

## **Funding The Student Creativity Programs (PKM) In The Triple Helix For The Independence Of The Defense Industry**

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### **Abstract**

*The urgency of funding student creativity programs within the Triple Helix framework to encourage the independence of the defense industry is a step forward in making economic progress, especially the defense industry. The SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis method is used as a research framework to evaluate the internal and external factors that influence the success of the program. This research reveals that funding for student creativity programs has a significant urgency in strengthening the defense industry. Through collaboration between students, industry and the government, this program is able to generate innovation, research and development of new technologies that can increase the competitiveness of the defense industry. The SWOT analysis shows that the strengths of the student creativity program in Triple Helix include access to fresh and innovative student intellectual resources, the ability to combine academic knowledge with the needs of the defense industry, and the encouragement of collaboration and knowledge exchange between all parties involved. Weaknesses identified include a lack of adequate funding, challenges in integrating student activities into a complex industrial environment, and a lack of understanding of the long-term benefits of the program. However, the SWOT analysis also identified significant opportunities, such as the increasing need for innovation and new technologies in the defense industry, government support for collaborative programs involving students, and the potential to develop long-term partnerships between the defense industry and universities. The threats faced include intense global competition, the need for constant updating of defense technology, and the potential for gaps between academic knowledge and industry needs if there is not adequate collaboration. In order to realize the independence of the defense industry, this research recommends adequate funding for student creativity programs, provision of supporting infrastructure, increased collaboration between universities, industry and government, as well as the development of a long-term strategy to ensure the sustainability of this program.*

**Keywords : Funding, Student Creativity Programs, Triple Helix, Defense Industry, SWOT Analysis, Independence.**

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## **INTRODUCTION**

The defense industry plays a crucial role in ensuring a nation's sovereignty and national security. In an era of continuously evolving and complex geopolitics, high levels of innovation and technological capability have become crucial factors in maintaining defense superiority. To achieve this goal, collaboration among the academic sector, industry, and government is highly important.

Student creative programs aimed at innovating the defense industry are important initiatives involving active student participation in creating new solutions, advanced technologies, and innovative concepts applicable in a defense context. This program serves as a platform to nurture students' creativity, skills, and knowledge that can significantly contribute to the advancement of the defense industry.

The existence of this program allows students to collaboratively work with companies and institutions in the defense industry. Through partnerships with the industry, students can gain access to industrial knowledge, facilities, and mentorship that help them develop innovative ideas into more mature and market-ready products (Wibowo, 2016).

Within the framework of the Triple Helix, a concept depicting collaboration among academia, industry, and government, the role of students as a creative and innovative young generation is highly significant. Student creativity programs supported by adequate funding can become a driving force in achieving defense industry self-reliance (Susdarwono, 2020).

Adequate funding for student creativity programs is a key factor in promoting collaboration and innovation. Through this program, students have the opportunity to apply the knowledge and skills they acquire in college to real-life situations in the defense industry. They can make meaningful contributions to the development of new technologies, innovative designs, and more effective solutions in the defense sector (Ramadhan, 2023).

The use of the SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) method in this research allows us to analyze the internal and external factors that influence the success of student creativity programs within the Triple Helix. With a deep understanding of the strengths, weaknesses, opportunities, and threats at hand, effective strategies can be designed to maximize this program's potential in achieving defense industry self-reliance (Fatimah, 2016).

In this introduction, the urgency of funding for student creativity programs within the Triple Helix to drive defense industry self-reliance will be examined. SWOT analysis will be used as a method to explain relevant factors in this context (Rohmad, 2022).

With collaboration among academia, industry, and government, as well as adequate funding for student creativity programs, it is hoped that a strong and competitive defense industry self-reliance can be realized. This will provide long-term benefits to the nation in maintaining national security and supporting sustainable economic growth (HB, 2012).

## **RESEARCH METHODS**

This research employs a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) approach to analyze the urgency of funding student creativity programs within the Triple Helix framework to promote the self-reliance of the defense industry. This approach allows for the identification of internal and external factors influencing the success of this program.

Using secondary data analysis, information will be gathered through literature reviews, encompassing relevant sources such as scholarly journals, books, research reports, and documents related to the defense industry and collaboration among academia, industry, and government. Through the SWOT analysis:

- a) **Strengths Identification:** Data analysis will identify the internal strengths of the student creativity program within the Triple Helix. This includes the intellectual resources of the students, skills relevant to the defense industry, and the ability to integrate academic knowledge with industry needs (Firmadani, 2020).
- b) **Weaknesses Identification:** Internal weaknesses of the student creativity program will also be identified, such as inadequate funding, difficulties in integration with the defense industry, and a lack of understanding regarding the long-term benefits of the program.
- c) **Opportunities Identification:** External opportunities within the collaboration among students, industry, and government will be identified. For instance, the increasing need for innovation in the defense industry, government support for collaborative programs, and potential for long-term partnerships.
- d) **Threats Identification:** External threats that the student creativity program might face will also be identified. These could encompass intense global competition, the need for defense technology updates, and the potential gap between academic knowledge and industry needs without sufficient collaboration.

Through the SWOT analysis approach, this research aims to provide profound insights into the urgency of funding student creativity programs within the Triple Helix framework and their contribution to the self-reliance of the defense industry.

## **RESULT AND DISCUSSION**

Innovation in the defense industry is an aspect that needs continuous enhancement to maintain competitiveness and excellence in facing evolving challenges. Despite the defense industry having produced various sophisticated technologies and systems, the speed of technological development and changes in security environments require ongoing efforts to create new innovations.

### **The Importance of Innovation for Defense Industry Independence**

Innovation plays a crucial role in achieving defense industry independence. Here are some reasons why innovation is highly important for defense industry independence:

1. **Advancing Technological Capabilities**

Innovation enables the defense industry to develop more advanced and sophisticated technologies. By creating new solutions and enhancing existing defense systems, the industry can enhance the overall defense capabilities of the nation. Superior technological capabilities allow the defense industry to meet security requirements more effectively and efficiently.

2. **Addressing Evolving Security Challenges**

The security landscape is constantly changing with emerging threats and evolving technologies. Innovation allows the defense industry to anticipate and rapidly respond to security challenges. Through continuous innovation, the industry can develop defense systems that are adaptive and responsive to evolving threats.

3. **Reducing Dependency on Imports**

With strong innovation, the defense industry can reduce its reliance on imported equipment and defense technologies. By developing and producing their own defense equipment, countries can mitigate the risk of external dependency and enhance defense industry self-reliance. This not only provides strategic advantages but also boosts the country's economic resilience (Saputro, 2022).

4. **Enhancing Efficiency and Effectiveness**

Innovation in the defense industry can improve the efficiency and effectiveness of using limited resources. By creating more efficient technologies, defense systems can operate at lower costs and achieve better performance. This contributes to defense industry independence by optimizing the utilization of available resources. (Montratama, 2018)

5. **Boosting Global Competitiveness**

Strong innovation in the defense industry can enhance the country's competitiveness in the global market. By producing innovative products and technologies, the defense industry can attract international market interest and increase the export of defense products. This provides opportunities to increase national revenue, reduce trade deficits, and enhance overall economic growth.

### **Triple Helix Concept**

The Triple Helix is a concept that describes the collaborative relationship among three main entities: academia, industry, and government, in advancing innovation and economic development (Murniati, 2009). The Triple Helix concept was proposed by Henry Etzkowitz and Loet Leydesdorff in the 1990s. This concept reflects a shift from the traditional model involving

only two main entities, namely government and industry, toward a three-party collaboration. The three main elements of the Triple Helix are:

1. Academia

Involves universities, colleges, and research centers. Academic institutions play a crucial role in generating knowledge, research, and innovation. They provide intellectual resources, skills, and an environment that supports the development of science and technology.

2. Industry

Represents the economic sector responsible for developing, producing, and marketing products and services. Industry brings market needs, financial resources, and practical perspectives necessary to apply knowledge and innovation on a larger scale(Irwanto, 2022).

3. Government

Plays a role as a regulator, policy maker, and provider of public resources. Government contributes by creating policies that support collaboration between academia and industry, providing incentives, infrastructure, and supporting research and technological development.

Through Triple Helix collaboration, these three entities interact and influence each other. Collaboration between academia, industry, and government opens opportunities for knowledge exchange, technology transfer, research commercialization, knowledge-based economic development, and collective problem-solving (Cheng, 2019). Triple Helix also fosters a more dynamic innovation ecosystem, where new knowledge and ideas can be developed, applied, and effectively utilized for social and economic progress(Istichomaharani, 2016).

### **Role of Student Creative Programs in Defense Industry Independence**

Student Creativity Programs (PKM) play a crucial role in enhancing defense industry independence. PKM involves students in developing innovative projects relevant to the defense industry, including technology, defense systems, and management. Through PKM, students can apply the knowledge and skills they acquire in higher education to create new solutions, improve efficiency, and address challenges faced by the defense industry. In this process, students also gain practical experience, teamwork skills, as well as analytical and problem-solving abilities required in the complex defense industry environment. Through PKM, students become agents of change who drive innovation and advancement in the defense industry, contributing to achieving independence and national resilience in defense and security(Firmadani, 2020).

### **Triple Helix Contribution to Achieving Defense Industry Independence**

Triple Helix, involving collaboration among government, academia, and industry, provides a significant contribution to achieving defense industry independence. Here are some key contributions of Triple Helix in this context:

1. Research and Development Collaboration

Collaboration among academia, defense industry, and government in Triple Helix enables the sharing of knowledge, resources, and research facilities. Through this partnership, joint research and development can be conducted to produce innovative solutions and advanced technologies relevant to the defense industry. This collaboration accelerates the development process and enhances the quality of defense products and systems(Karim, 2014).

2. Technology Transfer

Triple Helix facilitates technology transfer from academia to the defense industry. Academic institutions possess in-depth knowledge and research in various disciplines. Through collaboration with the defense industry, new knowledge and findings can be applied in the development of products, systems, and processes in the defense

industry. This technology transfer enhances the industry's ability to produce high-tech technology and strengthens independence in meeting defense needs.

3. Provision of Skilled Workforce

Triple Helix enables universities to produce job-ready graduates relevant to the needs of the defense industry. Collaboration with industry through Student Creative Programs or internships helps students gain practical experience and a deep understanding of the defense industry. This prepares them with the skills and knowledge needed to contribute to the development and innovation of the defense industry.

4. Policy Support

Triple Helix allows the government to create policies that support the growth and independence of the defense industry. Government involvement in collaboration with academia and industry allows them to understand the needs and challenges faced by the defense industry. Based on this understanding, the government can develop policies and incentives that encourage investment, research, and development in the defense industry.

5. Shared Resource Utilization

Triple Helix enables the utilization of shared resources among government, academia, and the defense industry. The government can provide funding and research facilities, academia offers academic knowledge and expertise, while the defense industry contributes practical experience and market understanding. This collaboration strengthens the efficient use of resources and accelerates the overall development of the defense industry.

By engaging Triple Helix, the independence of the defense industry can be significantly enhanced. Collaboration between government, academia, and the defense industry generates innovation, technology transfer, and human resource development that support the growth and advancement of the defense industry. This allows the country to have a strong, innovative defense industry capable of facing evolving security challenges independently (Jaelani, 2019).

### **SWOT Analysis 1**

The SWOT analysis conducted provides the following results:

Strengths:

- The Student Creative Program harnesses the strength of students' creativity and innovation potential. Students often bring fresh perspectives, out-of-the-box thinking, and the courage to try new approaches to solving defense industry problems.
- Within the Triple Helix framework, the strength of this program lies in the strong collaboration among academia, industry, and government. This collaboration can combine academic knowledge, industry resources, and government policies to create a conducive environment for innovation in the defense industry.

Weaknesses:

- One main weakness is the lack of adequate funding for this program. Limited financial resources can hinder the development of innovative student projects and reduce the impact that can be achieved in enhancing defense industry independence.
- Students might face difficulties integrating themselves into the complex defense industry environment. Lack of understanding about defense-related challenges and constraints can affect the relevance and effectiveness of their projects.

Opportunities:

- The defense industry's constant need for innovation and improvement provides a significant opportunity for student creativity programs. By aligning student projects

with the current needs of the defense industry, these programs can address real-world challenges and contribute to achieving defense industry independence.

- Collaboration with defense industry professionals offers students the opportunity to gain mentorship, guidance, and insights. This interaction can help students refine their projects and develop a better understanding of the defense industry's requirements.

Threats:

- Rapidly changing technology landscapes can pose a threat. If student projects do not keep up with the latest technological advancements, their solutions might become outdated before implementation.
- Lack of interest or engagement from industry partners can also pose a threat. If industry professionals are not actively involved in guiding and supporting student projects, the projects might lack practical relevance and fail to contribute meaningfully to defense industry independence.

Overall, the Student Creative Program, within the Triple Helix framework, presents a promising approach to enhancing defense industry independence through innovation. However, addressing weaknesses and threats, such as funding limitations and staying updated with technology trends, will be crucial for maximizing the program's effectiveness.

### **SWOT Analysis 2**

The SWOT analysis for the Triple Helix approach to defense industry independence is as follows:

Strengths:

- Collaboration between academia, industry, and government leverages the strengths of each entity. Academia brings research expertise, industry provides practical insights, and government offers policy support, creating a comprehensive approach to innovation in the defense industry.
- The Triple Helix model encourages knowledge exchange and interdisciplinary collaboration. This can lead to the development of holistic solutions that consider technical, economic, and policy aspects, contributing to robust defense capabilities.

Weaknesses:

- Balancing the interests and priorities of academia, industry, and government can be challenging. Differing goals and timelines might lead to conflicts or delays in decision-making and implementation (Rochana, 2021).
- The Triple Helix approach requires effective communication and coordination among diverse stakeholders. In the absence of clear communication channels, misunderstandings can arise, affecting the success of collaborative initiatives.

Opportunities:

- The Triple Helix model can foster a culture of open innovation. By engaging multiple stakeholders, the defense industry can tap into a broader pool of ideas, leading to breakthrough innovations that might not have been possible within the confines of a single entity.
- Collaborative research and development efforts can attract funding from various sources, including government grants, industry investments, and international partnerships. This can provide financial support for ambitious defense innovation projects.

Threats:

- Bureaucratic hurdles within government agencies or academic institutions can hinder the smooth operation of the Triple Helix model. Excessive red tape or lack of flexibility might slow down decision-making and impede progress.

- Changes in leadership within any of the three entities (academia, industry, government) can disrupt ongoing collaborations and strategies, potentially leading to a loss of momentum in innovation initiatives.

In conclusion, the Triple Helix approach offers a robust framework for driving defense industry independence through innovation (Fatimah, 2016). By capitalizing on the strengths of academia, industry, and government, while addressing weaknesses and threats, nations can enhance their defense capabilities and maintain a competitive edge in a rapidly evolving security landscape. Effective implementation and ongoing coordination will be key to realizing the full potential of the Triple Helix model.

## CONCLUSION

The urgency of funding student creative programs within the Triple Helix is crucial in promoting the self-reliance of the defense industry. Through adequate funding, this program can act as a catalyst for innovation, collaboration, and knowledge exchange among students, industry, and government. Based on SWOT analysis and systems thinking, we conclude several key points:

1. Student creative programs are an effective strategy to generate innovation in the defense industry. Involving students in creative activities and research allows for the adoption of new ideas, cutting-edge technologies, and fresh approaches.
2. Within the Triple Helix framework, collaboration among academia, industry, and government is key to success. Adequate program funding enables the creation of strong and sustainable partnerships, where academic knowledge is combined with industry needs and expertise, supported by government policies.
3. Weaknesses that need to be addressed include a lack of understanding regarding the long-term benefits of this program. Educating stakeholders about long-term benefits, such as increased defense industry competitiveness, quality human resource development, and contributions to national economic growth, will help garner greater support and funding.
4. Opportunities that can be leveraged include policy support and incentives from the government, as well as closer partnerships with the defense industry. Utilizing tax incentives, research subsidies, and other policy support will encourage industry participation in program funding. Additionally, strong partnerships with the defense industry will open doors to additional resources and collaborative opportunities.
5. Threats that need to be monitored include changes in government policies or priorities, as well as economic uncertainty. Maintaining good communication with the government and monitoring economic conditions will help address these threats and seek more diverse funding alternatives.

To enhance the urgency of funding student creative programs within the Triple Helix for defense industry self-reliance, strategic steps must be taken. These include advocating for the importance of the program to stakeholders, building strong partnerships, optimizing available funding resources, and integrating systems thinking to holistically understand how funding can drive growth and innovation in the defense industry. By implementing these recommendations and suggestions, the urgency of funding student creative programs within the Triple Helix for defense industry self-reliance can be enhanced. This will strengthen collaboration among students, industry, and government, and drive innovation, growth, and self-reliance in the country's defense industry.

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