



Economic Development through Social Entrepreneurship: Case Study of Rural Innovation Hubs

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Abstract

Rural innovation hubs have increasingly been recognized as strategic mechanisms for promoting social entrepreneurship and strengthening local economic development. This study aims to examine the contribution of rural innovation hubs to entrepreneurial performance and household economic improvement in Balikpapan, Indonesia. A quantitative cross-sectional survey was conducted involving 180 respondents representing three innovation hubs operating in the agriculture, handicrafts and creative industries, and digital services sectors. Data were collected using structured questionnaires and analyzed through descriptive statistics and paired sample t-tests. The findings reveal a statistically significant increase in household income following participation in innovation hub programs, indicating positive economic outcomes for participating entrepreneurs. Respondents also reported favorable perceptions regarding market access, entrepreneurial skills development, and networking opportunities, whereas access to financial capital remained the least satisfactory aspect of the programs. The novelty of this study lies in its comparative quantitative assessment of multiple rural innovation hubs across different business sectors within a single regional context, providing empirical evidence on their contribution to inclusive entrepreneurship and local economic development. The findings highlight the importance of strengthening institutional collaboration, entrepreneurship support services, and financial inclusion policies to enhance the sustainability and effectiveness of rural innovation ecosystems.

INTRODUCTION

Economic development in rural areas remains one of the most pressing challenges for many developing countries, particularly in regions where economic opportunities are constrained by structural inequalities, limited infrastructure, inadequate access to finance, and weak market integration. Although globalization and technological advancement have expanded economic opportunities, rural communities continue to experience slower economic growth than urban areas, resulting in persistent poverty, unemployment, and social exclusion. In response to these challenges, scholars and policymakers have increasingly emphasized the importance of inclusive development strategies that simultaneously generate economic value and address social problems.

Within this context, social entrepreneurship has emerged as an innovative development approach because it combines entrepreneurial activities with explicit social missions, enabling communities to create sustainable economic opportunities while improving social welfare (Diaz-Sarachaga & Ariza-Montes, 2022; Klarin & Suseno, 2023; Kumar & Yadav, 2023; Oduro, 2023; Baquero & Monsalve, 2024).

Unlike conventional entrepreneurship that primarily pursues profit maximization, social entrepreneurship emphasizes the creation of shared value through business models that address societal challenges such as poverty reduction, employment generation, gender inequality, environmental sustainability, and community empowerment. Recent studies demonstrate that social enterprises contribute significantly to achieving the Sustainable Development Goals by strengthening local economies, increasing employment opportunities, encouraging innovation, and improving social inclusion (Beisland et al., 2021; Addae & Ellenwood, 2022; Jia & Desa, 2022; Parekh & Attuel-Mendes, 2022; Diaz-Sarachaga & Ariza-Montes, 2022). Furthermore, contemporary research suggests that social entrepreneurship plays a particularly important role in rural regions because these areas often possess abundant local resources but lack institutional support, investment capital, technological innovation, and market connectivity needed to transform those resources into sustainable economic value (Prado et al., 2022; Kheya et al., 2023; Akinboade et al., 2023; Ma et al., 2024; Shao et al., 2024).

One institutional mechanism that has gained increasing international recognition for facilitating social entrepreneurship is the development of rural innovation hubs. These hubs function as collaborative ecosystems that integrate entrepreneurs, government agencies, universities, financial institutions, and local communities to encourage innovation, strengthen entrepreneurial capabilities, and expand access to markets and knowledge (Rahmawati, 2025; Leal et al., 2023; Bramwell et al., 2019). Rather than acting merely as business incubators, rural innovation hubs create environments where knowledge exchange, capacity building, technological adoption, and collaborative problem solving occur simultaneously. Recent international evidence indicates that innovation hubs enhance entrepreneurial resilience by improving access to digital technologies, strengthening local innovation ecosystems, and promoting collaborative economic development (Chandna, 2022; Cuvero et al., 2023; Ochinanwata et al., 2024; Pusz et al., 2024). These hubs have therefore become increasingly important instruments for stimulating rural transformation while supporting more inclusive economic growth.

The growing importance of rural innovation hubs has become particularly evident following the COVID-19 pandemic, during which many rural entrepreneurs experienced declining income, disrupted supply chains, and reduced access to traditional markets (Ngo, 2022; Rukasha et al., 2021; Kamar & Ali, 2023). At the same time, accelerated digital transformation has created new opportunities for rural businesses capable of adopting digital technologies and innovative business models. Studies across emerging economies reveal that innovation ecosystems enabling digital entrepreneurship significantly improve business adaptability and competitiveness, especially among small and medium enterprises operating in disadvantaged regions (van Dülmen et al., 2022; del Olmo-García et al., 2023; Dhillon & Moncur, 2023; Ochinanwata et al., 2024). Nevertheless, substantial disparities remain because rural entrepreneurs frequently encounter financial constraints, inadequate logistics, weak institutional coordination, and insufficient technological capabilities that limit business expansion.

Indonesia presents an important context for examining these issues because regional economic disparities remain relatively pronounced despite sustained national economic growth. While metropolitan areas continue to attract investment, innovation, and industrial development, many rural regions continue to rely heavily

on agriculture and small-scale enterprises characterized by low productivity and limited competitiveness (Tshikovhi et al., 2023). Recognizing these challenges, the Indonesian government has increasingly promoted community-based entrepreneurship, digital transformation, and local innovation ecosystems as strategies for strengthening regional economic resilience. Balikpapan represents an especially interesting empirical setting because its economy has historically depended on extractive industries, particularly oil and gas, yet current regional development policies increasingly encourage economic diversification through entrepreneurship, creative industries, agriculture, and digital innovation. The establishment of rural innovation hubs reflects these broader efforts to diversify the local economy while empowering marginalized communities through entrepreneurial activities (Pertwi, 2025; Mejail & Nestares, 2024).

Despite the growing policy interest in rural innovation hubs, empirical evidence regarding their effectiveness remains relatively limited. Existing studies on social entrepreneurship have primarily concentrated on urban enterprises, social finance, educational initiatives, digital entrepreneurship, or microfinance institutions, leaving relatively little understanding of how rural innovation hubs contribute to inclusive local economic development in developing countries (Beisland et al., 2021; Parekh & Attuel-Mendes, 2022; Prado et al., 2022; Klarin & Suseno, 2023). Likewise, many international studies evaluate innovation hubs from technological or organizational perspectives without simultaneously examining their socioeconomic impacts on household income, community empowerment, entrepreneurial capacity, and institutional inclusiveness. Consequently, current literature provides insufficient empirical evidence regarding how rural innovation hubs operate within specific regional contexts, particularly in Indonesia, where institutional capacity, cultural characteristics, and local economic structures differ considerably from developed economies (Qoriawan & Aprilianti, 2023).

The existing body of literature also reveals several unresolved research gaps. First, previous studies have predominantly employed either quantitative approaches that emphasize economic indicators or qualitative approaches focusing on community experiences, with relatively few studies integrating both perspectives to provide a comprehensive understanding of rural innovation ecosystems. Second, although numerous investigations acknowledge the importance of innovation hubs, limited attention has been devoted to comparing their effectiveness across different economic sectors such as agriculture, handicrafts, and digital services. Third, relatively little empirical research has examined how innovation hubs simultaneously generate economic outcomes while promoting broader social objectives including women's empowerment, youth participation, and community resilience. These limitations restrict current understanding of the multidimensional contributions of rural innovation hubs toward sustainable regional development.

Recent advances in social entrepreneurship research have increasingly emphasized ecosystem perspectives, collaborative governance, digital innovation, and inclusive entrepreneurship as important determinants of sustainable local development (Klarin & Suseno, 2023; Cuvero et al., 2023; Ochinanwata et al., 2024; Moral et al., 2024; Ma et al., 2024). However, the practical implementation of these concepts remains insufficiently explored within rural Indonesian contexts. The interaction between innovation hubs, entrepreneurial capacity building, market expansion, institutional collaboration, and socioeconomic empowerment requires further empirical investigation to better understand the mechanisms through which rural innovation contributes to long-term economic resilience. Addressing these issues is particularly important because effective rural innovation ecosystems may provide scalable models for reducing regional inequality while promoting sustainable development across emerging economies.

This study addresses these research gaps by investigating the contribution of rural innovation hubs to economic development through social entrepreneurship in Balikpapan, Indonesia. Using a mixed methods case study involving three rural innovation hubs representing agriculture, handicrafts, and digital services, this research examines the demographic characteristics of participating entrepreneurs, evaluates the economic outcomes of hub participation, and explores participants' perceptions regarding the benefits and challenges of the innovation hub ecosystem. The novelty of this study lies in its integrated evaluation of rural innovation hubs by simultaneously combining quantitative measurement of economic performance with qualitative exploration of empowerment, inclusivity, institutional support, and entrepreneurial experiences across multiple sectors within a single regional context. Unlike previous studies that typically focus on isolated dimensions of social entrepreneurship, this research provides a comprehensive understanding of how rural innovation hubs function as collaborative mechanisms for inclusive economic development. The findings are expected to enrich the theoretical discourse on social entrepreneurship and rural innovation ecosystems while providing practical recommendations for policymakers, development agencies, and local governments seeking to strengthen sustainable regional economic development through community based innovation.

METHODS

Research Design

This study employed a quantitative research approach using a cross-sectional survey design to examine the contribution of rural innovation hubs to economic development through social entrepreneurship in Balikpapan, Indonesia. A quantitative design was selected because the study aimed to measure the economic outcomes and perceived benefits of participation in rural innovation hub programs through numerical data that could be statistically analyzed. The cross-sectional design enabled the collection of data from respondents at a single point in time, providing a comprehensive assessment of their socioeconomic characteristics, participation experiences, and perceived impacts of innovation hub activities. Quantitative survey research is widely recognized as an appropriate approach for investigating relationships among socioeconomic variables and evaluating program outcomes in entrepreneurship research (Creswell & Creswell, 2023).

Research Location

The research was conducted in Balikpapan, East Kalimantan, Indonesia, where rural innovation hubs have been established to strengthen community-based entrepreneurship and diversify local economic activities beyond the extractive industry sector. The study focused on three rural innovation hubs representing different business sectors, namely Hub A (agriculture), Hub B (handicrafts and creative industries), and Hub C (digital services). These three hubs were selected purposively because they represent the primary sectors promoted under the regional entrepreneurship development program and have operated consistently in facilitating community business development.

Population and Sample

The study population consisted of entrepreneurs participating in rural innovation hub programs, hub managers, and community members directly benefiting from hub activities. A total of 180 respondents participated in this study. Respondents were selected using purposive sampling, whereby individuals were included based on predetermined criteria, including active participation in innovation hub programs and sufficient experience with hub activities. To ensure balanced representation, respondents were proportionally distributed across the three innovation hubs and

classified according to business sector and gender. This sampling strategy enabled the study to obtain representative information regarding entrepreneurial performance and the socioeconomic impacts generated by innovation hub participation.

Research Instrument and Data Collection

Primary data were collected using a structured questionnaire administered directly to all respondents. The questionnaire consisted of two sections. The first section collected respondents' demographic information, including gender, age, educational background, and business sector. The second section measured variables related to household income before and after participation in innovation hub programs, employment opportunities, business sustainability, and participants' perceptions regarding the benefits of hub services, including market access, entrepreneurial training, networking opportunities, and access to financial resources. Perception variables were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Before the main survey was conducted, the questionnaire was reviewed to ensure the clarity, relevance, and consistency of all measurement items. Data collection was conducted through direct distribution of questionnaires to respondents across the three innovation hubs during the research period.

Data Analysis

The collected data were analyzed using descriptive and inferential statistical techniques. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to describe respondents' demographic characteristics and summarize the distribution of research variables. To evaluate the economic impact of participation in rural innovation hubs, paired sample *t*-tests were employed to compare respondents' household income before and after participating in hub programs. The paired sample *t*-test was selected because it allows comparison between two related measurements obtained from the same respondents. Prior to hypothesis testing, data normality was assessed to ensure compliance with the assumptions of parametric analysis. When normality assumptions were violated, appropriate nonparametric statistical procedures were applied to maintain analytical robustness. Statistical analyses were performed using standard statistical software, and all hypothesis tests were evaluated at a significance level of $\alpha = 0.05$.

Validity and Reliability

The quality of the research instrument was evaluated through validity and reliability testing before hypothesis testing was performed. Content validity was established through expert review to ensure that all questionnaire items adequately represented the research constructs. Subsequently, construct validity was examined using item-total correlation analysis, where questionnaire items with correlation coefficients exceeding the minimum acceptable threshold were considered valid. Instrument reliability was assessed using Cronbach's Alpha coefficient, with values greater than 0.70 indicating satisfactory internal consistency and reliability. The implementation of validity and reliability testing ensured that the questionnaire accurately measured the intended constructs and produced consistent results across respondents. Applying these procedures enhanced the credibility and accuracy of the quantitative findings.

Table 1. Research Methodology Framework

Component	Description
Research design	Quantitative cross-sectional survey
Research location	Three rural innovation hubs in Balikpapan, East Kalimantan

Population	Entrepreneurs, hub managers, and community beneficiaries
Sample	180 respondents
Sampling technique	Purposive sampling
Research instrument	Structured questionnaire with five-point Likert scale
Data collection	Questionnaire survey
Data analysis	Descriptive statistics and paired sample <i>t</i> -test
Instrument testing	Content validity, item validity, and Cronbach's Alpha reliability

Table 1 summarizes the quantitative methodological framework adopted in this study. The combination of a structured survey, validated measurement instruments, and appropriate statistical analyses enabled a rigorous assessment of the contribution of rural innovation hubs to economic development through social entrepreneurship in Balikpapan.

RESULTS AND DISCUSSION

This section presents the quantitative findings of the study on the contribution of rural innovation hubs to economic development through social entrepreneurship in Balikpapan, Indonesia. The results are organized systematically according to the research objectives and the analytical procedures described in the methodology. The presentation begins with the evaluation of the research instrument through validity and reliability testing to ensure the quality of the collected data, followed by an overview of respondents' demographic characteristics and descriptive statistics of the research variables. Inferential statistical analysis is then conducted to examine changes in household income before and after participation in rural innovation hub programs using paired sample *t*-tests, while respondents' perceptions of the benefits provided by the innovation hubs are analyzed using descriptive statistics across the three sectors of agriculture, handicrafts, and digital services. Overall, the findings demonstrate that the research instrument met acceptable statistical quality standards and that participation in rural innovation hubs was associated with positive economic outcomes, particularly in improving household income, expanding market access, strengthening entrepreneurial skills, and enhancing networking opportunities. However, access to financial capital remained the lowest-rated dimension, indicating that financial support continues to be a major challenge for entrepreneurs participating in the innovation hub programs.

Instrument Validity Test

Before conducting the main statistical analysis, the validity of the research instrument was evaluated using the corrected item-total correlation method. An item was considered valid if its correlation coefficient exceeded the minimum acceptable threshold of 0.30. The results indicate that all questionnaire items met the validity criterion, demonstrating that each indicator was appropriate for measuring the intended construct and could be included in the subsequent analysis.

Table 1. Instrument Validity Test Results

Variable	Item	Corrected Item-Total Correlation	Criterion	Result
Market Access	MA1	0.742	> 0.30	Valid
Market Access	MA2	0.781	> 0.30	Valid
Business Skills	BS1	0.756	> 0.30	Valid
Business Skills	BS2	0.804	> 0.30	Valid
Networking	NW1	0.733	> 0.30	Valid
Networking	NW2	0.769	> 0.30	Valid
Access to Capital	AC1	0.685	> 0.30	Valid

Access to Capital	AC2	0.721	> 0.30	Valid
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Source: Authors' survey data, 2025

As shown in Table 1, all questionnaire items produced corrected item-total correlation coefficients above 0.30, ranging from 0.685 to 0.804. These findings indicate that every measurement item demonstrated satisfactory construct validity and was suitable for further statistical analysis. The reliability of the research instrument was assessed using Cronbach's Alpha to evaluate the internal consistency of the questionnaire. A Cronbach's Alpha coefficient of 0.70 or higher was considered acceptable. The results indicate that all research variables achieved reliability coefficients exceeding the recommended threshold, confirming that the instrument consistently measured the intended constructs.

Table 2. Reliability Test Results

Variable	Number of Items	Cronbach's Alpha	Criterion	Result
Market Access	2	0.842	> 0.70	Reliable
Business Skills	2	0.856	> 0.70	Reliable
Networking Opportunities	2	0.819	> 0.70	Reliable
Access to Capital	2	0.791	> 0.70	Reliable
Overall Instrument	8	0.867	> 0.70	Reliable

Source: Authors' survey data, 2025

As presented in Table 2, the Cronbach's Alpha values ranged from 0.791 to 0.867, indicating good internal consistency across all measurement variables. Therefore, the questionnaire was considered reliable and appropriate for subsequent descriptive and inferential statistical analyses

Respondent Characteristics

A total of 180 respondents participated in this study, representing entrepreneurs from three rural innovation hubs operating in the agriculture, handicrafts and creative industries, and digital services sectors. The respondent profile provides an overview of the demographic characteristics of participants and illustrates the diversity of entrepreneurs involved in the innovation hub programs.

Table 3. Demographic Characteristics of Respondents (n = 180)

Characteristics	Hub A (n = 60)	Hub B (n = 60)	Hub C (n = 60)	Total
Male (%)	55	40	45	47
Female (%)	45	60	55	53
Average age (years)	37	35	32	35
High school education or above (%)	70	65	85	73

Source: Authors' survey data, 2025

Table 3 shows that female respondents accounted for 53% of the total sample, slightly exceeding the proportion of male respondents (47%). The average respondent age was 35 years, indicating that most participants were within the productive working-age group. In terms of educational attainment, 73% of respondents had completed at least a high school education, with the highest proportion observed in Hub C (85%). These findings suggest that the rural innovation hubs attracted a relatively educated and economically active group of entrepreneurs across the three business sectors

Descriptive Statistics of Research Variables

Descriptive statistical analysis was conducted to summarize respondents' perceptions of the main variables investigated in this study. The analysis includes the mean, standard deviation, minimum score, and maximum score for each variable measured using a five-point Likert scale.

Table 4. Descriptive Statistics of Research Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Market Access	4.30	0.58	3.00	5.00
Business Skills Training	4.20	0.61	2.80	5.00
Networking Opportunities	4.00	0.64	2.60	5.00
Access to Capital	3.50	0.72	2.20	5.00

Source: Authors' survey data, 2025

Table 4 indicates that Market Access recorded the highest mean score ($M = 4.30$), followed by Business Skills Training ($M = 4.20$) and Networking Opportunities ($M = 4.00$). Meanwhile, Access to Capital obtained the lowest mean score ($M = 3.50$), suggesting that financial support remained the least satisfactory aspect of the rural innovation hub programs.

Economic Impact of Rural Innovation Hub Participation

The economic impact of rural innovation hub participation was assessed by comparing respondents' average household income before and after joining the innovation hub programs. A paired sample *t*-test was conducted to determine whether the observed income differences were statistically significant.

Table 5. Average Monthly Household Income Before and After Participation

Hub	Before Participation (IDR '000)	After Participation (IDR '000)	Percentage Increase
Hub A	3,200	4,850	51.6%
Hub B	2,800	4,200	50.0%
Hub C	3,600	5,600	55.6%
Overall	3,200	4,883	52.6%

Source: Authors' survey data, 2025

Table 5 shows that average monthly household income increased across all three rural innovation hubs after respondents participated in the programs. Overall, household income increased from IDR 3.20 million to IDR 4.88 million, representing an average increase of 52.6%. Among the three hubs, Hub C recorded the largest income improvement (55.6%), while Hub B showed the lowest increase (50.0%).

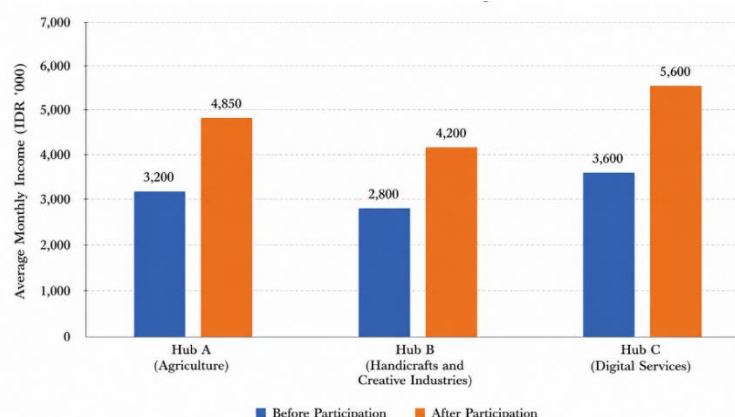


Figure 1. Average Monthly Household Income Before and After Participation in Rural Innovation Hub Programs

Source: Authors' survey data, 2025

Figure 1 illustrates the changes in average monthly household income before and after participation in the rural innovation hub programs. All three innovation hubs demonstrated noticeable income growth following program participation. Hub C (Digital Services) recorded the largest increase, followed by Hub A (Agriculture) and Hub B (Handicrafts and Creative Industries). The visual comparison confirms the positive trend observed in Table 5 and indicates that participation in rural innovation hub programs was associated with improved household economic outcomes across all business sectors.

To determine whether this increase was statistically significant, a paired sample *t*-test was performed.

Table 6. Paired Sample *t*-Test of Household Income Before and After Participation

Comparison	Mean Difference (IDR '000)	<i>t</i>	df	Sig. (2-tailed)
Before vs. After Participation	1,683	21.847	179	< 0.001

Source: Authors' survey data, 2025

As presented in Table 6, the paired sample *t*-test revealed a statistically significant increase in household income after participation in rural innovation hub programs ($t = 21.847$, $p < 0.001$). These findings indicate that involvement in the innovation hubs was associated with substantial improvements in the economic performance of participating entrepreneurs.

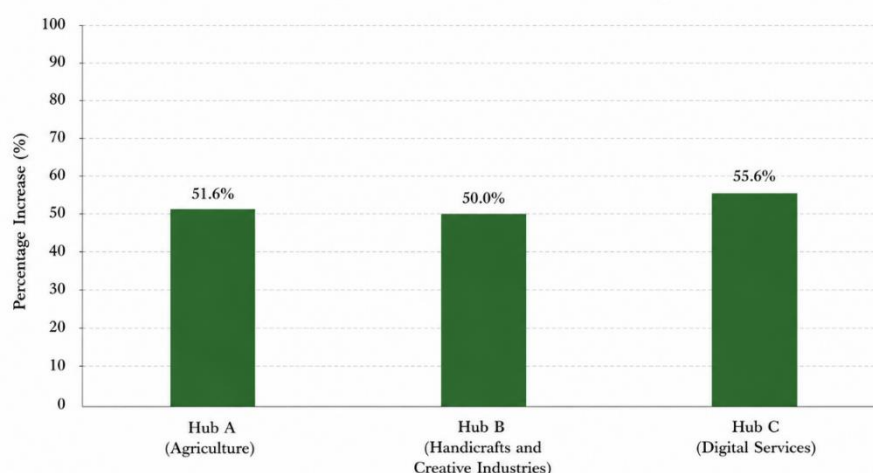


Figure 2. Percentage Increase in Household Income After Participation in Rural Innovation Hub Programs

Source: Authors' survey data, 2025

Figure 2 presents the percentage increase in average household income following participation in the rural innovation hub programs. All three innovation hubs recorded income growth exceeding 50%, indicating substantial economic improvement among participating entrepreneurs. Hub C (Digital Services) achieved the highest increase (55.6%), followed by Hub A (Agriculture) (51.6%) and Hub B (Handicrafts and Creative Industries) (50.0%). The figure further illustrates the relatively consistent economic benefits generated across the three innovation hub sectors.

Perceived Benefits of Rural Innovation Hub Programs

Respondents were asked to evaluate the benefits obtained from participating in rural innovation hub programs using a five-point Likert scale. Four key dimensions were assessed, including market access, business skills training, networking opportunities, and access to capital. The results provide an overview of participants' perceptions regarding the effectiveness of the services offered by each innovation hub.

Table 7. Perceived Benefits of Rural Innovation Hub Programs

Dimension	Hub A	Hub B	Hub C	Overall Mean
Market Access	4.2	4.1	4.5	4.3
Business Skills Training	4.0	4.3	4.4	4.2
Networking Opportunities	3.8	4.2	4.1	4.0
Access to Capital	3.5	3.2	3.8	3.5

Source: Authors' survey data, 2025

Table 7 shows that Market Access received the highest overall evaluation ($M = 4.30$), followed by Business Skills Training ($M = 4.20$) and Networking Opportunities ($M = 4.00$). In contrast, Access to Capital obtained the lowest mean score ($M = 3.50$), indicating that financial support remained the primary concern among participating entrepreneurs. Hub C consistently recorded the highest scores across most dimensions, suggesting stronger perceived program benefits in the digital services sector.

Comparison of Program Benefits Across Innovation Hubs

To provide a clearer comparison of perceived program performance, the average scores for each innovation hub were calculated across the four evaluation dimensions.

Table 8. Comparison of Average Benefit Scores Across Innovation Hubs

Innovation Hub	Average Mean Score	Category
Hub A (Agriculture)	3.88	Good
Hub B (Handicrafts and Creative Industries)	3.95	Good
Hub C (Digital Services)	4.20	Very Good

Source: Authors' survey data, 2025

As presented in Table 8, Hub C achieved the highest overall average score ($M = 4.20$), indicating that respondents perceived the digital services hub as providing the greatest overall benefits. Hub B ranked second with an average score of 3.95, while Hub A recorded the lowest average (3.88). Although all three hubs were evaluated positively, the findings suggest that programs emphasizing digital entrepreneurship generated comparatively stronger perceptions of effectiveness than those focusing on agriculture and handicrafts.

The Role of Rural Innovation Hubs in Strengthening Social Entrepreneurship and Local Economic Development

The findings of this study demonstrate that rural innovation hubs play a significant role in strengthening social entrepreneurship and promoting local economic development by improving entrepreneurial capacity, expanding market access, and increasing household income among participating entrepreneurs. The statistically significant improvement in household income observed after participation in the innovation hub programs indicates that collaborative entrepreneurial ecosystems can generate tangible socioeconomic benefits beyond conventional business support. Rather than functioning solely as business incubation centers, the innovation hubs

served as platforms that integrated entrepreneurial training, networking opportunities, and market facilitation, enabling participants to enhance business performance and adapt to changing market conditions. These findings support the growing body of literature suggesting that innovation ecosystems contribute to sustainable regional development by fostering entrepreneurial resilience, knowledge exchange, and inclusive economic participation (Klarin & Suseno, 2023; Diaz-Sarachaga & Ariza-Montes, 2022; Oduro, 2023; Kumar & Yadav, 2023; Baquero & Monsalve, 2024). The relatively lower evaluation of access to financial capital, however, indicates that institutional support remains uneven, emphasizing that entrepreneurship development requires not only capacity-building initiatives but also stronger financial inclusion policies and investment mechanisms to ensure long-term business sustainability.

The present findings are generally consistent with previous international studies that identify social entrepreneurship as an important driver of inclusive economic growth and community empowerment. Recent studies have shown that innovation hubs improve entrepreneurial performance by facilitating access to knowledge, technology, collaborative networks, and business mentoring, thereby increasing business competitiveness and income generation (Beisland et al., 2021; Addae & Ellenwood, 2022; Jia & Desa, 2022; Prado et al., 2022; Cuvero et al., 2023; Chandna, 2022). Similarly, research conducted in developing economies has demonstrated that entrepreneurship support institutions contribute positively to employment creation, poverty reduction, and regional economic resilience through the development of locally embedded innovation ecosystems (Akinboade et al., 2023; Kheya et al., 2023; Ma et al., 2024; Ochinanwata et al., 2024). However, this study also reveals an important contextual difference. While previous research frequently emphasizes technological innovation as the principal determinant of entrepreneurial success, the evidence from Balikpapan suggests that market access and entrepreneurial capacity building were perceived as more influential than financial assistance alone. This finding highlights the importance of strengthening institutional collaboration among local governments, innovation hubs, educational institutions, and private-sector stakeholders to create more comprehensive entrepreneurial support systems adapted to local socioeconomic conditions.

From a theoretical perspective, this study extends the literature on social entrepreneurship by demonstrating that rural innovation hubs function as collaborative innovation ecosystems rather than merely physical business incubation facilities. The integration of entrepreneurial training, networking, market access, and community participation illustrates how innovation hubs simultaneously generate economic and social value, thereby reinforcing ecosystem theory within the context of rural entrepreneurship. The study also contributes empirical evidence from Indonesia, where quantitative investigations of rural innovation hubs remain relatively limited compared with studies conducted in developed countries. Practically, the findings suggest that policymakers should prioritize strengthening institutional partnerships, expanding market linkage programs, improving entrepreneurship education, and facilitating access to affordable financing for rural entrepreneurs. Such strategies may enhance the effectiveness of innovation hubs in promoting inclusive regional development while reducing disparities between urban and rural economic opportunities. The novelty of this study lies in its quantitative assessment of rural innovation hubs across three different business sectors, providing comparative evidence regarding their contributions to household income, entrepreneurial development, and perceived program effectiveness within a single regional innovation ecosystem.

Despite these contributions, several limitations should be acknowledged. First, the study employed a cross-sectional survey design, limiting the ability to examine long-

term changes in entrepreneurial performance and business sustainability. Second, the research was conducted exclusively in three innovation hubs located in Balikpapan, which may limit the generalizability of the findings to other regions with different institutional, cultural, or economic characteristics. Third, the study focused primarily on perceived program benefits and income improvement without examining additional outcomes such as business innovation capability, digital transformation, or enterprise survival. Future studies are therefore encouraged to adopt longitudinal research designs, include a broader geographical coverage, and incorporate additional variables such as innovation capability, digital readiness, entrepreneurial resilience, and institutional collaboration. Comparative studies across different provinces or countries would also provide a deeper understanding of how rural innovation hubs contribute to sustainable economic development under varying policy and socioeconomic contexts. Collectively, these future investigations would strengthen the evidence base for designing more effective entrepreneurship development policies while further advancing the theoretical understanding of rural innovation ecosystems and social entrepreneurship.

CONCLUSION

This study demonstrates that rural innovation hubs play a significant role in strengthening social entrepreneurship and promoting local economic development in Balikpapan, Indonesia. The findings indicate that participation in innovation hub programs was associated with a significant increase in household income, while respondents also reported positive perceptions regarding market access, entrepreneurial skills development, and networking opportunities. Among the evaluated dimensions, access to financial capital remained the weakest aspect, suggesting that financial inclusion continues to be a major challenge for rural entrepreneurs. These findings confirm that rural innovation hubs function not only as business support centers but also as collaborative ecosystems that facilitate knowledge sharing, entrepreneurial capacity building, and community empowerment.

Theoretically, this study contributes to the growing literature on social entrepreneurship by providing empirical evidence that rural innovation hubs can strengthen inclusive entrepreneurial ecosystems and generate measurable socioeconomic outcomes in a developing-country context. Practically, the findings provide useful insights for policymakers, local governments, and entrepreneurship support organizations in designing integrated programs that combine business training, market facilitation, institutional collaboration, and financial support to enhance rural economic resilience. Nevertheless, this study was limited to three innovation hubs in Balikpapan and employed a cross-sectional research design, restricting the generalizability of the findings and the observation of long-term impacts. Future studies are encouraged to adopt longitudinal approaches, include broader geographical coverage, and examine additional variables such as digital innovation capability, entrepreneurial resilience, and institutional collaboration to provide a more comprehensive understanding of sustainable rural entrepreneurship.

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