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Chapter 7: Design a digital tool (2% Assignment bonus if your score in Chapter 7 does not meet the required threshold)

Chapter 7: Design a digital tool

Lesson Objectives: Student are able to

- Understand the meaning of "a business pain point."
- Understand the meanings of the 5 stages of Design Thinking.
- Understand the method and output of each stage of Design Thinking.
- Apply Design Thinking to solutions for a business pain point.
- Create a digital solutions for a business pain point.



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7.1 Business Pain Point



A "Business Pain Point" refers to a specific problem or challenge that a business is experiencing. These pain points can vary widely depending on the industry, size of the company, and market conditions, but they generally fall into several broad categories such as financial issues, operational inefficiencies, sales declines, customer service challenges, or technological hurdles. Identifying and addressing these pain points is crucial for businesses to improve their operations, increase customer satisfaction, and drive growth.

7.2 Design Thinking

Design thinking is an initial process used to develop a rapid prototype for innovations such as products, services, processes, or organizations, based on customer needs. There are five stages to this method:

1. Empathize: understanding what customers really need;
2. Define: choosing a specific problem based on customer needs;
3. Ideate: generating ideas for solving that problem;
4. Prototype: creating a prototype; and
5. Test: testing it.

By using the design thinking method, we can create products that customers will want to buy, rather than products we want to sell. Therefore, the resulting product will have a high likelihood of creating value.

Empathize	<p>Meaning: Empathizing is the essential first step, which focuses on gaining an empathetic understanding of the problem you're trying to solve.</p> <p>Method:</p> <ol style="list-style-type: none">1. Conduct user research: This involves interviews, observations, surveys, and co-creation workshops. The aim is to collect qualitative data that provides insight beyond simple demographics and statistics.2. Actively listen: It's important to pay close attention not only to what users say but also to non-verbal cues like body language and tone of voice. Ask questions that help clarify their statements to grasp their deeper meanings.3. Challenge your assumptions: Avoid imposing your own beliefs and experiences on users. Be open to discovering that their perspectives and needs may be significantly different from your own.4. Develop empathy maps: Create visual representations of what users think, feel, do, and say in various situations related to your design challenge. This technique helps you to fully empathize with their experiences throughout their journey. <p>Output: Data or inside for the next stage.</p>
Define	<p>Meaning: Define refers to take the insights gathered from understanding your users (empathy) and transform them into a clear, actionable problem statement.</p> <p>Method:</p> <ol style="list-style-type: none">1. Synthesizing information: You analyze the data collected during the empathy stage, looking for patterns, themes, and key insights. Tools like empathy maps, affinity diagramming, and user personas can help you organize and analyze this information.2. Identifying needs and pain points: Based on your analysis, you identify the core needs and pain points of your users related to the design challenge you're facing. This involves going beyond the surface-level observations and understanding the underlying motivations and frustrations.3. Reframing the problem: You reframe the problem statement to be user-centered. This means shifting the focus from what you want to achieve (e.g., "increase website traffic") to how you can fulfill unmet user needs (e.g., "how can we make it easier for users to find relevant information on our website?").4. Formulating a clear statement: The final step is to formulate a clear, concise, and actionable problem statement. This statement should be specific, measurable, achievable, relevant, and time-bound (SMART). It should also be phrased in a way that inspires creative solutions. <p>Output: Problem statement which is a clear and concise description of an issue or challenge that needs to be addressed. It should be specific, actionable, and user-centered.</p>
Ideate	<p>Meaning: Ideate is the stage that you have to generate creative solutions to the problem statement. It's all about divergent thinking, encouraging wild and varied ideas without judgment. The goal is to explore as many possibilities as possible before narrowing them down later.</p> <p>Method:</p> <ul style="list-style-type: none">• Brainstorming: This classic method involves throwing out ideas quickly without stopping to think.• Brainwriting: Similar to brainstorming, but participants write down their ideas individually and then pass them on for others to build upon.• SCAMPER: This technique involves applying a set of verbs (Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, Reverse) to the problem to generate new ideas.• Worst Possible Idea: This method encourages coming up with the worst possible solution to the problem, which can often lead to unexpected and innovative solutions when flipped around.• Role-playing: Imagine yourself as the user experiencing the problem and brainstorm solutions from their perspective. <p>Output: Best few solutions out of tons of generated solutions.</p>
Prototype	<p>Meaning: Prototype is the stage of transform your idea solution into tangible, testable models which will be called a prototype.</p> <p>Method: Depends on several factors, including the stage of your project, available resources, and desired level of fidelity</p> <p>Output: A prototype: Note that there are 3 level of prototypes:1. Low-Fidelity Prototypes:</p> <ul style="list-style-type: none">• Quick and easy: Ideal for early-stage exploration and testing basic concepts.• Methods: Sketches, paper mockups, cardboard models, role-playing.• Tools: Pen and paper, markers, scissors, cardboard boxes, prototyping kits.• Examples: Testing different layouts, understanding user flow, getting initial feedback. <p>2. Mid-Fidelity Prototypes:</p> <ul style="list-style-type: none">• More refined: Include basic visual elements and some interactivity.• Methods: Digital mockups, clickable wireframes, interactive PDFs.• Tools: Design software (Figma, Sketch, Adobe XD), online prototyping tools (InVision, Marvel), coding tools (for interactive elements).• Examples: Refining user interface, testing specific features, gathering detailed feedback. <p>3. High-Fidelity Prototypes:</p> <ul style="list-style-type: none">• Close to final product: High-quality visuals and advanced functionality.• Methods: Functional prototypes, alpha/beta testing versions.• Tools: Advanced design software, development tools, specialized prototyping tools.• Examples: User experience testing, finalizing design decisions, gathering pre-launch feedback.
Test	<p>Meaning: Put prototypes to the test with real users and get their feedback.</p> <p>Method: Bring your prototypes to sample of your target customer, ask them to try and get their feedbacks.</p> <p>Output: User feedbacks, Assumptions validation, early issue identification,</p>

Note that Design Thinking is a dynamic and iterative approach that necessitates continuous review, repetition, and extensive back-and-forth movements, involving ongoing evaluation and considerable iterative processes.



7.3 Design a Digital Tool

Design thinking is a comprehensive methodology employed to devise solutions for business pain points. These solutions can manifest as processes, methods, or products. However, one of the critical elements that can enhance the efficiency of a solution is digital technology. By integrating digital technology with design thinking, it's possible to create significantly improved solutions. This synergy not only enhances the functionality and effectiveness of the solution but also ensures it is more adaptable and responsive to the evolving needs of users.

Leveraging digital technology in the design thinking process can lead to innovative outcomes that are both user-centric and technologically advanced, offering a competitive edge in addressing business challenges.

Digital tools can significantly enhance each phase of the design thinking process. In the Empathize phase, social media platforms can be leveraged to gain insights into the thoughts and feelings of your target customers, allowing for a deeper understanding of their needs and challenges. During the Define stage, various analysis tools can be utilized to sift through data, helping to distill a well-defined problem statement that accurately captures the core issue. In the Ideate phase, platforms like Zoom facilitate brainstorming meetings, enabling teams to collaborate effectively regardless of their geographical locations.

Additionally, generative AI can be employed to produce a wide array of potential solutions, pushing the boundaries of creativity and innovation. When moving to the Prototype stage, an array of design tools can be used to craft UX/UI designs, allowing for the tangible representation of concepts and ideas. Finally, in the Test stage, various online channels offer a direct pathway to engage with target customers, providing opportunities to test prototypes and gather feedback through online surveys. This comprehensive integration of digital tools not only streamlines the design thinking process but also opens up new avenues for creativity, collaboration, and customer engagement, leading to more refined and effective solutions.

However, we can effectively integrate digital tools directly into the solution itself. During the Ideate stage, it's essential to generate a comprehensive range of solutions, considering both digital and non-digital approaches. At this point, you should evaluate the digital technologies available to you and strive to incorporate these technologies into as many solutions as possible. This proactive integration can significantly enhance the innovation and applicability of your solutions.

After generating a diverse array of solutions, you must then identify the most promising one. Typically, the most effective solution will incorporate digital technology, leveraging its capabilities to address the problem more efficiently and innovatively. To determine if your chosen solution is the best fit, consider the following factors:

1. Feasibility

Think of it as asking, "Can we actually do this?" It's about looking at whether you have the right technology, skills, and resources to make your idea happen. It's like checking if you have all the ingredients and the right kitchen tools before deciding to bake a cake.

2. Viability

This is about asking, "Will this work in the real world?" It means making sure your idea not only can be done but also will be successful and profitable in the market. It's like making sure there's enough people who would want to buy your cake at a price that covers your costs and makes some profit.

3. Desirability

This means, "Do people actually want this?" It focuses on whether your target users or customers will find your idea appealing and useful. If you're creating a new flavor of cake, desirability checks if people would actually enjoy and choose to eat it.

4. Sustainability

Asking, "Can we keep this going for a long time?" It looks at whether your idea can be maintained over time without harming the environment, society, or running out of resources. It's like baking your cake in a way that doesn't waste ingredients and ensures you can keep making cakes in the future without running into problems.

5. Impact

This is about the difference your idea makes, asking, "What change or benefit does this bring?" It evaluates how your idea will positively affect the problem it's trying to solve, your users, or the broader world. If your cake is made to raise awareness for a cause, its impact is measured by how well it does that.

6. Innovativeness

This asks, "Is our idea new and different?" It looks at how your idea brings something new to the table or improves on existing solutions in a novel way. If everyone is baking chocolate cakes and you decide to make a triple chocolate lava cake with a unique twist, that's innovativeness.

7. Scalability

Questioning, "Can we grow this idea bigger and better?" It checks if your idea can be expanded or adapted to meet growing demand or to serve a wider audience. If your cake becomes popular, can you scale up your baking to produce more cakes efficiently?

8. Implementation Time

This considers, "How long will it take to make this idea a reality?" It's about estimating the time needed to develop your idea and bring it to the market or users. If you need a cake for tomorrow's party, can you get all the ingredients and bake it in time?

9. Risk Assessment

Asking, "What could go wrong, and how can we prepare?" It involves identifying potential problems or challenges your idea might face and figuring out how to address or mitigate them. When planning your cake, it's considering if you have a backup plan if you can't find a crucial ingredient or if the oven breaks.

By expanding on these criteria, you can develop a more detailed and robust framework for evaluating and selecting the most promising solution. This approach ensures a thorough consideration of various aspects that contribute to the success of a digital solution, from its initial development through to its long-term sustainability and impact.

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