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# Systematic Review of Business Models and Technological Innovation in Start-up

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## ABSTRACT

This research aims to provide a systematic review of business model development and technological innovation in start-ups in the digital era. Using the Systematic Literature Review (SLR) method, this research analyzes relevant literature published between 2021 and 2024. The main focus of the research is to understand the impact of digital transformation on the performance of small and medium enterprises (SMEs) and how digital technology innovations, such as artificial intelligence (AI) ), blockchain, and big data, supporting entrepreneurial growth. The literature selection process involves tools such as Publish or Perish, Covidence, and VOSviewer to visually analyze bibliometric data. The research results show that digital technology integration can increase operational efficiency, accelerate business growth, and open up new opportunities in the market. Visualization using VOSviewer emphasizes the important role of AI in digital marketing innovation, strengthening brand identity, as well as efficient solutions to market challenges. The conclusions of this research provide strategic insights for entrepreneurs, investors and policy makers to support the sustainability and success of start-ups in Indonesia. This research also emphasizes the importance of innovative business models to create sustainable economic value and the relevance of digital transformation in strengthening the competitiveness of SMEs.

Keywords: Start-Up, Digital Innovation, Business Model, Digital Technology, Systematic Literature Review (SLR).

## INTRODUCTION

In the current digital era, the startup concept is growing rapidly as a result of rapid technology adoption, easy access to global markets, as well as changes in social and economic dynamics. Startups, which are usually described as new companies with innovative approaches and flexible business models, are now a key driver in industrial transformation across sectors, from technology to health to education. Advances in digital technology, including artificial intelligence (AI), blockchain, cloud computing, and big data, have provided incredible opportunities for startup founders to address complex market challenges with more efficient and effective solutions.

Digital transformation has brought fundamental changes to the global business landscape, including in Indonesia. One phenomenon that has emerged from this development is the growth of startups as a driving force for economic innovation. Startups often emerge with a creative approach and use of the latest technology, providing solutions to societal problems that have not been answered by conventional companies. This makes startups an entity that has a strategic role in accelerating the development of a digital-based economy. Technologies such as artificial intelligence (AI), blockchain, big data, and cloud computing provide a strong foundation for startups to create innovative business models. In this era, startups are not only required to produce unique products or services but also to be able to adapt quickly to changing market dynamics. This capability allows startups to reach a wider market, increase operational efficiency, and create a more personalized customer experience. However, startup success is not without challenges. Many of them face obstacles in the form of access to funding, intense competition, and the need to continue to innovate to remain relevant. Moreover, with the rapid development of technology, startups must be able to integrate new technologies into their business models to create sustainable competitive advantages.

Startups in the digital era are not only limited to creating new products or services, but also play an important role in redefining the way we interact with the world. Along with increasingly widespread internet adoption, increasing digital consumption patterns, and changes in consumer behavior that prioritizes convenience and speed, startups have the opportunity to answer these needs with more responsive and personalized business models.

However, even though there are many opportunities, the startup world is also filled with big challenges. Many startups face difficulties in terms of funding, increasingly fierce competition, and the need to continue to innovate and adapt to very dynamic market changes. In this case, digital technology is a key factor that can support startups to not only survive, but also develop significantly. Recent research shows that the integration of digital technology in startup business models can increase operational efficiency, accelerate growth, and open up new opportunities for market expansion (Zhang & Li, 2023; Nguyen & Tran, 2022; Lee & Kim, 2024).

In the digital era, start-ups are the main driver of innovation and change, especially in Indonesia, with increasingly rapid technology adoption. Start-ups have the unique ability to develop disruptive new business models and utilize technology to create efficient solutions, increase competitiveness, and meet dynamic market needs. However, although many start-ups have succeeded in innovating, many also face challenges in maintain the sustainability and scalability of their business. Therefore, it is important to understand how business models and technological innovation can support each other in ensuring long-term success.

Technology is not only for operational efficiency, but also allows start-ups to create new products and services, expand markets, and improve customer experience. This innovation must be translated into the right business model in order to produce real and sustainable economic value.

This research aims to provide a systematic review of how start-ups develop innovative business models and utilize technology to achieve competitive advantage and sustainability in a highly competitive market. It is hoped that this review can provide useful insights for entrepreneurs, investors and policy makers in supporting the growth of start-ups in Indonesia.

## RESEARCH METHODS

The SLR method in the research context refers to Systematic Literature Review, which is a research method used to collect, evaluate and analyze all literature relevant to a particular topic in a systematic and objective manner. The stages of the SLR method are in Figure 1.

**Figure 1.** Stages of the Systematic Literature Review (SLR) process


Steps in Systematic Literature Review (SLR):

1. Determine the Research Question: Establish a clear question to focus on the literature search.
2. Literature Search: Search for articles, journals and other scientific sources in various academic databases.
3. Study Selection: Selecting relevant articles based on inclusion and exclusion criteria.
4. Data Extraction: Extracting important data from selected studies.
5. Data Synthesis and Analysis: Combining and analyzing findings from multiple studies to draw more general conclusions.

**Data collection**

This research uses the Systematic Literature Review (SLR) method to collect data from various relevant and verified literature. This approach aims to identify, evaluate and synthesize existing research results related to business model development and technological innovation in start-ups in the digital era.The data collection process began with a literature search using the Publish or Perish tool, which utilizes the Google Scholar search engine to find relevant scientific sources. Keywords such as "digital-based start-up entrepreneurship" were chosen to ensure the research focus was appropriate to the topic. From the results of this search, 80 articles published between 2021 and 2024 were obtained, which were then exported in .ris format for further analysis.

The next stage is the literature selection process. The collected articles were screened using Covidence, a platform specifically designed for the literature screening process. Screening is carried out in several stages:

1. Title and Abstract Screening: Articles that do not match the research topic are immediately eliminated.
2. Full Text Evaluation: Relevant articles are evaluated in more depth to ensure the quality and relevance of the content.

The results of this process are visualized using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) diagram, which shows the number of articles entered at each stage. Of the 80 articles identified, 69 articles were eliminated because they did not meet the inclusion criteria, leaving 7 articles that were relevant and of high quality for further analysis. In addition to Covidence, VOSviewer is used for bibliometric analysis to map relationships between main themes in the literature. This helps in identifying key trends in technological innovation and start-up business model development.

**Data Analysis Techniques**

Data analysis in this research was carried out systematically through several stages to obtain valid and relevant results:

1. **Data Extraction**

   This process involved collecting key information from each selected article, such as the elements of the digital business model, the technologies used (e.g., artificial intelligence, blockchain, big data), as well as their impact on the performance of small and medium enterprises (SMEs). Data extraction was carried out manually by focusing on answers to the main research questions.
2. **Bibliometric Analysis**

   VOSviewer was used to analyze inter-topic relationships in the selected literature. This bibliometric visualization allows researchers to identify the most frequently discussed and relevant topics, such as the role of artificial intelligence (AI) in digital marketing, strengthening brand identity, and operational efficiency. Additionally, VOSviewer helps in grouping literature based on key themes, which provides a comprehensive overview of previous research.

3. **Synthesis of Findings**

   The data that has been extracted from the selected literature is then synthesized to gain a comprehensive understanding of the relationship between digital innovation, business models and start-up sustainability. Findings are analyzed to answer research questions, such as:

   - How can implementing digital business models in the SME sector improve their performance?
   - How does digital innovation impact entrepreneurship?
   - What elements support the success of a digital business model?

4. **Thematic Analysis**

   The results of the synthesis of findings are organized into main themes, such as digital transformation, technology integration, and their impact on efficiency and growth. This thematic analysis provides deeper insight into the strategic elements that influence start-up success in the digital era.

5. **Preparation of Conclusions and Recommendations**

   The results of the analysis are used to draw conclusions that provide strategic insight for entrepreneurs, investors and policy makers in supporting start-up growth. This research also produces recommendations for developing more innovative business models and optimal use of digital technology.

## RESULTS AND DISCUSSION

1. Determine the Research Question

   Results: The first stage in the Systematic Literature Review (SLR) process is establishing clear and specific research questions. In this research, the main questions asked are:

   a) How can digital business models be implemented in the SME (Small and Medium Enterprises) sector to improve their performance?

      It is hoped that this question will help researchers understand the relationship between digital transformation and performance improvement in the context of SMEs, as well as to map the elements that support the success of digital business models in this sector.

Discussion:

Defining a clear and focused research question is a crucial step in SLR because it will limit the scope of the literature search and ensure that the selected studies are relevant to the research topic. With specific questions, the literature search process can be focused on truly relevant articles, avoiding wasting time and resources on unrelated literature. The questions used in this research are:

RQ 1 : selected journals in the range 2022 – 2024

RQ 2 : What is the impact of digital innovation on entrepreneurship

RQ 3 : How to explain entrepreneurial digital innovation

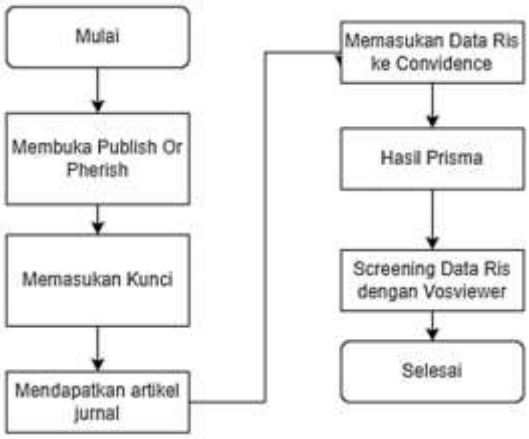
2. Literature Search

The literature search was carried out using the Publish or Perish tool which utilizes the Google Scholar search engine. The keywords entered in the search were *Digital-based Startup Entrepreneurship* which was chosen to ensure that the literature found came from scientific sources indexed by Sinta. Based on requests for 100 journals according to keywords, the results of this search identified only 80 pieces of literature published between 2021 and 2024

3. Study Selection

Screening is carried out with the help of the Covidence website and VOSviewer. The antricle selection process can be seen in the picture.

**Figure 2. Data Selection Flowcart**




After successfully identifying 80 journals or articles through a search process using the Publish or Perish tool and saving them in .Ris format, the next step is to enter the data into the Covidence platform to carry out systematic filtering and selection of articles. Covidence is used as a key tool in ensuring that only articles that are relevant, of high quality, and meet predetermined inclusion criteria will be included in further analysis. This selection process is carried out carefully through several important stages, designed to maximize efficiency and ensure the quality of the literature selected.

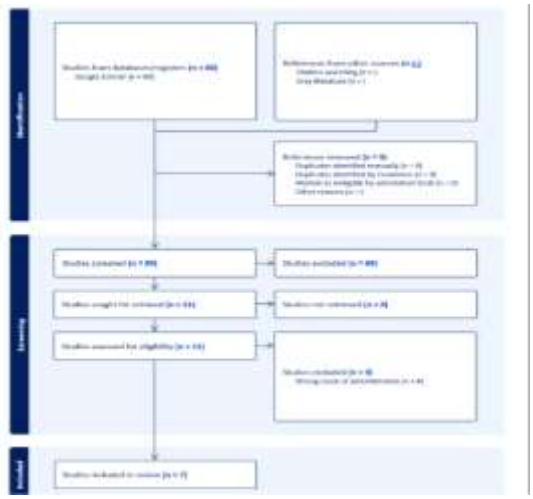
The first stage of the selection process is screening based on the title and abstract. Articles that do not match the research topic or are not relevant to the research objectives are immediately eliminated at this stage. Next, articles that pass the initial screening will go through a full-text evaluation process, where the article content is analyzed in more depth to ensure that all required aspects, such as methodology, results, and relevance to the research question, are met. This evaluation not only helps in weeding out articles that lack support for the research, but also ensures that each article selected makes a significant contribution to the final findings.

The results of this screening process are then presented in the form of a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) diagram. This diagram is used to visualize all stages of selection, starting from the initial identification of articles, the number of articles excluded at each stage, to the number of articles ultimately used in the final analysis. The PRISMA diagram not only provides a clear picture of the selection process, but

also ensures transparency in the research methodology. In this study, of the total of 80 articles initially identified, the majority were eliminated because they did not meet the inclusion criteria or were deemed not relevant to the topic discussed. After going through various stages of selection, only a number of articles deemed relevant and of high quality were finally selected for further analysis.

This process has several important benefits. First, by using Covidence and the PRISMA Diagram, researchers can ensure that the selection process is carried out systematically and can be accounted for. Second, this approach helps eliminate selection bias that might occur if done manually without tools. Third, by ensuring that the articles selected are the most relevant and high quality, this research is able to provide more accurate, in-depth and reliable results. Thus, the steps taken not only ensure the reliability of the findings, but also provide a transparent and objective framework for future similar studies. And the PRISMA results obtained are:

**Figure 3. PRISMA diagram**



Process The literature selection process using the PRISMA flow begins with collecting 80 articles identified through a search on Google Scholar using relevant keywords. These articles represent a variety of scholarly sources that can provide insight into the topic being researched. After initial identification, the first step in the selection process is screening based on title and abstract. At this stage, a number of articles that are irrelevant or that do not match the research topic are immediately eliminated. Of the 80 articles first obtained, 11 articles were successfully filtered because they met the initial criteria for further analysis.

Next, articles that pass the initial screening stage then go through the second stage, namely full text evaluation. In this stage, articles that are relevant to the research topic are evaluated in more depth, both in terms of methodology, research results, and their contribution to the research objectives. The results of this stage showed that 69 articles needed to be excluded from further analysis, because they were deemed not to meet the predetermined inclusion criteria or did not provide information that was significant enough for this research. This strict filtering ensures that only truly quality and relevant articles remain for deeper analysis.

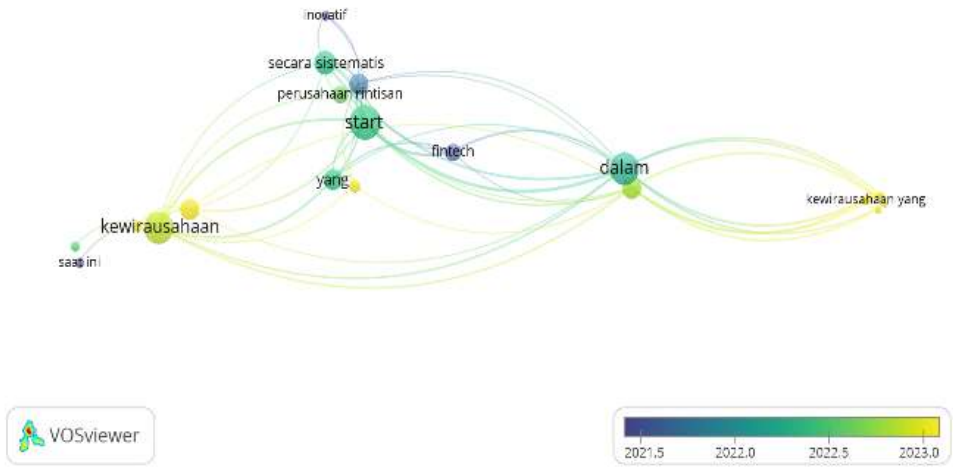
Finally, after a rigorous evaluation stage, the remaining 7 articles were selected for final analysis. These articles are considered to meet all research criteria and are considered relevant to

provide a deeper understanding of the topic being discussed. These selected articles make a significant contribution to the understanding of how digital business models and technological innovation can influence the development of start-ups in the digital era.

After the article filtering and selection process is complete, the next stage is bibliometric analysis using VOSviewer, which is used to visualize and analyze the relationship between the main themes in the selected literature. VOSviewer helps researchers to identify key trends in research, such as the most discussed technologies, relationships between related concepts, as well as the geographic distribution of relevant research. This analysis process allows researchers to map various main topics that emerge from the selected articles and provides a clearer picture of the direction of research development related to business models and technological innovation in start-ups.

The results of the analysis using VOSviewer provide insight into the important role of digital technology in strengthening business models and supporting start-up growth. The data visualizations produced by VOSviewer show the relationship between digital technologies such as artificial intelligence (AI), blockchain, and big data, and their impact on operational efficiency and innovation in the market. This visualization not only helps in understanding emerging trends, but also provides a broader picture of how these various themes are interconnected and contribute to the development of theory and practice in the world of digital business. The results are:

**Figure 4**. PRISMA diagram



## CONCLUSION

This research provides comprehensive insight into the role of digital technology in driving business model innovation in start-ups, especially in the increasingly dynamic digital era. By using the Systematic Literature Review (SLR) method, this research succeeded in identifying the main trends in the development of innovative business models and the relevance of digital technology as a key factor for achieving competitive advantage and business sustainability.

The research results show that the adoption of digital technology, such as artificial intelligence (AI), blockchain, and big data, has a significant positive impact on start-up performance. In particular, AI technology plays an important role in supporting digital marketing innovation, strengthening brand identity, and creating efficient solutions capable of overcoming market challenges. Blockchain technology, on the other hand, provides transparency and efficiency to business transactions, while big data enables more data-based decision making through analysis of market patterns and consumer behavior.

### Strategic Implications

This research underlines the importance of integrating digital technology with innovative business models. Some strategic points that can be taken are:

1. Operational Efficiency : Technology integration helps start-ups reduce operational costs through automation and more advanced data analysis.
2. Business Growth : Technology supports market expansion by creating easier access to consumers through digital platforms.
3. Competitiveness : Start-ups that utilize cutting-edge technology have greater opportunities to innovate and compete in the global market.
4. Sustainability : Business models that incorporate technology enable the creation of sustainable economic value and long-term relevance to the market.

### Challenge

However, this research also notes that technology adoption is not without obstacles. Start-ups face challenges such as limited funding, the need to continuously adapt to rapid technological developments, and increasingly fierce competition. Therefore, support is needed from various parties, including the government, investors and the business community, to create an ecosystem that is conducive to start-up growth.

### Recommendation

This research offers recommendations for various stakeholders:

1. For Entrepreneurs : Focus on utilizing digital technology that suits market needs and investing in training and developing a team that is able to manage this technology.
2. For Investors : Allocate funds to start-ups that demonstrate technology-based innovation and have a disruptive but sustainable business model.
3. For Policy Makers : Encourage technology adoption through tax incentives, provision of technology infrastructure, and collaboration with the private sector to support start-up innovation.

**Final Conclusion**

By strategically utilizing digital technology, start-ups in Indonesia have great potential to become major players in the global entrepreneurial ecosystem. Innovation in business models, when combined with the adoption of the right technology, can create relevant solutions, increase efficiency and open new market opportunities. This research provides a strong foundation for entrepreneurs, investors and policymakers to collaborate in creating a sustainable and competitive future for the start-up ecosystem in the digital era.

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