Journal of Economics Education and Entrepreneurship
Vol. 5, No. 3, Dec 2024, pp. 258-264
https://ppjp.ulm.ac.id/journals/index.php/jee/issue/view/ 11866
ISSN: 2746-5438 (Print) | 2745-729X (Online)

Technology and Entrepreneurship Combine: Shaping an Innovative Future

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Article Info
Keywords:
Technology
Entrepreneurship
Innovative

A B S T R A C T
Technology's rapid development has had a significant impact on the world of entrepreneurship. The combination of technology and entrepreneurship creates a business environment full of new opportunities, innovation, and economic growth. Technological innovation has a positive effect on economic growth, especially when applied in business. This research will explore how the fusion of technology and entrepreneurship not only stimulates business transformation but also opens doors for entrepreneurs to face future challenges. The research method used is descriptive, involving analysis of published articles and case studies. The research findings reveal that the first combination of technology and entrepreneurship creates limitless opportunities for entrepreneurs to design an innovative future. Secondly, it provides deep insights into how technology development and entrepreneurship can mutually reinforce each other, creating a dynamic business ecosystem and bringing significant benefits to society as a whole. By understanding the complexity and potential of this combination, we can together create a more sustainable, inclusive, and innovative future.

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Submitted 2 Feb 2024; Accepted 25 Nov 2024; Published 31 Dec 2024

1. INTRODUCTION

The ever-evolving era of globalization is bringing profound changes to the business world. The transformation is inseparable from the fusion of technology and entrepreneurship, a phenomenon that has changed the way we think about innovation, economic growth, and shaping a more dynamic business future (Si et al., 2023). From the beginning of the industrial revolution to the current digital era, technology continues to be the main driving force of innovation. Technological developments such as the internet, artificial intelligence, and cloud computing open the door to the development of more efficient, effective, and adaptive solutions. Over time, entrepreneurship has begun to embrace technology as the key to unlocking new potential.

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The development of technology has also created a vibrant startup ecosystem. Young entrepreneurs are taking risks to realise their innovative ideas by leveraging technological advancements. These startups not only create new products and services, but also bring a new paradigm on how a business can grow and thrive. By embracing these technologies, entrepreneurs can create more innovative business models, capitalise on new market opportunities, and improve operational efficiency (Eliakis et al., 2020). However, these changes also bring new challenges, such as cyber security and ethical questions surrounding the use of advanced technologies. Therefore, it is important for entrepreneurs to remain vigilant and adaptive to the continuous development of technology. In the context of entrepreneurship, innovation has become a catalyst for economic growth (Bhupatiraju et al., 2012). Businesses that are able to continuously innovate tend to be more competitive and responsive to market changes.

Technology plays a key role in supporting this innovation process, from research and development to the implementation of customised solutions. Innovation has a significant positive impact on economic growth, especially when applied in business (Elia et al., 2021). By embracing these technologies, entrepreneurs can create more innovative business models, capitalise on new market opportunities and improve operational efficiency. However, these changes also bring new challenges, such as cyber security and ethical questions surrounding the use of advanced technologies. Therefore, it is important for entrepreneurs to remain vigilant and adaptive to the continuous development of technology. The fusion of technology and entrepreneurship is a reflection of the constant evolution in the business world. With technology as a key driver, entrepreneurship finds itself at the centre of an innovation revolution. The future of a more dynamic, responsive and innovative solution-orientated business lies in the continued growth of the fusion between technology and entrepreneurship.

2. METHOD

This research uses a descriptive method by involving the analysis of 15 nationally and internationally reputable articles from 2015 to 2024 that have relevance to the topic and case studies that have been published so as to produce exposure in the form of ideas about the combination of technology and entrepreneurship to shape an innovative future. The study presented in this study is based on literature analysis in the form of a collection of statements from various sources that are references. In this study, the data collection technique carried out is to collect data through literature studies assisted by books and journals. Data collection is carried out carefully and precisely to ensure the validity of the research results that have been carried out.

3. RESULTS AND DISCUSSION

3.1 Results

Technology has a very important role as the main driver of innovation in various fields of life. It facilitates efficient and global communication. Collaboration between individuals, teams and organisations from different parts of the world becomes easier. This opens the door for the exchange of ideas and perspectives that can drive innovation. Technology enables rapid data processing and in-depth analysis (Duening et al., 2020). With these capabilities, innovators can identify new trends, patterns, and opportunities that may not be visible without the help of technology. Technology enables greater access to resources, including hardware and software. Cloud computing, for example, provides access to massive computing power without the need to own physical infrastructure (Rathee & Rajain, 2017). As such, technology serves as a key driver of innovation by enhancing human capabilities, accelerating processes, and opening up new opportunities for exploration and development.

From the beginning of the industrial revolution to today's digital age, technology has been the main driving force behind a wave of innovation that is changing the face of the world. Rapid developments in areas such as the internet, artificial intelligence and cloud computing have opened the door to more efficient, effective and adaptive solutions. Amidst this evolution, technology's role as a key driver of innovation is becoming increasingly apparent, permeating various aspects of life and business (Duening et al., 2020). Technology expands the scope of business by opening up access to global markets. New opportunities emerge as connectivity increases, enabling companies to explore new territories and collaborate with partners around the world (Trott et al., 2015). Then business process automation, fast data processing, and real-time analytics help improve operational efficiency. Supply chains can be optimised, production cycles shortened, and production costs reduced with the adoption of technology.

Modern technology is deeply embedded with artificial intelligence. Artificial intelligence and data analysis provide deep insights into customer preferences. As such, companies can improve the quality of their products and services, even creating solutions that better suit individual needs. Then the role of technology in security cannot be ignored. With blockchain technology, transparency and reliability in transactions can be improved. Advanced cybersecurity solutions also help protect business data and information (Zahra et al., 2023). Technology empowers companies to create new business models. Digital platforms, subscription services, and other innovative ecosystems become possible, changing the business landscape and creating new opportunities.

Technological innovations accelerate the product development cycle by enabling faster prototype development, efficient idea testing, and faster iterations (Audretsch et al., 2016). Cloud computing and application development platforms provide easy access to development tools and resources. In an era where change is constant, companies that understand and embrace the role of technology as a key driver of innovation are more likely to remain relevant and competitive. Awareness, adaptation, and investment in technology development are the cornerstones for success in this ever-evolving business world. Modern entrepreneurship is therefore not just about managing a business, but also about understanding and harnessing the transformational power offered by technological developments.

Artificial Intelligence (AI) has become one of the supports in the transformation of the entrepreneurial world. With its ability to process large amounts of data, analyze patterns, and provide automated solutions, AI opens up new opportunities for entrepreneurs to create smarter, faster, and more relevant innovations. The combination of AI technology and entrepreneurship not only changes the way businesses are run but also has a significant impact on society, the economy, and global consumption patterns.

Based on research (Adelika, 2024) regarding the use of artificial intelligence in companies, it was found that 48% of companies use at least one AI system in their business operations. This is a significant increase compared to 2017, where only 20% of the companies involved in the study used AI. The implementation of the use of the ChatGpt artificial intelligence application which can be used to provide information about market trends and provide suggestions on interesting advertising messages, the use of the Dell.E application which can be used by MSMEs to create unique product images (Arief et al., 2024).

The combination of technology and entrepreneurship provides various significant social impacts, including (Chen et al., 2024): 1) Increased Access to Services. Technology allows entrepreneurs to create solutions that improve access to education, health, and basic necessities in remote areas. An example is an online education platform or application-based health service that reaches people in areas that were previously difficult to access. 2) Creation of new jobs. Technology is driving the emergence of new industries such as the digital economy, artificial intelligence, and technology-based services. This opens up new job opportunities and improves

people's skills. 3) Local Community Empowerment Through entrepreneurial innovation, technology can be leveraged to support small and medium-sized businesses, such as access to global markets through e-commerce, which empowers local communities to compete more broadly. 4) Increasing Digital Literacy. Technology-based entrepreneurship encourages people to learn and adopt digital skills, which is an important key in the modern era.

The challenges faced are (Shepherd & Majchrzak, 2022), 1) Digital Inequality. Not all individuals or communities have adequate access to technology, both in terms of infrastructure and digital skills. This inequality can increase social and economic disparities. 2) Data Security and Privacy. The increased use of technology in entrepreneurship often poses a risk of data breaches and privacy. This is the main challenge in building consumer trust. 3) Resistance to Change. Not all people or business actors are ready to adapt to technological changes. This resistance often hinders the implementation of innovation in entrepreneurship. 4) Dependence on Technology. Over-reliance on technology can create vulnerabilities, especially when there is a technical disruption or cyberattack, which can impact business continuity. 5) Regulatory Challenges. Rapid technological developments are often not in line with existing regulatory frameworks. This can hinder innovation or create legal uncertainty for tech entrepreneurs. By strategically addressing these challenges, the blend of technology and entrepreneurship can have a broader social impact and create an inclusive and sustainable innovative future.

3.2 Discussion

The fusion of technology and entrepreneurship is critical to the development of modern economies and societies. These two elements complement and support each other to create innovation, business growth and increased prosperity. Entrepreneurship can be a key driver for technological innovation. Entrepreneurs often see opportunities to solve problems or fulfil market needs through the use of new or existing technologies in new ways.

Entrepreneurship plays a key role in developing technology-based products and services. Entrepreneurs create new solutions, applications and products that can utilise technological advances to provide added value to consumers (Jafari-Sadeghi et al., 2021). Technology can be a driver of business growth by providing efficiency, scale and access to a wider market. Entrepreneurs who are smart in applying technology can achieve significant business growth. Some concrete examples of successful combinations of technology and entrepreneurship in creating innovative solutions are GOJEK (Indonesia), Khan Academy, Tesla (Global), TANIHUB, Ruang Guru (Indonesia). These examples show how technology, especially AI, and digital platforms, is a key catalyst in creating far-reaching entrepreneurial solutions. With the right utilization, technology not only supports business growth but also provides significant social benefits.

The use of technology in business processes can improve operational efficiency. Automation systems, data analytics and other technology-based solutions can help entrepreneurs manage their businesses more effectively. Technology-based entrepreneurship can create new jobs. Fast-growing businesses in the technology sector tend to require more labour to support their growth. Technology facilitates collaboration and connectivity between entrepreneurs, investors and business partners. Online platforms, social networks and digital collaboration tools help build a vibrant entrepreneurial ecosystem. The fusion of technology and entrepreneurship has great potential to shape an innovative and sustainable economic future. Innovations resulting from the creativity of entrepreneurs and the application of technology can have a significant positive impact on various aspects of human life.

Opportunities through AI in Entrepreneurship allow entrepreneurs to create products and services that are more relevant to market needs (Chalmers et al., 2021). AI automates various routine tasks, such as inventory management, customer service through chatbots, or

financial data processing. This helps entrepreneurs save time and operational costs. With AI, entrepreneurs can analyze global market trends and reach international audiences more strategically. For example, AI-based translator technology makes cross-language communication easier. AI technology can help businesses predict market trends and identify potential risks, such as changes in demand or security threats, so that entrepreneurs can respond more quickly and appropriately.

While AI offers many benefits, its development and implementation costs can be a bottleneck for small and medium-sized businesses (SMBs). The necessary technological infrastructure also requires large investments. Not all entrepreneurs have a deep understanding of AI or have a team capable of implementing this technology. This creates barriers to widespread adoption of AI. The high reliance on AI technology can pose risks, such as system disruptions or cyberattacks that could potentially harm businesses.

As for strategies to capitalize on opportunities and overcome challenges, entrepreneurs can partner with technology solution providers or AI companies to gain access to the necessary resources and infrastructure. Increasing AI literacy among entrepreneurs through training, workshops, and collaborations with educational institutions. This step is important to reduce the knowledge gap. Governments and related agencies must develop regulations that support AI innovation while protecting data privacy and security. Providing incentives or access to funding to entrepreneurs who want to adopt AI technology, especially for small and medium businesses. Increasing access to digital infrastructure in remote areas so that the benefits of AI can be felt equally.

The fusion of technology and entrepreneurship through AI offers an incredible opportunity to create a more innovative, inclusive, and sustainable future. However, entrepreneurs must also be prepared to face challenges, such as infrastructure limitations, privacy issues, and implementation costs. With the right strategy, AI adoption can be a catalyst for business transformation that not only benefits entrepreneurs, but also has a positive impact on society as a whole.

4. CONCLUSION

The combination of technology and entrepreneurship is the main catalyst in creating an innovative future. Technologies such as artificial intelligence, blockchain, cloud computing, and digital platforms play an important role in supporting entrepreneurs to produce products and services that are more adaptive, efficient, and relevant to market needs. This change involves a wide range of actors, from individual entrepreneurs, small and medium-sized businesses, large corporations, to local communities. All parties contribute to leveraging technology to empower businesses, increase digital literacy, and expand social impact. The implementation of this blend is relevant around the world, including remote areas that were previously difficult to reach. Technology has opened up access to global markets, making entrepreneurship an inclusive solution to a wide range of social and economic challenges. From the industrial revolution to today's digital era, technology continues to evolve to be a driver of innovation. In recent years, the use of technologies such as AI has increased significantly, proving that this transformation is accelerating and inevitable. Technology provides opportunities to create new business models, accelerate innovation cycles, and improve operational efficiency. In addition, social impacts such as community empowerment, job creation, and increased access to services underlie the importance of this blend.

This blend is achieved through the development of inclusive strategies, such as investment in technology infrastructure, digital skills training, and the creation of supportive regulations. By mitigating challenges such as digital inequality, data security risks, and resistance to change, the blend of technology and entrepreneurship can be optimized for a

sustainable future. The combination of technology and entrepreneurship is not only an opportunity but also a strategic need to answer the challenges of the modern era. Collaboration between technological innovation and entrepreneurial vision is key to shaping a more inclusive, efficient, and competitive future.

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