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The Penta Helix Synergy in Creating *DESA BESTARI* a Smart Village Marvel

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ABSTRACT

Rural communities encounter distinct development challenges, necessitating innovative solutions like the smart village initiative. This article aims to delves the successfully implementing the "Desa Bestari" smart village initiative and the collaborative dynamics among stakeholders within the Penta Helix Model. These stakeholders include representatives from government agencies, local communities, businesses, academic institutions, and mass media. Understanding their perspectives, experiences, and roles in the collaboration process is crucial for gaining insights into the dynamics of the smart village initiative. Employing a qualitative case study approach, the research explores collaboration processes, stakeholder roles, and project outcomes through interviews, observations, and document analysis. Findings underscore the pivotal role of diverse stakeholder collaboration in achieving sustainable rural development. The study elucidates stakeholders' contributions and practical strategies while addressing challenges and lessons learned, offering valuable insights for future smart village projects. This research illuminates the transformative potential of technology-driven rural development initiatives, providing practical guidance for stakeholders and contributing to the understanding of successful smart village implementation.

Keywords: Desa Bestari, Penta Helix Model, Rural Development, Smart Village

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INTRODUCTION

Developing rural economies demands prompt and suitable measures to optimize the village's resources through innovative initiatives (Latif et al., 2023). One option is to create a smart village. The concept of smart villages has emerged as a transformative approach to address challenges and revitalize rural development through technology and innovation (Visvizi et al., 2019; Shofwan et al., 2023). Smart villages aim to overcome development barriers in underdeveloped regions by promoting social potential and fostering a sense of civic society (Guzal & Zwolinska, 2018). The primary focus is on leveraging technology and resources efficiently to achieve self-sufficiency and sustainability in rural areas (Chatterjee & Kumar, 2017). This will help promote sustainable growth and improve the quality of life for residents.

Effective collaboration among stakeholders plays a vital role in the success of smart village initiatives (Dimitrovski et al., 2021; Komorowski & Stanny, 2020). Collaboration enables a holistic approach, integrating various aspects of rural development (Roxas et al., 2020). Pooling resources allows stakeholders to optimize their utilization (Kuswanto et al., 2023), effectively avoiding duplication. Furthermore, fostering knowledge exchange among these stakeholders significantly contributes to developing innovative solutions and disseminating best practices (Kismartini et al., 2023; Warouw et al., 2024).

Collaboration ensures social inclusion and community empowerment, incorporating local voices and needs (Rahmafitria et all., , 2021). It fosters trust and strengthens relationships among stakeholders (Wahyuningsih, 2021). Stakeholders can be classified into five distinct roles: policy creator, coordinator, facilitator, implementer, and accelerator. According to the literature Minnaert (2020), stakeholders encompass the community, government, private sector, non-government organizations, and mass media. Purnaweni et al., (2022) The stakeholder governance approach, working collaboratively with various entities, plays a critical role in achieving sustainable development, which encompasses the four pillars of sustainability: human, social, economic, and environmental concerns. However, the success or failure of development policies largely depends on the participation of public and private organizations in the policy subsystem (Graci & Van Vliet, 2020). Through collaborative efforts, stakeholders can more effectively overcome challenges and address barriers collectively, enabling them to tailor solutions specifically to the unique context of smart villages.

Calzada, (2017) The Penta Helix Model, which brings together government, academia, industry, civil society, and media, offers a unique synergy that can drive the achievement of smart village objectives. The concept of the Penta Helix emerged as an evolution and development of two previous models, namely the Triple Helix theory (Etzkowitz & Leydesdorff, 1995; Galvao et al., 2019) and later the Quadra Helix theory (Carayannis & Campbell, 2009; Galvao et al., 2019), which involved four actors: government, business, academia, and society. The Penta Helix concept was further refined by adding a fifth actor, the mass media (Shyafary et al., 2019). As the discussion progressed, the Penta Helix model became known as ABCGM, representing academia, business, community, government, and media (Halibas et al., 2017; Subagyo, 2021).

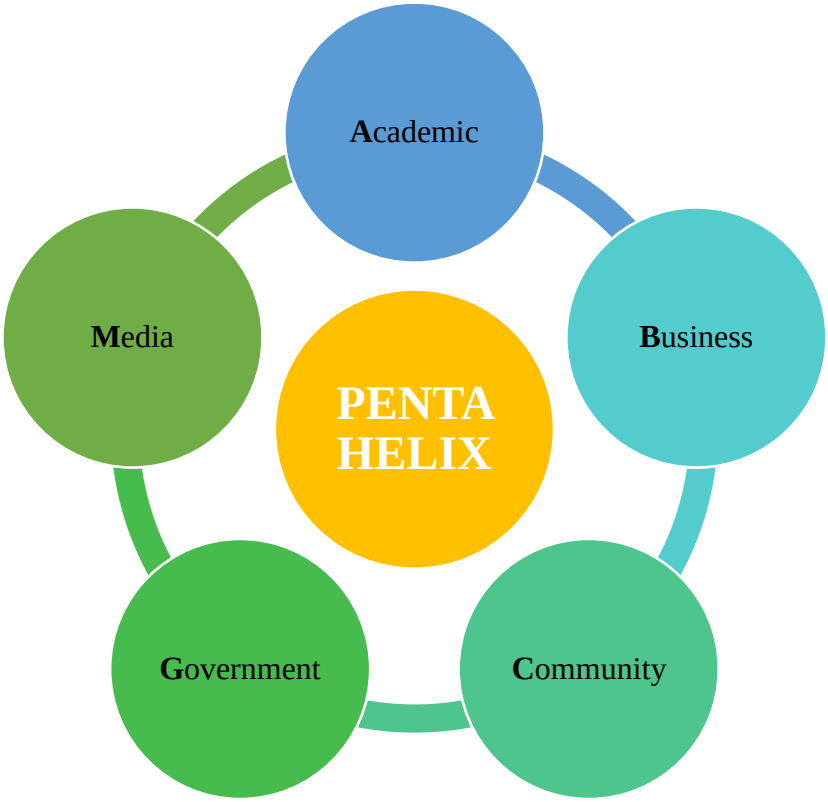

Figure 1. The Penta Helix Model

The Model represents a departure from traditional linear development models, emphasizing the importance of multi-stakeholder collaboration and knowledge exchange (Capetillo et all., 2021). Strong synergy and commitment among stakeholders are the primary factors that drive the successful implementation of the model (Hidayat et al., 2021). Each stakeholder within the Penta Helix Model possesses distinct expertise, resources, and perspectives that, when combined, create a powerful force for innovation and sustainable development (Halibas et al., 2017).

The academic sector can benefit the industry as a knowledge transfer collaboration within the framework of the helix element synergy (Shyafary et al., 2019). They conduct studies, evaluate interventions' impact, and

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provide valuable insights into best practices (Purnomo et al., 2021). Academia is pivotal in enhancing skills and knowledge by offering comprehensive training and capacity-building programs (Rosyadi et al., 2020). Moreover, academics are crucial in identifying program participants for equality education initiatives. They also analyze to ensure inclusivity and relevance, understanding participants' backgrounds, education, work experience, and special needs (Desmawati et al., 2023).

In the Penta Helix model, the business sector is an enabler, providing technology and funding through existing corporate social responsibility (CSR) mechanisms (Sudiana et al., 2020). Within the Penta Helix model, CSR serves as a mechanism through which the private sector demonstrates its commitment to society and the environment (Bhattacharya et al., 2009). It involves responsible business conduct, philanthropy, environmental stewardship, and community engagement (Arsad et al., 2021). Over the past few decades, CSR has emerged as a pivotal element in highlighting the impact of corporate operations on the environment and identifying social issues that can be mitigated through community-oriented initiatives (Gorgenyi Hegyes, Fekete Farkas, 2019 as cited in Metzker & Streimikis, 2020). Sabaruddin et al., (2023) argue that CSR has evolved from a demand to a necessity for companies, requiring well-designed and implemented strategies for long-term social investment, sustainability, and growth.

In the Penta Helix model context, community engagement is essential for fostering social inclusion and ensuring the success of development initiatives (Carayannis & Grigoroudis, 2016; Sjögren Forss et al., 2021). Civil society organizations, as part of the community, play a vital role as intermediaries between stakeholders and the local population, ensuring that the voices and needs of the community are effectively communicated and incorporated into decision-making processes (Lindtner et al., 2014; Nylander & Tholander, 2017). Their local knowledge and insights into the specific needs and dynamics of the community are invaluable for designing context-specific solutions.

The Government is crucial in fostering collaboration across the Penta Helix, providing essential policy frameworks, regulatory support, and funding (Rosyadi et al., 2020). They actively facilitate the establishment of initiatives by ensuring the presence of necessary infrastructure, legal frameworks, and governance structures. The government's role extends beyond financing; it also involves coordinating and facilitating innovative activities. Putra, (2019), further explains that governments primarily regulate relationships within society and with external entities. They possess the authority to make decisions that align with society's goals and uphold order.

As one of the elements in the Penta Helix model, the media is needed to support information dissemination (Effendi et al., 2016). Media outlets are potent channels for sharing news, knowledge, and updates with a broad audience. They contribute to creating an informed society by providing timely and accurate information. Through their reporting, journalism, and digital platforms, the media helps bridge the gap between stakeholders and the public, ensuring that information reaches and engages diverse individuals.

The Penta Helix model has found extensive application in developing various domains. Moreover, several studies have provided evidence of successful implementation of this model. In the survey conducted, it was revealed that each component within the penta-helix model possesses its role in the development of Smart City Nusantara in Bandung. Nevertheless, using a cooperative implementation strategy, these components can effectively foster the creation of a sustainable Smart City Nusantara. Syafari's study (2018) Provides compelling evidence that the Penta-Helix Model, which synergizes five stakeholder components, can improve the empowerment of homemakers in the artisan community of Sasirangan Batik, renowned for its distinctive Taba-long patterns.

Furthermore, Wahyuningsih's recent research in 2021 highlights that the Penta-Helix Model has the potential to positively impact the development of intelligent villages by involving the community, government, private sector, academia, and media in collaborative efforts. In a recent study Ardiansyah et al., in 2023, it was found that the synergy of the Penta Helix model in addressing the COVID-19 situation in Pekanbaru City has two notable impacts: promoting a spirit of cooperation and accelerating the response to the COVID-19 pandemic in the city. “DESA BESTARI” is a sustainability program initiated by PT Coca-Cola Europacific Partners (PT CCEP Indonesia) in collaboration with the local community where the company operates. CCEP Indonesia operates two factories in Bekasi Regency and one in Sumedang Regency, West Java. These factories serve as the operational hubs where the sustainability program is initiated. The program follows a collaborative approach based on the Penta Helix Model, which brings together stakeholders from academia, business, community, government, and media. Through the collaboration of stakeholders within the Penta Helix Model, DESA BESTARI strives to achieve sustainable development and improve the overall well-being of the communities involved.

The current research landscape concerning real-life examples of the synergy achieved by the Penta Helix Model in attaining smart village objectives still needs to be explored. There is an urgent need to address this gap. This article explores the synergy of the Penta Helix Model in achieving “DESA BESTARI” objectives. The study's primary goals include investigating successful case studies, innovative strategies, and best practices from collaborative efforts within the Penta Helix Model. Additionally, it seeks to analyze the benefits, challenges, and lessons learned from implementing this model in Desa Bestari initiatives. Such knowledge is critical for policymakers, practitioners, and researchers to effectively utilize this approach in promoting sustainable rural development and creating thriving, intelligent villages.

METHOD

The research design employed in this study is a qualitative case study approach that enables researchers to explore intricate phenomena in specific contexts (Rashid et al., 2019). This methodology allows for a comprehensive examination and understanding of collaboration within the Penta Helix Model for achieving the smart village objectives of "DESA BESTARI." By utilizing this approach, researchers can thoroughly analyze the collaboration process, stakeholders' roles, and the outcomes of the smart village initiative. Research participants from various sectors, including government agencies, local communities, businesses, academic institutions, and mass media, offer diverse perspectives crucial for comprehending the dynamics involved. Employing data collection techniques such as interviews, observations, and document analysis enriches the data pool, while strategies like member checking and triangulation enhance data validity. Through thematic analysis and constant comparison, this study uncovers intricate patterns and insights, shedding light on the complexities of collaboration and its impact on intelligent village development within the Penta Helix Model.

RESULTS AND DISCUSSION

Background and Objectives of DESA BESTARI

The DESA BESTARI program fosters collaboration with stakeholders to identify and address prevailing issues in the community. Its main objective is to establish a self-sufficient, clean, healthy, resilient, and sustainable community, specifically emphasizing four pillars: education, environment, health, and entrepreneurship.

The education pillar is a crucial foundation for individuals and communities to acquire knowledge and skills. It involves periodic learning and continuous training to enhance the capabilities of citizens. Education is a container that holds valuable information and provides opportunities for personal growth and development. By investing in education, individuals can broaden their horizons, acquire new skills, and stay updated with the latest field advancements. Moreover, education promotes critical thinking, problem-solving abilities, and creativity, enabling citizens to contribute effectively to society. Since the quality of human resources heavily relies on the education individuals receive, it catalyzes elevating human skills and abilities, ultimately shaping a high-quality society, as emphasized by Sufyan et al., (2019).

Given the numerous environmental challenges faced by Indonesia, there is a pressing need for collaborative efforts to improve the sustainable development ecosystem. The environment pillar emphasizes tangible steps taken by citizens and communities to address environmental issues. This includes promoting conservation, sustainable resource management, and adopting eco-friendly practices. By actively participating in environmental initiatives, citizens can contribute to preserving natural resources, protecting ecosystems, and mitigating climate change impacts. Through collaborative action, individuals and communities can create a more sustainable and resilient environment for future generations.

The entrepreneurship pillar aims to foster self-reliance and independence among citizens and communities. It recognizes the importance of developing an entrepreneurial mindset and cultivating economic and mental abilities related to entrepreneurship (Nurhaida et al., 2023). This pillar promotes the idea that individuals can create opportunities by starting businesses, taking risks, and exploring innovative ideas. It provides the necessary skills to start businesses that align with their potential and environmental context, fostering an entrepreneurial spirit (Suminar et al., 2021). By focusing on entrepreneurship, citizens can enhance their financial stability, create job opportunities for themselves and others, and contribute to economic growth. Developing entrepreneurial potential enables individuals to overcome challenges, adapt to changing circumstances, and seize opportunities in a competitive world (Nurhaida, Khomsiyah, et al., 2023).

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The health pillar emphasizes improving awareness, willingness, and ability to lead a healthy lifestyle among citizens and communities. It recognizes the interconnection between environmental factors and individual well-being. Through environmentally based health activities, citizens can promote a holistic approach to health that considers the impact of the environment on human health. This pillar encourages individuals to adopt healthy habits, engage in physical activity, consume nutritious food, and prioritize mental well-being. By promoting a healthy lifestyle, citizens can enhance their quality of life, reduce the burden of preventable diseases, and contribute to the community's overall well-being.

The strategies for upholding the four pillars encompass implementing sustainable education and combining theory and practice to enhance the capacity and capabilities of program participants. The educational activities aim to broaden insights and knowledge, particularly concerning the DESA BESTARI program. This collaborative program is thoughtfully designed to engage all stakeholders and residents of Zone 1, fostering active participation from individuals, community groups, and local organizations. Additionally, an appreciation program is organized to recognize each participant's valuable contributions and serve as a platform for monitoring and evaluation—the program endeavors to celebrate achievements while assessing progress and identifying areas for further improvement.

Collaboration Strategies in DESA BESTARI

In the Penta Helix Model, each stakeholder in Desa Bestari possesses unique strengths and powers that contribute to the program's overall success. Here's an explanation of the power of each stakeholder:

Table 2. Stakeholders' role in the PENTA HELIX model

No.	Element	Actor	Power
1.	**A**cademic (conceptor)	Lecturer & Researcher: **Community service team of the Faculty of Economics and Business, Universitas Trisakti**	**Intellectual power** - Universities and research institutions contribute valuable insights, research findings, and innovative solutions to address sustainability challenges. - provide evidence-based guidance, conduct training, capacity building and offer expertise in various disciplines.
2.	**B**usiness (enabler)	Industry player: **PT COCA-COLA Europacific Partners Indonesia**	**Resources Power** - through the CSR programs, PT CCEP Indonesia possess financial resources, technological advancements, and implementation power that can drive sustainable initiatives in DESA BESTARI
3.	**C**ommunity (Accelerator)	- Community leader - Community groups - Local community	**Public power** - mobilize resources, raise awareness, and advocate for social and environmental causes. - amplifying the voices of the community, promoting social equity, and ensuring the program's inclusivity.
4.	**G**overnment (Regulator)	Sub-district level local government: **Desa Sukadanau, Bekasi**	**Power of policy making** - set guidelines and enforce regulations that promote sustainable development. - create supportive policies and establish frameworks that enable collaboration between stakeholders.
5.	**M**edia (Promotor)	Mass Media: online & offline	**Power of communication and influence** - capacity to reach a broad audience and create a narrative around sustainable development efforts. - media's influence can contribute to building a positive perception of sustainability and encourage a wider adoption of sustainable practices in both the community and society as a whole.

The implementation of this collaboration follows the Adaptive Collaborative Management (Prabhu et al., 2008), which prioritizes mutual respect, trust, and mutual benefit. It is a cooperative approach involving stakeholders working together towards a common goal, emphasizing adaptability, open communication, and shared decision-making. Mutual respect emphasizes treating all participants with dignity, valuing their contributions, and encouraging idea-sharing. Mutual trust forms the foundation for effective collaboration,

relying on transparency and integrity. Mutual benefit ensures all stakeholders derive advantages and achieve their objectives, promoting win-win solutions and shared interests. This approach fosters a cooperative and inclusive environment, enabling effective collaboration and achieving common goals.

Community Engagement and Empowerment

PT CCEP Indonesia actively engaged in sustainability initiatives, which include enhancing capacity building and community empowerment through programs that provide education and training in environmental awareness and social and economic empowerment. As part of the community empowerment program, CCEP Indonesia, through its Bekasi 1 factory, conducted training on aloe vera cultivation. The training occurred in RT.007/013, Kampung Cibitung Kaum, Sukadanau Village, Cikarang Barat District. Thirty participants, predominantly mothers, attended the training. The participants received materials covering the basics of aloe vera plants, cultivation techniques, and processing of aloe vera harvests.

The training on aloe vera cultivation marks the beginning of a series of mentoring programs in the coming period. The choice of aloe vera plants is based on their ease of cultivation and their numerous benefits. This decision emerged from discussions with community representatives and local leaders during the initiation phase of the DESA BESTARI program itself. As a continuation of the previous training, advanced training was provided on the following topics: advanced cultivation techniques for aloe vera plants and guidance on utilizing organic waste as a medium for aloe vera cultivation.

In environmental awareness, the company, together with “Forum Bank Sampah (BSB) in Bekasi Regency, supports enhancing the management capacity of existing regional waste banks. This support is demonstrated through the Waste Bank Unit Competition organized by the company. One hundred thirty-five waste bank units in Bekasi Regency participated in this competition. As a result, three waste bank units from different districts—Babelan, Cibitung, and Tambun Selatan— achieved remarkable success and were crowned champions. This initiative is a testament to CCEP Indonesia's dedication to environmental sustainability.

This initiative continues with efforts to collect post-consumer plastic bottles. The company and community near the Bekasi Factory's operational area undertook environmental clean-up initiatives. At Bekasi 1 in Sukadanau Village, the efforts removed 111.42 kilograms of organic waste, including leaves and wild plants. Additionally, 7.1 kilograms of inorganic waste in PET beverage packaging and 13.01 kilograms of non-beverage inorganic waste were collected. At Bekasi 2, located in Taman Limo, Jatiwangi Village, CCEP Indonesia, we have collaborated with the local community to organize clean-up activities and waste collection. This joint effort led to the collection of 136.6 kilograms of organic waste, 12.1 kilograms of non-PET inorganic waste, and 26.64 kilograms of PET inorganic waste.

The collected inorganic waste, specifically PET plastic bottles, will be processed through recycling procedures at Amandina Bumi Nusantara, a plastic packaging recycling facility established by CCEO Indonesia in partnership with Dynpack Asia. The company aims to improve waste management practices and contribute to environmental conservation efforts through these activities. In addition, the company demonstrates its commitment to environmental care through tree-planting initiatives and water conservation efforts via the Coca-Cola Forest program. Moreover, through this program, the company enhances the land capacity for educational purposes, known as the “Fun Learning Studio Coca-Cola Forest,” and cultivates various plant varieties. In economic empowerment, the company synergizes with the efforts of the local government, which is currently focused and consistent in developing the Micro, Small, and Medium Enterprises (MSMEs) sector to make a significant contribution to the region's economic growth. As part of this collaboration, the company, with the academia, organizes a companion program in entrepreneurship training for the communities residing around the Bekasi 1 factory in Sukadanau Village, Cikarang Barat District, Bekasi Regency.

The program offers valuable assistance to participants in processing food products based on aloe vera, complemented by comprehensive entrepreneurship training. During the training, participants are equipped with essential skills and knowledge, enabling them to become successful "Ibupreneurs." They receive guidance on crucial aspects such as business financial reporting, effective marketing and branding strategies, embracing digitalization for business growth, and leveraging social media platforms to optimize their ventures. The ultimate objective of this training is to stimulate the expansion and development of existing MSMEs within Bekasi Regency. By empowering local entrepreneurs with these essential tools, the program aspires to create a positive and sustainable impact on the economic growth and prosperity of the region.

Outcomes and Impact of DESA BESTARI

Enhanced Access to Educational Services

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One of the significant outcomes of DESA BESTARI is the enhanced access to educational services for the residents. Through collaboration within the Penta Helix Model, DESA BESTARI can address gaps in acquiring knowledge, skills, and appropriate technology. This includes comprehensive training and capacity-building programs. Collaborative efforts ensure the availability of sufficient and efficient resources, resulting in enhanced access to vital knowledge and suitable technology for the community. This fosters an environment where the community can thrive and make the most available resources.

Economic Empowerment and Job Creation

DESA BESTARI promotes economic empowerment and job creation for the community members. Through the collaboration of the stakeholders, various economic initiatives are implemented, such as establishing micro-enterprises, vocational training programs, and access to markets for local products. This increases economic opportunities for the community members, contributing to poverty reduction and improved livelihoods. By harnessing the resources and expertise of the stakeholders, DESA BESTARI can create an enabling environment for entrepreneurship and economic growth in the region.

Sustainability and Replicability

Another significant outcome of DESA BESTARI is its focus on sustainability and replicability. By adopting sustainable practices such as waste management systems, environmental protection, and environmentally friendly practices, DESA BESTARI promotes long-term sustainability. The collaboration within the Penta Helix Model allows for sharing best practices, lessons learned, and knowledge transfer, enabling the replication of successful innovative village models in other communities. This ensures that the impact of DESA BESTARI extends beyond the specific village and contributes to the broader sustainable development agenda.

CONCLUSION

The collaboration of the Penta Helix Model in achieving the intelligent village initiative "DESA BESTARI" demonstrates the power of multi-stakeholder partnerships in rural development. By leveraging the strengths of academia, business, community, government, and mass media, DESA BESTARI has successfully transformed a rural community into a technologically advanced and sustainable smart village. Cooperation and collaboration can be established through better-coordinated communication and strong stakeholder commitment. The case study of DESA BESTARI provides valuable insights and lessons learned for future bright village endeavors, emphasizing the potential of collaboration to drive rural transformation and create self-sufficient, clean, healthy, resilient, and sustainable communities.

REFERENCES

Ardiansyah, A., Suparto, S., Hajri, W. A., Rafi, M., & Amri, P. (2023). Analysis of the Synergy of the Penta Helix Model in Handling COVID-19 at the Pekanbaru City Level. *Journal of Contemporary Governance and Public Policy*, *4*(1), 1–22. https://doi.org/10.46507/jcgpp.v4i1.88

Arsad, S., Said, R., Yusoff, H., & Ahmad, R. (2021). Corporate governance and Islamic corporate social responsibility disclosures: Shari'ah compliant companies in Malaysia. *Estudios de Economia Aplicada*, *39*(10). https://doi.org/10.25115/eea.v39i10.5347

Bhattacharya, C. B., Korschun, D., & Sen, S. (2009). Strengthening stakeholder-company relationships through mutually beneficial corporate social responsibility initiatives. *Journal of Business Ethics*, *85*(SUPPL. 2), 257–272. https://doi.org/10.1007/s10551-008-9730-3

Calzada, I. (2017). Transforming Smart Cities with Social Innovation: Penta Helix Multi-Stakeholders Framework. *The Great Regional Awakening: New Directions 4th – 7th June 2017 Trinity College Dublin, Ireland RSA (Regional Studies Association) Annual Conference 2017, Dublin, Ireland*. https://ssrn.com/abstract=2932102

Capetillo, A., Abraham Tijerina, A., Ramirez, R. et al. (2021). Evolution from triple helix into penta helix: the case of Nuevo Leon 4.0 and the push for industry 4.0. *International Journal on Interactive Design and Manufacturing (IJIDeM)*, *15*, 597–612. https://doi.org/10.1007/s12008-021-00785-x

Carayannis, E.G & Campbell, D. . (2009). "Mode 3" and "Quadruple Helix": toward a 21st century fractal

innovation ecosystem. *International Journal of Technology Management*, *46*(3/4), 201–234. https://doi.org/10.1504/IJTM.2009.023374

Carayannis, E., & Grigoroudis, E. (2016). Quadruple innovation Helix and smart specialization: Knowledge production and national competitiveness. *Foresight and STI Governance*, *10*(1), 31–42. https://doi.org/10.17323/1995-459x.2016.1.31.42

Chatterjee, Sheshadri & Kumar Kar, A. (2017). Concept of Smart Village in India: A Proposed Ecosystem and Framework. In 1 (Ed.), *Advances in Smart Cities*. Chapman and Hall/CRC.

Desmawati, L., Sutarto, J., Kisworo, B., & Shofwan, I. (2023). Multimodal Learning Design in Improving Technoprenership Capabilities in the Equality. *European Journal of Humanities and Educational Advancements (EJHEA*, *4*(12), 27–33. https://www.scholarzest.com/index.php/ejhea/article/view/4122

Dimitrovski, D., Lemmetyinen, A., Nieminen, L., & Pohjola, T. (2021). Understanding coastal and marine tourism sustainability - A multi-stakeholder analysis. *Journal of Destination Marketing and Management*, *19*(May 2020), 100554. https://doi.org/10.1016/j.jdmm.2021.100554

Effendi, D., Syukri, F., Subiyanto, A. F., & Utdityasan, R. N. (2016). Smart city Nusantara development through the application of Penta Helix model (A practical study to develop smart city based on local wisdom). *2016 International Conference on ICT for Smart Society (ICISS)*, 80–85. https://doi.org/10.1109/ICTSS.2016.7792856.

Etzkowitz, H., & Leydesdorff, L. (1995). The Triple Helix--University-industry-government relations: A laboratory for knowledge based economic development. *EASST Review*, *14*(1), 14–19. https://ssrn.com/abstract=2480085

Galvao, A., Mascarenhas, C., Marques, C., Ferreira, J., & Ratten, V. (2019). Triple helix and its evolution: a systematic literature review. *Journal of Science and Technology Policy Management*, *10*(3), 812–833. https://doi.org/10.1108/JSTPM-10-2018-0103

Graci, S., & Van Vliet, L. (2020). Examining Stakeholder Perceptions Towards Sustainable Tourism in an Island Destination. The Case of Savusavu, Fiji. *Tourism Planning and Development*, *17*(1), 62–81. https://doi.org/10.1080/21568316.2019.1657933

Guzal-Dec, D., & Zwolinska-Ligaj, M. (2018). The social field of smart villages concept: the case of peripheral region - Lublin province in Poland. *Proceedings of the 2018 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT," 49*, 296–306. https://doi.org/10.22616/esrd.2018.147

Halibas, A. S., Sibayan, R. O., & Maata, R. L. R. (2017). The Penta Helix Model of Innovation in Oman: an HEI Perspective. *Interdisciplinary Journal of Information, Knowledge & Management*, *12*, 159–174. https://doi.org/10.28945/3735

Hidayat, M., Rozak, R. W. A., Kembara, M. D., & Baihaki, E. (2021). Pentahelix synergy in realizing ecovillage values in the Cijalingan village community of Cicantayan Sukabumi district. *IOP Conference Series: Earth and Environmental Science*, 012135. https://doi.org/10.1088/1755-1315/683/1/012135

Kismartini, K., Roziqin, A., & Authori, N. (2023). A stakeholder analysis for sustainable development of Maritime Village in Semarang coastal community, Indonesia. *Public Administration and Policy*, *26*(3), 321–334. https://doi.org/10.1108/PAP-10-2022-0119

Komorowski, Ł., & Stanny, M. (2020). Smart villages: Where can they happen? *Land*, *9*(5). https://doi.org/10.3390/LAND9050151

Kuhn, B. M. (2022). Sustainable finance in Germany: mapping discourses, stakeholders, and policy initiatives. *Journal of Sustainable Finance and Investment*, *12*(2), 497–524. https://doi.org/10.1080/20430795.2020.1783151

Kuswanto, D., Triandini, E., Baihaqi, I., Wibawa, A. D., Mahardhika, P. S., Samboro, M. Y. A., Maharany, G. T., Harseno, A. R., Firmansyah, A. N., Jafari, N. P., & Dhafin, F. R. (2023). Development of Low-Cost Prosthetic Using Circular Economy Approach for Disability in Indonesia. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, 1781–1792. https://doi.org/10.46254/an13.20230501

Latif, I. N., Heriyanto, H., Mardiana, M., & Dewi, C. K. (2023). Analysis of Financial Management in Economic Empowerment of MSMEs: A Case in a Tourism Village. *Journal of Nonformal Education*, *9*(1), 151–159. https://doi.org/10.15294/jne.v9i1.42717

Lindtner, S., Hertz, G. D., & Dourish, P. (2014). Emerging sites of HCI innovation. *Proceedings of the 32nd Annual ACM Conference on Human Factors in Computing Systems*, 439–448. https://doi.org/10.1145/2556288.2557132

Metzker, Z., & Streimikis, J. (2020). CSR Activities in the Czech SME Segment. *International Journal of*

p-ISSN 2442-532X | e-ISSN 2528-4541
https://journal.unnes.ac.id/journals/jone

Entrepreneurial Knowledge, *8*(1), 49–64. https://doi.org/10.37335/ijek.v8i2.101

Minnaert, L. (2020). Stakeholder stories: Exploring social tourism networks. *Annals of Tourism Research*, *83*(June), 102979. https://doi.org/10.1016/j.annals.2020.102979

Nurhaida, D., Arsiyanti, F., & Munawar, M. A. (2023). Anatomi Bisnis Plan. *JUARA: Jurnal Wahana Abdimas Sejahtera*, *4*(2), 200–211. https://doi.org/10.25105/juara.v4i2.16744

Nurhaida, D., Khomsiyah, K., & Masnita, Y. (2023). Unleashing entrepreneurial potential: Empowering social beneficiaries through the practice of developing marketing plans at Panti Sosial Bina Karya Harapan Jaya. *Community Empowerment*, *8*(7), 1040–1048. https://doi.org/10.31603/ce.8827

Nylander, S., & Tholander, J. (2017). Community-based innovation among elite orienteers. *Proceedings of the 8th International Conference on Communities and Technologies*, 87–95. https://doi.org/10.1145/3083671.3083696

Prabhu, R., McDougall, C., & Fisher, R. (2008). *Adaptive collaborative management: A conceptual model. Adaptive collaborative management of community forests in Asia* (16th ed.).

Purnaweni, H., Saputra, J., Roziqin, A., Kismartini, K., Djumiarti, T., & Seitz, T. (2022). Oil Spill Governance: Evidence from Bintan Island, Indonesia. *Sustainability (Switzerland)*, *14*(3), 1–17. https://doi.org/10.3390/su14031603

Purnomo, E.P., Fathani, A.T., Setiawan, D., Fadhlurrohman, M.I., Nugroho, D. H. (2021). Penta-Helix Model in Sustaining Indonesia's Tourism Industry. *Antipova, T. (Eds) Advances in Digital Science. ICADS 2021. Advances in Intelligent Systems and Computing*, 477–510. https://doi.org/10.1007/978-3-030-71782-7_42

Putra, T. (2019). A Review on Penta Helix Actors in Village Tourism Development and Management. *Journal of Business on Hospitality and Tourism*, *5*(1), 63. https://doi.org/10.22334/jbhost.v5i1.150

Rahmafitria, F; Sukmayadi, V; Suryadi, K;.Rosyidie, A. (2021). Disaster management in Indonesian tourist destinations: how institutional roles and community resilience are mediated. *Worldwide Hospitality and Tourism Themes*, *13*(3), 324–339. https://doi.org/10.1108/WHATT-01-2021-0014

Rashid, Y., Rashid, A., Warraich, M. A., Sabir, S. S., & Waseem, A. (2019). Case Study Method: A Step-by-Step Guide for Business Researchers. *International Journal of Qualitative Methods*, *18*, 1–13. https://doi.org/10.1177/1609406919862424

Riduansyah Syafari, M. (2018). Penta Helix Model In The Community Empowerment Around Coal Mine In Maburai Village Tabalong Regency. *N International Conference on Business, Economic, Social Science and Humanities (ICOBEST 2018)*, *225*(Icobest), 490–493. https://doi.org/10.2991/icobest-18.2018.98

Rosyadi, S., Kusuma, A. S., Fitrah, E., Haryanto, A., & Adawiyah, W. (2020). The Multi-Stakeholder's Role in an Integrated Mentoring Model for SMEs in the Creative Economy Sector. *SAGE Open*, *10*(4). https://doi.org/10.1177/2158244020963604

Roxas, F. M. Y., Rivera, J. P. R., & Gutierrez, E. L. M. (2020). Mapping stakeholders' roles in governing sustainable tourism destinations. *Journal of Hospitality and Tourism Management*, *45*(September), 387–398. https://doi.org/10.1016/j.jhtm.2020.09.005

Sabaruddin, A., Ode, L., & Elwan, M. (2023). Review of Quadruple Helix Actors in the Management of Corporate Social Responsibility (CSR) Programs. *Migration Letters*, *20*(10), 878–894. https://doi.org/10.59670/ml.v20iS10.5435

Shofwan, I., Sunardi, S., Gunarhadi, G., & Rahman, A.H. (2023). Entrepreneurship Education: Encouraging Entrepreneurial Intentions for Equality Education Students in Semarang. *International Journal of Learning, Teaching and Educational Research*. https://doi.org/10.26803/ijlter.22.6.10

Shyafary, D., Pristanti, H., & Cahyadi, D. (2019). Implementation of the Role of Higher Education in the Vocational Sector in the Penta Helix Model. *International Journal of Social Sciences and Humanities*, *3*(2), 31–46. https://doi.org/10.4108/eai.18-11-2020.2311686

Sjögren Forss, K., Kottorp, A., & Rämgård, M. (2021). Collaborating in a penta-helix structure within a community based participatory research programme: 'Wrestling with hierarchies and getting caught in isolated downpipes.' *Archives of Public Health*, *79*(1), 1–13. https://doi.org/10.1186/s13690-021-00544-0

Subagyo, A. (2021). The implementation of the pentahelix model for the terrorism deradicalization program in Indonesia. *Cogent Social Sciences*, *7*(1). https://doi.org/10.1080/23311886.2021.1964720

Sudiana, K., Sule, E. T., Soemaryani, I., & Yunizar, Y. (2020). The development and validation of the penta helix construct. *Business: Theory and Practice*, *21*(1), 136–145. https://doi.org/10.3846/btp.2020.11231

Sufyan, A., Nurhalim, K., & Shofwan, I. (2019). Learning Management of Nonformal Education Units in

Sanggar Kegiatan Belajar. *Journal of Nonformal Education*, *5*(1), 57–66. https://doi.org/10.15294/jne.v5i1.18335

Suminar, T., Arbarini, M., Shofwan, I., & Setyawan, N. (2021). The Effectiveness of Production-Based Learning Models in the ICARE Approach to Entrepreneurial Literacy Ability. *Journal of Nonformal Education*, *7*(2), 142–149. https://doi.org/10.15294/jne.v7i2.31700

Visvizi, A., Lytras, M. D., & Mudri; (2019). "Smart Villages: Relevance, Approaches, Policymaking Implications." In *Smart Villages in the EU and Beyond* ((Emerald S, pp. 1–12). Emerald Publishing Limited. https://doi.org/10.1108/978-1-78769-845-120191002

Wahyuningsih, E. (2021). Strengthening community in increasing village potential through pentahelix collaboration. *International Journal of Research in Business and Social Science*, *10*(1), 149–157. https://www.ssbfnet.com/ojs/index.php/ijrbs

Warouw, F. F., Pusung, P. H., Herdiawanto, H., & Luthfi, R. M. (2024). Branding Sustanable Forest City At Ibu Kota Negara (Ikn) Nusantara Viewed From the Perception of Pentahelix Stakeholders in Manado City. *Indonesian Journal of Urban and Environmental Technology*, *7*(1), 42–55. https://doi.org/10.25105/urbanenvirotech.v7i1.19317

Zen, A., Lopez, A., Dambros, Â., Menezes, D., & Machado, B. (2016). Analysis of interaction of triple helix in a federal public program: a study of the centers of support for innovation management (NAGIS). *Revista Eletrônica de Ciência Administrativa*, *15*(3), 153–169. https://doi.org/10.21529/recadm.2016015