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A Comparative Study of Lean Startup and Design Thinking to Accelerate Startup Market Adaptation

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Abstrak

This study aims to compare two popular innovation approaches, namely Lean Startup and Design Thinking, in the context of speed of responding to market needs. Lean Startup is known for its focused scientific method that encourages hypothesis testing and product validation through the Build-Measure-Learn cycle, while Design Thinking emphasizes deep understanding of users and the creation of innovative solutions through the process of research, problem definition, ideation, prototyping, and evaluation. Through literature analysis and comparison of the two approaches, this study found that although both have the same goal of creating relevant products, they have different methods and focuses. Lean Startup is more efficient in a dynamic and competitive environment, while Design Thinking produces solutions that are more in line with user needs. This study recommends that companies and innovators consider the specific context of the innovation project being implemented and combine elements of both approaches to achieve optimal results. These findings provide valuable insights into the application of Lean Startup and Design Thinking in product development and innovation.

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INTRODUCTION

Startups are now a rapidly growing trend in Indonesia. Startup companies are companies that have just been established or are operating and creating products or services amidst market uncertainty by seeking a repeatable and growing business model (Made et al., 2023)**.** These companies are usually less than three years old. They usually have fewer than 20 employees. Revenues are typically less than $100,000 per year, as many startups are still in the development stage and are not yet profitable. Startups are the epitome of creative entrepreneurship. Startup founders are astute observers who spot problems in the marketplace and, using their ingenuity, attempt to solve them in innovative, previously unseen ways. The innovations they create may be distinctive in

nature, such as new or improved products, services, or production methods (technological innovations) (Olek, 2023).

In its development, startup companies often face stiff competition from established companies and newcomers. This crowded market can make it difficult for startup companies to gain recognition and market share. Startup companies often fail to achieve good product-market fit, meaning that their innovation offerings do not meet the needs or preferences of the target market. This can result in low customer acceptance and poor sales (Suwarni et al., 2020)**.** In this context, speed in responding to the market becomes a key factor in determining the success of a startup company. Companies that are able to adapt quickly to market changes have a greater chance of maintaining market share and increasing customer satisfaction (Lachlan & Smith, 2024).

How do Design Thinking and Lean Startup compare in terms of speed in responding to market changes? What factors influence the speed of each approach in the innovation and product development process? These questions are important to answer so that companies can understand how best to improve their responsiveness to changing market needs.

This study aims to conduct a comparative study between Design Thinking and Lean Startup in the context of market response speed. This study will be conducted through a literature review of various previous papers and studies that discuss both approaches. By analyzing the principles, methodologies, and results of previous studies, it is hoped that this study can provide deeper insight into how each strategy can be applied to increase innovation speed. The results of this study are expected to provide practical recommendations for companies in choosing the most appropriate approach to increase their responsiveness to market dynamics, as well as contribute to the development of theory in the field of innovation management.

RESEARCH METHODS

This research is a literature - based research that aims to analyze and compare the speed of responding to the market between two innovation approaches, namely Design Thinking and Lean Startup. By using this method, the research will collect, analyze, and synthesize information from various relevant academic and practical sources.

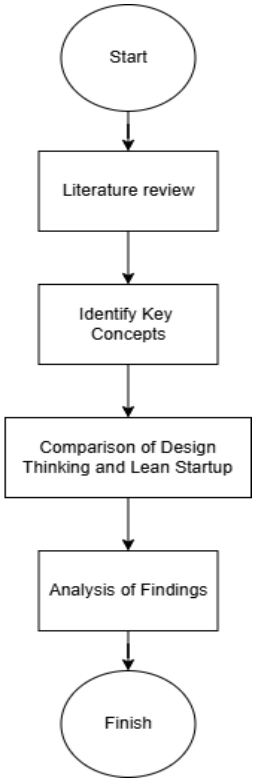

Figure 1. Research Flow

The data sources in this study consist of journals and case studies that have been published previously. This study will focus on literature that discusses the principles, methodologies, and implementations of Design Thinking and Lean Startup, as well as studies that evaluate the speed of both approaches in the context of innovation and product development.

The data collection process in this study was carried out systematically through several stages. First, source identification was carried out by selecting credible and relevant academic databases, such as Google Scholar, IEEE Xplore, and ScienceDirect. These sources were used to search for literature related to the concepts of Design Thinking, Lean Startup, and the speed of startup adaptation to the market.

RESULTS AND DISCUSSION

In this study, the literature reviewed includes various articles, books, and case studies that discuss Design Thinking and Lean Startup. Both of these approaches have been widely discussed in the context of innovation and product development, with a focus on how each method can increase the speed of responding to market needs.

Lean Startup

The Lean Startup methodology applies the scientific method to practical, time-sensitive problems. The goal is to run cycles as quickly and frequently as possible, revising the product repeatedly to better understand and respond to customer needs. In order to quickly transform a product idea into something that users will actually use which may differ greatly from what the innovator had in mind at first.

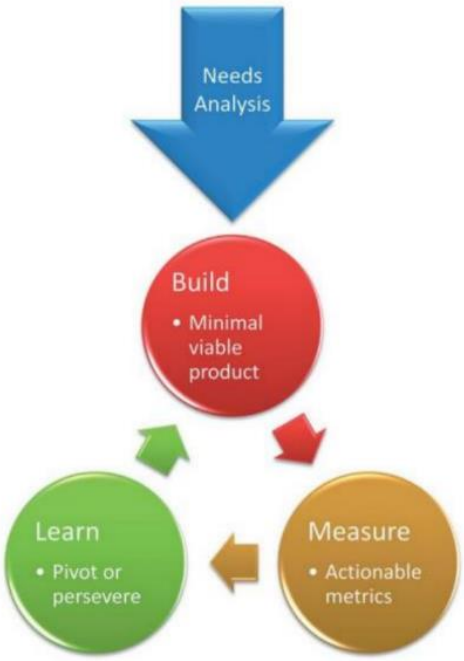

Figure 2. Build-Measure-Learn cycle of Lean Startup

Lean Startup enables innovators (including innovative educators) to quickly identify and refine potential ideas into truly effective models. Every innovation is based on a set of assumptions; these assumptions need to be clearly identified, prioritized, and empirically tested (validated learning). In order to identify and test assumptions, innovators must get out of the office and interact with customers (students, teachers, and administrators). Assumptions are tested through a series of rapid, iterative cycles. A Minimum Viable Product (MVP) is a version of a product that allows innovators to test one or more core assumptions with the least amount of effort. (proposal), here is the Build-Measure-Learn cycle of Lean Startup:

Build is The initial focus is on creating a Minimal Viable Product (MVP), which is a basic version of an educational innovation that is functional enough to gather feedback. The idea is to avoid wasting excessive time and resources perfecting the product before understanding customer needs. This stage emphasizes rapid development and iteration based on early assumptions about what the educational innovation should look like.

Measure is the stage After building the MVP, the next step is to measure its performance in a real-world setting. This involves collecting data on user interactions and feedback to assess the effectiveness of the innovation. The importance of validated learning, which focuses on understanding whether the innovation meets the needs of learners and stakeholders. Various methods such as customer development interviews, surveys, and usage analysis can be used to collect this data.

Learn is The learning phase involves analyzing the data collected during the measurement phase to determine whether the initial assumptions were correct. This can lead to decisions to pivot (make fundamental changes to the product based on feedback) or persist (continue to refine the current approach). The iterative nature of this process allows for continuous improvement and adaptation of educational innovations based on real feedback, not assumptions (Cook et al., 2023).

Products are developed continuously, iteratively, and incrementally as part of a customer development process, using agile management methods that enable rapid prototyping and customer testing. The pace of work is irregular and fast, and actions are taken based on data, in fast, participatory decision making, often guided by intuition (Olek, 2023).

The product is developed using alpha and beta used by early adopters to get feedback and iteration. The lean startup approach, is a lean framework that means avoiding failure but the main common object is the principles of waste reduction. From some startup Companies, Thanks to beta testing, they start to spin until partnerships with medium and large companies are established. This is the build-measure-learn cycle of the Lean Startup Approach (Ghezzi & Cavallo, 2020)**.**

In addition to eliminating waste, there exists a pronounced focus on endeavors that cultivate value for consumers and ascertain their requirements throughout the development of innovative products and services. Enterprises adopting this methodology acknowledge the significance of validating the preliminary iteration of their business model and ensuring its congruence with market exigencies to achieve product-market alignment expeditiously. The lean startup methodology prioritizes empirical experimentation, customer feedback, and iterative advancement. This approach facilitates a rapid comprehension of consumers' needs and preferences concerning novel products, thereby aiding in the effective fulfillment of these requirements and sustaining the organization’s competitive edge within the marketplace. The lean startup paradigm offers profound insights into customer perceptions regarding a product and validates market potential through the formulation and assessment of hypotheses. It encourages substantial customer engagement (e.g., face-to-face interactions) to refine the product before its market introduction. (Lizarelli et al., 2022)**.**

Design Thinking

Design Thinking can be understood in three different ways, as a mindset, a toolbox or a (design) process, Design Thinking is a people-centered way of solving difficult problems (Schleinkofer et al., 2019), the Design Thinking process is flexible and can be applied in a variety of ways to meet the needs of different library cultures. Design thinking experts vary in how they describe the stages of the process, and some authors also discuss and apply the process in different ways. The steps recommended by the authors for the purposes of this chapter include:

The initial phase encompasses Research/Understanding/Empathy, wherein this phase underscores methodologies that facilitate the team in comprehending the issue from the user’s standpoint, which is imperative, as individuals frequently hasten to address a

problem without initially ascertaining that the user's perception of the situation is thoroughly grasped. A variety of user research methodologies may be employed during this phase. Techniques such as individual interviews, observational studies, tangible usability assessments, cognitive mapping, user journals, and inquiries posed on a communal whiteboard represent some of the approaches that scholars have implemented within their respective libraries.

The second phase entails the process of defining, which incorporates the utilization of data amassed in prior phases to ascertain the who, what, where, when, and why about the identified problem or opportunity. Additionally, this phase necessitates the synthesis of this information into a coherent statement articulating the objectives the team aims to address. For instance, Team A articulates this inquiry: What methodologies can we employ to assist students in identifying seating arrangements that align with their noise level preferences (as well as other criteria) when the library experiences high occupancy? In this phase, the team also elaborates on the significance of resolving the issue for users, and uncovering these motivations frequently propels staff towards insights that enhance their empathetic understanding. In this concluding phase, the team is expected to delineate design principles, which are succinct assertions that encapsulate the essential attributes indicative of the project's success.

The third phase is Ideate, during which the Ideation process proves to be more efficient and different from the traditional brainstorming method. This stage seeks to explore various approaches to address the problem statement, subsequently honing those ideas into one or two concepts for prototyping. Various methods for generating ideas can be utilized to increase the chances of ideas emerging and ensure participation from all team members. An instance of an ideation method is brainwriting, in which participants write down ideas on note cards and pass them around the table.

The fourth stage is Prototyping, prototype development is the creation of a "quick and easy" visual representation of a concept, then sharing and testing it with library users to get their feedback. Prototypes can take many forms, such as a mock-up to demonstrate a new service; a cardboard model or replica of a new room arrangement; a hand-drawn flyer promoting a new event (Toolkit, nd); or sticky notes to demonstrate how a hypothetical application or software will work.

The fifth phase is Implement & Evaluate. When the team chooses to execute an idea, staff might need to prepare beforehand for how the idea will affect the overall user experience. This involves recognizing stakeholders, figuring out how to convey the change or concept, and considering how it will affect other users. Once the concept has been executed, the team must evaluate its effectiveness based on the design principles set earlier in the process. Once implemented, the team must keep seeking methods to enhance the concept. At times, putting a solution into action enables the team to uncover new user issues; consequently, the process is repetitive *(Boisvenue-Fox & Meyer, 2019)*.

Design Thinking is a concept that promises to increase innovation through a more user-centric approach to innovation, finding what users really want is valuable. After getting the information obtained from users, they can create the best solution. Barriers to implementing Design Thinking (DT) can appear in various forms. One common challenge is the difficulty in accessing the right users at the right time. For example, developing features for a specific role is often hampered by interviews conducted with individuals from different roles, making the results less relevant. Another challenge is communicating the results of Design Thinking activities effectively to the entire team and determining their impact on the final product. Typically, these results are only considered important by most of the team when a particular feature is being developed. In addition, obstacles arise when the results of Design Thinking conflict with management expectations or the predetermined product focus. For example, even though several interviewed users suggest a particular feature, management may choose to prioritize another feature (Dobrigkeit et al., 2019).

Identify key concepts

Based on the Literature Review that has been conducted, the following are the stages of Identifying Key Concepts that can be taken from both approaches, Lean Startup and Design Thinking.

Lean Startup is a scientific method-based approach that uses the Build-Measure-Learn cycle to build a Minimum Viable Product (MVP), collect data and user feedback to analyze performance, reduce waste, run experiments to validate the business model, and iterate rapidly to efficiently create value for customers.

Design Thinking is a user-centered approach to solving complex problems, involving research stages to understand the user perspective, define the problem based on the information obtained, generate multiple solution ideas, prototype concepts for testing, and implement and evaluate the results, with the goal of creating innovations that users want, overcoming barriers to their implementation, and ensuring the results are communicated effectively to influence the final product.

Speed of Innovation Both approaches contribute to the speed of innovation in different ways. Lean Startup emphasizes rapid iteration and market validation, while Design Thinking focuses on deep understanding of users.

In Handling User Feedback Both rely on user feedback to improve the product, although their approaches are different. Lean Startup uses MVPs to get quick feedback, while Design Thinking uses prototypes to understand user needs.

Iteration and Adaptation, The iterative process in both approaches allows for continuous adaptation based on feedback and test results.

By identifying these key concepts, research can better focus on how each approach contributes to speed in responding to market needs and how they can be applied effectively in different contexts.

Comparison of Lean startup and Design Thinking

From the literature reviewed, the following is a comparison between Lean Startup and Design Thinking based on the literature study presented in Table 1.

Table 1. Comparison of Lean startup and Design Thinking

Aspect	Lean Startup	Design Thinking
Approach	Scientific methods focused on testing assumptions and market validation.	A user-centered approach to solving complex problems.
Main Focus	Hypothesis testing and minimum viable product (MVP) development.	Deep understanding of user needs and creating innovative solutions.
Process Cycle	Build-Measure-Learn Cycle: 1. Build: Building the MVP 2. Measure: Measuring the performance of the MVP and gathering feedback. Learn: Analyzing the data to decide whether to pivot or persist.	The process consists of: 1.Research/Understand/Empathize: Understand the issue from the user's perspective. 2. Define: Identify and formulate the problem or opportunity. 3. Ideate: Generate and refine ideas for solutions. 4. Prototype: Create a visual representation of the concept. 5. Implement & Evaluate: Implement the idea and assess its success
Speed of Innovation	Driving velocity through rapid iteration and repeated testing.	Driving innovation through deep understanding and prototyping.
User Feedback	Rely on user feedback for product validation.	Using feedback to understand needs and improve solutions.
Iteration	A rapid iterative process for product adaptation based on feedback.	A continuous cyclical process for improvement based on evaluation.

Effective Context	Effective in dynamic and competitive environments, such as technology startups	Effective in contexts where user understanding is critical, such as product design.
Excess	Reduce risk with fast validation and Focus on reducing waste.	Encourage creative innovation and relevant solutions and Deepen empathy towards users.
Lack	It may neglect the deeper aspects of the user experience and Focus on speed may sacrifice product quality.	A longer process and may require more resources and Challenges in accessing the right users at the right time.

Analysis of Findings

The following is an analysis of the findings from the comparison between Lean Startup and Design Thinking based on the comparison table that has been prepared:

Main approaches and focus: Lean Startup focuses on applying scientific methods to test assumptions and market validation. This approach is well suited to dynamic and competitive environments, where speed and efficiency in product development are critical. Using a Minimum Viable Product (MVP), innovators can quickly test ideas and gather feedback from users. Design Thinking, on the other hand, is a user-centric approach, emphasizing a deep understanding of user needs and expectations. This process is more holistic and creative, allowing teams to explore multiple solutions before deciding on a direction to take. This approach is particularly effective in contexts where user-focused innovation is critical.

Process Cycle: In Lean Startup, the Build-Measure-Learn cycle provides a clear structure for product development. This process allows innovators to quickly build, measure, and learn from products that have already been launched. This leads to better and faster decision making, and reduces the risk of product failure. Design Thinking has a more flexible and iterative process, which includes steps such as research, problem definition, ideation, prototyping, and evaluation. This process allows teams to continuously refine and adapt solutions based on user feedback, creating more relevant and effective innovations.

Speed of Innovation: Lean Startup encourages speed of innovation through rapid iteration cycles and repeated testing. With a focus on waste reduction and rapid validation, this approach allows companies to respond to market needs more efficiently. Design Thinking also supports speed of innovation, but more through deeper understanding of users. While the process may be longer, the result is better solutions that are more aligned with user needs, which ultimately can increase customer satisfaction.

User Feedback: Both rely on user feedback, but the way it is collected is different. Lean Startup uses MVP to get quick feedback, while Design Thinking uses prototyping to understand user needs more deeply. This shows that while both approaches have the same goal, they have different methods in achieving that goal.

Pros and Cons: Lean Startup has the advantage of speed and efficiency, but it can neglect the deeper aspects of the user experience. This can be a problem if the product developed does not meet the user's needs holistically. Design Thinking offers a more creative and empathetic approach, but the process can be longer and require more resources. Challenges in accessing the right users can also hinder its effectiveness.

From this analysis, it can be concluded that both Lean Startup and Design Thinking have their own advantages and disadvantages. The choice between these two approaches should be based on the specific context of the innovation project being undertaken. If speed and efficiency are top priorities, Lean Startup may be more appropriate. However, if deep user understanding and creative innovation are the focus, then Design Thinking will be more effective. These two approaches are not mutually exclusive and can complement each other. In practice, many companies combine elements of both methodologies to achieve optimal results in product development and innovation.

CONCLUSIONS

This study concludes that although Lean Startup and Design Thinking have different approaches where Lean Startup focuses on rapid hypothesis testing and market validation through the Build-Measure-Learn cycle, while Design Thinking emphasizes deep understanding of user needs through the process of research, problem definition, ideation, prototyping, and evaluation both aim to create products that are relevant and meet user needs, it is important for companies and innovators to consider the specific context of the innovation project being undertaken and, in many cases, combine elements of both approaches to achieve optimal results.

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