



Stakeholder Perceptions of the Pentahelix Model in the WMK-MBKM Program at Manado State Polytechnic

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Abstract

This study aims to analyze the implementation of the Pentahelix model in the Merdeka Belajar Kampus Merdeka Wirausaha Merdeka (MBKM-WMK) program at Manado State Polytechnic as a strategy to realize an inclusive and sustainable economy from stakeholder perception. The background of the study comes from the high youth unemployment rate and the strategic role of MSMEs in driving economic growth and employment. Through the Pentahelix model, this program is expected to optimize students' potential to create and develop local power-based businesses. This study used a mixed-methods concurrent embedded design, with a qualitative approach as the primary method and quantitative data (Likert scale) playing a complementary role in identifying perception tendencies and strengthening findings from interviews and observations. Data were obtained through interviews and questionnaires distributed to 15 respondents using a purposive sampling technique. Data were analyzed using the average score and percentage contribution of each helix in supporting inclusive and sustainable economic goals. The results showed that all elements of the Pentahelix model contributed very strongly, with percentages: academic 91%, business 91%, government 85%, community 83%, and media 90%. This collaboration increases access to capital, entrepreneurial capacity building, distribution of local products, and branding and publication of student businesses. In 2023-2024, this program is perceived to have contributed to fostering young entrepreneurs in the agriculture, fisheries, services, and tourism sectors, with participants reporting increased entrepreneurial awareness and motivation to develop MSMEs that support the local economy in North Sulawesi. Respondents assessed that the Pentahelix model applied in this study has a strong contribution to building an inclusive entrepreneurial ecosystem that aligns with the SDGs.

Keywords: WMK-MBKM, Student Entrepreneurship, Inclusive Economy, Sustainable Economy, Higher Education Entrepreneurship, Manado State Polytechnic, Pentahelix Collaboration

INTRODUCTION

In this era of globalization and rapid industrial development, the issue of Sustainable Development Goals (SDGs) has become one of the priorities of countries incorporated in the United Nations, including Indonesia. The SDGs agenda emphasizes the importance of inclusive economic growth that not only focuses on financial benefits but also considers social and environmental aspects (United Nations, 2020).

However, in order to promote sustainable development, challenges such as economic inequality, environmental degradation, and high unemployment rates still hamper the achievement of these goals. Regarding the unemployment rate, it is estimated that by 2030, 600 million jobs will be needed worldwide, making this a challenge for all countries (World Bank, 2019).

In solving these challenges, the younger generation plays an important role. The younger generation plays an important role in economic development, as the larger the labor force, in this case the younger generation, the greater the expected increase in the production capacity of the economy.

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Indonesia, with a population of approximately 281,603.8 million people by mid-2024 ([BPS-Statistics Indonesia, 2024b](#)), faces enormous challenges with its unemployment rate, especially among the younger generation. The Central Bureau of Statistics noted that the open unemployment rate among youth reached 35.7%, 12.01% of whom were university graduates ([BPS-Statistics Indonesia, 2024a](#)). The solution to the unemployment problem is to increase the availability of employment.

In circumstances where the unemployment rate is a formidable hurdle for many countries, Micro, Small, and Medium Enterprises (MSMEs) act as job creators ([Kiswinata et al., 2023](#)). Regarding the young generation and MSMEs providing employment, 31.5% of young people in Indonesia want to become entrepreneurs, the highest percentage among ASEAN countries ([World Economic Forum, 2019](#)). This can be an opportunity for Indonesia to solve the challenges related to the unemployment rate.

In supporting local and national economic growth, MSMEs play a very important role as agents of sustainable development. Based on Press Release HM.4.6/303/SET.M.EKON.3/08/2023 of the Coordinating Ministry for Economic Affairs, Republic of Indonesia, the MSME sector contributes to the Gross Domestic Product (GDP) of 61%, or equal to Rp 9,580 trillion of the total Gross Domestic Product (GDP), and the MSMEs' contribution to employment reaches 97% of the total workforce.

Based on data from the Ministry of Cooperatives and SMEs, Indonesia has 65.5 million MSMEs, which account for 99% of all business units. Therefore, MSMEs are pillars of Indonesia's economic development and are always encouraged to upgrade so they can contribute more to the Indonesian economy and absorb more labor ([Coordinating Ministry for Economic Affairs Republic of Indonesia, 2023](#)). In 2023, MSMEs contributed significantly to economic growth by creating jobs, which also indirectly reduced the existing unemployment rate, especially among the younger generation.

MSMEs have proven to absorb labor through product innovation and adaptation to market dynamics, thus encouraging inclusive and sustainable economic growth ([Krisna, 2024](#)). MSMEs have contributed a lot to the local and national economy. In this case, apart from being a business actor, MSMEs also play a role as a pillar of Indonesia's sustainable economic development, where the position of MSMEs in the national economic structure is at the center of the great changes in the Indonesian economy accompanied by population growth and changing global dynamics ([Kiswinata et al., 2023](#)).

Seeing these opportunities and challenges, the Ministry of Higher Education, Culture, Research and Technology launched the MBKM program to prepare Indonesia's young generation to face the industrial world. One of its flagship programs is WMK. This program was launched to encourage students' potential to manage and run businesses of interest.

On the other hand, according to [Presidential Regulation Number 2 of 2022 Concerning National Entrepreneurship Development for 2021-2024 \(2022\)](#), this program is one of the efforts to create many young entrepreneurs who have the fighting spirit to encourage regional economic development. Thus, students can play an active role in reducing the unemployment rate and strengthening the regional economy.

In the process, the Pentahelix model is considered an effective solution in achieving the success of the MBKM-WMK program. This Pentahelix model consists of five main elements: academia, business, government, community, and media. The implementation of the Pentahelix model in a learning program is perceived as effective in building a mutually beneficial collaborative ecosystem, realized by the creation of real output in the form of advertising videos and MSME business profiles that can strengthen the capacity and competitiveness of MSMEs, improve the quality of student learning through project-based methods, and the formation of harmonious

professional relationships between all actors involved ([Ramdhani & Irfan, 2026](#)).

Research by [Beatrice & Hertati \(2023\)](#) shows that Pentahelix collaboration can increase entrepreneurial effectiveness and produce positive results. Thus, applying the Pentahelix model in the MBKM-WMK program is expected to encourage the formation of new MSMEs that stakeholders perceive to have potential social and economic impacts, such as job creation and improved community income.

The MBKM-WMK program at Manado State Polytechnic with the theme "Local Pride Entrepreneur" has adapted the Pentahelix model by involving many related parties in the development and implementation of the flagship program. This includes Manado State Polytechnic as a center for entrepreneurship training and development, industry as a partner and source of market access, government as a regulator, the community, and even the media.

This collaboration encourages the utilization of four leading sectors in North Sulawesi, namely agriculture, fisheries, services, and tourism, so that this program not only provides entrepreneurial skills but also encourages the exploration of the use of natural resources as effectively and efficiently as possible to support regional economic growth.

From the above statement, collaboration is very important for developing entrepreneurial skills while encouraging the effective and efficient use of natural resources. This is expected to trigger economic growth in the North Sulawesi region, especially in the agriculture, fisheries, services, and tourism sectors.

Therefore, this research focuses on the effectiveness of implementing the Pentahelix model in the MBKM-WMK program at Manado State Polytechnic and on strategies for sustainable economic development. Previous research has analyzed the implementation of the Pentahelix model in the MSME sector, starting from mapping the roles of actors in the field, establishing a mentoring team to improve the quality of MSMEs' internal human resources, to using the Pentahelix perspective to formulate predictive commercial strategies to save businesses experiencing declining turnover ([Beatrice & Hertati, 2023](#); [Najmudin et al., 2023](#); [Rao et al., 2025](#); [Susyanti & Pardiman, 2023](#)).

There is also research that shows that the success of regional development, both tourist villages, halal tourism, and smart villages, is very dependent on the balance of the roles of the five elements of Pentahelix, because development will not run optimally if it only relies on the government or local communities, but requires a commitment to integrated cooperation, intensive communication, and a long-term roadmap that is mutually agreed upon ([Chamidah et al., 2021](#); [Fithriyah, 2022](#); [Kelvin et al., 2022](#); [Pugra et al., 2021](#)).

Based on previous research, there is a research gap, namely the implementation of the Pentahelix model when higher education institutions act as core institutional actors that formally coordinate the entrepreneurial ecosystem through the MBKM-WMK program and perceptions regarding strategic directions to overcome obstacles to integrating off-campus ecosystems in order to realize the sustainability of inclusive student businesses. This study aims to analyze the perceptions of five Pentahelix actors regarding the implementation of the Pentahelix model in the WMK program at Manado State Polytechnic as a strategy for inclusive and sustainable economic development.

LITERATURE REVIEW

Pentahelix Model

The Pentahelix model is the result of the development of previous models. The first model was the triple helix introduced by Henry Etzkowitz and Loet Leydesdorff in 1995, which combined elements of government, entrepreneurs, and academics to create innovation and build a knowledge-based economy ([Ishak & Sholehah, 2021](#); [Leydesdorff, 2012](#); [Pratiwi et al., 2025](#); [Roman](#)

& Fellnhöfer, 2022).

Then, in 2009, the triple helix model was developed by Elias G. Carayannis and David F. J. Campbell by adding community elements, thus becoming a quadruple helix model that shows the importance of involving the views of culturally grounded communities in the innovation process (Pratiwi et al., 2025; Schütz et al., 2019; Shin et al., 2023). Furthermore, the quadruple helix model was developed into a Pentahelix model that adds the media element as the fifth element, which plays a role in publishing information, creating public perceptions, and supporting the participation of other elements (Pratiwi et al., 2025; Swandhono et al., 2025).

This model can be implemented in various aspects to achieve certain goals. For example, to increase the development of digital startups to support government programs (Pratiwi et al., 2025), as well as to support the development of MSMEs (Beatrice & Hertati, 2023; Najmudin et al., 2023; Rao et al., 2025; Susyanti & Pardiman, 2023).

In general, the Pentahelix model is a framework for cooperation among five main elements of society: government, academia, business, community, and media (Pratiwi et al., 2025; Swandhono et al., 2025). This model aims to achieve common goals by utilizing the strengths and resources of each. The collaborative approach in the Pentahelix model involves the five main elements in economic empowerment and entrepreneurship development, especially in the context of sustainable management and utilization of local resources.

These elements play distinct roles in development and management to achieve common goals. This ensures that the involvement of various stakeholders in the implementation and decision-making process supports inclusive and sustainable economic management. Thus, this Pentahelix model can also create positive outcomes for the MBKM-WMK program.

MBKM-WMK Program

The MBKM-WMK program is a strategic initiative launched by the Ministry of Higher Education, Culture, Research and Technology within the framework of MBKM with the main objective of encouraging student entrepreneurial potential. The program aims to empower students, reduce unemployment and improve economic welfare, and encourage an inclusive and sustainable economy. In line with that goal, this program supports the achievement of the Indonesian government's desired target of 1 million new entrepreneurs through [Presidential Regulation Number 2 of 2022 Concerning National Entrepreneurship Development for 2021-2024 \(2022\)](#).

MBKM-WMK encourages students to develop and run businesses according to their interests and potential. Through entrepreneurship training, idea development, and market research, students are expected to create jobs and increase the production capacity of the local economy. This program seeks to bridge the gap amidst the challenge of high unemployment, especially among youth and college graduates, by creating many young entrepreneurs. Thus, the program not only provides entrepreneurial skills but also contributes to strengthening the regional economy.

In line with the SDGs agenda, which emphasizes an inclusive economy and considers social and environmental aspects, MBKM-WMK focuses on creating businesses that do not solely aim for financial gain but also target social impact and environmental preservation. This program is one of the strategic efforts to optimize economic production capacity through entrepreneurial empowerment.

Inclusive and Sustainable Economy

An inclusive economy is a growth model that not only increases economic output but also ensures that the benefits of growth are felt equally by all levels of society, especially the poor and vulnerable groups (Adika & Rahmawati, 2021). In the development framework, an inclusive and

sustainable economy is formulated as a paradigm that emphasizes economic growth not only through increasing added value, but also through the equitable distribution of benefits to all levels of society and the maintenance of environmental and social quality.

Herman et al. (2024) stated that an inclusive economy involves three dimensions: income distribution through pro-poor fiscal policies; access to financial services and appropriate technology for MSMEs; and the application of circular economy principles to minimize waste and maximize local resource efficiency.

A sustainable economy is a development framework that balances the fulfillment of current needs and the preservation of resources for future generations. Together with social and environmental sustainability, a sustainable economy becomes the goal of sustainable development, which involves implementing economic activities that ensure the prosperity of present generations without neglecting the prosperity of future generations (Herman et al., 2024; Khan et al., 2025).

With guiding values including economic sustainability, environmental sustainability, and social welfare of the islands, Zahrah & Rahayu (2024) showed that green economy and blue economy models that emphasize the preservation of terrestrial and marine ecosystems while maximizing local potential are excellent strategies to maintain environmental carrying capacity while increasing the income of coastal communities and implementing a sustainable economy.

An inclusive and sustainable economy is one of the goals of the SDGs stated in Goal 8: to realize inclusive and sustainable economic development, as well as the availability of decent work for all (United Nations, 2015). The active involvement of MSMEs can realize sustainability transformation (Surman & Böcskei, 2023).

Based on the theoretical foundations above, this study proposes a conceptual framework in which each Pentahelix actor is expected to have a clear and mutually supportive role for the success of the WMK-MBKM program and the realization of inclusive and sustainable entrepreneurship. Academics are expected to be the main drivers by developing a structured entrepreneurship curriculum, mentoring students, and managing the entrepreneurial ecosystem comprehensively so that the education received is truly ready to be applied in the world of work and can produce long-term sustainable businesses (Liu et al., 2021; Pintanawati et al., 2025).

Business actors are expected to act as mentors and sustainability partners, helping students test the feasibility of ideas, develop products, and understand real market conditions. They can even potentially become investors for student businesses deemed innovative and prospective (Nugroho et al., 2023; Wahyuningtiyas et al., 2025).

The government is expected to provide support through regulatory streamlining, simplified business licensing processes, and access to funding programs that student entrepreneurs can use (Rachman & Thalib, 2025). The community is expected to absorb production results and provide social legitimacy by becoming consumers, promoters, and production partners for local student products, ensuring that the businesses built are truly rooted in regional needs and potential (Rachman & Thalib, 2025).

The media is expected to be a catalyst that expands the program's reach by publicizing student business results, building a credible brand image, and opening wider market access through digital platforms (Ramdhani & Irfan, 2026). When these five actors operate in an integrated and balanced manner, where academics and business actors form the core of the internal ecosystem, while the government, community, and media strengthen the integration of the external ecosystem, the WMK-MBKM program is expected to not only give birth to new business units, but also inclusive and sustainable MSMEs capable of providing broad socio-economic impacts for the community.

RESEARCH METHOD

This study used a mixed-methods approach with a Concurrent embedded model, where the researcher differentiates the weighting of the methods, with a qualitative approach as the main method. Quantitative data in the form of a Likert scale were used only as supporting data to identify perception tendencies and strengthen the results of interviews and observations (Sembiring et al., 2024).

The data used in this study were primary. Primary data were collected using several techniques, including interviews and questionnaires conducted by purposive sampling of WMK program participants and observation of activities—methodological triangulation aimed to ensure data credibility and reduce potential bias. Triangulation was carried out by comparing and cross-checking data obtained from three sources: in-depth interviews as the primary data source, supported by questionnaire results and field observations.

Interview findings were first analyzed to identify key themes, which were then cross-referenced with questionnaire responses to confirm or supplement the emerging patterns. Field observations further validated the consistency between what participants reported and what was practiced in actual settings.

In cases where minor discrepancies arose, interview data were prioritized, while questionnaire and observation data served to reinforce and contextualize the findings. The questionnaire data, obtained through purposive sampling, represent the views of each helix on the role of the Pentahelix in the WMK program. There were 25 questions with five helixes as indicators, namely:

Table 1. Questionnaire Questions

No.	Helix	Questions
1	Academic	Academic elements play an important role in the WMK program.
2		Academic elements have been operating in accordance with their duties and roles.
3		Academic elements participate in all stages of WMK activities (Pre Immersion, Immersion, Post Immersion)
4		Academic elements provide discussion space for the development of entrepreneurial ideas.
5		Academic elements provide knowledge about entrepreneurship.
6	Business	Business elements play an important role in the WMK program
7		Business elements carry out their duties and roles.
8		Business elements participate in all stages of WMK activities (Pre Immersion, Immersion, Post Immersion)
9		The business element provides a discussion space for the development of entrepreneurial ideas.
10	Government	The business element provides skills and guidance regarding entrepreneurship.
11		Government elements play an important role in the WMK program
12		Government elements have been operating in

		accordance with their duties and roles.
13		Government elements participate in all stages of WMK activities (Pre Immersion, Immersion, Post Immersion)
14		Government elements provide discussion space for the development of entrepreneurial ideas, regulations, and licensing.
15		Government elements provide easier access to creating and running a business.
16	Community	Community elements play an important role in the WMK program
17		Elements of the community have been working according to their duties and roles.
18		Community elements participate in all stages of WMK activities (Pre Immersion, Immersion, Post Immersion)
19		The community and existing communities welcomed the WMK program.
20		Community elements provide support for established businesses and activities.
21	Media	Media elements play an important role in the WMK program
22		Media elements have been running according to their duties and roles.
23		Media elements participate in all stages of WMK activities (Pre Immersion, Immersion, Post Immersion)
24		Media elements help in introducing new businesses to the public.
25		Many people know about WMK products and activities through their broadcasts.

Meanwhile, the respondents were limited to 15 people, with 3 respondents representing each helix. These informants are not MBKM-WMK student participants, but rather key stakeholders who hold strategic roles and direct involvement in implementing the MBKM-WMK program within the Pentahelix ecosystem and who organize, facilitate, support, and evaluate the program from their respective institutional and professional positions.

The selection of informants was carried out by identifying and selecting individuals who have special and relevant knowledge in accordance with the research objectives (Ahmad & Wilkins, 2025; Creswell & Poth, 2023). Purposive sampling was used so that the sample truly represents those who best understand the implementation of Pentahelix in MBKM-WMK.

This involved selecting respondents who are directly involved, from coordinating with academics to collaborating with business, government, the community, and the media. This method was chosen because the focus of the research is not on generalizing to the entire student population, but on gaining an in-depth understanding of the program's main elements. The details of the research samples/respondents can be seen in the following table.

Table 2. Details of Sample/Respondents

Helix	Informant Code	Role/Position	Explanation
Academic	AC1, AC2, AC3	Program Coordinators / Senior Lecturers	Key informants who have strategic positions, direct involvement in program implementation, and institutional authority to represent universities in the Pentahelix ecosystem
Business	BS1, BS2, BS3	MSME Owners / Industrial Mentors	Key informants who have direct experience in a business, while also representing the role of practical partners in the Pentahelix ecosystem
Government	GV1, GV2, GV3	Local Gov. Officers	Key informants who have policy authority and direct involvement in supporting programs through regulation, facilitation, and funding, while also representing the role of local government as an enabler in the Pentahelix ecosystem.
Community	CM1, CM2, CM3	Community	Key informants who act as consumers, while also representing the role of the community as social partners in the Pentahelix ecosystem.
Media	MD1, MD2, MD3	Journalists / Digital Content Creators	Key informants who have direct experience in covering, promoting, and expanding the reach of student entrepreneurship programs, while representing the role of the media as an information amplifier and public opinion shaper in the Pentahelix ecosystem

After data collection, data measurements were carried out. Measurements were carried out using a Likert scale by distributing questionnaires to respondents, including key informants, who were selected by purposive sampling. The questionnaire was designed to measure respondents' perceptions of the involvement of the five elements of the Pentahelix, namely academic, business, government, community, and media, in supporting program implementation.

Each statement was rated from "1 = Strongly Disagree" to "5 = Strongly Agree". To calculate

the total frequency score, all 15 respondents rated each helix, resulting in a total frequency per helix indicator of $15 \text{ respondents} \times 5 \text{ indicators per helix} = 75 \text{ total response units per helix}$. This allows the calculation of the total score as a representation of the intensity of respondents' perceptions of the contribution of the five Pentahelix elements in realizing an inclusive and sustainable economy.

The measurement results will be analyzed and interpreted thematically to form the basis for exploring the implementation of the Pentahelix model in the MBKM-WMK program. The research results will be more valid in describing the contribution of each element to the achievement of an inclusive and sustainable economy.

FINDINGS AND DISCUSSION

Results Measurement

The following are the measurement results of the five Pentahelix indicators.

Table 1. Academics Role Indicator

Helix	Number of Items	Score	Frequency	Total Score	Percentage
Academics	5	SA (5)	47	235	69%
		A (4)	21	84	25%
		N (3)	7	21	6%
		D (2)	0	0	0%
		SD (1)	0	0	0%
Total			75	340	100%
Maximum Score			375		
Average Percentage			91%		
Criteria			Very Strong		

Source: Primary Data Processed, 2025

Table 2. Business Role Indicator

Helix	Number of Items	Score	Frequency	Total Score	Percentage
Business	5	SA (5)	49	245	72%
		A (4)	19	76	22%
		N (3)	7	21	6%
		D (2)	0	0	0%
		SD (1)	0	0	0%
Total			75	342	100%
Maximum Score			375		
Average Percentage			91%		
Criteria			Very Strong		

Source: Primary Data Processed, 2025

Table 3. Government Role Indicator

Helix	Number of Items	Score	Frequency	Total Score	Percentage
Government	5	SA (5)	31	155	49%
		A (4)	32	128	40%
		N (3)	11	33	10%

	D (2)	1	2	1%
	SD (1)	0	0	0%
Total		75	318	100%
Maximum Score		375		
Average Percentage		85%		
Criteria		Very Strong		

Source: Primary Data Processed, 2025

Table 4. Community Role Indicator

Helix	Number of Items	Score	Frequency	Total Score	Percentage
Community	5	SA (5)	33	165	53%
		A (4)	20	80	26%
		N (3)	21	63	20%
		D (2)	1	2	1%
		SD (1)	0	0	0%
Amount			75	310	100%
Maximum Score			375		
Average Percentage			83%		
Criteria			Very Strong		

Source: Primary Data Processed, 2025

Table 5. Media Role Indicator

Helix	Number of Items	Score	Frequency	Total Score	Percentage
Media	5	SA (5)	45	225	67%
		A (4)	21	84	25%
		N (3)	9	27	8%
		D (2)	0	0	0%
		SD (1)	0	0	0%
Amount			75	336	100%
Maximum Score			375		
Average Percentage			90%		
Criteria			Very Strong		

Source: Primary Data Processed, 2025

The Measurement results of the five Pentahelix components in the MBKM-WMK program at Manado State Polytechnic indicate that respondents generally perceived the roles of the five actors positively. All indicators fall within the “Very Strong” category, with percentage scores ranging from 83% to 91%.

Academics and Business recorded the highest average percentage (91%), followed by Media (90%), Government (85%), and Community (83%). The dominance of “Strongly Agree” and “Agree” responses across all variables indicates positive respondent perceptions regarding the contribution of Pentahelix actors within the program.

However, these findings reflect perceived stakeholder roles rather than direct evidence of program effectiveness or long-term economic impact. The variation in percentage values also suggests that internal institutional actors (Academics) and market actors (Business) were perceived as more influential than external ecosystem actors such as Government and Community.

This may indicate that broader ecosystem integration beyond the campus environment still requires strengthening.

To complement the quantitative findings, direct observations were conducted to capture the actual implementation of the Pentahelix model within the MBKM–WMK program. The observations focused on three main aspects: stakeholder roles, stages of entrepreneurial activities, and forms of program support.

Table 6. Observation Results

Category	Observation Description
Pentahelix Actors Roles	Academics, business actors, government, media, and community play active roles in mentoring, evaluation, socialization, promotion, and exhibition activities.
Entrepreneurial Stages	Activities include business plan development, production processes, product packaging, digital marketing, expos, and business pitching.
Program Support	Continuous mentoring, workshops, branding training, business legality training, and promotion through social media are provided

Source: Observation, 2025

Based on the observation results, the implementation of the Pentahelix model is reflected in the active involvement of all five actors. Academics provide business mentoring, while business actors contribute through product evaluation and market-oriented guidance. Government involvement is evident in training and socialization activities, whereas the media support product promotion and visibility. In addition, communities participate through exhibitions and bazaar activities, indicating their role as market absorbers and social supporters.

Furthermore, the program demonstrates a structured entrepreneurial process, from business plan presentations and production activities to product packaging, digital marketing, and participation in expos and business pitching sessions. Continuous support is also evident through mentoring, workshops, branding training, legal assistance, and the utilization of social media for promotion.

These findings strengthen the quantitative results, confirming that observable program activities support the high perception scores. However, the variation in intensity of involvement among external actors suggests that ecosystem integration beyond institutional and business actors still requires further optimization.

Implementation of Pentahelix Model in WMK Program of Manado State Polytechnic

Entrepreneurship has been a part of learning at Manado State Polytechnic long before the MBKM-WMK program existed. Encouraging students to participate in entrepreneurship actively will certainly have a positive impact on the regional economy. However, without support from the government and the community, the products created are difficult to obtain licensing, access markets, and develop sustainably.

The MBKM-WMK program is implemented with collaboration between interested parties, including the five main components of the Pentahelix model, namely academics, business, government, community, and media, in forming a synergy that strengthens the motivation and quality of students towards entrepreneurship.

Academics as the Core Institutional Driver

The Academic helix functions as the central institutional driver in implementing the MBKM–WMK program at Manado State Polytechnic. Academics provide knowledge and information to

form an economically literate society. For students, academics prepare skilled, innovative, and critical-thinking human resources and serve as a forum for developing student talents to enter the business world. This central role was affirmed by AC1, who stated:

"We are not just teaching in the classroom. In WMK, we accompany students directly from the planning stage to the actual business practice, because we believe that entrepreneurial competence can only be built through real experience, not just theory." - (AC1, Program Coordinator, 2025)

A significant issue highlighted in the North Sulawesi Vocational Consortium's documentation is the misalignment between vocational education and industrial needs. Many vocational graduates, although prepared to enter the workforce, do not meet the competency standards required by companies. This mismatch results in unfilled job vacancies and the absorption of labor from outside the region. In response, academics must strengthen "link and match" strategies to align curriculum design with industry requirements.

The empirical findings, which show a 91% score for the Academic helix, indicate that respondents perceived academic involvement as highly influential in implementing the MBKM-WMK program. This suggests that respondents perceived curriculum integration, mentoring systems, and coordination with industry partners positively within the MBKM-WMK program.

Academics fulfill three core obligations: (1) developing entrepreneurial knowledge and resilient character among students; (2) conducting research and providing policy input to support business innovation; and (3) implementing community service to disseminate economic literacy. Thus, academics do not merely function as educators but also as facilitators who support entrepreneurial learning and collaboration within the program ecosystem.

Business as Market Validator and Sustainability Partner

The Business helix also achieved a 91% score, demonstrating its equally strong role in the entrepreneurial ecosystem. Business actors participate in all stages of business development, from idea formation and concept validation to product prototyping and market access. If academics act as the starting line for entrepreneurship education, businesses serve as mentors who guide students in navigating real market conditions.

While anyone can start a business, sustaining a business requires market understanding, managerial competence, and adaptive strategies. Business mentoring therefore becomes crucial in strengthening students' capacity to maintain and grow their enterprises. BS2 reinforced this point, stating:

"Many students have creative ideas, but they struggle with pricing, managing cash flow, or dealing with difficult customers. That is where we come in, sharing real-world experiences, including our own failures, so they can learn without repeating the same mistakes." - (BS2, Industrial Mentor, 2025)

In addition to mentorship, business actors may also function as investors in innovative and marketable student products. This fosters deeper collaboration and long-term partnerships between students and industry.

The high perception score indicates that respondents viewed experiential learning approaches in the MBKM-WMK program favorably. Respondents perceived continuous guidance and exposure to business dynamics as supportive of entrepreneurial learning and business development activities.

Government as Regulatory and Structural Support

The Government helix scored 85%, indicating a strong but comparatively less direct influence. The government plays a key role as regulator and facilitator by creating a conducive environment for business growth. This includes simplifying licensing processes, such as establishing a Business Identification Number (NIB), providing labor training, and granting access to funding programs that enhance the capacity of student entrepreneurs.

Government intervention also supports the development of four leading regional sectors—Agriculture, Fisheries, Tourism, and Services—encouraging the utilization of local natural resources for regional economic advancement. Such structural support strengthens the foundation of student businesses and aligns entrepreneurship programs with regional development priorities.

The slightly lower score compared to Academics and Business may indicate that government engagement is perceived as structural rather than operational. Therefore, strengthening direct interaction between student entrepreneurs and government agencies could further enhance perceived impact and policy integration.

Community as Economic Absorber and Legitimacy Provider

The Community helix obtained an 83% score, the lowest among the five components, although still categorized as “Very Strong”. The community is perceived as an important supporting actor within the local entrepreneurial ecosystem. As drivers of the regional economy, communities act as consumers, promoters, and supporters of locally produced goods. This role was acknowledged by CM1, who reflected on how community reception shapes student business sustainability:

“When students show off their products, we try to support them not only by purchasing them, but also by spreading the word to others.” - (CM1, Community Representative, 2025)

Public awareness regarding the importance of local products is essential for realizing an inclusive and sustainable economy. Communities often form networks or groups that serve as spaces for exchanging ideas, discussing challenges, and identifying solutions. These social interactions may support business collaboration and increase community engagement in student entrepreneurship activities.

However, the relatively higher neutral responses suggest that community engagement may not yet be fully structured or directly experienced by all participants. Strengthening participatory collaboration—such as involving communities in product development, feedback mechanisms, and co-creation processes—could increase inclusivity and long-term sustainability.

Media as Visibility and Expansion Catalyst

The Media helix achieved a 90% score, reflecting its significant role in promoting and expanding student businesses. Media possesses strong mass mobilization power and functions primarily as an information disseminator. This role was directly articulated by MD1, who described how media engagement shapes public perception of student entrepreneurship:

“When we cover WMK student businesses, we are actively building their brand and helping them reach audiences they could never access on their own.” - (MD1, Journalist, 2025)

In the era of technological advancement, digital platforms play an increasingly important role in business growth. Within the MBKM-WMK program, media acts as a bridge between program implementers and the wider community. It supports business publication, brand image

development, and market expansion. Through effective media exposure, student businesses gain opportunities to attract customers and potential investors, thereby increasing scalability. MD3 highlighted the longer-term strategic value of media involvement:

"Media coverage creates a documented track record for student businesses. Media exposure gives these businesses credibility in the eyes of investors and government agencies. It is not just promotion, but it is building a professional identity." - (MD3, Journalist, 2025)

The high score indicates that communication strategies have been effectively utilized. Media involvement was perceived as helpful in increasing product visibility and expanding promotional reach. The findings suggest that collaboration and coordination among the five helixes were essential for sustainable business growth in implementing the MBKM–WMK program.

The implementation of the Pentahelix model within the MBKM–WMK program reflects an effort to support student entrepreneurship through multi-stakeholder collaboration. The Integration of academic guidance, business mentoring, regulatory facilitation, community support, and media exposure indicates collaborative interactions among stakeholders within the program.

The MBKM–WMK program was implemented in 2023, and respondents perceived 2024 as providing opportunities for entrepreneurial learning and practical business experience. The results suggest that respondents perceived collaboration between educational institutions, business actors, and regulatory stakeholders as supportive of entrepreneurship-related activities within the program.

The emergence of student business initiatives may indicate the potential contribution of mentoring activities within the program, although this study does not directly measure causal effects. However, ensuring long-term sustainability requires strategic planning, market adaptation, and continuous stakeholder collaboration. Therefore, the next phase of development must focus on formulating strategies that strengthen business resilience and inclusive economic growth.

Strategy for an Inclusive and Sustainable Economy

Economic growth is closely associated with increased production and economic circulation within the community (Hartati, 2021). In this context, local communities function not merely as consumers but as primary drivers of regional economic development. The empirical findings of this study indicate the need to strengthen external ecosystem integration. Therefore, several strategic directions are proposed to enhance inclusivity and sustainability within the entrepreneurial ecosystem.

Building a Communication Forum

Establishing a structured communication forum is a strategic mechanism to institutionalize collaboration among the five Pentahelix actors. Such a forum functions as an interactive platform connecting academics, business actors, government institutions, training providers, communities, and media representatives. The empirical findings revealed strong internal collaboration between academics and business actors.

However, strengthening broader stakeholder coordination is necessary to balance ecosystem integration. A communication forum facilitates open discussions regarding entrepreneurial challenges, including access to capital, licensing processes, and market expansion. Within the MBKM–WMK framework, students can directly communicate business obstacles, while mentors and policymakers provide practical solutions. BS3 emphasized the value of this direct dialogue from a business perspective:

"When students tell us what problems they are facing, whether it is pricing, suppliers, or customers, we can give them concrete answers, not theoretical ones. Honest, direct conversations like that are what really drive businesses forward." - (BS3, MSME Owner, 2025)

Furthermore, the forum enables the introduction of digital technologies for marketing, financial management, and business analytics. It also promotes youth participation by showcasing successful local entrepreneurs, thereby strengthening entrepreneurial culture. Rather than functioning as a mere gathering space, the communication forum becomes an institutional backbone that ensures continuous knowledge exchange, innovation diffusion, and coordinated economic impact.

Identifying Local Potential and Excellence

Identifying local potential is a foundational strategy for sustainable entrepreneurship development. Regional competitive advantage often derives from unique natural, cultural, or sectoral characteristics that other regions cannot easily replicate. The MBKM–WMK program at Manado State Polytechnic focuses on four leading sectors of North Sulawesi—Agriculture, Fisheries, Tourism, and Services.

This sectoral orientation ensures that student enterprises align with regional development priorities and optimize local resource utilization. By grounding entrepreneurship in regional strengths, businesses not only achieve economic profitability but also help preserve local identity and environmental sustainability. This strategy supports inclusive growth by integrating economic objectives with socio-cultural and ecological considerations.

Strengthening Community Empowerment

Community empowerment is a transformative process that shifts communities from passive development objects to active economic subjects. In the context of sustainable development, empowerment extends beyond income generation toward strengthening capacity, independence, and adaptive resilience. The relatively lower Community helix score suggests that participatory engagement can be further optimized.

Empowerment strategies should therefore emphasize capacity-building initiatives, collaborative production models, and participatory decision-making processes. The MBKM–WMK program, initiated under the Ministry of Higher Education framework, provides an entry point for integrating students into broader economic development movements. AC3 emphasized how this integration creates mutual benefits between students and the communities they serve:

"The best results we see at WMK are when students do not just sell to the community, but actually collaborate with them, such as sourcing local ingredients and adapting products based on community feedback. That is when the program stops being just a student exercise and starts becoming a real economic development initiative." - (AC3, Program Coordinator, 2025)

The success of empowerment initiatives can be measured through indicators such as the number of newly established businesses, job creation, and increased community involvement in economic governance. Strengthening community empowerment enhances inclusivity and ensures that economic benefits are distributed across broader social groups.

Encouraging Innovation and Entrepreneurship

Innovation functions as the primary driver of sustainable entrepreneurship. Encouraging innovation involves developing creative solutions that utilize regional potential while addressing

local socio-economic challenges. Entrepreneurial innovation is not limited to product development but includes process innovation, business model adaptation, and digital marketing strategies.

The MBKM-WMK program has generated several context-based innovations, including environmentally friendly paving blocks produced from rice husks and organic fertilizers derived from water hyacinth. These examples illustrate the potential of innovation-oriented entrepreneurship to contribute to economic, environmental, and social objectives.

Such innovation-based entrepreneurship has the potential to support regional competitiveness and long-term sustainability. By integrating creativity with local resource optimization, the program contributes to a resilient and adaptive entrepreneurial ecosystem.

The proposed strategies collectively reinforce the empirical findings of this study. While academic and business collaboration forms the ecosystem core, strengthening structured communication, identifying local potential, empowering communities, and developing innovation ensure broader inclusivity and sustainability.

An inclusive and sustainable economy requires continuous coordination among stakeholders, adaptive policy support, and innovation-driven business practices. Therefore, the long-term success of the MBKM-WMK entrepreneurial ecosystem depends on maintaining collaborative synergy while expanding community-centered economic participation.

CONCLUSIONS

This study examined respondents' perceptions regarding the implementation of the Pentahelix model within the MBKM-WMK entrepreneurship program at Manado State Polytechnic. The findings indicate that respondents generally perceived the involvement of Academics, Business, Government, Community, and Media actors positively in supporting entrepreneurship activities within the program.

Among the five helixes, the Academic and Business components received the highest perception scores, suggesting that respondents viewed these actors as the most influential in supporting entrepreneurial learning and business mentoring activities. Government and Media actors were also perceived positively, particularly in relation to facilitation and information dissemination. Meanwhile, the Community helix received comparatively lower scores, indicating that broader participatory engagement may still require further strengthening.

The study contributes to the literature by describing how the Pentahelix framework can be applied within a higher education entrepreneurship context. However, the findings remain limited to respondents' perceptions and do not directly measure program effectiveness, business sustainability, or regional economic impact.

Practically, the findings suggest that multi-stakeholder collaboration is perceived as important in supporting entrepreneurship education programs. The study also highlights the importance of aligning entrepreneurship initiatives with local potential and innovation-oriented activities within vocational higher education settings. Overall, this study provides a descriptive overview of stakeholder perceptions regarding the implementation of the Pentahelix approach in the MBKM-WMK program at Manado State Polytechnic.

LIMITATION & FURTHER RESEARCH

This study has several limitations. First, the analysis focuses on a single higher education institution, which limits the generalizability of the findings across different institutional or regional contexts. Second, the observation period covers only the 2023–2024 implementation cycle, preventing long-term assessment of business sustainability and post-program performance.

Third, the study primarily relies on ecosystem evaluation indicators and descriptive analysis,

which may not fully capture causal relationships among helix actors. Therefore, the findings should be interpreted cautiously, as this study focuses on perceived stakeholder roles rather than measuring actual entrepreneurial outcomes, MSME sustainability, or long-term socio-economic impact.

Future research should expand the scope by conducting comparative studies across multiple universities implementing entrepreneurship programs under the MBKM framework. Longitudinal research designs are recommended to measure MSME survival rates, growth trajectories, and long-term socio-economic impact.

Additionally, future studies may employ quantitative modeling approaches—such as structural equation modeling or network analysis—to examine interaction effects among helix actors and their influence on business performance and inclusive growth outcomes.

Strengthening empirical measurement and cross-institutional comparison will enhance theoretical development and provide more robust policy recommendations for entrepreneurship-based regional development.

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