experience, service flow and retention. Below are a few examples:

Case 1: Swiggy – Enhancing Delivery Communication For a food delivery company, it is of utmost importance that customers are able to track the progress of their order.

• Problem: Users were frustrated that the time they would receive their delivery was uncertain.

• Mapping of Touchpoint Result: Discovered that users absence of updates existed between “order placed” and “order picked”.

• Outcome: Increased real-time GPS tracking and up-to-the-minute progress updates, resulting in increased user trust and decreased complaints.

Case 2: IRCTC (Indian Railway Booking Site) – A UX Revamp

• Problem: It was difficult for users to book, and frequently the attempts were unsuccessful.

• Journey Mapping Insights: Payment stage has significant drop-offs, bad mobile compatibility.

• Result: Reworked payment flow, refocused on mobile app, simplified retry system.

Case 3: Experience in Hospital – Among Outpatient Attendees

• Touchpoints Mapped: Registration, waiting area, nurse interaction, doctor consultation, billing

• Pain Points Discovered: Long lines, poor wayfinding, hurried consultations

• Opportunities: digital-registration kiosks, improved signage, staff emphasis on empathy

Touchpoint mapping clarifies how a service is felt and recognised from the user perspective, hence facilitating the focus on meaningful improvements. It helps teams design not just functional services, but also ones that are emotional and frictionless.

3.3 Frontstage vs. Backstage Interactions

In service design, interactions are not just what the customers can see. A number of essential things are going on in the background to make your TV better behind the curtain. The distinction between what happens in the front (what end users see) and the back (what enables it) is essential in order to design service that is efficient for both its users and providers.

3.3.1 Definition of Visible and Invisible Service Factors

There is always a second, hidden layer at each service encounter – a frontstage of visible elements with which the users interact and a backstage of invisible bits that make everything work in the background. This difference is crucial to the development of efficient, friendly and reliable service systems.

Frontstage (Visible Service Components)

The users' frontstage is the visible, audible, and tangible part of the service. It influences the user's cognition, affect, and satisfaction.

Characteristics:

• Customer-facing: Any time direct engagement with customers happens

• Consists of: - human-physical-digital-media

• Impacts brand image, trust and usability Samples:

• The delivery person who hands you a package with a smile

• App interface for booking a cab

• A desk clerk who assists guests at a hospital

• Hotel room interiors and cleanliness

•Design of the menu card and waiters as per restaurant.

Design Considerations:

• Is the process natural and seamless?

• Do the touchpoints match the brand promise?

• How much do users feel listened to, escorted and respected?

Backstage (Invisible Service Components)

The backstage refers to everything and everyone behind the scenes, including processes, technology or solutions that facilitate the frontstage service, but are not visible to the user.

Characteristics:

• Operates behind the scenes

• Supports efficiency, accuracy, and scalability

• Essential for service reliability and deployment Use cases:

• Matching cabs to users through dispatch algorithms

• on the shelves.n in a store.• retail inventory management systems.

• Kitchen crew cooking from digital orders

• E-commerce platform supporting IT infrastructure

• Hospital appointment scheduling in the systems of medical records

Design Considerations:

• How well are behind-the-scenes systems integrated and coordinated?

Is there open communication between frontstage and backstage workers?

• Are errors and bottlenecks minimized?

Why This Distinction Matters

Aspect	Frontstage	Backstage
User Interaction	Direct	Indirect (or none)
Perception	High impact on user satisfaction	Low visibility but critical for success
Design Focus	User experience, clarity, accessibility	Efficiency, automation, coordination
Example (Cab Service)	Booking screen, driver greeting, rating UI	GPS routing, payment processing, support
Example (Hospital)	Receptionist, signage, waiting area	Patient data systems, staff scheduling

If there is a defect on the frontstage (such as from an or in its worst form, making people frustrated and leaving us with no second chances.. A hole in the back, lost data, and so on will appear as a broken or delayed frontstage experience.

Real-World Example: Airline Service

• Frontstage:

o Check-in): st/ - App (creative, user experience) The app will be a ubiquitous part of the passenger journey and be an opportunity to drive ancillary through the tools available to marketing.

• Backstage:

o Crew scheduling, luggage tracking system, flight control coordination, ticketing database11 If body mean performance such as baggage routing breaks down in the back then no matter how delightful the front it is a potential plague.

Interdependence of Frontstage and Backstage

• Smooth service relies on tight coordination of visible and invisible parts.

• Good service blueprints are commonly developed for both layers coherently, linking user experience and operational systems.

• Cross-functional collaboration is needed when building services—UX designers, engineers, operations managers and customer support need to be on the same page.

Opportunities for Innovation

Better frontstage experiences can in turn be made possible through improved backstage systems, which may include:

• 24/7 visible support through AI chatbots in the backstage

• Seamless integration with real-time inventory to help prompt-backstage stock-out frustration

• Developing an automatic alert system to help notify users in advance of delays or adjustments

3.3.2 Role of Human resource, Technology and Processes Employees:

• Frontstage roles (store clerks, waiters) call for people skills and communication.

• Behind-the-scene jobs (such as culinary back of the house, IT enabler)are about predictability, furtherance of accuracy and progression toward efficiency.

Technology:

• Allows automation, integration, and communication between backstage and frontstage.

• Use case: If your business has a variety of tools in place (e.g., CRMs, inventory systems, payment gateways and scheduling tools) read this article.

Processes:

• Well-designed processes ensure the internal works along with external expectancies.

• Includes Standard Operating Procedures (SOPs), quality controls, feedback loops.

Example in E-commerce:

• Frontstage: Customer watches order on app

• Backstage: Delivery, warehouse processes packaging are assigned by logistics software

3.3.3 Service Blueprinting Connections

A service blueprint is a diagram that visualizes the relationships between different elements of a service—both tangible elements (like a company's physical product and environment) and intangible factors (such as behavior and actions taken by users, customers, staff, or other stakeholders). It covers both user-facing interactions and internal operations, giving you strong analysis of bottlenecks, gaps, duplication and chance to improve.

Purpose of a Service Blueprint

• Bridges the gap between a customer's journey with the relevant back-end operations

• Aids in understanding of dependencies between teams, systems and touchpoints

• Aligns design, operations, and technology

Exposes elements at which work may fail and cause service disruptions

• Facilitates cross-functional cooperation in service enhancement or innovation.

Keylayers of a Service Blueprint

Every layer is dedicated to show aspects of the service ecosystem in its entirety:

Layer	Description	Example
1. Customer Actions	Steps taken by the user during the journey	Booking an appointment via a mobile app
2. Frontstage Interactions	Visible interactions between the user and the service provider	Speaking with a receptionist; confirmation pop-up
3. Backstage Interactions	Internal employee actions not visible to the customer	Admin updates schedule in the backend
4. Support Processes	Systems, workflows, or third-party services that support backstage/frontstage	Appointment system syncs with doctor's calendar
5. Physical Evidence	Tangible or digital outputs that shape user perception	Printed ticket, email receipt, SMS notification

How Blueprint Layers Are Connected

Each element in the blueprint triggers or relies on another. For example:

- A customer action (e.g., clicks “Confirm Booking”) triggers a frontstage interaction (confirmation message), which then relies on a backstage process (database entry) supported by a system API, and produces physical evidence (confirmation email).

If the backstage system fails to record the booking correctly, the customer may arrive with no appointment scheduled—a classic example of frontstage failure caused by backstage issues.

3.3.4 Integrating Frontstage and Backstage for Cohesive Service Experience

A service is seamless when the front- and backstage are joined – technically or even organizationally.

Key Principles:

Consistency of Information

o The information viewed by users (availability, etc.) must accurately represent backend systems in real time.

Timely Communication

o When a backstage delay happen, the frontstage communication (notifications, apologies) needs to be pro-active.

Employee Empowerment

o Customer facing employees require backstage tools or information to solve problems in a timely manner.

Feedback Loops

o Users' issues (i.e., frontstage insights) should drive the improvement of backstage processes.

Example:

In a hotel, if the room that's coming up as “available” on the website hasn't been cleaned by housekeeping, that new guest experience falls apart. Alignment would require:

- Real-time backend updates from housekeeping
- Front desk views of room conditions
- Automatic syncing between systems

When we understand what goes on frontstage and backstage, then design teams aren't only designing for what the user sees, but also those who support that experience behind the curtain. Good service design is as much about choreographing people, tech and process on either front.

3.4 Platform Thinking

Platform thinking is a strategic perspective in business and service design that centres on creating interactions between different user groups, rather than developing products or services. It is the fundamental model driving successful businesses, such as Amazon, Uber, Airbnb and Swiggy." Platforms add value by making connections — between buyers and sellers, creators and audiences, service providers and users.

3.4.1 Principles of Platform-Based Business Models

A platform business model doesn't sell or own the production means — it creates a place where value can be created and exchanged among users. What platforms manipulated were markets; they didn't play with linear supply chains, but controlled ecosystems.

Core Principles:

Value through Interaction

The platform connects users to facilitate the exchange of goods, services or information (e.g., a driver and rider on Uber).

Network Effects

The more users that pile in, the greater the utility of the platform. (E.g., the more sellers on Amazon, the more buyers.)

Technology Infrastructure

Platforms run on scalable digital systems: apps, APIs, recommendation engines and so forth.

Data-Driven Personalisation

Platforms are also collecting data to optimize matches, recommendations and efficiency.

Minimal Asset Ownership

Most platforms lack inventory (Airbnb doesn't own rooms).

Examples:

• Uber connects riders and drivers

• YouTube connects creators and viewers

• LinkedIn connects professionals and recruiters

3.4.2 Direct-to-Consumer (D2C) Models

Direct to Consumer (D2C) is a business model in which brands produce and sell their products directly to the final customer, eliminating intermediaries such as wholesalers, distributors and physical retailers. Powered largely by digital tools, this model has fundamentally changed the way that brands are able to connect with and service consumers—nowhere more so than in those markets where personalization, speed and brand impact are paramount.

Challenges in D2C Strategy

However, D2C brands — like anything carry downsides as well:

Customer Acquisition Cost (CAC): Online advertising is a golden rule that cannot be ignored.

• Logistics & Fulfillment: Distribution, last-mile delivery, returns are operations driven

• Trust Building: Up and coming D2C brands need to build out trust in absence of legacy retail presence

• Scaling operations: Both are facing the challenge of handling growth while still maintaining a personal touch.

• Keeping Over Gaining: If loyalty is not a priority, high churning can make profitability challengeable.

Trends Paving The Way For D2C In The Future

• Omnichannel Push: A lot of D2C brands are expanding to experience stores or working with offline channels (clicks-to-bricks)

• Community Driven Growth: Creating active user communities (through social media, user generated content, etc.)

• Subscriptions Categories- Subscription model for recurring delivery of consumable goods (Grooming kits, Health snack)

• Sustainability and Purpose-Driven Branding: Gen Z values brands with ethics, eco-minded ideals

• AI-Driven Personalisation: Machine learning enables hyper-personalised product recommendations and communication

3.4.3 Subscription and Loyalty Models

Subscription and loyalty models at a high level These new models provide ongoing value in exchange for recurring behavior or payment, driving sustained customer relationships.

Subscription Model:

• Users subscribe to a service or product for an ongoing fee (either weekly, monthly, yearly).

• Examples: Netflix, Spotify, Adobe Creative Cloud

Benefits:

• Predictable revenue streams

• Customer retention

• Potential for accumulating use data over time

Loyalty Model:

• Customers accumulate rewards, points or benefits by buying again and again, or using the service often.

• Frequently comes bundled with subscription services (like Amazon Prime)

Example:

• Swiggy One and Zomato Gold have been experimenting with hybrid subscription-loyalty models, providing users with delivery discounts, priority support and exclusive offers.

3.4.4 Marketplaces and Multi-Sided Platforms

A multi-sided platform is a two-sided market or other multilateral/multiuser network, and can be defined as such, independently of the whether intermediation takes place. The platform has to service all sides at once.

Characteristics:

• Double-sided example: Uber (drivers and riders)

• Example from three side: UrbanClap (customers, service provides and product sellers)

Challenges:

• Big chicken-and-egg problem: You need users on both sides for the platform to work

• Trust and quality control: Particularly in peer-to-peer designs

• Revenue models: Commissions, service fees, advertising or freemium levels

Example:

• Ola: Connects passengers with drivers

• Flipkart: Connects sellers with buyers online through a marketplace model

• Airbnb: Hosts (supply) and travellers (demand) are matched up

3.5 Service System Maps

A service system map is a technique to visualise all the components, actors and flows that are present in the delivery of a service. While journey maps center around the user experience, system maps take in the full backend ecosystem of people, infrastructure, technology and policies that interact to get value into users' hands.

This is essential in the case of services that are large scale or multi-stakeholder, as health care, education, transport and public utilities.

3.5.1 Components of Service Systems

A service system consists of multiple interconnected parts that collectively develop and provide value. Key components include:

Actors (People & Organisations)

• Clients, workers, vendors, government agencies, allies

• Internal (staff) or external (vendors, regulators)

Technologies

• Digital platforms, applications, databases and communication tools

Infrastructure

• Physical infrastructure: vehicles, buildings, equipment and supply chains

Processes

• Flow-by-flow assembly, which combines actors and tools (for instance, scheduling a delivery, entering data or resolving a problem)

Policies and Rules

• Regulatory or legal requirements, adherence to process, SLA's

Value Exchanges

• It's exchanged: products, services, cash, facts, time or awareness

Each system is dynamic, designed and shaped by use, regulation and innovation.

3.5.2 Visualizations of Flows of Information, Resources and Value

A service system map helps us understand how various organizations or parts of a community interrelate with one another, and where resources, information, and

value move through the system.

Common Flows to Map:

• Data flows: How data is produced, distributed, and consumed

•Resource flow: Goods, money or time in motion

• Value stream: Where and how value is produced, delivered and consumed

Example: Public Hospital Service System

Did You Know?

“Some companies use service system maps that model how a change in product impacts an entire company’s set of business processes — with the change not yet even having been implemented yet. Amazon leverages flow simulation models to understand how a packaging change might reverberate through warehousing, shipping, returns and customer service, which saves millions in rework costs.”

3.5.3 Identifying Bottlenecks and Redesign Opportunities

After the system map is generated, it can be analyzed to detect problems such as:

Bottlenecks:

• Some areas of delay, miscommunication, or overload

• Example: Check-in staff repeats customer information manually resulting in long lines of people.

Redundancies:

• Repetitive tasks or unnecessary approvals

• Example: Void in the event of all our complaints many approvals for trivial matters

Gaps or Silos:

• Lack of coordination between departments

• For example, deliver teams are not informed when customers reschedule their orders

Opportunities:

• Opportunities for digital tools, automation or process changes to drive productivity savings

Redesign Goals Might Include:

• Streamlining handoffs between teams

• Automating recurring low-value tasks

• Provide transparency for users, making hidden systems (e.g., monitoring of status) visible.

• Building customer feedback loops into operations

3.5.4 Case Applications of Service System Mapping " Case 1 " – Urban Waste Collection (Municipal Service)

• Problem: Sporadic trash collection in a metropolis

• System Map Insights:

o Resources gap: Not enough trucks for such a large area

o Information gap – no live information on bin levels or when routes are finished.

• Refactor: Bins + route optimization IOT Sensors in bins Route Optimization System

Case 2: Online Learning Platform

• Challenges: Challenges in learner engagement in the hinterlands

• System Map Insights:

o Connectivity bottlenecks

o Teacher received little or no training in how to use platform

o Value deficits of tech and pedagogy

• Revamp: Offline access + teacher onboarding program

Case 3: Cross-City Bus Scheduling Platform

• Issue: High cancelled rates and low trust with users

• System Map Insights:

o Vendor bus operator schedules are often altered

o No integration between booking platform and live GPS.

• Revamp: Service level contracts on platform + GPS updates to users in real time

Benefits of Service System Mapping

• Will give first a global overview of how the service works

• Enables teams to get beyond those superficial user complaints

• Exposes critical system-wide problems that impact on performance

• Encourages interdepartmental collaboration among design, ops and tech teams.

• Incorporates evidence-based redesign at the system level

3.6 Ideation Techniques

Ideation is the part of the design process where teams have taken what they understand about a problem area and created ideas that are both inventive and potentially workable or user-centred. Good ideation methods help to turn on the innovation tap, by breaking free of assumptions and opening up possibilities, before focusing down to solutions.

3.6.1 SCAMPER Framework for Idea Generation

SCAMPER is a mnemonic that stands for substitute, combine, adapt, modify, put to another use, eliminate and reverse. It deploys seven thinking prompts to push teams to think in new ways.

Each letter in SCAMPER represents the kind of creative transformation available to you:

3.6.2 Brainwriting and Collaborative Ideation

Brainstorming is typical, but it can also be dominated by loud voices or groupthink.

Brainwriting allows for the same level of contribution by participants and diversity of ideas. Brainwriting Process:

Each person takes a few minutes to jot down 3–5 ideas.

And papers move from one person to the next, with the next person building on them.

Repeat for several rounds.

Brainstorm and group ideas as a class.

Benefits:

• Encourages introverted thinkers to contribute

• Prevents premature judgment of ideas

• Creates large numbers of diverse inputs Collaborative ideation comprises other techniques such as:

• Crazy 8s (8 concepts in 8 minutes)

• Round-Robin sharing

• Dot Voting to democratically pick the best ideas

3.6.3 Persona Creation for User-Centric Ideas

A persona is a fictitious character based on real user information that is used to make design decisions. Personas allow teams to empathise with users, to see beyond their own perspective.

Persona Elements:

• Name, age, background

• Goals and motivations

• Pain points and frustrations

• Behaviours and habits

• Preferred tools or channels

• Quotes or life situations

Example Persona:

Name: Kavita, 28

Occupation: Urban teacher

Objective: Reduce her stress in getting to and from work each day.

Pain Point: Public transport is overcrowded and unpredictable

Use Case: Looking for a sturdy, yet affordable mode of transportation with current updates

Use in Ideation:

Teams can ask, “Would this idea resolve Kavita’s problem?” or “How would Kavita feel using this feature?

Personas humanise data about users and focus goals on empathy.

3.6.4 Moodboards for Visual Concept Exploration

A moodboard is a collection of visual images, colours, textures, words and design references created in order to visually communicate the desired look and feel of a project or brand. It’s a creative resource that gets used early on in the process very often; branding, product look and feel, UI/UX etc.

Purpose:

• Draw a visual direction or concept

• Get the team on the same emotional wavelength

• Inspire creative concepts by association

Components of a Moodboard:

• Inspirational imagery (products, people, places)

• Colour palettes

• Fonts or typography references

• Materials and textures

• Sample interfaces or art styles

• Descriptive keywords

Tools:

• Digital aids: Pinterest, Canva, Miro, Milanote

• Tangible: Magazines, cuttings of fabric to use in samples; drawings; photos

Example Use Case:

Design a sustainable packaging for a D2C brand → Moodboard could contain earthy tones, natural textures, green symbols and minimal designs.

Why These Techniques Matter

Collectively, these ideation resources enable teams to:

• Break creative blocks

• Frame ideas around actual user needs

• Explore visual and functional possibilities

• Collaborate more inclusively and efficiently

3.7 AI-Assisted Ideation Tools

AI is increasingly shaping how we create, explore and fine-tune ideas in design." These tools help teams with everything from text-based strategy generation to visual prototyping and interface design, enabling faster team moves from idea to insight to execution.

AI isn't a replacement for creativity – it's a complement to it that speeds up the process by suggesting directions, visualising ideas and allowing us to iterate quickly.

3.7.1 Use of ChatGPT for Conceptualising and Testing Scenarios

ChatGPT (or other large language models) can be a creative co-pilot for ideation.

Key Uses:

Idea Generation

o Generate variety of ideas to address user's problem/need.

o Try different scenarios under different conditions(e.g., budget, social equity, technological)

Scenario Testing

o Test "what if" scenarios to understand how a solution can operate in real-world situations

o Example: "What if it rains and shipment is delayed by 3 hours?

Persona-Driven Responses

o Role play responses from various personae (e.g., "How would a senior citizen respond to this design?")

Rapid Research Summarisation

o Take up articles, feedback, or trend reports for ideation

Example Prompt:

"Principle five low-cost urban transportation ideas with a focus on safety and equity considerations.

Instruction to Student:

Determine a social or environmental issue in the real world (e.g. water conservation, digital education

access). Use ChatGPT or another AI language model to list out 5 solutions based on specific prompts.

Example prompt:

"Propose five low-cost solutions for enhancing rural digital education access." Then:

• Choose one idea that you believe most promising.

• Use the A.I. to work with you in creating a brief scenario or use case of how this solution would apply in real life.

• Turn in the AI prompt and final response to the AI, as well as your reflection of how doable that idea is.

3.7.2 Visual Ideation with MidJourney

MidJourney is a deep learning-based image generator that can generate highly stylized images from textual input. It is commonly used for concept design early in the project, and can be very useful within branding.

Applications in Ideation:

• Visualising emotions, places or events (for example “a futuristic food truck”)

• Considering product shape or style, without the requirement for design skills

• Developing brand environment or style benchmarks Benefits:

• Stimulates visual thinking

• Helps teams communicate abstract ideas

• Handy for moodboards and early presentations

Example Prompt:

“Design of a solar powered street kiosk for a crowded market with realistic rendering styles”

3.7.3 Collaborative Prototyping with Figma AI

Figma is one such collaborative design interface tool. Its AI capabilities make it faster, especially for UI/UX prototyping and layout generation.

Figma AI Features:

• Auto-layout suggestions

• AI-generated interface controls (button, card, input, etc.)

• Intelligent content filling (placeholder text and images)

• Rapid fire styling and thematic suggestions How It Enables Ideation:

• Turn rough prototypes into interactive ones

• Try out various UI designs in real time

• Accelerate web, app, and digital design workflows

Example Use Case:

A designer draws an idea for a login screen, and Figma AI helps turn it into a more structured prototype with actual buttons and fields — test-ready.

3.7.4 Transforming Raw Ideas into Concept Sketches

Not everyone on the team is necessarily trained in visualisation, but AI tools can now help convert a text or rough verbal idea into a series of sketches or wireframes.

Tools for This:

• Dall·E (OpenAI): Text-to-image generation

• Uizard: Transforming a hand-drawn wireframe into a digital UI design

• AutoDraw: Transform your designs into hand drawn, symbol-inspired drawings

Why This Matters:

• Helps non-designers contribute visually

• Handy for pitch decks, workshops or moodboards

• Promotes faster development iteration and idea exploration

Example:

One team member describes an idea for a small foldable desk. A visual concept sketch would be created with the tool such as Dall·E or MidJourney in just a few seconds for conversation and design direction.

Key Insight:

In ideation, AI tools are used as accelerators and co-creatists. They open up a whole realm of options, cut out the potential for creative gridlock, and let you quickly explore both textual andvisual ideas—especially when time or resources are tight.

Knowledge Check 1

Choose the correct option:

In the context of stakeholder mapping, what is a term for a community which is not serviced directly but indirectly impacted by a service:

A. Primary stakeholder

B. Key stakeholder

C. Secondary stakeholder

D. Internal stakeholder

What is an example of a front-stage interaction in a food delivery service?

A. Delivery routing algorithm

B. Order confirmation SMS

C. Inventory update at restaurant

D. Restaurant kitchen workflow

What is one of the advantages of platform business models?

A. Higher manufacturing control

B. Intellectual Property Rights in all content and supply

C. Intermediating value exchange between multiple parties

D. Operating without the internet

What is the best AI tool to create visual ideas from text prompt?

A. Figma

B. Uizard

C. MidJourney

D. Trello

The "E" in the SCAMPER method?

A. Expand

B. Enhance

C. Eliminate

D. Evaluate

3.8 Summary

3 Module 3 discussed the move from isolated design decision-making to systemic approach in service design. It showed how to map, visualise and envisage services in the perspective of ecosystems, stakeholders technological platforms and AI powered ideation-tools.

ϖ Learners were being trained on how to frame problems, not just what to design, but how to design for systems which are complex and interdependent involving multiple user groups.

• Key topics included:

• Stakeholder mapping and alignment of expectations

• Visualising customer journeys through touchpoints

• Thinking about the balance of frontstage and backstage

• Platform, ecosystem and multi-sided network design

• Exercise tools for ideation including service system maps, mood boards, and personas) and some AI apps (eg ChatGPT, MidJourney etc Figma AI.

3.9 Key Terms

Stakeholder Mapping – Who is either involved in or affected by a service system.

Touchpoints – Any time a customer comes into contact with a service or brand.

Frontstage vs Backstage – What you see of the service (frontstage) vs what happens behind-the-scenes to make a service happen (backstage).

Platform Thinking - A design philosophy that focuses on facilitating exchange of value among multiple parties, rather than just serving a service.

Service System Map: A Graphical representation for actors, flows and resources of a service ecosystem.

SCAMPER – Is an informal and systematized manner for creative thinking.

Persona – An imaginary user profile informed by data of the specific customer segments.

Moodboard – An interest board developed around a concept's emotional aspects.

Figma AI – The first design tool to use artificial intelligence to help you generate creative ideas.

MidJourney – Copy-prompt-generating AI that generates visual concepts from textual prompts.

3.10 Descriptive Questions

What is stakeholder mapping, and how does it contribute to the alignment of service goals in an ecosystem?

Describe the differences between frontstage and backstage in service design with one example.

How can service system maps be applied to identify bottlenecks?

Explain the SCAMPER method and its role assist ideation.

What good can an AI tool like ChatGPT, or MidJourney do, when you want to develop concepts early on?

3.11 References

- Stickdorn, M., Lawrence, A., Hormess, M. E., & Schneider, J. (2018). This is Service Design Doing. O'Reilly Media.
- Osterwalder, A., Pigneur, Y., Bernarda, G., & Smith, A. (2014). Value Proposition Design. Wiley.

• Parker, G. G., Van Alstyne, M. W., & Choudary, S. P. (2016). Platform Revolution. Norton.

• Kumar, V. (2012). 101 Design Methods: A Structured Approach for Driving Innovation in Your Organization. Wiley.

• IDEO.org. (2015). The Field Guide to Human-Centered Design. IDEO.org

Answers to Knowledge Check

Knowledge check 1

1. C. Secondary stakeholder
2. B. Order confirmation SMS
3. C. Enabling value exchange between multiple parties
4. C. Midjourney
5. C. Eliminate

3.12 Case Study

Netflix – Ecosystem Mapping and AI Tools for Conceptual Innovation

Background:

Netflix was once a DVD rental company and has grown into one of the world's most influential content providers. Its evolution is based not only on the crowd, but on systematic service design incorporating platform thinking, touchpoint management and data-driven ideation.

Stakeholder Mapping:

Netflix serves multiple stakeholder groups:

• Users (viewers, subscribers)

• Content creators (studios, directors)

• Tech teams (recommendation engine, streaming infrastructure)

• Regulatory and partner (licensing authorities, ISPs)

• Internal teams (marketing, customer support)

Touchpoint Mapping:

Netflix manages multiple digital touchpoints:

• App for mobile and TV, web interface

• Recommendation banners, notifications

• Subscription billing and help centres

Every interaction point is finely tuned with insights and user behavior data.

Platform Thinking:

Netflix acts as a two-sided platform:

• Demand side: Viewers consume content

• Supply side: Creators upload/licence content

• The algorithm is the matching engine

AI-Assisted Innovation:

• ChatGPT-like models simulate viewers reactions in response to show concepts

• The MidJourney type tools are used for internal marketing for key visuals.

• Real-time A/B testing of AI-based trailers and content thumbnails

• Figma AIallows you to prototype all new UI updates and feature tests

Outcomes:

• Hyper-personalised experiences

• Rapid concept testing before investment

Strong combination between AI and human creativity

Product & Service Design Unit 4_V3.docx

Product & Service Design_BBA_3

Product & Service Design_BBA_3

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Document Details

Submission ID

trn:oid:::3618:127363251

Submission Date

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Feb 2, 2026, 3:05 PM GMT+5:30

File Name

Product & Service Design Unit 4_V3.docx

File Size

183.2 KB

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4,589 Words

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Unit 4: Prototyping, Blueprinting & Testing

Learning Objectives

1. Understand the fundamental principles and purpose of prototyping in service design.
2. Learn how to create and analyze a service blueprint to map customer interactions and backend processes.
3. Explore effective methods for packaging and presenting service concepts to stakeholders.
4. Apply usability testing techniques to evaluate service functionality and user experience.
5. Master the use of feedback and refinement cycles for continuous service improvement.
6. Summarize key insights and best practices from the prototyping and testing stages of service design.
7. Identify and explain key terms, answer descriptive questions, and analyze a real-world case study.

Content

4.9 References

4.10 Case Study

4.0 Introductory Caselet

“The Village Bridge: A Conversation between Riya and a Carpenter.”

Background:

Riya, a girl-next-door, who hails from Delhi comes to the village at her father's place in summer holidays. She observes that villagers still cross a river via stepping stones (a route often made slippery and hazardous by monsoons). Wary about safety, she says that she doesn’t understand why so far no permanent bridge has been constructed.

One night she comes across an old man by the river, whittling wood. Riya floats about the design of a sleek steel bridge. The craftsman smiles and says, "Every solution starts as an idea, but ideas need to be deployed in small, safe experiments. We used to build temporary wooden walkways up here long ago, and test our strength and balance. It was only after learning from failures that we decided what could endure.”

In the days that follow, the craftsman demonstrates to Riya how villagers try out bamboo structures, ropes and stone supports before committing anything to permanence. Testing out modest versions is how Riya has come to understand the value in not blowing cash on potentially silly mistakes.

When she returns to her engineering college, it’s not just the image of her village she takes back: It’s a clear lesson that innovation becomes more robust when ideas are taken through trials step by step.

Critical Thinking Question:

Why is it often useful to test little or small versions of ideas before going big, especially in engineering projects or social ventures?

4.1 Prototyping Basics

Prototyping is the practice of producing an early, inexpensive model of a product or idea before creating the final one. It is a bit like creating a prototype or model to test out whether the idea could work in real life. Instead of sinking a lot of time and money into the full scale-up, designers and engineers create a prototype in order to try out, improve, and refine an idea.

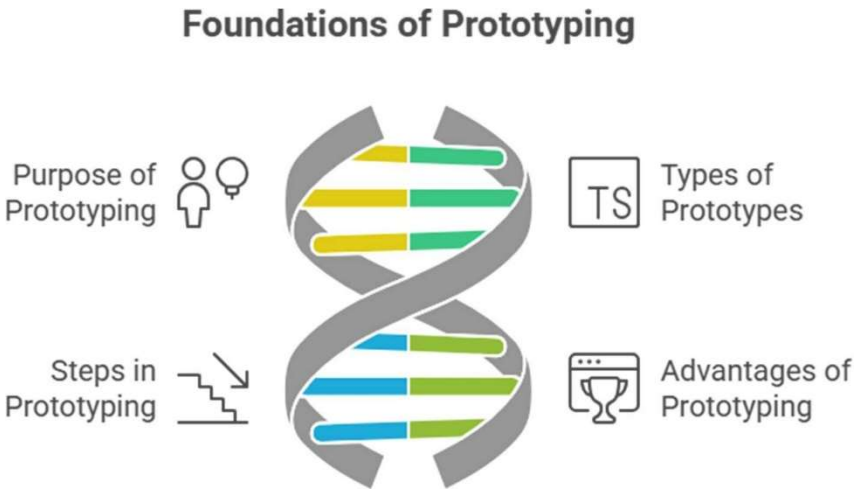

Figure 4.1

Here are the basics, in plain language:

Purpose of Prototyping

o To determine whether it is feasible to do what you are thinking.

o To identify problems early.

o To receive input from users prior to reaching the final design.

Types of Prototypes

o Low-fidelity Prototypes: Very crude and rapid prototypes such as simple sketches, paper mock-ups or rough models. They are a general picture and not a lot of details.

o High fidelity prototypes: A detailed representation of the final physical product that includes digital app simulations, 3D printed products, or mechanically functional samples.

Steps in Prototyping

o Brainstorming: Begin with an idea.

o Modeling: Create a small scale version with existing tools or materials.

o Test: Test it to verify that it works.

o Feedback and enhancement: Collect feedback and then enhance.

Advantages of Prototyping

o Time and cost saving-in that mistakes are eliminated from the end product.

o Encourages creativity and experimentation.

o Can articulate ideas effectively for discussion with others, such as teammates or clients.

o Robustness of the design before mass production.

Everyday Example

Suppose you're building a brand new mobile app. Rather than coding the whole app out, you start by sketching the app screens on paper and then create a clickable digital demo. By displaying this to users, you figure out what they love and what needs fixing. You only then need to start coding.

4.1.1 Concept of MVPs (Minimum Viable Products)

An MVP stands for Minimum Viable Product, which is the simplest version of a product you can build that you can be released and be tested with real users. It's only the significant highlights, not the entire feature set that is intended for final release.

• Purpose:

The point of an MVP is to launch something super basic; users can provide input for making it better. Instead of spending years creating a full product, only to find it not succeed, creators release an initial version as a test in the market.

• Key Features of an MVP:

Concentrates on addressing the principal problem.

Contains only what's necessary, nothing more.

Enables testing and feedback from real users.

modifiable or modifiable based on the results.

• Example:

Let's say a team needs a food delivery app. Rather than develop a perfect platform with tracking and discounts and ratings, they put forth a leaner version first: An app where you can place clunky orders at a handful of restaurants. This MVP will help them understand if people indeed need the service out there.

Did You Know?

"Dropbox, the prominent file storage company, did not initially ship a complete product. Instead they released a very quick demo video as their first MVP to demonstrate how the service would work. It already had thousands of signups after this video was watched, proving demand before Dropbox even built the real thing."

4.1.2 Low-Fidelity vs High-Fidelity Prototypes

According to our detail /accuracy thresholds, we can categorize a prototype into one of two prototypes-runner up my man!

• Low-Fidelity Prototypes:

o Very rough and simple.

o Frequently rough on paper, sketches or simple digital comps.

o Consider the concept and shape, not what it looks like in its finished state.

o Easy and quick to create.

o Example: Sketch for a drawing app to indicate how users might navigate from one page to another.

• High-Fidelity Prototypes:

o More polished and detailed.

o Better resemble to the real product, & even sometimes partly functional.

o Emphasis on design, UX and interaction.

o Are more of a chore to construct.

o Example: An interactive app demo on a desktop where viewers can click buttons and play around with features as if they were using the real app.

Select low or high-fidelity prototypes based on development stage. You have to run early stage of your design low-fidelity, and high-fidelity in a later stage for some realistic testing.

4.1.3 Wireframes, Mock-ups, and Simulations

These are the most used tools in prototyping:

Wireframes:

o Simple graphic plan or “blueprint” of a design.

o Display how the buttons, menus and images are positioned.

o Typically black and white, with no use of color or ornamentation;

o Objective: To design structure and navigation.

Mockups:

o Increased complexity, colors and polish in the visuals.

o Demonstrate what the product might look like in real life.

o Don't always be functional (not clickable images).

o Objective: To show the style and feel of the final design.

Simulations (or Interactive Prototypes):

o Realistic models that act like the real thing.

o Users are able to navigate, scroll or interact as if you were using the live system.

o Are frequently made using digital tools for apps, websites or machines.

o Use: To do UX and Fu (Function) testing before any of the real coding/production stuff. Sample: For my new e-learning platform:

•Wireframe: A sketch of where the login box, video space and course list will be placed.

• Mockup: A colored rendering that features fonts, themes and icons.

• Simulation: A clickable demo for users to “log in” and sample a demo course.

4.1.4 The Role of Rapid Prototyping in Innovation

Responsive prototyping is the practice of expeditiously creating models or prototypes of a product by leveraging modern techniques such as 3D printing, software tools, and rapid design methods.

• Why it matters for innovation:

Speed: Concepts can be tested and iterated far more quickly than in conventional practice.

Cost-saving: Issues are identified at an early stage, slashing heavy production spending.

Creativity: Teams can test several iterations of an idea in rapid succession and see which ones work best.

User feedback: Actual users could test out versions early, informing the final product.

• Examples in real life:

o In product design, companies use 3D printers to prototype new gadgets rapidly.

o Software developers rely on clickable prototypes to validate app idea with users.

o In the health sector new medical equipment gets first small models, that are produced very promptly, and only then expensive machines are created.

Rapid prototyping is also an important part of innovation as it enables testing in a way that doesn't fear the failure and that's how it drives better quality and more user-friendly products.

4.2 Service Blueprinting

Service blueprint is a diagram which captures the service processes, contact points and evidence of the services. It is a visual ladder of the steps one climbs in using a service, mapping both what the customer experiences and what happens behind the scenes.

It enables businesses to see the entire service process, identify issues and improve customer satisfaction.

4.2.1 Elements of a Service Blueprint

Key sections of a service blueprint Generally, a service blueprint consists of the following:

Actions of the consumer - customer behaviour that occur while using the service (eg purchasing tickets online, calling support).

Frontstage (Visible Contact Employee Actions) -The customer-employee interactions visible to the customer (such as a waiter taking an order or a cashier collecting payment).

Backstage (Invisible Contact Employee Actions) – Tasks performed by employees that are not visible to the customer, but which contribute to effective service delivery (e.g. food preperation in kitchen).

Support Processes – Internal systems and activities that support the service (for example, payment processing procedures, IT support coordination, supplier management).

Physical Evidence: – All the physical evidences that are either given to consumer or seen by them in form of advertisements in newspapers, magazines, boarding passes, menu etc.

Lines of interaction and visibility – Horizontal lines separating customer activities, frontstage activities and backstage activities provide an understanding of who interacts with whom, and what is out-of-sight.

Did You Know?

Lynn Shostack, who was a bank executive, first introduced the idea of service blueprinting in the 1980s to address issues within financial services. Today it is worked regardless of industry, from health care and airlines to retail and even online streaming services."

4.2.2 Mapping Frontstage vs Backstage Activities

Any service can be broken into 2 categories:

• Frontstage Activities:

o Directly visible to customers.

o Influence the service experience's perception for the customer.

o Example: A hotel staff, who greets a hotel guest, a delivery staff giving a package.

• Backstage Activities:

o Invisible to end consumers yet critical for a seamless delivery.

o Frequently contain operational, technical, and logistical tasks.

o Example: The household workers and maids cleaning rooms, logistics managers organizing delivery routes.

Why the distinction matters:

• The influence of frontstage activities on the customer satisfaction path is established directly.

• Behind-the-scenes work is part of the recipe for efficiency and reliability, even if customers don't see it.

A blueprint serves as a bridge between the two, demonstrating how backstage service can support frontstage performance to create an integrated experience for participants.

4.2.3 Identifying Bottlenecks and Service Gaps

Bottleneck is a point where service slows down, or becomes inefficient, and a service gap represents when what customer expects varies from what is delivered.

• Common Bottlenecks:

o Long wait times (e.g., long hold times in call center).

o Overloaded staff or limited resources.

o Complex approval processes delaying service.

• Common Service Gaps:

o Unmet promises (e.g., An app claims to confirm your ride immediately when it does so only hours after).

o Lack of communication among teams (i.e. front desk not being made aware of changes at backend).

o No or not clear KPI / steps in customer's journey (e.g. After buy online no instractions) Blueprinting places the problem visually, so that we can see where it is and repair.

4.2.4 Applying Service Blueprints for Better User Journeys

Service blueprinting is ultimately a roadmap to enhancing the customer's journey and overall experience from beginning to end.

• How blueprints help:

Clarity: There's a clear picture of what happens in each phase of service.

Consistency: Make customer experience consistent on all channels.

Problem-solving: Identify areas that are weak points and where customers can become frustrated.

Innovation: Stimulate new thoughts by disclosing areas of improvement.

• Example:

For an internet-based food delivery business:

o Customer Journey: Search menu> placing order > making payment> Tracking order > delivery.

o Blueprint also claims that although the app is sexy, there are delays behind-the-scenes as far as restaurants confirming orders.students confirm.emma.vanmeeuwen.writer-issued students say this.

o Faster, slicker user experience through better coordination backstage.

4.3 Packaging and Presentation

Packaging and presentation refer to the way that ideas and prototypes are presented to others — teammates, investors, clients or users. No matter how brilliant an idea, it still must be communicated in a way that people can understand, trust and support. This phase is all about visual storytelling, prototyping and persuasive presentations of ideas.

4.3.1 Communicating Concepts through Storyboards and Visuals

• Storyboards:

A storyboard is kind of like a comic strip that illustrates how a product or service will be used. It communicates visually, frequently involving sketches, basic drawings or digital imagery.

o Objective: Simplify things that are difficult to understand.

o Example: An app that allows you to pay from your phone with a storyboard of how a customer leaves his money at home, scans a QR code, and gets on with the payment instantly.

• Visuals:

Pictures, diagrams, infographics and simple charts can explain ideas more quickly than many words of text.

o Objective: To attract and clarify.

o Example: The journey of a sale online from “Add to Cart” → “Payment” → “Delivery” can best be explained with the use of a flowchart rather than words.

Storyboards and visuals invite ideas to be more compelling, memorable and easier to discuss. \

“Activity: Creating Storyboards to Solve Student Problems”

Instruction to Students:

Choose an issue experienced by students (e.g., scheduling studies, food delivered late, finding way around campus).

Develop a graphic six-frame storyboard that demonstrates your plan step by step.

Draw only as very rough sketches, stick figures or icons - no emphasis is on your art.

Make sure it’s apparent in your story board that you are following the problem → action → solution model.

Turn in your storyboard, along with 100 words explaining how the visuals help make the idea more understandable.

4.3.2 Preparing Prototypes for Stakeholder Feedback

Stakeholders are those who have some kind of vested interest in the project – whether an investor, client, manager or even end-user. It is essential to share prototypes with them before the product gets materialized.

• Preparing Prototypes for Receiving Feedback:

Find the best detail level: Sometimes a low-poly model suffices, or is it better to have a high detail version polished.

Emphasize features: Highlight the features that are most significant for decision-making.

Bonus if it's interactive: Let stakeholders try out the product, app, or service themselves.

Get questions ready: Request feedback on usability, design and value.

• Why it matters:

o Saves time and money in advanc e by avoiding mistakes.

o Engages stakeholders in the decision-making process, building trust and a sense of ownership.

o Reveals hidden needs or requirements.

4.3.3 Designing Presentations that Inspire and Persuade

A presentation isn't just about getting information across, it's also about building confidence and belief in the idea.

• Essential Elements of a Great Presentation:

Clearness: It should be plain language and visual, not gobbledygook.

Storytelling: Frame the idea as a story — what problem there is, how your solution solves it and why that matters.

Emotion + Logic: Employ both facts (data, research) and emotion (stories, examples) to engage your audience.

Structure: Start with the problem, and follow up with the solution, benefits and a strong CTA.

Figure 4.2

• Example:

For example, while introducing a new green packaging design, the presentation content does not necessarily need to be entirely technical; it could begin with a narration on how ocean life is affected by plastic waste and how new design addresses this problem.

4.3.4 Introducing Ideas with Demonstrated Value Propositions

A value proposition is a crisp statement that explains why someone would want to support, buy or invest in your idea. It emphasizes the distinct advantage that your solution offers.

• Key Elements of a Compelling Value Proposition:

Problem: What problem are you trying to solve?

Solution and How Your Product/Service Provides it\/ Them: \(What is the solution you offer?

Unique Advantage – What is unique about it, or the alternative that makes it good?

Benefit to stakeholders: What's in it for them?

• Example of a Value Proposition:

For a solar-powered lantern:

o Issue: Dark nights for rural households without access to reliable electricity.

o Solution: A cheap solar lantern that recharges during the day.

o Unique Selling Point: Lower cost than batteries or kerosene lamps with longer life.

o Advantage: Enhances safety, learnings and life style.

The idea is to be brief and clear and focused when you pitch so that people instantly understand why the idea matters.

4.4 Usability Testing

Usability testing is how one checks whether real people can use a product or service easily, effectively and satisfactorily. Instead of relying purely on the designer's intuition, usability testing exposes a prototype to the viewpoints of real users and reveals problems and opportunities.

It helps answer questions like:

• Can users complete tasks easily?

• Do they make mistakes or get stumped?

• Do they feel good about the experience as a whole?

4.4.1Usability testing methods (In-person, Remote, A/B Testing)

Usability tests are performed in some other form depending on the time, resources and goals of a test:

In-person Testing

o Participant behaviors are monitored face-to-face in a controlled environment such as a lab or meeting room.

o Scientists are able to pose questions, observe faces and monitor movements.

o Example: Having somebody attempt to carry out a banking app transaction on a tablet.

Remote Testing

o Users experience the product remotely through screen-share or other tools.

o Helps to cater a range of people from various localities.

o Example: Tasking users from different cities with testing an e-commerce site and reporting their experiences.

A/B Testing

° Two demos (A and B) are shown to the two groups of users.

o The performance of the two versions is compared to determine which one is better.

o Example: A/B Test of two check-out page designs to determine which would result in less abandoned shopping carts.

Did You Know?

“NASA remote usability tests its astronaut training software. Since astronauts train

at sites located around the U.S., NASA employs remote tools to test software performance before deploying it in high-stakes space missions.”

4.4.2 Defining Metrics: Task Success, Errors, Satisfaction

Usability testing depends on quantifiable metrics to economically measure performance:

Task Success Rate

o Quantifies how well users can perform a particular task.

o As an example: If 10 users attempt to book tickets and 8 successfully book – the success rate is 80%.

Error Rate

o Tallies errors as users interact with the product.

o Example: Someone types in an incorrect password, clicks on the wrong button or repeats a step when not necessary.

Satisfaction Level

o Describe what users think and feel about the experience.

o Typically expressed in terms of survey results, ratings or open responses.

o Example: After evaluating, users answer the question of how satisfied they are on a scale from 1 to 5. Combined, these measures reflect the cognitive and emotional performance of a design.

4.4.3 Collecting and Analysing User Feedback

The most important result of usability testing is feedback. Although it can be quantitative (measurement of numbers, ratings),

and qualitative (opinions, stories).

• Methods of Collecting Feedback:

o Surveys and questionnaires.

o Interviews after testing.

o Observing user behavior during tasks.

o Capturing the screen or eye tracker output.

• Analyzing Feedback:

Identify issues that affect more than one user.

Pursue major issues (halt momentum) vs. minor ones (slight irritant).

Spot repeating patterns — we got confused about navigation again or the instructions were unclear.

Translate insights into design improvements.

Example: When many users give up on a checkout experience due to the lack of “Apply Coupon,” you know that’s a giant usability issue designers should work to resolve.

4.4.4 Ethics and Best Practices in User Testing

Because usability testing is done with people, ethical considerations need to be taken into account:

• Ethical Considerations:

Consent: Participants must have some idea of what the test is up to and must freely consent to take part.

Privacy Guard: Don't abuse or wiretap users' personal information.

Respect and Comfort: You want to keep the user at ease so they don't feel judged when they make a mistake, it is the design you are testing not them.

• Best Practices:

User test with participants that match your target market.

Everything should be simple and neutral in terms of what to do for an answer, avoid "leading" people to the right answer.

Take small steps, try early, and iterate often.

Record the findings and refer them to enhance the design.

Example: If you're testing a health app, researchers need to figure out how data are kept secure and make the setting feel safe enough for honest feedback.

4.5 Feedback and Refinement Cycles

Feedback and Refinement Cycles are what they sound like – the steps we take over and over to test, learn & modify to get better products or services. Rather than framing design as a one-off activity, teams iteratively improve solutions in response to what users and stakeholders say. So that the result is usable AND sorbet!

4.5.1 Iterative Design and Continuous Improvement

• Iterative Design is the process of gradually polishing a product, on multiple passes.

• Feedback is collected following each iteration of prototyping and testing, and incorporated into the design.

• This process continues until the product is efficient, easy-to-use and successful.

Benefits:

Catches the problems early before you have invested large amounts.

Allows experimentation with multiple ideas.

Ensure that the end-product is iterative based on actual user requirements.

Example: A team building an app for online learning might release an early version to a few people, collect feedback, improve navigation and then release again. Every round makes the app smarter.

4.5.2 Prioritizing Feedback for Implementation

Not all feedback is actionable in the moment, or ever should be. Which suggestions are "worth it?" Teams must synthesize.

Ways to Prioritize:

Patching the Hurdles: Resolve blocking issues preventing users completing key tasks.

Frequency of Feedback: Fix issues reported by lots of people before singular requests.

Impact vs. Effort Analysis: Measure the benefit of a change against the effort or cost.

For example, if 80% of users are saying that the checkout steps are confusing but only 5% tell us we need to incorporate new colors in the app, then fixing up the checkout flow has priority.

4.5.3 Balancing User Needs with Business Constraints

Designers must balance two perspectives:

• User Needs: Ensuring the product is usable, useful and enjoyable.

• Business Pressures: Budgets, time frames, technology and corporate mission.

Balancing Strategies:

Provide a working solution first that addresses the primary problem.

Trade-offs — sometimes you can't have the perfect design right away.

Phase your plan features: Must-have now, "nice-to-have" later.

Example: A food delivery startup might desire highly developed AI recommendations, but if money is tight, it will prioritize first-order ability to place orders and track deliveries.

4.5.4 Case Applications of Feedback-Driven Refinement

Feedback guided refinement exists in many scenarios:

Software Development:

o Apps let (some of) their users try the "beta version".

o Feedback will refine the usability and bugs are identified by 100,000 users before full release.

Healthcare Products:

o Patients and doctors test medical devices.

o Modifications based on comfort, safety and correct shooting are applied.

Education Tools:

o New platforms for e-learning test modules with teachers and students.

o Feedback points out something that is confusing or a technical problem.

Retail Services:

o Stores experiment with different layouts.

o Customer behaviour and response determines which contingency arrangement is best.

The above examples also illustrate that Refinement is not an after-thought, but an integral part of building great products and services.

Knowledge Check 1

Choose the correct option:

Which of the below's best describes a low-fidelity prototype?

A polished, interactive app demonstration with clickable features

B) A rough draft or crude imitation (as a model in a rough draft) built to try out ideas.

C) A market ready product that functions effectively

D) A 3D prototype along with the full design specifications

An example of a backstage activity in a restaurant service blueprint is which one of the following?

A) A waiter listening to his customers' orders

B) The cashier that prints the bill of customers

C) Chef preparing the food in the kitchen

D) A customer placing an order

What is the best way to have confidence doing a presentation?

A) Only present data Don't share the feelings

B) Telling stories through the use of data in order to relate with audience members

C) With long paragraphs filled with all technical details

D) Not using images and relying on speech alone

If 9 of 10 users finish a task during usability testing, what is the task success rate?

A) 60%

B) 70%

C) 80%

D) 90%

Which one of the following best describes balancing user needs and business constraints?

A) Implementing any feature that users request no matter how expensive it is for the company

B) User needs are neglected and profit is the only thing that matters

C) Prioritize key requirements out initially and more advanced ones out in later releases.

D) Inability to change once the first prototype has been created

4.6 Summary

ϖ This chapter examined the process of designing, testing, and refining innovations in its entirety. It started at the beginning of prototyping, demonstrating how to turn an idea into a small model for testing. Then it developed service blueprinting, a template to chart both frontstage and backstage activities.

ϖ We then moved on to discuss packaging and presentation, how to express ideas through storyboards, visuals and advancing arguments. The chapter subsequently transitioned to usability testing, focusing on real-user assessment, feedback gathering, and ethical considerations. Lastly, feedback and refinement cycles was introduced transitioning from iterative design towards ongoing system improvement.

ϖ Collectively, these chapters provide a hands-on guide to developing solutions that are pragmatic, user-focused, and scalable.

4.7 Key Terms

Prototype: A preliminary model of a product or service that is tested for ideas before going to full production.

Minimum Viable Product (MVP): The basic working model of a product with only its core features.

Lo-Fidelity Prototype: An early, incomplete version typically created with sketches or paper models.

HFP (High-Fidelity Prototype) A high-quality, true-to-life approximation of the final product.

Wireframe: A simple visual blueprint depicting the structure of a product's interface.

Mockup:Refers to a visual design of the product without being clickable.

Simulator: A virtual prototype that emulates real product behavior.

Service Blueprint: A visual representation of customer actions, frontstage, backstage and support processes.

Frontstage Acts: Completing the transactions between service providers and clients that are in view.

Behind the Scenes: Operations in the background to deliver the service.

Usability Testing: A means of testing how easy it is to use a product by real users.

Task success rate: The proportion of users who successfully complete a task.

Feed Cycle: Feedback cycle, with iterative design following each cycle.

Value Prop: A statement which compellingly represents the singular benefit of its service/product.

Iterative Design: Enhancing a product little by little through testing over and over.

4.8 Descriptive Questions

What is an MVP, and can you give me a product example?

Compare low-fidelity and high- fidelity prototypes.

What are the components of service blueprint? Illustrate with an example.

Describe how visuals and storyboards can be used to communicate design concepts.

Explain various usability testing techniques and their use cases.

What are the typical measures used in usability testing? Explain their importance.

How do feedback loops drive better innovation in designing products?

What are the trade-offs when you balance the user's needs and business limitations?

Consider the ethical implications of usability test.

Discuss how prototyping, service blueprinting and usability testing complement each other in product development.

4.9 References

Stickdorn, M., Hormess, M., Lawrence, A., & Schneider, J. This is Service Design Doing. O'Reilly Media.

Ulrich, K. T,, & Eppinger, S. D. (2015). Product Design and Development. McGraw-Hill Education.

Nielsen, J. (1994). Usability Engineering. Morgan Kaufmann.

Brown, T. (2009). Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation. Harper Business.

Gothelf, J., and Seiden, J. (2013). Lean UX: Designing Great Products with Agile Teams. O'Reilly Media.

Osterwalder, A., Pigneur, Y., Bernarda, G., & Smith, A. (2014). Value Proposition Design: How to Create Products and Services Customers Want. Wiley.

Answers to Knowledge Check

Knowledge check 1

1. B) A rough sketch or simple mock-up to test ideas quickly
2. C) A chef cooking food in the kitchen
3. B) Using a mix of storytelling and data to connect with the audience
4. D) 90%
5. C) Releasing essential features first, while planning advanced features for later phases

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Product & Service Design_BBA_3

Product & Service Design_BBA_3

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Document Details

Submission ID

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Submission Date

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Feb 2, 2026, 3:05 PM GMT+5:30

File Name

Product & Service Design Unit 5_V3.docx

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Unit 5: Prototyping, Blueprinting & Testing

Learning Objectives

1. Understand the principles of business storytelling and its role in effective communication.
2. Explore the use of emotional design in narratives to connect with audiences.
3. Learn techniques for pitching ideas with clarity and impact.
4. Analyze strategies for designing solutions with long-term impact in mind.
5. Apply storytelling methods to influence decision-making and inspire action.
6. Evaluate how narratives can balance logic, data, and emotion in business contexts.
7. Integrate storytelling, pitching, and design thinking into a comprehensive case study for practical learning.

Content

5.0 Introductory Caselet

"The Pitch at Midnight: A Conversation with Neha and Her Mentor"

Background:

Neha, a young entrepreneur gets a chance to present her boot camp idea in front of investors and venture capitalists at an out-of-network late night invention network event. She has all the numbers and market data, the financial charts are sharp — everything she needs is ready to go, but she feels something powerful is lacking in her presentation.

She reaches out to her mentor, who listens attentively and responds:

“Statistics persuade the mind, but stories touch the heart. If you want others to believe in your idea, don’t simply tell them what it does —tell them why it’s important. People invest in stories of impact, not just spreadsheets.”

That night, Neha adjusts her pitch: Instead of leading with financials, she begins with a tale of a delivery worker too overwhelmed to navigate time and how her solution can solve that. The panel not only relates to the problem better but also emotionally connects with her idea.

Critical Thinking Question:

Why do narratives sometimes serve as more powerful conduits for audiences than cold, hard numbers?

5.1 Business Storytelling

Business storytelling is the craft of using stories to convey business ideas, values and strategy. Rather than focusing on data and technical information alone, stories put there sources from which such context is derived in terms that are familiar to human understanding and thereby can stimulate emotional response.

Key Aspects of Business Storytelling:

Purpose

o To break down big ideas into simple, commonsense terms.

o To build trust and affective engagement.

o To inform decision-making and encourage action.

Structure of a Business Story

o Intro: Start to the problem/concern.

o Middle: Demonstrate what you faced and did as a result.

o End: Present the resolution and what we will make happen.

Types of Stories in Business

o Customer Stories: Demonstrating how actual people enjoy the benefits of a product or service.

o Founding Stories: Telling the story of how an idea or a company came about.

o Vision Stories: Create a picture of the future that the organization is creating.

o Data Stories: A twist on numbers in context to demonstrate trends or insight.

Benefits of Storytelling in Business

o Makes presentations engaging and memorable.

o Let audiences see the "why" behind concepts.

o Bridges fit the divide between logic (the facts, the data) with emotion (human impact).

o Builds brand identity and trust.

Example:

And when Airbnb was raising money in its early days, the founders didn't just present market numbers: They told stories of travelers who could not afford a hotel but found community through an Airbnb home. This story served as a means for investors to relate to the greater vision rather than just financial returns.

5.1.1 Importance of Storytelling in Design and Innovation

• Why it matters:

It is also not just for entertainment; it is a means of clarity, persuasion and connection. In design and innovation, stories make it possible to express abstract concepts that people can relate to.

• Role in Design:

o Translates technology prototypes into human experiences.

o Clarifies on "why" a product exists, and not what it does.

o Develops Understanding: It instills empathy by demonstrating how users' issues are resolved.

• Role in Innovation:

o Motivates investors to back risk or novel concepts.

o Builds consensus and alignment across the teams by stating clear vision.

o Transforms nascent concepts into strong pitches for funding and adoption.

Example: When IDEO designers designed a new medical product, they didn't just hand over specs. They dramatized the tale of the stressed nurse and demonstrated how the device relieved pressure, amplifying how persuasive the solution was.

5.1.2 Pixar Pitch as a Framework for Orchestrating Storylines

Famous for making movies that stick with you, Pixar adopts a tried-and-true storytelling formula that also crosses over well to business pitches.

• Framework:

BY MY SOOP Once upon a time... (Set the scene)

Every day... (Show the routine/problem)

One day... (Trigger event/change)

Because of that... (Consequences)

Until finally... (Resolution/solution)

• Why it works:

o Simple and memorable structure.

o Creates emotional connection.

o Creates an organic progression from problem → solution → impact.

Example:

For a food delivery startup:

• Long ago, time-starved professionals had no time to cook.

• They got fast food that was bad for them every day.

• One day our app launched healthy meals that arrived within 20 minutes.

• It also meant that customers could eat better without eating up time.

• At long last, the city caught on to a more healthful way of living.

Did You Know?

"The legendary Pixar storytelling formula ("Once upon a time... Every day... One day... Because of that... Until finally ...") has been taken up by companies such as Google and LinkedIn to train employees how to tell persuasive stories."

5.1.3 Hero's journey and its application in business pitches

The Hero's Journey is a narrative framework that is widely used in myths and movies, but there is tremendous business writing power located inside this formula.

• Stages Relevant to Business:

ORDINARY WORLD: Present the problem in its everyday context.

The Call to Adventure: Introduce the issue or need.

Show the Hero's Struggle Show problems in solving the Problem.

The Outcome: Explain how the innovation addresses the issue.

The Pay Off: Emphasize reward for user or society 2.

• Why it's useful:

o Position the user or customer as the "hero," not the company.

o Makes pitch fun and easy to remember.

o Demonstrates the power of innovation through storytelling and not just data.

Example: In a pitch for an educational app, the "hero" is the student who struggles with test preparation. The app turns into the "guide" that teaches them how to manage stress and perform.

"Activity: Writing a Hero's Journey Pitch"

Instruction to Students:

Pick a product or service (real or imagined).

Frame a Hero's Journey pitch, where the customer is the hero and your offering is the guide.

o Ordinary World: What is the problem of the customer in daily life?

o Call to Adventure – What has changed or threatened this world and now forces them to act?

o Pain: What problems they are trying to solve or avoid with your product? o Struggle: What will life feel like without your solution?

o Transformation: How does your product/service help solve it?

o Return on Reward: What does the customer finally get as their reward?

YOUR PITCH Write 5–7 sentences about where this journey takes you.

Present it as though you are selling to a prospective investor or client.

5.1.4 Crafting Compelling Narratives for Stakeholders

If anything, the story of the business when presented to stakeholders (investors, clients, users or team members) should be personalized for them.

• How to Create a Stakeholder Narrative:

Know your audience: Investors invest in growth, users invest in benefits, and employees invest in purpose.

Frame the problem: Begin with a pain point your audience can identify with.

Demonstrate the solution: Clearly present product or service.

Highlight impact: Describing the quantifiable (value) and the perceived, emotional gain (benefit).

Call to action: Make the next step clear (invest, adopt, approve).

• Techniques:

o Use statistics within a narrative (e.g., “This is a problem 1 million people deal with every single day...”).

o Toss in some emotional hooks (actual user stories).

o Keep it concise and structured.

Example: A sustainability startup pitching investors might say:

“Eight million tons of plastic enter the ocean every year. Our proprietary upcycling takes trash and turns it into reusable packaging. In pilot programs we reduced the amount of plastic being used by 60 percent. Together we can really take this to the world.”

5.2 Emotional Design in Narratives

Emotional design of a story is about going beyond the reasons people should collaborate and stirring them with emotions that touch their brains and hearts. While facts inform, emotions persuade. When narratives inspire feelings of trust, empathy, excitement, or hope they are engaging and memorable. In business and design, emotional storytelling helps ideas not only make sense, but feel relevant and inspiring.

5.2.1 Understanding User Emotions in Storytelling

• Why emotions matter in decision-making

Neuroscientists have my back on this one: Even the most rational decisions depend on emotional input. People are more likely to lend their support or embrace concepts that “feel right.”

o Case in Point: An individual purchasing a car isn't solely convinced by miles per gallon values, nor are they only swayed by safety statistics - it all comes down to how he or she feels confident, proud and safe while driving their new vehicle.

 Triggering emotions in stories Types of emotional triggers in narratives

Joy and Surprise: Inspires happiness, gets the audience to smile or be excited.

Example: Ads depicting surprise reunions with a loved one, after being away on long travel.

Fear and Urgency: It shows the consequences of not doing something.

Example: Cybersecurity campaigns focus attackingly on how simple it is to get hacked.

Hope & Aspiration: Inspires us to dream of the future.

Example: Education platforms that demonstrate how a student's life improves after learning new skills.

Empathy and Relatability: Allows people to see themselves in the story.

Example: A bank commercial featuring parents saving for the dreams of their child.

• Application in design storytelling

Instead of saying, "Our app has a 2-second response time," a company might express: "Imagine a mother in an urgent situation who gets immediate access to a doctor within two seconds." This creates an emotional picture as to why speed is important.

5.2.2 Designing for Empathy and Connection

Empathy, in this case, means moving beyond the demographics to a deeper understanding of what users feel, fear and even hope for. Empathetic stories are the stories that make audiences think, 'This is about me.'

• Principles of empathetic design storytelling:

Listen before you do anything: Use interviews, surveys and observations to get to the actual pain point.

Product, the pocket watch: The user should be the hero.

Demonstrate shared challenges: Illustrate common elements (stress, time constraints, satisfaction of success).

Provide relief and hope: Position the product as the remedy to make things right then again.

• Example in practice:

o A mental health startup shys away from industry-specific lingo. What it does instead is share stories like: “We know what it feels like to lie awake at 2 a.m., glancing at the ceiling in the dark, alone with our worries. That’s why we connect you to a counselor who listens immediately.”

• Why it works:

This creates trust, lowers resistance and makes innovation feel less remote and theoretical.

5.2.3 Using Visuals, Metaphors, and Analogies

Any facts themselves may drift out of the mind, but the vivid imagery and relatable comparisons stick. Visuals and devices of language including metaphors and analogies make stories accessible, as well as emotionally impactful.

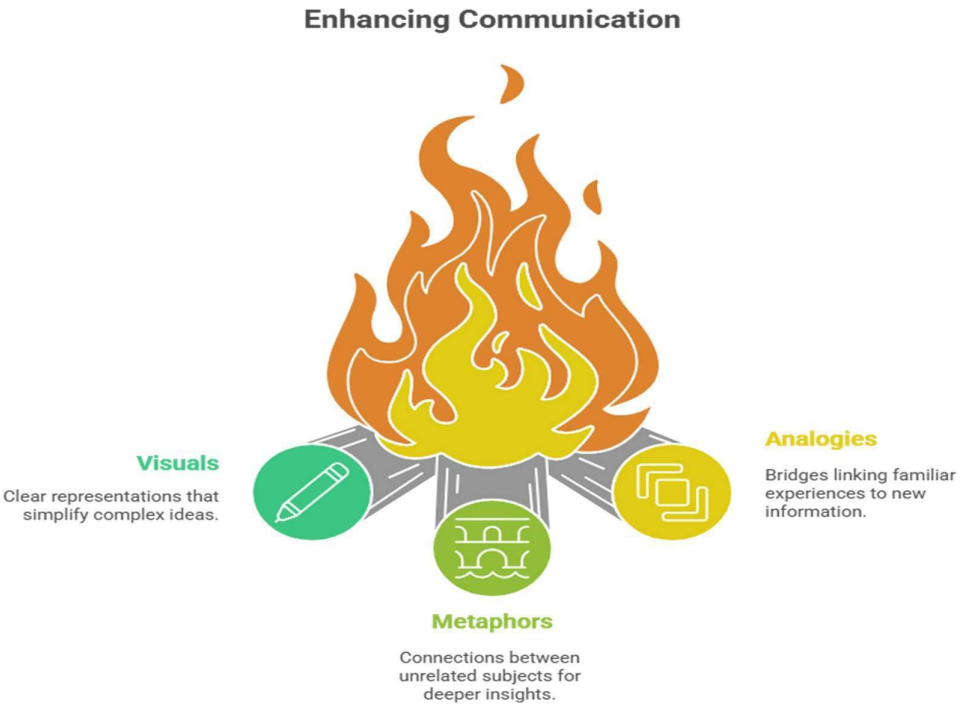

Figure 5.1

• Visuals

o Use graphic sources, photos and video to “show rather than tell.”

o Example: Instead of the saying “Our solution decreases carbon footprint,” show two images-slide pictures- one a polluted city’s skyline and another with open sky.

• Metaphors

o Describe a strange concept by contrasting it with something you already understand.

o Example: “Our cybersecurity system acts as a digital lock for your front door – it’s always protecting you, even while you sleep.”

• Analogies

o Emphasize analogies to familiar processes to clarify difficult concepts.

o Example: Description of cloud storage: “a virtual backpack that you can wear and carry with you and not even feel it.”

• Why it works:

You make an appeal to the senses, the imagination via metaphor, and with analogy create clarity – all these boost emotional strength.

Did You Know?

Cognitive scientists have discovered that people are 22 times more likely to remember a fact if it is delivered through a story with metaphors than if it’s delivered plain. It’s why brands often rely on such analogies as “cloud storage is your digital locker.”

5.2.4 Case Examples of Emotional Storytelling in Products/Services

Apple – Creativity and Lifestyle

o Apple doesn’t tend to lead with tech specs. Instead, including those of “Shot on iPhone,” focus on personal memories, creativity and moments captured by users in a way where the phone feels like a tool for life and not just technology.

Nike – Perseverance and Empowerment

o "Just Do It" advertisements display athletes who are battling some form of adversity be it a physical impairment or a lack of social acceptance or self-doubts. The shoes aren’t the star; human resilience is.

Coca-Cola – Happiness and Togetherness

o Advertisements promote sharing Coke with loved ones, making the beverages an element of enjoyment, not just a simple refreshment.

Airbnb – Belonging

o In lieu of selling rooms, Airbnb sells the concept of \u201cbelonging anywhere,\u201d by narrating stories about travelers who feel at home wherever they go.

Procter & Gamble (P&G) – Thank You Mom is a Proud Sponsor of Moms

o P&G ads during the Olympics show moms encouraging their children after they lose, emphasizing gratitude and emotional connection as opposed to product attributes.

Lesson: Emotional storytelling doesn’t replace data — it augments it by getting people to care about the numbers, and the product, and the mission.

5.3 Pitching for Impact

Silicon Valley Vets Defining what a pitch is can be challenging — we all have been on the receiving end of an uninspiring presentation or overly verbose one. Pitching for impact means going

doing more than just conveying information: it's about shaping the message in a way that makes it clear, memorable and motivating.

5.3.1 Structuring a Clear and Persuasive Pitch

A good pitch is a cascade that builds logic and emotion together.

Typical Structure:

Hook: Begin with a statement, statistics, question or story.

Problem: Tell us what the problem is in a way we can all grasp.

Solution: Position the product or service as the solution.

Value: Demonstrate what makes it the special and impactful proposition that it is.

Evidence: Cite data or testimonial or case studies for credibility.

Call to Action: Request for investment, adoption or partnership.

Example:

• Hook: A graphic on the screen reads, "Every year 8 million tons of plastic ends up in the ocean."

• Problem: "Traditional packaging is unsustainable."

• The solution: "Our startup manufactures biodegradable packaging for 40% less."

• Value: "It's more cost-effective, it's modular, and it's eco-friendly."

• Call to Action: "We're looking for $2 million to take this nationwide."

5.3.2 Tailoring the Pitch for Investors, Customers, and Partners

Different communities care about different things, so the same pitch needs to be massaged.

• Investors:

o Emphasis on potential for growth, profitability and scale.

o Example: Provide market size, financials forecast and exit options.

• Customers:

o Show benefits, ease-of-use, and the way in which this improves their life.

o For example: Stress convenience, money saving or emotional fulfillment.

• Partners (suppliers, collaborators, distributors):

♣ Emphasize long-term partnership, common values and mutual interests.

o Example: Describe dependability, cost-sharing and synergy possibilities.

Tip: The base fact doesn't change, but the emphasis does depending on who is listening.

5.3.3 Communicating Value Propositions and Impact

A value proposition is a reason why somebody should use your solution as opposed to other solutions. It should be short, straightforward and outcome-oriented.

• Basics of an Effective Value Proposition:

Problem solved: What problem are you solving?

Only one: What's a different or better solution?

Measurable effect: What quantifiable blessings come from this?

• Framing Impact:

o Social impact "Our water filters provide safe drinking water for rural families."

o Economic value: "Our AI tool saves 30 percent on operating costs."

o Personal impact: "Our app gives busy parents 5 hours a week back"

Example: The value proposition of Tesla isn't just "electric cars." It's about "high-performance, sustainable transport that accelerates the world's transition to clean energy."

5.3.4 Common Pitches that Fail and How to Fix Them

Even good ideas flunk if the pitch is weak. Some common pitfalls include:

Information Overload

o Problem: Too much information leaves any audience scratching their heads.

o Solution: Focus just on the essentials, detail supporting data in backup slides.

Weak Storytelling

o Problem: Too much dependence on figures without a human face.

o Solution:Add in user stories, anecdotes or any personal experience.

Ignoring the Audience

o Issue: Talking to all your stakeholders with the same pitch.

o Solution: Tailor by relevance to each target audience.

Unclear Ask

o Problem: Failing to articulate what you want (investment or partnership or purchase).

o Solution: Close with a powerful, specific call to action.

Overpromising

o Problem: Overstating and overstating and overstating again loses credibility.

o Solution: Dream big but provide facts and evidence to back up claims.

Failure example: A startup pitch focusing too much on future features without explanation of how they will execute – making the investors skeptical.

5.4 Designing for Long-Term Impact

To design for long-term impact, to create meaning or value that endures, is to look beyond short-term functionality or profit. It focuses on the impact products and services have on society, culture, environment, man's relationship with nature and future generations. Today,designers have to embed responsibility, sustainability and ethical considerations in their inventions.

5.4.1 Social and Cultural Dimensions of Design

• Why it matters:

Design is not a thing-in-itself—it has, and is informed by, social and cultural contexts. Neglecting these dimensions has the potential to produce technically correct but socially sterile or harmful solutions.

• Social Dimensions:

o Inclusivity (design for diverse abilities, genders, ages).

o Accessibility being improved (products which can be used by the people with disabilities).

o Equity (cost-effective products for underserved communities).

• Cultural Dimensions:

o Sensitivity to tradition, values and local custom.

o Avoiding designs with connotations that unintentionally neglect or upset particular cultural constituencies.

o Adding a layer of cultural identity to product narrative.

Example: Financial apps in emerging markets offer support for regional languages and intuitive interfaces so that first-time users can access financial services.

5.4.2 Designing for Sustainability and Ethical Responsibility

• Sustainability in Design:

o Use of renewable materials.

o Energy-efficient production processes.

o Circular design – items should be reusable, repairable or recyclable.

• Ethical Responsibility:

o Fair working conditions in supply chains.

o Open and transparent (no “lies” in marketing).

o Privacy and security in data products.

Example: The clothing brand, Patagonia, advertises durable apparel and recommends customers mend products instead of replacing them—matching with a focus on sustainability

Did You Know?

“Patagonia, the outdoors clothing brand, used to advertise with a message that read “Don’t Buy This Jacket”, encouraging customers to repair older clothes instead of buying new ones. This counterintuitive storytelling—built trust and furthered its reputation as an environmentally responsible brand.”

5.4.3 Measuring Social and Cultural Impact

Design is more than use or beauty—it should have a social impact and make people’s lives better, especially in social innovation, public services, education, healthcare or sustainability. But in order for this shift to be significant, it must also be quantifiable. Social and cultural impact measures inform teams how their interventions are affecting people, communities, and systems over time.

Why Measure Impact?

• To evaluate whether the solution is actually changing lives positively, not merely functioning efficiently

• To inform future enhancements and redesign iterations

• For accountability to funders, partners, or communities

• To develop confidence amongst stakeholders by demonstrating genuine results

• Unintended consequences- to discover and limit unintended outcomes on the relevant system (or systems)

Approaches to Measuring Social and Cultural Impact

This can be nicely complemented by a combination of the relatively qualitative (story based) and quantitative (data based) approaches.

Surveys and Interviews

- Gather user perceived quality, satisfaction and emotions
- Record behaviour changes or quality of life upgrades.

• Structured (scored) / Open-ended (narrative)

Example: Inquiring of caregivers whether a telehealth mobile app made them feel more supported and in charge.

Usage Data and Metrics

• Measure number of users, usage frequency, drop-off rates and feature engagement.

• Helpful for gauging whether a tool is adopted and used over time

Example: An app for rural learning also logs daily usage from students in multiple districts during a 3-month period.

Social Indicators

• Broader societal-level data such as:

o Literacy rates

o Access to clean water

o Reduced dropout rates

o Increased access to healthcare

• Could be monitored by NGOs, governments or non-Pfizer studies

Sample: The attendance rate teaching in villages using educational app (abacus application) is compared before and after lecture.

Cultural Fit and Acceptance

• Public perceptions and acceptability to incorporate the solution into routine everyday schedules

• Documented with the help of pilot experiences, community dialogues or feedback loops

Model: A toilet product, developed for urban slums, is highly used because it works within the customs of local hygiene.

Case Studies and Testimonials

• Capture specific, real-life stories that demonstrate impacts on individuals or families

• Anchored by an emotional and contextual depth reports lack

Quote from user: “Ever since we got this app my daughter is never late to school and I can see her scores getting better.

Participatory Feedback Mechanisms

• Assessment alongside users or community leaders or field staff

• Promotes community involvement and ownership in impact evaluation

Example: In tribal areas, community review boards assist in assessing the coverage and appropriateness of a health awareness project.

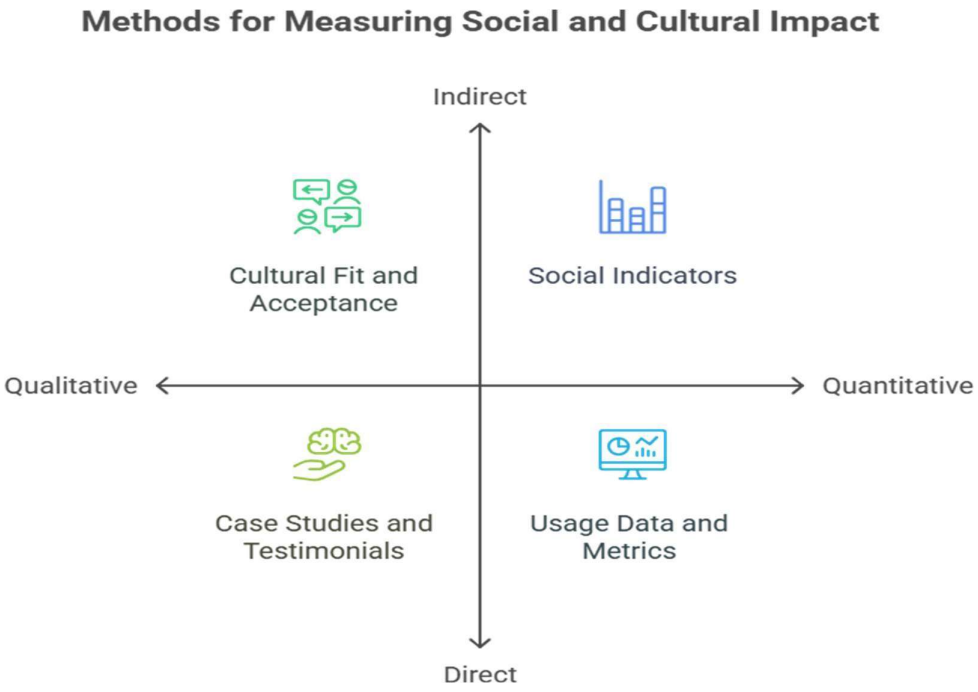

Figure 5.1

Challenges in Measuring Impact

Challenge	Mitigation Strategy
Impact is **long-term and slow**	Set short-, mid-, and long-term indicators
Hard to **isolate cause**	Use control groups or before-after comparisons
Data may be **incomplete or biased**	Combine multiple sources and triangulate findings
Cultural change is **hard to quantify**	Use qualitative stories and ethnographic insights
Risk of **overclaiming** impact	Be honest about what has and hasn't worked

Real-World Example

Project: Rural Education App

• Goal: Boost student engagement and performance at low-resource schools

• Quantitative Indicators:

o 25% increase in school attendance

o Increase in the scores of English and Math tests

• Qualitative Indicators:

o Parental comments regurgitating children having more motivation

o The students in class participated more according to teachers

• Cultural Fit:

o App is in local multi languages and works even offline that makes it more acceptable

o Oral content helps non-literate parents to support their children

Best Practices for Measuring Social and Cultural Impact

Practice	Description
Define success early	Set clear, measurable goals during the design phase
Use mixed methods	Combine numbers and narratives for a holistic view
Engage the community	Include users in shaping what success looks like
Monitor continuously	Don't just evaluate at the end—track impact over time
Report transparently	Share both positive outcomes and areas needing improvement

5.4.4 Building Impact into Business and Service Models

• Why embedding matters:

The long-term impact cannot be an afterthought, but should instead be built into the DNA of a business model.

• Ways to Embed Impact:

Mission-Driven Design: Set social or environmental goals as part of the company's mission.

Shared Value Models: Make profit where it links to positive social benefit.

Feedback Loops: Access community feedback on an ongoing basis to tune services.

Partnerships: Work with NGOs, governments and local organisations to maximise the impact.

• Example:

o TOMS Shoes incorporated "One for One": with every pair of shoes sold, a second was donated.

o Grameen Bank integrated micro-financing into its business model that can economically empower rural women.

Knowledge Check 1

Choose the correct option:

What can be said about the goal of business storytelling?

A) To substitute information with imaginary tales

B) To articulate information in such a way that one is conversational, persuasive

C) To maintain non logical reasons in business messages

D) In order to present more lengthy and detailed presentations

Which sequence does the Pixar Pitch system work with?

A) Issue – Solution – Call to Action

B) Long ago → Every day → One day… → Because of this → Until at last…

C) Hook → Data → Impact → Ask

D) Hero ◊ Conflict ◊ Transformation ◊ Boon

Applying the Hero's Journey to business pitches: Who gets cast as the "hero"?

A) The investor

B) The product

C) The customer

D) The entrepreneur

What is the storytelling tools that help relate abstract ideas to the familiar?

A) Visuals

B) Data charts

C) Metaphors and analogies

D) Bullet points

What elements are most often sought in Money Listeners pitches by an audience seeking profitability, growth and scale-ability?

A) Customers

B) Partners

C) Investors

D) Employees

5.5 Summary

ϖ This chapter showed how storytelling, emotion, pitching and impact-driven design work together to turn innovation into reality. It started with how businesses use storytelling to persuade or convey an idea, and examined how narratives have the potential to create emotional connections with users. Then the chapter explored impact focused pitching which included those pitch structures, personally tailored words and no-nos. Last, designing for lasting impact underscored societal and ethical responsibility in the definition of sustainable innovations.

ϖ Altogether, these ideas demonstrate that sustainable innovation is more than problem solving—it's about

people to take actions, build trust and embed good in the world.

5.6 Key Terms

Business Story Telling – the power of sharing a vision or idea in story form.

Pixar Pitch – A story template in the form of "Once upon a time... One day... Because of that... Until finally..."

Hero's Journey – A narrative structure that casts the user as a hero and the product as an aid.

Emotional Design -Designing stories or products where users feel something, such as trust, sympathy and hope.

Metaphors & Analogies – Easier to understand through the use of simple comparisons.

Value Proposition – A distinctive value or benefit statement of a product or service.

Pitching – The power of the pitch to persuade all stakeholders.

Social Design – How design choices impact inclusion, accessibility and equity.

The Cultural Dimension of Design – Designs appropriate to tradition, value and diversity.

Sustainability in Design – Designing products and services with low environmental impact, exercising social responsibility.

5.7 Descriptive Questions

Discuss the role of storytelling in design and innovation, give an example.

Explain the Pixar Pitch structure and how can it relate for business dialogs?

In what ways does the Hero's Journey structure work to enhance business pitches?

Explain the function of empathy in emotional design and user attachment.

How important are images, metaphors and analogies in framing stories?

How should they tailor pitches differently for investors, customers and partners?

Explain what a value proposition is and how it fits into pitching for impact.

What is the social and cultural role of design, and why does it matter?

How do companies quantify the social and cultural reach of their innovations?

Assess how Tesla has told its story and affected culture in terms of the concepts presented in this chapter.

5.8 References

Denning, S. (2011). The Leader's Guide to Storytelling: Mastering the Art and Discipline of Business Narrative. Jossey-Bass.

Gothelf, J.; Seiden, J. (2017). Sense & Respond: How Successful Organizations Listen to Customers and Create New Products Continuously. Harvard Business Review Press.

Campbell, J. (2008). The Hero with 1000 Faces. New World Library.

Norman, D. (2004). (Emotional Design: Why We Love (or Hate) Everyday Things. Basic Books.

Christensen, C. M. (1997). The Innovator's Dilemma. Harvard Business Review Press.

Osterwalder, A.,& Pigneur, Y. (2010). Business Model Generation. Wiley.

Brown, T. (2009). Change by Design. Harper Business.

Answers to Knowledge Check

Knowledge check 1

1. B) To communicate ideas in a relatable, persuasive way
2. B) Once upon a time... → Every day... → One day... → Because of that... → Until finally...
3. C) The customer
4. C) Metaphors and analogies
5. C) Investors

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Document Details

Submission ID

trn:oid:::3618:127370057

Submission Date

Feb 2, 2026, 3:03 PM GMT+5:30

Download Date

Feb 2, 2026, 3:07 PM GMT+5:30

File Name

Product & Service Design Unit 6_V3.docx

File Size

195.2 KB

25 Pages

5,409 Words

34,339 Characters

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Unit 6: Emerging Trends in Product & Service Design

Learning Objectives

1. Explain the features and role of money market, differentiating it from capital markets.
2. Write a note on the features, participants and instruments of Indian money market.
3. Describe the characteristics, tenors and issuance procedure of T-Bills and CP.
4. Discuss various short-term money market instruments like Commercial Bills, Certificates of Deposit (CDs) and Call/Notice Money under following heads: liquidity, risk, yield etc.
5. Explain role of Collateralised Borrowings and lending Obligations (CBLO) and the way they operate in secured interbank lending, highlight on collateral.
6. Assess the appropriateness of various money market instruments for banks, corporates and government entities in meeting their short term funding needs.
7. Utilize understanding of the money market to analyze market trends and support near- term investment/borrowing execution decisions.

Content

6.0 Introductory Caselet

“The Silent Assistant: A Dialogue between Aarav and His Teacher”

Background:

Aarav, a fourth-year engineering student thinks its great how AI is trickling into everyday life- voice-based assistants that set an alarm on his phone or recommend engines that tell him what music to listen to and which movie he'd like. But he wonders whether these systems truly "comprehend" users, or if they simply automate functions.

One night, in the university lab, a worried Aarav shares his fears with his professor. The professor smiles and replies:

"AI is not something where we're just looking to replace human activity — it's about creating experiences where intelligence is infused into the product from day 1. The real measure isn't whether AI can answer a question, but whether it can come up with new ideas, connect the dots and build bridges toward a shared goal."

In the weeks ahead, Aarav will walk you through how businesses are moving away from the process of "tacking on AI" to creating AI-first products and services — things that emphasize intelligence, adaptability and continuous learning. He also knows that the change isn't just a question of better technology, but a new design ethos, period.

Critical Thinking Question:

What is the difference between designing AI-first and retrofitting a product with AI capabilities?

6.1 Designing for AI-First Products & Services

An AI-first mentality is not an "add-on" for a product or service, but is instead the central framework that surrounds how one thinks about, develops and delivers that product/service. But here's the catch: instead of AI being tacked on at the end as a feature, AI-first design seeks to make intelligence what drives user experience from day one.

Key Characteristics of AI-First Design

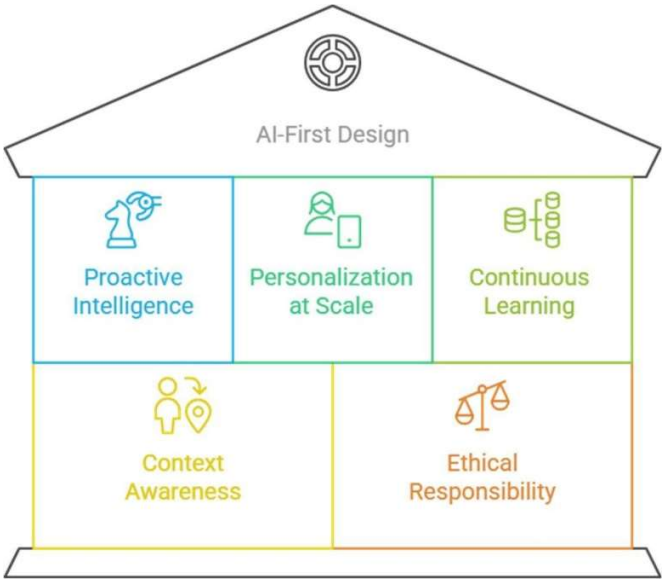

Figure 6.2

Proactive Intelligence

o AI can predict what the users want before they voice that.

o For example, when Google Photos organizes our memories by groups without being asked or Netflix suggesting shows that the user will enjoy.

Personalization at Scale

o Customize experiences for every person and do it at scale (where “every” can be millions or even billions of users).

o Example: Spotify’s “Discover Weekly” playlist is different for every listener, curated from AI-based processes.

Continuous Learning

o The system gets better over time as it learns more and more.

o Example: Chat ‘bots that improve at responding to questions the more users they encounter.

Context Awareness

o AI changes learning models according to the location/ device/ situation etc.

o Instance: A smart thermostat that changes a temperature in different ways during summer evenings and winter mornings.

Ethical Responsibility

o Building an AI-first product is also about ensuring fairness, transparency and user confidence.

o Example: An AI solution for lending approval should not be biased and should provide a clear explanation for its decision.

Why AI-First Matters

• User Expectation Change: Users now demand more than static apps – they want an experience that is responsive and intelligent.

• Differntiation: Companies with an AI-first design approach are competitive one by way of more intelligent and efficient services.

• Scalability – AI is capable of serving more users without commensurate growth in human resources to handle complexity and scale.

Example Applications

• Health care: Facial recognition AI aids in early diagnosis of diseases with a monopoly on scanning sooner and more accurately than human experts.

• Retail: AI-driven personalized recommendations and dynamic pricing.

• Transportation: Self-driving cars that are built around AI-based decision making, not the other way around.

• Education: Adaptive learning systems that customize lessons in response to student performance.

6.1.1 Characteristics of AI-First Design

AI-first design is founded on the concept that intelligence is in the product or service itself, not something slapped on. Key characteristics include:

Proactive Intelligence - “Systems are intuitive rather than waiting to be told what to do.

Example: Smart Compose in Gmail forecasts entire sentences as you type.

Continuous Learning – AI adapts and improves with more data over time.

For example, Google Maps continually updates traffic predictions using real-time user provided data.

Context Awareness – Products change according to the location, behavior or context of user.
Example: A smartwatch that can tell if the user is running, walking or sleeping and change it’s functionalities as per.

Scalability – AI-empowered services can now serve millions of users with very little human intervention.

Example: answering one off questions users post around the world.

Ethical Responsibility – Designing for fairness, transparency, and accountability.

Example: Hiring tools with A.I. are combed through for bias, so the hiring process is fair.

Did You Know?

“Live traffic predictions in Google Maps are an AI model that uses aggregated and anonymized data from people who have opted to turn on their Location History setting, which is off by default,” a Google Cloud spokesperson told VentureBeat in an email.

6.1.2 Personalization, Prediction, and Automation

AI-first products excel at providing personalized, predictive and automated experiences.

• Personalization

o Customizes experiences for individual users.

o Example: Netflix providing distinct TV shows for each subscriber.

• Prediction

o Predicts what users will need or want before they request it.

o Example: Amazon recommending what products a user might reorder based on past purchase behaviours.

• Automation

• Automates repetitive and complex work without human intervention.

o Example: Self-driving cars on busy streets, or banking apps scheduling your regular monthly payments.

What to watch: These three attributes decrease user effort, add delight and increase product stickiness.

6.1.3 Human-AI Collaboration in Design

AI-first doesn't mean replacing humans — it means empowering them.

• Designer as Guide:

Designers must determine how AI supplements, rather than overpowers, human decision-making.

• Human-in-the-Loop Systems:

AI suggests, humans decide in critical contexts. Example: In health care, AI scans might indicate potential diseases, but doctors diagnose them.

• Co-Creation:

AI tools could speed creativity by presenting ideas that humans refine.

Example: From Canva's AI-driven design suggestions to GPT-3 assisting non-designers in building slick layouts.

• Trust and Transparency:

Users have to know how AI decisions are reached. Clear explanations build confidence.

Example: LinkedIn providing context for why certain jobs are recommended to a user.

6.1.4 Case Examples of AI-First Products

Spotify (Personalization at Scale)

o AI listens to users' habits and provides personalized playlists like Discover Weekly.

Tesla Autopilot (Prediction & Automation)

o AI forecasts traffic states and automates driving maneuvers, with resulting semi-autonomous driving.

Duolingo (Adaptive Learning)

o Lessons adjust in difficulty to keep you challenged, but not overwhelmed.

Amazon Alexa (Context Awareness)

· Learns user habits over time – such as favourite music, shopping items or daily routines – and automates responses.

Grammarly (Human-AI Collaboration)

o AI recommends: corrections, tone and clarifications at the same time human makes the final call.

6.2 Sustainability & Circular Design Principles

Principles of sustainability and circular design focus on the development of products and services that create minimal waste, have extended life spans, and cause less damage to the environment. Design no longer follows the old 'take–make–dispose' paradigm, but considerations for systems in which materials and resources are used with economic efficacy, and recirculated back into the economy.

6.2.1 Designing with the Circular Economy in Mind

• Definition:

The circular economy is a closed system in which products and resources are kept in use for as long as possible, extracting full value, at the end of their lifecycle recovering products and materials with the aim to eliminate waste.

• Core Principles:

Prevent Waste and Pollution - Solve problems before they are implemented.

Maintain Products and Materials in Use – Reuse, refurbishment, and recycling.

Reflash Natural Systems – Grow ecosystems rather than using them up.

• Example: Philips provides "lighting-as-a-service'' which means customers buy light and Philips keeps ownership of the equipment, promoting part reuse and recycling.

Did You Know?

"By 2030, the Ellen MacArthur Foundation estimates that transitioning to a circular economy would create 4.5 trillion dollars worth of economic benefits, confirming that sustainability is not only ethically sound but also incredibly lucrative."

6.2.2 Designing for Repair, Reuse and Recycling

• Design for Repair:

Products should be fixable rather than disposable.

Example: Fairphone makes modular smartphones you can fix yourself.

• Design for Reuse:

Products or packaging reused over and over The above can be used many times.

(Takeaway: Refillable water bottles and shopping bags you can use more than once.)

• Design for Recycling:

Material selection and design that allow for high levels of recycling should also be considered.

Example: An aluminum can is recyclable over and over with no loss in quality.

Big Idea: Make products with longer lives, not short ones.

“Re” Designing Everyday Products for Sustainability.

Instruction to Students:

Choose something you use every day (like your phone, computer, water bottle or an article of clothing).

Scrutinize its existing life cycle: How is it produced, used and then discarded?

Redesign to consider repair, reuse and recycle:

o Which components may be modularized or simplified for better repair?

• How could you repurpose it elsewhere?

“o What would be the choice of material for easy recycling?

Write a brief, 300-word report or create and upload a sketch of your new product explaining how it would extend the life of the company’s product and help slow waste.

6.2.3 Sustainable Materials and Manufacturing

With rising global concerns over climate change, pollution and resource scarcity, sustainable design is now a responsibility of designers, engineers and manufactures. Sustainable materials and processes seek to minimize environmental impact over a product's life, from raw material sourcing to production, use, and disposal.

Sustainable product design is more than just minimizing impact—it’s also about long-term value, incentivizing supply chain responsibility and meeting consumers’ rising appetite for ethical products.

Sustainable Materials

Sustainable materials are those with minimized environmental impact throughout their life cycle. They are frequently renewable, recyclable, biodegradable or waste-based.

Key Characteristics

• Consume fewer energy or water resources to make

• Do not pollute to a great extent during extraction and processing

- Support end-of-life options of reuse, recycling or composting
- Commonly obtained ethically and responsibly
    - **Examples of Sustainable Materials**

Material	Description	Applications
Biodegradable Plastics	Break down naturally without leaving harmful residues	Packaging, disposable utensils
Bamboo	Fast-growing, renewable, requires no fertilizers or pesticides	Furniture, textiles, toothbrushes
Hemp	Durable, low water consumption, grows without pesticides	Fabrics, bio-composites, bags
Recycled Textiles	Made from post-consumer or industrial fabric waste	Fashion, upholstery, footwear

Mycelium (Mushroom Leather)	Grown from fungi, compostable, animal-free alternative to leather	Packaging, bags, wallets
Recycled Metals and Glass	Use less energy compared to raw extraction; infinitely recyclable	Electronics, containers, construction

Designers are increasingly turning to bio-based, plant-derived, or post-consumer waste materials to reduce dependency on virgin resources and lower emissions.

Sustainable Manufacturing

Environmentally responsible manufacturing includes eco-efficiency programs and practices that minimize detrimental effects on the environment (including resource consumption) as well as mitigate their social effects, where cost effective.

Core Principles of Sustainable Manufacturing

Use of Renewable Energy

o Production with solar, wind, and hydro power cuts down fossil dependency and CO2 levels.

Minimizing Energy and Water Consumption

o Use of energy-efficient equipment, and closed-loop cooling systems and sensors that help manage usage all contribute to waste reduction.

Carbon Emission Reduction

o More localised and shorter supply chains lead to lower emissions from transportation.

o Lightweight or dense designs of products can also facilitate shipping impact.

Waste Reduction and Circularity

o The circular design mindset involves using scrap materials, which recycle industrial waste and is designed for disassembly or recycling.

Cleaner Production Processes

o Minimizing toxic chemicals and solvents.

o Investment in clean technology and low-emission supply chains

Social and Ethical Considerations

What you're really talking about are fair, or ethical, labor practices; safe working conditions and community impact. Responsible manufacturers must:

• Sustainably sourcing raw materials (such as conflict free minerals)

• Make factories safe and fair places to work

• Real-World Example: Sourcing of natural materials in relation to indigenous rights and land use practices

Adidas x Parley for the Ocean

Adidas partnered with Parley to make shoes from recycled ocean plastic. The campaign not only cleared pollution from the ocean but was an example of mass's production role in protecting the environment. This business model has sold millions of pounds of shoes as proof that sustainability and innovation can go hand in hand.

Challenges in Sustainable Manufacturing

Challenge	Mitigation Strategy
Higher upfront costs	Long-term savings and increased brand value
Limited availability of eco-materials	Investing in material innovation or forming supplier partnerships
Lack of consumer awareness	Education, transparency, and clear communication
Complex supply chain integration	Using digital tools for supply chain traceability

6.2.4 Business Benefits of Sustainable Design

Designing for the future isn't just better for the planet — it can have business advantages, too.

Economy: The efficient use of resources and recycling, helping to save raw materials.

Brand Reputation As eco-friendly polo-shirts are now the trend, density of customers will more likely gravitate towards brands with credible reputation for sustainability and responsibility.

Laws and Regulations: The regulations induced by the government further encourage higher levels of sustainability.

Differentiation: Novel and sustainable products become compared to competitors.

Longevity of Value: Products built to last help develop a long-term relationship with the customer.

Example: Tesla gains by appearing to be cool and sustainable at once, which leads to stronger customer loyalty and investor confidence.

6.3 Ethical Design & Inclusivity

"It's about driving fairness, transparency and responsibility in the way ... products and services are designed." Inclusiveness is a step further as it has all people, irrespective of age, ability, gender, culture or location able to access and gain benefits from the design. They work together to produce solutions that are both practical and fair.

6.3.1 Principles of Ethical Design

An ethical design is based on a value system that places human well-being ahead of money and convenience.

Figure 6.2

• Core Principles:

Transparency: Consumers need to understand how products work and their data is managed.

Fairness Do not take advantage of gaps, or target, marginalise other groups.

Accountability: Responsibility for the consequences of design must lie increasingly with designers and their organizations.

Sustainability: Design for the health and welfare of both people and the planet.

User Autonomy: Allow users to make their own choices without being manipulated.

• Example: Apple implemented App Tracking Transparency, giving users a say over whether apps can track their data.

6.3.2 Accessibility and Inclusive Product Development

Access& inclusivity should be table stakes for modern product development, so that anything we build can and will be used by anyone, anywhere in the world: whether they're 5 or 95. Whether English is their first language (or not!). And regardless of income, people should have what they need to live a fulfilling life. Accessibility often

is individuals with disabilities, however universal design takes into consideration a wide spectrum of human diversity including ability, language, culture, gender age and other forms of human difference to ensure inclusive experience for all.

Making products complete accessible isn't just an ethical responsibility; it also has the power to drive more innovation, open up more markets and improve the users experience.

Understanding Accessibility

Accessibility refers to the design of products, devices, services or environments so they can be used by people who have disabilities:

• Visual (e.g., blindness, low vision)

• Auditory (e.g., deafness, hearing loss)

• Motor (e.g., limited mobility, tremors)

• Neuropsychological Acute effects: o Cognitive (learning and Memory) Brain Regan898 kap.

Common Accessibility Features

Feature	**Purpose**
Screen Readers	Convert on-screen text into audio for visually impaired users
Subtitles and Captions	Provide audio information as text for users with hearing loss
Keyboard Navigation	Enables use without a mouse, helpful for users with motor impairments
Adjustable Font Sizes	Supports users with low vision or dyslexia
High-Contrast and Dark Modes	Improves legibility in various lighting conditions
Voice Input/Command Features	Helps users with limited hand movement interact with systems

What Is Inclusive Design?

Inclusive design takes a **broader, proactive approach**—it doesn't just respond to special needs; it

anticipates diversity in users and designs from the outset to be as inclusive as possible.

Inclusive Development Practices

Practice	Benefit
Involve diverse users in testing	Surfaces challenges early from different perspectives
Design for variable connectivity	Supports both urban and rural users (e.g., low-bandwidth versions)
Support multiple languages and scripts	Expands accessibility for non-native speakers
Consider cultural sensitivities	Avoids inappropriate symbols, colors, or gestures across regions
Flexible layouts and content formats	Adapts to different devices, screen sizes, or assistive tech
Use plain and simple language	Makes content easier to understand for all education levels

Why Accessibility and Inclusion Matter

• Legal Obligation: In many countries, the law has made it mandatory to be accessible digitally(eg ADA in US, RPWD Act at India and WCAG guideline across Nigeria).

• Wider Reach: There are one billion people worldwide who have some sort of disability — designing for them expands your market.

• Better Usability: Some like annotations or dark mode, but all can benefit from them.

• Trust (Brand Trust and Brand Equity) : ID leads to the perception of social responsibility, building a positive brand image.

Real-World Example

Microsoft's Xbox Adaptive Controller

• Built for gamers with limited mobility.

• You can also use other input device button, joystick and Switch besides the joystick button.

• Built with input from advocacy groups and actual users.

• Demonstrates that inclusive products can be innovative, scalable and empowering.

Another case in point comes from Google Maps providing features such as wheelchair-accessible routes and voice-guided navigation for visually impaired people — which can benefit all kinds of temporary or permanent limitations.

Best Practices for Accessibility and Inclusion

Action	Description
Follow Accessibility Guidelines	Use standards like **WCAG 2.1** for web and app accessibility
Test with Real Users	Go beyond checklists—observe how diverse users actually interact with your product
Use Semantic Markup	Helps screen readers understand structure and content
Avoid Relying on Color Alone	Combine color with labels or patterns for users with color blindness
Add Accessibility Tags and Metadata	Improve discoverability and usability of images, videos, and documents

6.3.3.Dealing with Bias in AI and Digital Products

The cross-pollination of Artificial Intelligence (AI) and digital tech seems to be seeping into nearly all aspects of our lives– from job applications, health screening tools, banking solutions, e-commerce platforms and social media. But these systems are not neutral by nature. They tend to learn and reproduce biases present in the data they have been trained on, or in the assumptions they were designed with.

Why Bias Matters

Biases not addressed in AI systems can result in:

- Unfair or discriminatory outcomes
- Erosion of user trust
- Legal and reputational consequences
- Reinforcement of systemic inequalities

Overcoming bias is not just a technical problem — it's a moral, social and design problem.

Types of Bias in AI

AI bias can appear in various forms that generally mirror previous historical or societal inequities:

Type of Bias	Description	Example

Gender Bias	AI performs better for one gender due to skewed training data	Voice assistants responding more accurately to male voices
Racial Bias	Systems underperform on or misidentify people of certain racial groups	Facial recognition failing to recognize darker skin tones
Socioeconomic Bias	Algorithms favor users from wealthier backgrounds or specific geographies	Loan approval tools rejecting applicants from poor neighborhoods
Cultural Bias	AI fails to understand local context or customs	Content moderation mislabeling culturally specific expressions
Disability Bias	Systems are not designed to accommodate different physical or cognitive abilities	Virtual assistants unable to understand speech impairments
Age Bias	Older adults are underrepresented in usability or behavioral data	Interfaces too complex or fast-paced for senior users

Sources of AI Bias

Biased Training Data: If training data is not an accurate reflection of a broad spectrum of potential users, the system will exhibit bad performance for under- represented communities.

Incorrect Labels : The human annotators might introduce unconscious bias into the labelling of data.

Algorithmic Design Considerations: The way we optimize models inadvertently lead to emphasizing of accuracy over fairness.

Homogeneity: Development teams often neglect ethical considerations or edge cases.

Strategies to Address Bias

Here's how designers, engineers and policymakers can collaborate to reduce and manage AI bias with a mix of technical, ethical and organizational measures:

Use Diverse and Representative Datasets

- Make sure that training data cover as wide and varied a spectrum of user demographics, behaviors, and contexts as possible.
- Actively pursue data from underrepresented populations.
- Audit datasets for categories which are missing or biased prior to training.

Audit Algorithms Regularly

- Test bias with alternative user segments.

• Adopt fairness criteria (e.g., equal false positive rates among groups).

• Require third-party audits or ethics review boards for high-stakes systems (hiring, lending, health care).

Build Explainable AI (XAI)

• Build systems that provide clearly understandable rationale for their decisions.

• Enable users to know why an output emerged (for example, why a loan was denied).

• Improve accountability and user trust.

Involve Multidisciplinary Teams

• Cross-collaborate with technology disciplines (data scientists, engineering) working along-side experts in:

o Ethics

o Social science

o Disability advocacy

o Legal and regulatory affairs

• Diverse teams are more likely to be able to bring ethical blind spots and issues pertaining to social impact into the light.

Involving Users in Design and Testing

• Represent a diversity of gender identities, age ranges, ethnicities and accessibility needs.

• Features co-designed with and decision logic presented to affected communities.

Promote Inclusive Defaults and Interfaces

Make no assumptions about the identity or culture of users, the language they speak, their physical ability to interact, or access privileges.

• Offer personalized options and opportunities to unsubscribe when possible.

Real-World Example

LinkedIn Job Recommendations

Moments like that used to sometimes accidentally reinforce gender stereotypes in the algorithms on LinkedIn, like suggesting higher-paying technical jobs more frequently to male users. Upon review, LinkedIn re-engineered the

ting system removing features causing the biased patterns, by putting fairness checks and

user feedback loops.

Other notable examples include:

• Apple Card outrage, after women were said to have been given lower credit limits than their male counterparts with similar financial statuses.

• Amazon's AI recruiting tool, which it killed off after it taught itself to discriminate against résumés that included the word "women's."

Ethical Frameworks and Legal Implications

And there is increasing interest in AI ethics frameworks and algorithmic accountability both from governments and organisations:

• EU AI Act: Introduces a legal framework to classify the risk of AI systems and regulate them accordingly.

• OECD AI Principles: Focus on fairness, transparency and robustness.

• India's National Strategy for AI (NITI Aayog): Recommends responsible development and bias removal.

The stakes are high for companies who don't address bias:

• Violating anti-discrimination laws

• Facing public backlash

• Undermining user safety and rights

6.3.4 Global Standards and Regulations on Inclusive Design

What do other governments and groups around the world teach to be inclusive and role-modeling ethical behavior?

• Key Standards:

o WCAG (Web Content Accessibility Guidelines): Global guidelines for accessible websites.

o ADA (Americans with Disabilities Act): Mandates online accessibility and physical accessibilility in the U.S.

o ISO 9241-210: An international standard for human-centred design.

o EU AI Act: Provides transparency, safety and fairness in the use of the AI.

• Why it matters:

Iterating to meet these standards mitigates compliance and litigation risks for organizations, increases adoption, and build trust with users.

• For example: In a lot of countries, government websites are required to meet the WCAG standard in order to provide equal access to information for all its citizens.

6.4 Future of Ecosystems

The new frontier for design and innovation is ecosystems.. . these are networked platforms, technologies, and stakeholders that work together to produce a coexisting system capable of creating value. Unlike single-room products, ecosystems grow and evolve over time; they are resilient to external shocks and they combine a variety of innovations.

6.4.1 Platformization and Interconnected Systems

• Platformization:

Refers to moving from individual products to platforms where multiple stakeholders (users, companies, developers) can interact.

• Key Features:

Multi-Point-to-Multi-Point Relationship (Direct Connection of Producers and Consumers).

Data-driven growth and personalization.

Shared infrastructure for scaling.

• Example:

o Amazon: More than a store, and beyond third-party sellers, it's also home to advertisers and logistics providers.

o Apple App Store: Puts millions of iPhone users in touch with developers, ensuring a dynamic app system.

• Interconnected Systems:

Platforms are increasingly bridging industries — health apps that sync with insurance systems, smart homes connected to energy grids.

6.4.2 Open Innovation and Co-Creation Models

Innovation is no longer being done behind closed doors. Today beneficial business advantage is being seen as a result of collaboration, not just with other organisations but also with customers. Two enabling models that facilitate this transition are: open innovation and co-creation.

With these approaches we are now breaking down R&D the way it used to be: utilising external skills, user insight and collaborations.

group creativity into the innovation process.

Open Innovation

Open innovation is the process of obtaining ideas, technology and capabilities from external sources, challenging that it can be only developed internally.

“We don’t have all the smart people.” - Henry Chesbrough (founder of Open Innovation)

Key Features of Open Innovation

• Promotes the transfer of know-how across intra-organisational boundaries

• Includes partnerships with:

o Startups

o Research institutes or universities

o Freelance developers or inventors

o Industry competitors (in pre-competitive areas)

• Emphasizes common delivery, licensing, partnerships or external acquisition

- **Benefits**

Benefit	Description
Accelerated Innovation	Faster product development by leveraging external expertise
Cost Savings	Reduces internal R&D costs
Broader Problem Solving	Taps into diverse thinking and solutions
Access to Emerging Tech	Identifies innovations early by collaborating with startups and labs

2. Co-Creation

Co-Creation goes one step further by actively involving customers and end-users in the design, development, or refinement of products and services.

Why Co-Creation Matters

- Customers are experts in their own needs
- Engaging them early ensures relevance, usability, and emotional connection
- Builds a sense of ownership and loyalty

- **Forms of Co-Creation**

Model	How it Works	Example
User Submissions	Users propose product ideas or features	LEGO Ideas: Fans submit and vote on new sets
Crowdsourcing	Gather input from large communities (e.g., design, feedback)	Threadless: T-shirt designs from users
Beta Testing / Pilots	Users test early versions and suggest improvements	Software beta programs like Gmail or iOS
Co-Design Workshops	Collaborative sessions with users during the design phase	Healthcare services designed with patients

Combined Benefits

Open innovation and co-creation as twin approaches Open innovation and co-creation are two interrelated strategies that can accompany each other in order to:

Accelerate time-to-market by tapping into internal and external expertise

Mitigate risk by testing with users early

Increase the product-market fit by conversing directly with users.

Make an impact with inclusivity in innovation

Build brand value by being transparent and working with others

Real-World Examples

• LEGO Ideas Platform:

Fans submit designs and those that receive 10,000 votes are considered by LEGO. A few of them end up as actual products, with the creators receiving credit and a reward. This breeds a healthy fan base and ongoing innovation.

• Procter & Gamble – Connect + Develop:

P&G gets 50%+ of its innovations from outside. They collaborate with scientists, entrepreneurs, and institutions to co-develop technologies in various sectors (e.g. skincare, oral care).

• Local Motors (USA):

Created the world's first 3D printed car together with engineers, designers and enthusiasts from around the world through community co-creation.

• Unilever Foundry:

Collaborates with startups around the world to address company's specific brand needs through open calls and piloting programs.

6.4.3 Designing Resilient and Adaptive Ecosystems

Resilience is the capacity to absorb disruptions (economic crises, pandemics, climate events) without ceasing to function. The capacity to adapt is the ability to change.

• Principles of Resilient Design:

Redundancy – Secondary suppliers and second systems to prevent any single failure points.

Scalability – Implementation for technologies that can be expanded.

Diversity – Including more than one player or perspective.

Learning Loops – Organisms that take in information and learn.

• Example:

o In the context of COVID-19, digital ecosystems such as Zoom, Slack and Microsoft Teams scaled virtually overnight to enable global commerce through new working norms.

o Supply chain platforms reorganized themselves to source from several regions, not just one geography.

6.4.4 The Role of Emerging Technologies (IoT, AR/VR, Blockchain)

New technologies underpin the future ecosystem, making new types of connections and trust possible across sectors.

• IoT (Internet of Things):

o1 Links electronic product (line follower) with systems for data transmission process in real world.

o Smart cities with IoT sensors for traffic control and energy efficiency.

• AR/VR (Augmented & Virtual Reality):

o Generates lifelike simulation for work, learning and entertainment.

o Example: Retail AR allows experimenting with furniture at home before purchase (IKEA Place app).

• Blockchain:

♣ Transparency, security, and decentralization is guaranteed in an ecosystem.

o Example: Blockchain-based supply chain ecosystems that track goods all the way from their point of origin to the consumer.

• Integration Impact:

They create ecosystems which are more linked, secure and adaptive in support of industries such as healthcare, finance education or urban planning.

Knowledge Check 1

Choose the correct option:

Which one is not a feature of AI-first Design?

A) Manual customization only

B) Static, one-size-fits-all experiences

C) Intelligent forward looking information (pre-dictating user needs)

D) Designing products without data

What is the key principle of design in a circular economy?

A) Maximizing short-term profits

B) Take–make–dispose lifecycle

C) Eliminate waste and keep resources in use

D) Focusing only on digital products

What is the principal example demonstrating a phone made of interchangeable parts and replacements, a smartphone with replaceable pieces)?

A) Designing for repair

B) Designing for fast disposal

C) Platformization

D) Blockchain integration

Which of these products/ materials do we typically refer to as sustainable in manufacturing?

A) Single-use plastic

B) Bamboo

C) Non-recyclable Styrofoam

D) Lead-based components

Ethical design emphasizes:

A) Prioritizing profits above user well-being

B) Transparency, fairness, and accountability

C) Ignoring cultural differences for uniformity

D) Designing products with hidden algorithms

6.5 Summary

ϖ In chapter 1 discussed perspectives of how design is changing in response to a world of problems and potentials in the 21st century. It started with AI-first products, services and experiences, that is built on personalization, prediction and human-AI partnership. With that it brought sustainability and circular design principles to the fore - a focus on repair, reuse, recycling and of using more eco-friendly materials. The ethical design and inclusivity section covered transparency, accessibility and the need to tackle #biasinai. Lastly, the chapter considered the future of ecosystems (namely platformization, co-creation, resilience and emerging technologies) such as IoT AR/VR blockchain.

ϖ Collectively, these factors communicate that good design today is not simply about making things but about designing responsible, adaptive and future-proof systems.

6.6 Key Terms

In AI-First Design, intelligence is designed into the center of a product or service.

Iterative Learning – AI systems that learn and get better over time using data.

Circular Economy – Financial model that reuses, repairs and recycles resources.

Design for Repair – Make the next generation of 'phones and gadgets easy to mend, not toss.

Sustainable Materials – Resources made with a low amount of environmental impact (such as bamboo and recycled plastics).

Ethical Design – Designing for fairness, transparency, and accountability.

Accessibility – Products must be accessible to people with disabilities.

Bias in AI – Systematized discrimination when using algorithms because of biased information.

Inclusive Design – Creating products and services that are accessible to many different kinds of people.

Platformization – Development of a platform architecture, through which products can be transformed into platforms to engage multiple players.

Open Innovation – Innovation carried out in partnership with other organisations.

Robust Ecosystems – Are able to respond to disruption, adapt and withstand uncertainty.

IoT (Internet of Things) – System of devices interconnected,work in a cooperation and integration to share real-time data.

Blockchain – Digital transactions record that operates in a decentralized manner, promoting transparency and trust.

AR/VR - Expanded realities that integrate the digital and physical worlds.

6.7 Descriptive Questions

What is an AI-first design and how does it contrast with simply adding AI features to the existing product?

Tell us about the impact of personalization, prediction and automation on AI-first services.

Describe the concept of circular economy in design with relevant examples.

How does design for repair, for reuse, and recycling decrease environmental harm?

Explain the significance of sustainable materials for production.

What are the social responsibilities of design? Provide practical examples.

What does accessibility and inclusive design do for user experience?

How bias in AI can be professionally managed during a product development?

What international laws and standards are in place to shape inclusive design?

Discuss how platformization will influence future business ecosystems.

Explain the models of open innovation and co-creation, giving examples.

What are the principles that explain resilience and adaptability in ecosystems?

Assess the impact of IoT, AR/VR and blockchain on ecosystem development.

What's the role of sustainability and ethics in driving long-term business value?

Illustrate this with specific reference to Patagonia, discussing how sustainability and ethical philosophies influence global ecosystems.

6.8 References

1. Norman, D. (2004). Emotional Design: Why We Love (or Hate) Everyday Things. Basic Books.

2. Ellen MacArthur Foundation. (2015). Towards the Circular Economy. Ellen MacArthur Foundation.

3. Raworth, K. (2017). Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist. Chelsea Green Publishing.

4. Nielsen, J. (1994). Usability Engineering. Morgan Kaufmann.

5. Wirtz, B. W. (2021). Business Model Management: Design – Instruments – Success Factors. Springer.

6. European Commission. (2021). Proposal for a Regulation Laying Down Harmonised Rules on Artificial Intelligence (AI Act).

Answers to Knowledge Check

Knowledge check 1

1. C) Proactive intelligence that anticipates user needs

2. C) Eliminating waste and keeping resources in use

3. A) Designing for repair

4. B) Bamboo

5. B) Transparency, fairness, and accountability