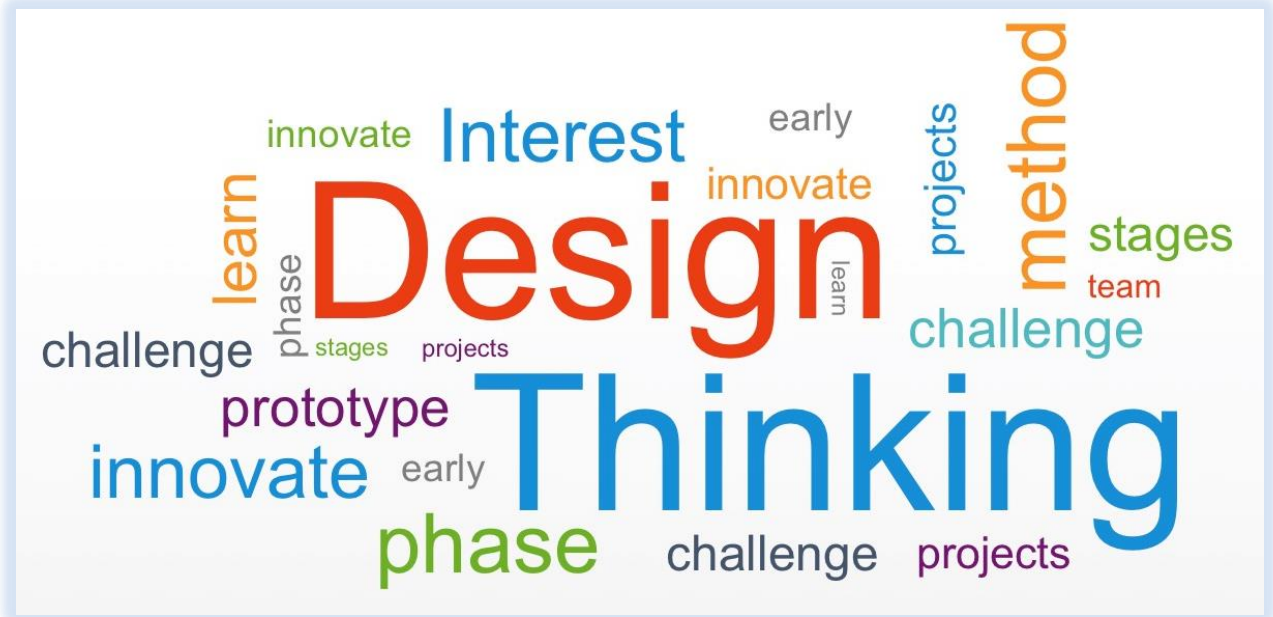


## Innovation and Design Thinking



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## Module – 1

# Understanding Design Thinking

### Meaning of Design Thinking

Design Thinking is not just the property of designers — all the great inventors of engineering, science, literature, art, music, and business have used it. Design thinking supports in developing, teaching, learning, and applying strategies to solve complications in a creative manner in the projects and processes of the business.

### Definition of Design Thinking

Design thinking is a term used to denote a set of strategic, conceptual, and practical processes in which design concepts are developed (product proposals, structures, equipment, communications, etc.). Many key concepts and aspects of design thinking have been identified through studies, across all different design fields, design concepts and design work in both laboratory and environmental contexts.

Design considerations are also linked to the establishment of products and services within the business and social environment. Some of these guidelines have been criticized for simplifying the design process and undermining the role of technical knowledge and skills.

### Origins of Design Thinking

The methods and concepts of design thinking, although promoted by developing companies and design consultants, ranging from a wide range of fields including software development, engineering, anthropology, psychology, art, and business.

Design ideas as they exist today have evolved collaboratively in various fields and industries. Over 50 years, and even more have emerged and merged into the quasi-Darwin system of natural selection. These have been integrated, documented, and promoted by leading design firms (such as IDEO and

Frog) and educational institutions (such as Stanford's d.school, and Rotman School of Management), and have been increasingly accepted by the industry.

While these evolutionary and experimental design experiments have led to methods process in the form of design thinking tools and methods.

**1963:** The idea of using Design as a way of solving complex problems in a simplified manner in sciences originated in the book ‘The science of the Artificial’ authored by Herbert A. Simon

**1973:** The idea of design was achieved for Design Engineering by the book ‘experiences in visual thinking’ authored by Robert McKim

**1982:** Design methodology is defined by “cross” the study of the principles, practices and procedures of design are developed .and includes the study of how designers work and think

**1987:** Peter Rowes Book Titled “design thinking” describes methods and approaches that planners, designers and architects use

**1980s to 1990s:** The work of Robert Mckim was consolidated by Rolf Faste at Stanford university during this period 1991 David M Kelly Founded IDEO and adapt Design thinking to business interests

**2009:** The design thinking process itself is human centered, offering methods for inspiration, ideation and learning to designers –Brown

**2012:** Apply the study of design thinking principles in engineering.

**2015:** Verbal protocol analysis, cognitive ethnography, controlled laboratory experiments, and other formal methods from cognitive science have been rigorously applied in engineering

**2017:** Design thinking reflected in many applications like prototyping, solution-based method is often useful way to encourage inspiration, ideation and organization learning and human centered methods

## **Design Thinker in the organizations**

Any individual who has the following traits can be design thinker in the organizations, namely

1. Individual who has the concern for the individuals and who know the working challenges in at workplace
2. Knowledge of multi -functionality of the organization
3. Vision for developing right process in the organization
4. Capability to understand the problems on the job and ability to work on the problems related to the jobs of the organization.

## **Features of Design Thinking**

The features of design thinking are as under

1. Design thinking understands from the perspective of the customers and provides solution for improving the product and service quality in the organization.
2. The role of design thinking is to collect feedback from the customers and employees by iteration of prototyping
3. Expanding the range of solutions to the problems identified in the organization and employee better customer and employee satisfaction
4. Enable the design thinkers to develop new products, features or services to customer and process satisfaction.
5. Providing and eco-system through the interaction with the employees, technical capabilities and customers.

## Principles of Design Thinking

At this point, it seems to the reader that design thinking is about how to think and act as it is about process. The process is obviously important, and there are certain, tested tools that need to be considered within each mode, each with its own set of inputs, outputs, and well-defined functions. Aside from the process, design thinking is also about thinking, where the concept can be thought of as an integrated set of beliefs and attitudes.

*Human Focused Design Thinking:* The process that understands from the perspective of the human including the employees and customers. While doing so design thinker needs to consider the individuals, beliefs, values and attitudes.

*Diversity to work in a team:* Design thinking needs to consider individuals from different background and train to work in a team. While group membership should be balanced throughout the project, it may be wise to occasionally include outside-organization participants — such as clients, suppliers, and other topic professionals — in specific modes or activities.

*Comprehensive:* Although details are important, design experts are also able to identify and consider relationships, collaborations, and communication between seemingly different ideas.

*Flexibility and unconventional comfort:* Design thinking is best suited to deal with problems and opportunities described in an incomprehensible way, and requires great flexibility in terms of both content and methodology (e.g., with the required repetition of modes and categories).

*Communication Skills:* Willingness to communicate and work in a variety of ways, including speaking, visual, and touch. Design experts design and build prototypes, without the perceived lack of skill or competence.



## Stages of Design Thinking

We will focus on the five-phase Design Thinking model proposed by the Hasso-Plattner Institute of Design at Stanford (d.school). D.school is a leading university when it comes to teaching Design Thinking. The five stages of design thinking, according to d.school, are as follows: Empathy, Explain (problem), Ideate, Prototype, and assessment. Let's take a look at five different categories of Design Thinking

### 1. Empathy

The first step in the design process is to gain a critical understanding of the problem you are trying to solve. This involves consulting with experts to find out more about the area of concern, to consult and empathize with people to understand their experiences and motives, and to immerse themselves in a visible environment to gain a deeper personal understanding of the issues involved. Sensitivity is very important in a person-centered design process like Design thinking, and sensitivity allows designers to set aside their ideas about the world in order to gain an understanding of users and their needs. Depending on the time limit, a large amount of information is collected in this section for use during the next phase and to develop a better understanding of users, their needs, and the problems that underpin the development of that particular product.

### 2. Define

During the Define stage, you combine the information you have created and collected during the empathy phase. This is where you will analyze what you have seen and put it together to explain the core values that you and your team have identified so far. You should want to describe the problem as a problem statement in a person-centered way.

For example, instead of describing a problem as your wish or business need, such as, “We need to increase our market share of food products among young girls by 5%,” the best way to describe the problem would be, “Young girls need nutritious food to thrive, be healthy and grow.”

Define Forum will help designers in your team come up with great ideas for creating features, functions, or any other features that will allow them to solve problems or, at the very least, allow users to solve problems themselves with minimal difficulty. In the Definition section you will begin to move on to the third phase, Ideate, by asking questions that can help you seek ideas for solutions by asking: "How can we ... a food product or company service?"

### **3. Ideate**

During the third phase of the design thinking process, designers are ready to begin producing ideas. You have grown to understand your users and their needs in the Sensory section, and have analyzed and summarized what you saw in the Define section, and ended up with a problem-focused problem statement. With this solid domain, you and your team members can start "thinking outside the box" to see new solutions to the problem statement you created, and you can start looking at other ways to look at the problem. Ideas at the end of the Ideation section to help you investigate and evaluate your ideas to find the best way to solve a problem or provide the necessary features to avoid it.

### **4. Prototype**

The team of designers will now produce less expensive, discounted versions of the product or specific features found within the product, in order to be able to investigate solutions to problems developed in the previous section. Prototypes may be shared and tested within the team itself, in other departments, or in a small group of people outside the design team. This is the testing phase, and the aim is to identify the best solution for each problem identified during the first three phases. Solutions are applied to prototypes, and, individually, are investigated and adopted, developed and

tested, or rejected on the basis of user knowledge. By the end of this section, the design team will have a better idea of the existing product problems and problems, and have a clear idea of how real users will behave, think, and feel about the product and services.

## 5. Test

Designers or testers firmly test the complete product using the best solutions identified during the simulation phase. This is the final stage of a 5-phase model, but with a recurring process, the results produced during the testing phase are often used to redefine one or more problems and inform users' understanding, usage conditions, and how people think. , behave yourself, and be sensitive, and compassionate. Even in this phase, changes and improvements are made to solve problems and gain as much insight into the product and its users as possible.

## Benefits of Design Thinking

- 1. It helps to overcome creative challenges:* Design Thought gives you the freedom to look at problems in many ways. It involves a lot of brains to come up with the best ideas, which helps to improve students' knowledge.
- 2. Helps to meet customer requirements effectively:* As we discussed earlier, design thinking involves developing prototypes when testing and using customer feedback repeatedly to ensure quality assurance. By following a successful design idea, your product will eventually meet the needs of customers.
- 3. It helps to increase your knowledge of Design Thinking:* You will do a lot of experiments in the design thinking process. You will always try to improve your model by using customer feedback to ensure customer satisfaction.

## **Theories and Practices of Design Thinking**

Design scholars continue to discuss theoretical developments in the design thinking. Different theoretical perspectives have been used in research into design thinking: one stream of research through protocol analysis to catch the ways designers are making sense of their own working processes another examines methods for teaching designedly thinking to design students through normative decision-based protocol. 'Design thinking' is much younger than 'design thinking', but it has grown rapidly. In one interpretation, 'design thinking' may also be a way for managers to 'understand design' in a more straightforward way than through the design management discourse that is built on a managerial platform.

When design management started as an academic area in the 1970s, it was taught by designers aiming to help management scholars and practitioners understand what design is and why it is relevant to the organizations.

### **Theory of Thinking Modes**

Building on the Guilford's studies there are three basic modes of thinking: Analytical, judicial, and synthetic. Analytical thinking is the process for separation of things from the visible relationships in the process and production in the organization. Judicial thinking is comparing and making judgments based on in-depth analysis in the thinking. Synthetic thinking is the process to combine two things and ideas with the intention of making new process and combination.

### **Theory of Problem Solving**

There are three types of problems; they are analytical, judicial and synthetic. The concept of analytical problems includes precise challenges and solution which are based on the small number of challenges and have precise way of working on the challenge. Judicial problems are influenced by complex challenges and which require solution that require correct direction based on the problem statement

present through complex challenge. Synthetic problems are based on the open concept that has various ways of working of resolving the problem.

### **Theory of Creative Blocks**

According to this theory there are barriers to the creativity of the individual and the individual expresses inability to access creativity and hence there is an block created in the creativity process of the individual.

### **Theory of Creative Process**

A creative process is the choice between the inner and outer, conscious and unconscious mind of the individual through the process of reflection and active collaboration of the individual.

### **Theory of Creative thinking education and Meta Cognitive Control**

According to this theory creative thinking is increased through creative education and supports in creating higher creative achievement among the individuals. This process also increased the individual creative potential and supports in developing right mindset for creativity of the individual.

### **Practices of Design Thinking**

At this stage the processes are presented from the perspective of designers and consultants.

1. Design ideas from the perspective of designers show that ideas are used for customer problem as this is driven by organizational culture. Therefore, design thinking has an impact on the culture of the organization and therefore designers need to consider the impact of design thinking on the organization.
2. Design thinking from a consultant's perspective demonstrates that supporting design thinking in providing support for complex business issues and providing solutions to complex business problems in the organization.

## Team based Design Thinking

Team size has a direct impact on design thinking process of the organization; following aspects are to be taken care in the design thinking for an organization.

1. Building the right type of team: Team members from diverse background and specialization support in providing solution to the challenges faced by the design team
2. Right Team Culture: Involvement of the team members is an important component for developing right culture; hence, rules, regulations and process of the team have an impact on developing right culture in the team. Therefore, design thinking team needs to have the right culture for developing right directions in the team process of the design team.
3. Development of higher inclusions, cohesion, interaction and confidence support in developing effective team for design thinking.
4. Effective communication among the members supports in sharing the ideas and solutions for the design teams in design thinking.
5. The role of leadership is an important aspect in design thinking, team leader support and encouragement support the design thinking team in the organization.

## Module 2

### Tools of Design Thinking

The tools of design thinking are as under;

1. **Visualization** means any activity that takes information beyond text as well as numbers and pictures, maps, and stories. At its simplest level, imagination is about creating visual images and images and moving away from our trust as masters in numbers and text. At a deeper level, it is about visualization: creating mental images, clear representations of our ideas and details about customers and their information, in a way that makes them human and attractive.
2. **Journey mapping** is an ethnographic research method that focuses on tracking a "journey" of a client as he or she interacts with the organization while still working on receiving a service, with special attention to heightening and reducing emotions. Mapping experience is used to identify needs that customer may be able to articulate.
3. **Value chain analysis** examines how an organization works with value chain partners to produce, market, and distribute new offerings. This analysis provides ways to create a better value for customers in the series and reveals important clues about the skills and goals of partners.
4. **The mind map** is used to represent how ideas or other objects are linked to the main idea and so on. Mind maps are used to produce, visualize, organize, and classify ideas to look at patterns and details that provide important design conditions.
5. **Rapid Concept development** is a tool to use the design details and terms we have developed to develop new business opportunities. When people hear the word "creative process," mental development may be the only thing they can think of, and they often equate it with the brain.

6. **Assumption testing** is a tool for expressing important assumptions that are less attractive to a new business idea and using available data to assess the feasibility of these assumptions. This approach acknowledges that any new business idea is actually an informed speculation about what customers want and what they will appreciate.
7. **Prototype** is a test model of a proposed solution used to test or validate ideas, design assumptions and other aspects of its consideration quickly and cheaply, so that the designer / participants can make appropriate refinements or possible changes along the way.
8. **Co- creation** is based on the belief that the presence of users is essential to the creative process, as users provide an understanding of what is important to them. At your core, this means that co-creation is any process that brings users and designers together to work towards a shared goal.
9. **Learning Launches** is the study for designer to explore the fundamental assumptions of total production potential for new growth in the market place. In contrast to the complete release of a new product, the learning implementation is a quick and inexpensive learning test to collect market-driven data.
10. **Story telling** in a logical way: summarizing a story. It is a close relative of imagination — one way to make new ideas sound real and compelling. Visual storytelling is a very compelling type of story. Every good presentation — whether analytical or designative — tells a fascinating story.



## Module 3

### Design thinking for Business Process Modeling

#### Business process Modelling (BPM)

Business process modelling (BPM) is a way of dividing business processes into their basic components: functions and performed for the business. BPM shows, clearly and concisely, how a product or service changes as it moves through the organization process, usually in the near real time. Procedure models facilitate communication between stakeholders: Business analysts and process partners. BPM models provide shared understanding so that everyone can provide information to various process-related steps: Process Map, Process Detection, Process Imitation, Process Analysis and Process Development. It has come in the last few decades and has replaced the organisation's previous effective packages: Time and Movement (TMS) and Total Quality Management (TQM). Procedure models facilitate communication between stakeholders: Business analysts, process partners and developers

#### Advantage of Business Process Modelling

1. Align operations with business strategy
2. Improves process communication
3. Increase control and consistency
4. Improve operational efficiencies
5. Gain competitive advantage

## **Design Thinking in Business Process Modelling**

By disclosing how things are done in the organization, and comparing that with how they should be done, BPM highlights dependence and interpersonal relationships, process, and technology — and when those elements are ready to be improved.

Design thinking is also focused on development, but it takes the experience of the end user or customer as a starting point. Basically, design thinking uses empathy to understand how people feel about using a service or product, including where their frustration lies, and then builds on that knowledge to build progress, with the ultimate goal of improving customer lives and knowledge.

## **Agile in Virtual Collaboration**

Agile methods are so popular in the software industry however they have received so much praise that other industries also want to pursue its benefits in their businesses. Working in a global environment makes these structures very challenging to function effectively. The Agile method can accommodate changes at any time compared to the waterfall method, and that is why collaboration between clustered groups slows down processes faster. Without communication; interactions, improvements, editing, reviews, review times etc. it also greatly reduces time and effort. Remote or distributed performance is considered competitive and is considered a suitable performance model. Some companies also offer it as an option to its employees. Businesses want to nurture talent day and night, utilize the best talent that can be found locally, the cheapest labor in the world, the higher productivity and the more strategic reasons. With the growing demand for remote operation, it is unacceptable to state that faster methods will not work with distributed teams. Although a few temptations will emerge, with the help of tools and techniques for moving to a remote workplace it is possible.

1. **Allow Openness:** As a company or leader create a transparent environment. Provide a sense of confidence in the team members for the decisions they make to organize sessions with them so that they align these decisions with the goals and vision of the company. Do not keep your responsibilities confidential. Explain the functions of the functions. Make sure the results are public as a whole. Collect the answer. Establish open communication channels.
2. **Establish a culture of continuous improvement:** Call for improvement within the team. See opportunities for improvement and get ideas from the group. Listen to the suggestions and take appropriate action. The Agile Goal drives continuous development and thus team members are open to opportunities for development. Generate calculated tests to use improvement efforts.
3. **Communication:** Communication is probably the most important skill in any group. the way you organize your communication is what determines the outcome. Practice deep communication at all levels. Too much emphasis on communication is key. Communication does not only have to happen through emails, calls or meetings, but in business most communication is done with the help or ERP tools that help you stay busy all the time.
4. **Rhythm Building:** There are three essential elements in a fast-paced workflow: Clarity, testing, and flexibility. Scrum is also called the three pillars of Scrum (Scrum Guide, 2005). It is important that we build a tempo that works close to these Scrum pillars. I have already said that drive to create a collaborative team that is a leading Agile excellence.
5. **Develop a culture of courage and flexibility:** This also goes hand in hand with the idea of immediate failure. Failure is not bad; it's okay to fail. Here, though, the main issue is the immediate failure. Set up a place where the team has the courage to take action to try something new. The idea is to reduce delays. Find failure quickly and re-engineer your plans.

6. **Establish a stable environment and work life balance:** A well-distributed team usually keeps its normal working hours leading to overtime or working overtime. Establish rules and ensure that no member of the team violates these terms, prompting partners to apply this principle. Plan accordingly and set reasonable expectations.
7. **Visualize the whole thing:** The most important step. Task planning is a simple utility tool that gives you a clear interpretation of tasks to be completed. Establish a solution that allows team members to monitor the flow of work, show who is working on it, guide together and be able to choose the right priority and at the right time. This solution will help you to scan problem areas and restore them properly to improve your processes.

## **Scenario Based Prototyping**

Design thinking is best if concrete prototypes can be used to visualize new products and services. However, in complex software systems with multiple users such portable prototypes are not possible. To overcome this problem, a situation-based prototyping method can be proposed to design complex software programs based on models, both structural and behavioral models. This approach will support step-by-step enrichment and interoperability of the model, the sequence between the artifacts collected during the previous design phases and scenarios. The models provide a more legitimate result of the process of designing low-level engineering works, so that the gap between design and engineering is narrowed. Circumstances define the sequence of events, reflecting the activities of one or more individuals in the real world. Goals should be realistic, detailed and concise. Since this is difficult to do quickly, it is best to cover only a limited time in a situation. We distinguish between terms of use, which is a type of dialogue and independent analysis that occurs today in real-world settings, and design conditions, which are updated versions of usage.

## Module 4

### Design Thinking for Strategic Innovation

#### Strategic Management

Strategic management is the process of setting goals, procedures, and objectives in order to make a company or organization more competitive. Typically, strategic management looks at effectively deploying staff and resources to achieve these goals.

#### Innovation Management

It is the concept which has multiple aspects and dimensions and are contributed based on the multiple disciplines of the study that has a various theories and frameworks.

#### Types of Innovations

There are four types of innovations which are (1) Disruptive vs Sustaining innovation (2) Radical vs incremental innovation (3) Innovation matrix (4) Architectural vs Modular innovation

##### 1. Disruptive vs. Sustaining innovation

The concept of disruptive innovation is related to the concept, product or service which will create new value to the existing market and also create a completely new market. While the sustaining innovation is based concept of improving and growing the existing markets.

##### 2. Radical vs. incremental innovation

Radical innovation happens when a new technology completely disrupts existing business or economy and creates a new business model. Incremental innovation, in turn, refers to a series of small, gradually built improvements to existing products, processes or methods to maintain competitive position over time.

### **3. The Innovation Matrix**

To clarify the aforementioned dimensions and to better demonstrate them, we took all four terms and combined them with our Innovation Matrix. Radically disruptive – Innovation that harnesses new technology and creates a new business model. Has no clear competitors. Radically sustaining – Improvement on a product or process in an existing market that provides new value for the customer. Incrementally disruptive – An incremental improvement in technology that leads to a dramatic disruption. Incrementally sustaining – Small and cumulative changes in an existing product, technology or service.

### **4. Architectural vs. Modular Innovation**

Architectural innovation is described as the reconfiguration of existing product technologies. Modular innovation (or component innovation), on the contrary, is the exact opposite. In modular innovations, one or more components of a product is changed while the overall design stays the same.

### **Strategic Innovation**

Strategic innovation is an organization's process of reinventing or redesigning its corporate strategy to drive business growth, generate value for the company and its customers, and create competitive advantage. This type of innovation is essential for organizations to adapt to the speed of technology change.

### **Features of Strategic Innovation**

Strategic innovation demands for holistic approach towards the activities of the organizations at various levels in the organization. The features of strategic innovation are as under;

1. This concept is based on the long-term perspectives and is developed based on the developing strategic which matches the innovations in the organization.
2. The main objective of strategic innovation is to create competitive space for the products and services offered by the organization.
3. The process of strategic innovation combines business process with creative solutions to the problems in the organizations.
4. Collect information about the business from unconventional sources and provide innovative strategy for the challenges in the organization.
5. Development of the organization process which can accommodate the changes in the organization and build robots business process and procedures in the organization.

### **Scope of Strategic Innovation**

The scope of strategic innovation is based on the seven dimensions which include (1) Managed innovation process (2) Strategic alignment (3) Industry foresight (4) Customer Insight (5) Technology (6) Organization Readiness (7) Implementation

1. **Managed Innovation:** In this process the facilitating process includes external and internal perceptive with regards to organization capabilities, process, procedures and customers.
2. **Strategic Alignment:** This is created for development of shared vision, goals and actions among the key stakeholders in the organization.
3. **Industry Foresight:** This process includes deeper understanding of the driving forces, influence of the new technology, competition dynamics and changing market trends.
4. **Customer Insight:** Strategic innovation provides deeper understanding of the customers' needs and demands and provide innovative strategic for the growth of the market.

5. **Technology:** The perspective of technology is assessed through strategic innovation on the aspect of internal technology capabilities, organization capabilities and reaching higher customer satisfaction.
6. **Readiness of the organization:** Strategic innovation provides an insight on the readiness of the company to the changing innovations and also provides insights on the capability of the organization to accept the changes in the business environment.
7. **Implementation:** Strategic innovation provides an insight on the process of implementation of the strategy through the aspect of process and procedures and policies which align the organization to the innovation in the organization.

## **Design Thinking and Strategic Innovation**

Design Thinking is a human-centered approach to innovation that integrates customer emotion and empathy, the possibilities of digital tech and analytics, and the requirements for business success. Integration of the strategy supports in the reaching the market better and improving the competitiveness of the firms in the market.

In order to link design thinking and strategic innovation. Design thinking is based on the mental activity in understanding the things and process of the organization. While strategic innovation is based on the concept of strategic management. Interaction between the design thinking and strategic innovation provides following benefits, they are as under;

1. Concept of design thinking has supported in developing products and services which match the expectation of the customers and there by supporting the strategy of the organization.
2. Design thinking provides an opportunity to integration of new ideas and thinking which is essential for the development of right strategy for the organization.



## Practices of Integrating Design Thinking in Strategic Innovation

Design thinking and strategic innovation has four practices they are (1) Reviewing (2) Simulating (3) Conversing (4) Collaborating.

**Reviewing:** Design thinking is based on the data collected through various sources, which include customers, employees and other stake holders. Based on the data collected prototype is developed through the concept of design thinking. These development support in development of right strategy for the innovation in the organization.

**Simulating:** The concept of simulation provides insights on the experience of the individual in the real world of business. Simulating opens up strategy practice because it provokes managers to form an empathetic engagement with the customer experience, thereby making the market context immediately appraisable.

**Conversing:** Conversing was particularly important in enabling collective reflection and getting agreement between participants with diverse understandings of the strategy. In other words, this aspect of design-led strategizing amplified managers' attention to the real fit within product-market fit.

**Collaborating:** This practice was especially useful when teams were dealing with complex issues that could easily be forgotten or lost in conversational dialogue. Rather than trying to empathetically understand each manager's perspective (as in the conversing practice) the focus in collaborative translation was on generating a shared solution to a complex problem.

## Module 5

### Design Thinking Workshop

#### Design Thinking workshop

Design thinking workshop is a collaborative, work-based session built around the Design Thinking process. Usually, these are done in person, but you can adapt and run a long-distance design workshop. It can take up to two hours, two days, or a whole week — all depending on the context of the workshop.

#### Focus of Design Thinking workshop

1. Sensitivity: Addressing the real user problem and building empathy for targeted users / customers.
2. Ideas, innovation, and problem solving: Generating multiple ideas and possible solutions.
3. Prototyping and testing: Creating prototypes that are less reliable in the ideas produced, suitable for testing to real users or agents.

#### Need for Design Thinking Workshop

1. Design Thinking into your process will help you to quickly come up with viable, user-centric solutions which results in improved customer satisfaction and greater cost saving to the organization.
2. Design Thinking workshops enables to build better organization culture with the focus of creativity and supports in growth of the organization.
3. Supports in developing skills of the employees by providing training in the domain of problem solving and providing better solutions to the challenges on the job.

4. Development of innovation in a team culture through collaborated learning in the design thinking workshop.
5. Design thinking workshop supports in developing competitive advantage for the organization and in return develops better products and services for the organizations.

## **Stages of Design Thinking Workshop**

Design thinking workshop are divided into two stages they are planning stage and the workshop stage. The aspects include in the planning stage include (1) Learning Goals (2) Pre-Meeting (3) Checking of the ambience for workshop (4) Developing flow of activity (5) Study Material for the workshop The workshop stage includes (1) Introduction (2) Define Problem Statement (3) Idea Testing (4) (5) Prototype (6) Testing (7) Feedback (8) Closing of the workshop

Planning Stage of Design Thinking workshop

**Learning Goals:** During this stage of design thinking workshop learning goals for the workshop needs to be developed, the organizing team can collect information from the participants, members of the unit head and other stake holders related to the challenges faced in the organizations. During this stage learning outcomes are be developed for focused outcome of the workshop. The learning outcomes needs to well connect with the objectives of the workshop. This aspect supports in developing right culture for the workshop on design thinking.

**Pre-Meeting:** During this stage of workshop the organizing team needs to check for the following aspects for making the workshop effectively, they are right information on the purpose of the workshop, secondly, preparation of agenda for the workshop. Thirdly, giving detailed information to the design thinking trainers on the background of the trainees and work profile which include designation, age and experience of the participants.

**Checking the ambience of the workshop:** The design thinking needs right ambience of the conduct of the workshop which include seating arrangement, venue and right electronic devices. The role of ambience is important for the improving the learning process of the trainees during the workshop.

**Flow of Activities:** Design thinking workshop needs to prepare the right type of activities for providing right insights on the challenges related to the organization's problems. The organization needs to collaborate with the design thinking trainers for development of activities for the workshop. The activities include the games, lecture material and discussion points with the participants. This supports in developing the right flow of activities during the workshop and achievement of learning goals of the design thinking workshop.

**Study Material for the workshop:** Participants for the workshop needs to be provided with right study material related to the workshop. The study material needs to be provided to the participants one week the workshop, this supports them to prepare well for the workshop. The study material needs to be aligned with the flow of activities and agenda of the workshop on design thinking.

In the next stage of design thinking workshop, the workshop process has to be conducted during this stage following aspects are covered, they are as under;

**Introduction to the workshop:** During this stage participants needs to define the right thoughts that can guide the flow of the workshop. During this stage all five stages of design thinking needs to be included which are sensitivity, explain, ideate, prototype and evaluation. Further to improve the learning process, during the introduction stage. Further, to set the stage for the workshop real world success stories are be shared with the participants for improving the motivation of the participants.

**Define Problem Statement:** During this stage of workshop, the participants will reduce the overall design challenge to the problem specific directions, in this stage, the trainers apply concepts such as empathy mapping, in this mapping participants create vision statement and prepare documents how

to approach the problem statement. Further, each participant would be allowed to present the problem statement and describe the problem and through the discussion the trainer provides insight on relooking at the problem statement which match to address the design challenge.

**Idea Testing:** In the third stage of the workshop design thinking process consists of idea development and providing possible solutions to the challenges. Concept such as brainstorming and sharing of ideas is applied by the trainer during this stage of workshop. Another popular concept applied during the stage is the mind mapping and visual of the data to understand the problem and develop idea towards the solution to the problem.

**Prototype:** During this stage participants are allowed to build and experiment with the prototype based on the idea presented by the participant. During this stage participants can conduct survey among the other participants and collect information from the prototype developed. During this stage, trainers might apply making the participants work in a team with an intension to provide better prototype for the idea. Further, the trainers might also apply the tool of journey mapping to understand the customers preference which supports in development of better prototype.

**Testing:** In this stage, the prototype developed is assessed to suit the scenario of the challenge and linked to the business process adapted in the organization. This insight is provided to the participants to match with the organization and customers. Testing stage provide greater insight on the acceptance of the prototype to the needs of the organization and provide solutions to the problem statement.

**Closing of the workshop:** This is the last stage of the workshop where in the trainers provide feedback to the participants and participants are motivated to apply the concept of design thinking in the working of the organization. They are appraised on the benefits of design thinking in improving the work process of an employee.

## MODEL QUESTION PAPER

### 1. Design Thinking supports in

- a. Developing the product
- b. Developing the strategy
- c. Developing the process
- d. All of the above

### 2. What is design considerations are not linked with?

- a. Products
- b. Services
- c. Business
- d. Computers

### 3. Design Thinker in an organization are

- a. People
- b. Employees
- c. Managers
- d. All of the above

### 4. Design thinking supports in developing product features to improve the services to the customers

- a. Yes
- b. No

### 5. Comprehensive Principle of Design Thinking does not include

- a. Relationship
- b. Collaboration
- c. Communication
- d. Suppliers

### 6. Communication Skills includes

- a. Speaking
- b. Writing
- c. Visual
- d. All of the above

**7. In the stages of design thinking empathy means**

- a. Identifying areas of concern in the business
- b. Identifying from the perspective of the employees
- c. Identifying from the perspective of the product
- d. All of the above

**8. What are the steps of Design Thinking Process?**

- a. Understand > Draw > Ideate > Create > Test
- b. Empathize > Define > Ideate > Prototype > Test
- c. Empathize > Design > Implement > Produce > Test
- d. Understand > Define > Ideate > Produce > Try

**9. Design Thinking is a Linear Process. True or False**

- a. True
- b. False

**10. Design Thinking typically helps in \_\_\_\_\_**

- a. Innovation
- b. Data Analysis
- c. Marketing Management
- d. Operation Management

**11. Which of the following well known consulting firms are offering Design Thinking as a solution?**

- a. McKinsey & Co
- b. BCG
- c. Bain & Co
- d. All of the above

**12. Which one of these statements is TRUE about the Prototype?**

- a. Your prototype has to be exactly like the final product
- b. You must not make it online
- c. The objective is to have people interacting with your product
- d. You can consider anyone as a potential user of your product

**13. Which one of these statements is NOT a good interview practice for user testing in the Empathy step?**

- a. Encourage interviewees to share personal experiences
- b. Encourage interviewees to provide concise answers going straight to the point
- c. Interview your target audience in their usage environment
- d. Depending on interviewees, diverge from the Interview Guide to ask additional unplanned questions

**14. A Brainstorming session is \_\_\_\_\_**

- a. There is no rule, it is up to the Brainstorming facilitator to decide
- b. A mix of individual & collective activities
- c. A collective activity only
- d. An individual activity only

**15. The objective of a low-fidelity prototype is to...**

- a. Test fast and fail cheap
- b. Validate final concepts among your target audience
- c. Test more concepts at an early stage
- d. Assess the technical feasibility of the solution

**16. You can interview your target users at any step of the Design Thinking approach.**

- a. Yes
- b. No



**17. When testing a new prototype, how many people do you need to interview per Persona to detect the main usability issues?**

- a. The more persons per Persona the better
- b. 20 persons per Persona
- c. 10 persons per Persona
- d. Five persons per Persona

**18. You are an Innovation Consultant helping a Team apply the Design Thinking approach. This team is working on the Ideation step and have produced more than 100 ideas. What would you suggest they do first?**

- a. To prototype some of these ideas
- b. To categorise their ideas
- c. To continue iterating on ideas
- d. To vote for their preferred ideas

**19. As an Innovation Consultant, what should you do to help a team struggling to think outside the box during a Brainstorming session?**

- a. Propose to them new brainstorming techniques (e.g. Mash-up)
- b. Remind the team about the Problem Statement(s) to help guide the ideation process
- c. Remind the team about the Brainstorming rules
- d. Give them feedback about the ideas like highlighting the good ones already proposed

**20. Who bought a collaborative design philosophy?**

- a. Henry Ford
- b. Henry Ford and Steve Jobs
- c. Steve Jobs
- d. None of the above

**21. One needs to have professional training in design to become a design thinker. True or False?**

- a. True
- b. False

**22. How does the Prototype stage of design thinking enable better management?**

- a. It enables designers to eliminate the user feedback portion of testing.
- b. It allows the design team to break testing down into smaller chunks.
- c. It requires the design team to tackle all portions of testing at once.
- d. The Prototype stage has no bearing on better test management.

**23. How does the test stage of design thinking allow you to make tweaks and refine your prototype?**

- a. By observing and talking to customers, you can learn whether your product hits the mark.
- b. By learning more about your product, you can determine the best market for it.
- c. By testing employees' knowledge of the product, you can start designing packaging.
- d. By talking with other designers, you can learn ways to redesign to make more money.

**24. What is characteristic for the location of a virtual team?**

- a. In the same building
- b. In the same industry
- c. In the same country
- d. Remotely

**25. Innovation is defined as:**

- a. the commercialization of a new product or process.
- b. the invention of a new product or process.
- c. a new product or process idea.
- d. the implementation of a new production method.

**26. Innovation can help to provide a temporary competitive advantage when:**

- a. Barriers to entry are high.
- b. Barriers to imitation are low and intellectual property rights are difficult to enforce.
- c. There are few other competitors.
- d. Barriers to entry are low.

**27. Scope of Strategic Innovation includes**

- a. Managed Innovation
- b. Strategic Alignment
- c. Industry Foresight
- d. All of the above

**28. Integrating Design thinking in strategic innovation includes**

- a. Reviewing
- b. Simulating
- c. Conversing
- d. All of the above

**29. Mr. Anil is starting a clothing company. Instead of making clothing that fits models, though, Will wants to start by thinking about what non-models need. Because will is planning his designs around the end user, he is engaging in \_\_\_\_\_.**

- a. Design thinking
- b. Model design
- c. End user generation
- d. Model thinking

**30. Mr. Ravi wants to design a new bed that she can sell to nursing homes to use with their patients. However, Ravi doesn't want anything to do with older adults or people with disabilities. According to the design thinking process, Mr. Ravi will face problems because he is missing \_\_\_\_\_.**

- a. Empathy
- b. Creativity
- c. Practicality
- d. Imagination

**31. Design Thinking is sometimes visualized as a linear process, but it is actually**

- a. Impactful
- b. Incapacitating
- c. International
- d. Iterative

**32. Which of these is a reason that companies might implement design thinking?**

- a. It relies on risk-taking
- b. It creates more problems
- c. It eliminates mistakes
- d. It accelerates effectiveness

**33. Mr. Ram is creating a new product for university students. He takes a design-thinking approach. He's first step is addressing who she is creating the product for and conducts research on understanding this target market. What is this step in the design thinking process?**

- a. Define
- b. Ideate
- c. Empathize
- d. Prototype

**34. Internal stakeholders are people or groups who work at your company or organization and directly or indirectly influence your task. Internal stakeholders can be**

- a. Employees
- b. Other business units or departments
- c. Top management
- d. All of the above

**35. What is a customer journey map?**

- a. It is a map to locate where the customer has travelled
- b. This only applies to the travel industry, since it involves maps
- c. It is a typical journey of a customer who goes through a certain experience
- d. The map that leads us to a profit-making enterprise

**36. The main uses of a customer journey map are**

- a. This gives the design thinkers a near first-hand experience of what a customer goes through
- b. The map can give us the emotional roller coaster of the user
- c. The output of the map is a list of problems that the customer goes through
- d. The map also serves as a visual aid to communicate the situation of the user

**37. Design thinking is often also called**

- a. Intellectual property
- b. Human Centered design
- c. Ecological sustainability
- d. Alien diversity

**38. For building a customer journey map, we interview only one customer**

- a. True
- b. False

**39. Who is the recommended group that you should test out the prototypes with?**

- a. Your target customers
- b. People in your team
- c. Professional designers
- d. Experts

**40. During which step do you allow an authentic audience to interact with your prototype and give feedback?**

- a. Prototype
- b. Ideate
- c. Test
- d. Define

**41. What is the usual order of problem-solving process?**

- a. Try, Reflect, Prepare, Define
- b. Prepare, Try, Define, Reflect
- c. Try and Reflect
- d. Define, Prepare, Try, Reflect

**42. During which step do you create an interactive representation or model of your idea or solution?**

- a. Prototype
- b. Ideate
- c. Test
- d. Define

**43. Ideate means**

- a. To rapidly change.
- b. When you create a 3D model of your design.
- c. The process for creating and sharing ideas where you use images and sketches instead of words to describe your idea.
- d. When you brainstorm ideas, get feedback, create an initial design, share the design, and iterate.

**44. State true or false. The various stages of design thinking are fixed and linear.**

- a. True
- b. False

**45. Stages of design thinking workshop are planning stage and workshop stage**

- a. True
- b. False

**46. Learning Goals in design thinking workshop are related to**

- a. Define learning outcomes
- b. Mapping with the problem statement
- c. Understanding culture of the organization
- d. Defining learning styles

**47. During the design thinking workshop, providing introduction is important to engage participants**

- a. True
- b. False
- c.

**48. Closing remarks of the design thinking workshop supports in motivating the participants to apply concepts of design thinking at the workplace**

- a. True
- b. False

**49. Collaboration in design thinking for strategic innovation includes**

- a. Collaboration with design thinking team
- b. Collaboration with design thinking consultant
- c. Collaboration with operation team
- d. Collaboration with all the members of the organization for shared solution for a complex problem

**50. Readiness of the organization for strategic innovation means**

- a. Changing innovation process in the organization
- b. Ready for change in the organization
- c. Ready for change in the capabilities of the organization
- d. All of the above