

Collaborative Stakeholder Mapping in Entrepreneurship Education at Islamic Higher Education in Aceh

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Abstract

Entrepreneurship education in higher education often remains confined to university-based activities despite its dependence on broader institutional resources and stakeholder collaboration. This study maps potential stakeholders supporting entrepreneurship education in Islamic higher education and examines its connection to regional development in Aceh, Indonesia. Using a descriptive qualitative design, data were collected through semi-structured interviews with ten purposively selected informants and triangulated with institutional documents. Stakeholder mapping involved four stages: identification, analysis, mapping, and priority determination. The findings identify five interconnected sectors with complementary roles: higher education institutions as organizers; government institutions as policy facilitators and providers of economic empowerment; private-sector actors as sources of financing, mentoring, and market support; community organizations as providers of training and assistance; and media as facilitators of information dissemination and public engagement. More importantly, these relationships indicate an Islamic value-based pentahelix in which stakeholder collaboration can incorporate zakat, productive waqf, and qardhul hasan. The study extends the conventional pentahelix perspective by demonstrating how ethical and locally embedded institutional resources can shape entrepreneurship ecosystems and provides a framework for connecting entrepreneurship education with regional development.

A. Introduction

Entrepreneurship education is widely celebrated, yet it is increasingly trapped in a paradox that threatens its relevance: universities are demanded to produce entrepreneurs, but most programs still operate as isolated classroom-based activities detached from real economic ecosystems (Rauch & Hulsink, 2015; Shil et al., 2020; Varblane & Mets, 2010). This contradiction is critical because entrepreneurial success is not generated by universities alone, but by complex interactions among government, industry, communities, and financial systems. In Islamic higher education, this gap becomes even more significant because entrepreneurship is expected to integrate economic empowerment with ethical and religious values. Without structured stakeholder collaboration, entrepreneurship education risks becoming symbolic rather than transformative, failing to produce real innovation or social impact.

The urgency of reforming entrepreneurship education is reinforced by the global rise of entrepreneurship as a driver of economic transformation. Universities are no longer only knowledge providers but are expected to shape entrepreneurial mindsets, competencies, and innovation capacity (Arendt et al., 2024). Entrepreneurship education is therefore closely linked to new venture creation, employment generation, and regional innovation systems (Galvão et al., 2020; Nugrahadi, 2015; Paco et al., 2010). It also strengthens both technical and soft skills required in dynamic labor markets (Diandra, 2019). In Indonesia, this expectation is institutionalized through national policy that integrates entrepreneurship into student learning outcomes (Direktorat Jenderal Pendidikan Tinggi KEMENDIKBUD, 2020), positioning universities as key actors in shaping entrepreneurial societies.

In the Indonesian context, entrepreneurship is not only an academic agenda but a socio-economic necessity. It is closely tied to efforts to reduce unemployment, poverty, and structural economic vulnerability (Hendro, 2011). Rapid technological change has further intensified the demand for adaptive and skilled graduates capable of creating their own employment opportunities (Rizun et al., 2024). This places universities in a dual role: preparing students for existing jobs while also enabling them to become job creators. Entrepreneurship also contributes directly to regional development, where local governments play a crucial role in shaping supportive business environments (Siwu, 2019). With Indonesia's entrepreneurial ratio still relatively low at 3.3% (Kurnia et al., 2018), strengthening entrepreneurship education becomes essential for broader economic resilience (Majid et al., 2019; Nansadiqa et al., 2019).

Empirical studies confirm that entrepreneurship education can stimulate new business creation and strengthen regional innovation systems (Raposo, M., and Do Paço, 2011; Saha et al., 2020). However, universities often face structural constraints, particularly limited funding and weak institutional support systems (Adnan et al., 2020). This reveals a fundamental limitation of university-centered approaches: entrepreneurial outcomes depend on external resources, networks, and institutional ecosystems that universities cannot control alone. As a result, stakeholder engagement is not optional but essential. This aligns with the broader view that entrepreneurial universities must operate within multi-actor ecosystems involving external partners (Etzkowitz et al., 2008; Lope Pihie et al., 2002).

Despite this recognition, existing research tends to treat stakeholders in fragmented ways. Some studies emphasize government and private sector roles in entrepreneurship education implementation (Lailatussaadah et al., 2025), while others highlight financial and mentoring contributions from institutions such as Islamic Microfinance Institutions (Aulia et al., 2020). Broader conceptualizations also identify stakeholders across individuals, organizations, and social structures (Colvin et al., 2016). Although these studies confirm the importance of external actors, they do not yet explain how these diverse stakeholders can be systematically mapped into an integrated ecosystem that connects entrepreneurship education with regional development outcomes.

This gap is particularly evident in Islamic higher education institutions in Aceh. Entrepreneurship education in Islamic Religious Universities (PTKI) is still largely confined to curricular and limited extracurricular activities, while essential entrepreneurial resources exist outside the university system (Lailatussaadah, Jamil, et al., 2023). The main challenge is therefore not the absence of stakeholders, but the lack of structured coordination among them. Universities have not yet fully identified how government, private sector, community organizations, and media can be strategically integrated into a coherent ecosystem (Bastian & Fitri, 2025; Tolstikh et al., 2021). This results in a conceptual blind spot where entrepreneurship education is treated as an internal academic program rather than a multi-actor development system.

To address this limitation, this study positions stakeholder mapping as a bridge between entrepreneurship education and regional development. It proposes an integrated five-sector framework that includes higher education institutions, government, private sector, community organizations, and media. This approach is grounded in an Islamic value-based pentahelix perspective, where each stakeholder plays a distinct but

interconnected role in shaping entrepreneurial ecosystems (Etzkowitz, 2008; Sulistyowati et al., 2024). In Aceh, this framework is particularly relevant because it aligns with local Islamic values while also responding to regional development needs. The study assumes that the effectiveness of entrepreneurship education depends not only on internal university capacity but also on how well external stakeholders are coordinated.

Accordingly, this study aims to map and analyze the roles of five key stakeholder sectors in supporting entrepreneurship education in Islamic higher education institutions in Aceh and to examine how their collaboration contributes to regional development. By developing an integrated stakeholder framework, the study seeks to move entrepreneurship education beyond fragmented institutional practices toward a coordinated ecosystem approach. The expected contribution is both theoretical, by advancing stakeholder-based entrepreneurship education models, and practical, by offering a structured framework for universities and policymakers to build more effective, value-driven, and regionally responsive entrepreneurial ecosystems.

B. Method

This study employed a descriptive qualitative design to examine the roles, contributions, and potential involvement of stakeholders in supporting entrepreneurship education at Islamic higher education institutions in Aceh. The design was selected because it enabled a systematic examination of stakeholder programs, activities, and institutional roles within their actual contexts (Creswell & Creswell, 2018). The study was conducted in Banda Aceh and involved stakeholders representing higher education, government institutions, the private sector, community organizations, and mass media.

Ten informants were selected through purposive sampling based on their involvement in, knowledge of, or institutional relevance to entrepreneurship education and related economic empowerment programs. Purposive selection was used to obtain information from actors considered capable of providing evidence relevant to the research objectives (Kumar, 2011). The informants represented UIN Ar-Raniry Banda Aceh, Baitul Mal Aceh, KNPI Aceh, Bank Aceh, the Aceh Youth and Sports Office, and Serambi Indonesia. Data were collected primarily through semi-structured interviews using open-ended questions, with each interview lasting approximately 48–60 minutes. With the informants' permission, interviews were recorded to preserve the accuracy of the information obtained. Interview evidence was complemented by documentary data

retrieved from the official websites of the relevant stakeholder institutions. These multiple sources were used for data triangulation by comparing information obtained from interviews with institutional documents and publicly available information concerning stakeholder programs and activities.

The data were analyzed using stakeholder mapping analysis following Schmeer (1999). The analysis proceeded through four interconnected stages: stakeholder identification, analysis, mapping, and priority determination. First, potential stakeholders were identified from the interview and documentary evidence according to their institutional relationship with entrepreneurship education and regional economic empowerment. Second, the information concerning their programs, resources, and potential contributions was examined to determine their respective roles. Third, the identified actors were mapped according to their institutional sectors and their potential relationships with entrepreneurship education in Islamic higher education. Finally, the stakeholders were prioritized according to their relevance and potential contribution to supporting entrepreneurship education and regional development. This analytical procedure provided the basis for identifying the five stakeholder sectors examined in the study.



Figure 1. Stakeholder mapping analysis steps (Schmeer, 1999)

Ethical considerations were applied throughout the research process. Before participating, each informant received an informed consent form explaining the study, its objectives, researcher contact information, and conditions of participation. Participation proceeded only after the informants had read, understood, and signed the consent form. Permission was also obtained before recording interviews. All information provided by participants was treated confidentially and used exclusively for research purposes, while the signed consent forms were retained as part of the research documentation.

C. Results and Discussion

This section outlines the study findings that aim to explore the role of stakeholders in implementing entrepreneurship education that affects regional development. The

discussion begins by presenting the main findings regarding the role of stakeholders from various sectors: the university sector, government, private sector (DUDI), other private sector (NGOs), and the media. Furthermore, the findings are integrated with the theoretical framework to understand each stakeholder's role comprehensively.

1. Results

Stakeholder mapping identified five institutional sectors with potential roles in supporting entrepreneurship education at Islamic higher education institutions in Aceh: higher education, government, the private sector, community organizations, and mass media. The identification, analysis, mapping, and prioritization stages showed that these sectors possess different but potentially complementary resources and functions. Higher education institutions primarily organize entrepreneurship education; government institutions provide programs, facilitation, and economic empowerment schemes; private-sector actors offer financing and entrepreneurial support; community organizations provide training and mentoring; and the media disseminate information and provide educational exposure. The findings are presented below according to these five stakeholder sectors.

a. Higher Education Sector

The findings indicate that higher education institutions occupy the central organizational position because entrepreneurship education is implemented through education and learning, research, and community service. Within teaching and learning, entrepreneurship activities were identified at intracurricular, co-curricular, and extracurricular levels.

The head of the study program explained that curricular implementation involved adjustments to the curriculum, lecturer assignment, and allocation of credits:

"In intracurriculars, entrepreneurship education is carried out by reforming the curriculum in accordance with the demands of KKN and MBKM, determining lecturers who are following the course, and selecting the number of credits for entrepreneurship courses." (Interview with HSP, 2024)

At the co-curricular and extracurricular levels, entrepreneurship education extended beyond formal courses. One lecturer described the activities as follows: *"In co-curricular activities, entrepreneurship seminars and workshops are conducted. While in the form of*

extracurricular activities, carried out industrial visits, carrying out bazaars, entrepreneurship competitions.” (Interview with L1, 2024)

Another lecturer reported integrating entrepreneurship across the three main functions of higher education: *“In teaching entrepreneurship, I implement it in the three pillars of higher education to make it more contextualized.” (Interview with L2, 2024).*

These findings show that entrepreneurship education at the university level is not limited to classroom instruction. It is implemented through curricular learning and supported by seminars, workshops, industrial exposure, bazaars, competitions, research, and community-oriented activities.

b. Government Sector

The mapping identified Baitul Mal Aceh, the Aceh Cooperatives and SMEs Office, and the Youth and Sports Office as government-sector actors with programs relevant to entrepreneurship development. Interview and documentary evidence showed that their potential contributions differ according to their institutional mandates.

Baitul Mal Aceh was identified as having an economic empowerment program based on productive waqf in collaboration with Bappeda. The program organizer explained:

“This program is one of the efforts to encourage economic growth when zakat has not been maximally reducing poverty and stimulating economic growth by managing waqf assets productively for the community’s welfare. The program has not been allocated to universities, although the entrepreneurship education program aims to produce educated young entrepreneurs. This productive waqf model can be assigned to start-up students from the business incubation of Islamic Religious Universities.” (Interview with BMA, 2024)

The evidence indicates that productive waqf has not yet been specifically allocated to university entrepreneurship programs, despite its potential relevance to student start-ups facing capital constraints. Baitul Mal Aceh also administers business-capital mechanisms in the form of *qardhul hasan*, providing another potential financing resource for entrepreneurial empowerment.

Documentary evidence also identified entrepreneurship-support programs within the Cooperatives and SMEs sector. The reviewed institutional documents contained provisions for entrepreneurial incubation, access to financing, mentoring, training, and equipment or capital assistance. At the Aceh level, prospective entrepreneurs can participate in programs requiring the preparation and presentation of business plans and prospects, with selected participants receiving training, mentoring, and business support.

Youth entrepreneurship constituted another government-supported area. Documentary data from the Ministry of Youth and Sports recorded the WiraMuda program for cultivating entrepreneurial interest among young people. At the local level, the Banda Aceh Youth and Sports Office similarly identified youth entrepreneurship development as one of its strategic objectives. Taken together, the government-sector evidence reveals available mechanisms covering economic empowerment, financing, entrepreneurial incubation, training, mentoring, and youth entrepreneurship development.

c. Private Sector

The private-sector mapping identified Bank Aceh and the pawnshop sector as institutions possessing resources relevant to entrepreneurship education. The evidence particularly highlighted financing, promotional support, entrepreneurship competitions, mentoring, and market-oriented business development.

The Head of Bank Aceh's financing division explained that the bank provides financing to established MSMEs rather than directly financing start-ups:

"Bank Aceh provides soft loans for MSMEs that have been formed and run their businesses for at least one year, but Bank Aceh does not finance start-ups. Here, universities can take the opportunity to create student MSMEs so that they can take advantage of the facilities provided by Bank Aceh. In addition to loans to MSMEs, Bank Aceh also provides promotional funds. This promotional fund is an essential opportunity for financing entrepreneurship education by universities. The program only requires activities that build students' entrepreneurial attitudes." (Interview with BA, 2024)

This finding reveals a specific financing condition: student start-ups cannot immediately access the MSME financing scheme unless their businesses have reached the required operational stage. Nevertheless, promotional funding constitutes another potential resource for university entrepreneurship activities.

Documentary evidence from the pawnshop sector identified the Entrepreneurship Competition Grant (HoKI), which targeted undergraduate students and incorporated prototype development and market testing. The documented program included proposal selection, entrepreneurship seminars, coaching, mentoring, three months of entrepreneurship training, partnership activities, periodic progress reporting, and monitoring and evaluation.

The private-sector data also recorded entrepreneurship-related training connected with patchouli-based products through collaboration with the Atsiri Research Center. The activity introduced participants to the production of fragrances and other products

derived from patchouli extract, providing practical exposure to products with commercial value. Overall, private-sector resources identified in the study covered financing, promotion, mentoring, product development, market testing, and practical entrepreneurial training.

d. Community Organization Sector

KNPI Aceh emerged as the principal community-organization stakeholder identified through the mapping process. Its youth economic empowerment activities included vocational and entrepreneurial training, equipment assistance, monitoring, and evaluation.

The Chairman of KNPI Aceh described the scope and outcomes of these activities:

"The training included workshops, furniture, agriculture and animal husbandry, construction, electronics, and organizational management. Finally, the monitoring system was carried out by directly observing the conditions faced in the field. In general, the results of monitoring and evaluation in the field are in line with expectations. The youth who participated in the program received training, have been independent, have a steady income, and can open up jobs for others." (Interview with KNPI, 2024)

The findings further indicate that KNPI uses needs assessment to determine the type of entrepreneurial support required by participants. Based on these assessments, assistance may include training, mentoring, equipment, and subsequent monitoring and evaluation.

The chairman further emphasized the priority given to entrepreneurship assistance:

"Entrepreneurship assistance is a priority program. This time, we provide training equipment assistance to students according to the need assessment. This program has been included in the priorities and will be implemented in 2021. This program aims to give birth to business people who do business for devotion, alms, and seeking rewards; not all KNPI Aceh activities are projects." (Interview with KNPI, 2024)

The community-organization findings therefore show both material and non-material forms of support, ranging from skills development and equipment provision to mentoring and monitoring. They also reveal the presence of social and religious orientations in the entrepreneurship activities described by the informant.

e. Media Sector

The mapping identified Serambi Indonesia as the mass-media stakeholder. Interview data indicated several functions relevant to university entrepreneurship education, including disseminating information, supporting educational activities, providing internship opportunities, and communicating university and government initiatives to the wider public.

The Editor-in-Chief of Serambi Indonesia described the institution's willingness to support university initiatives:

"SI, as a media that holds the mandate of the people, will continue to support the good intentions of universities in providing education for the community ... we will take part in helping to report on the activities of universities and governments that work together in developing the region, several times we have also received student internships at the SI office, this is proof that we support the entrepreneurship education program being run by PTKI." (Interview with ESI, 2024)

This evidence identifies two concrete forms of media involvement: public dissemination of collaborative university and government activities and the provision of internship opportunities for students. The data also indicate that the media performs informational and educational functions that can extend entrepreneurship-related activities beyond the university environment.

Across the five sectors, the stakeholder mapping therefore reveals differentiated institutional capacities rather than identical forms of involvement. Higher education institutions provide the organizational and educational platform; government actors possess empowerment, financing, incubation, and youth-development programs; private-sector institutions provide financial, promotional, mentoring, and market-oriented resources; community organizations contribute training, equipment, needs-based assistance, and monitoring; and the media provides dissemination and experiential learning opportunities. The empirical findings thus identify a set of complementary stakeholder resources surrounding entrepreneurship education in Islamic higher education in Aceh, while the nature and implications of these relationships are examined further in the Discussion.

2. Discussion

The central finding of this study is that the effectiveness of entrepreneurship education in Islamic higher education cannot be adequately explained by internal university processes alone. Instead, its developmental capacity is fundamentally shaped by the extent to which universities are able to position themselves within a broader entrepreneurial ecosystem that connects learning, research, and community engagement with external stakeholders who control complementary resources such as financing, regulation, mentoring, market access, and public communication (Caniato et al., 2014; Widanan & Gunawarman, 2021). From this perspective, higher education institutions, government, private sector, community organizations, and media are not merely institutional

actors operating in parallel, but interdependent components of a system whose value emerges through interaction. This shifts the analytical lens away from entrepreneurship education as an internally managed academic program toward a relational and ecosystem-based process that links graduate entrepreneurial capacity with regional development outcomes.

Building on this finding, stakeholder mapping becomes not a technical exercise, but a strategic necessity. The evidence suggests that collaboration in entrepreneurship education does not occur automatically through institutional proximity, but must be actively constructed through alignment of interests, capacities, and expectations among actors who differ in authority, resources, and institutional logic (Izharuddin, 2026; Sassi & Mshenga, 2025). In practice, universities contribute academic infrastructure and knowledge production, government institutions provide regulatory legitimacy and empowerment instruments, the private sector enables access to capital and markets, community organizations embed mentoring and social capital, while media expands visibility and facilitates experiential learning. However, the critical insight is that none of these contributions is sufficient in isolation. Their developmental impact only becomes visible when they are deliberately integrated into a coherent ecosystem architecture that supports entrepreneurial progression from idea formation to venture realization.

This ecosystem logic aligns with the pentahelix model, which conceptualizes development as the outcome of interaction among academia, business, community, government, and media. Prior studies have demonstrated its relevance in sectors such as halal tourism, where each actor performs distinct but complementary roles (R. Pratiwi et al., 2024). However, the findings of this study indicate that entrepreneurship education requires a more context-sensitive application of the model. The pentahelix framework cannot be treated as a universal template, because each stakeholder operates within institutional environments shaped by policy priorities, organizational interests, and socio-cultural dynamics (Azwar et al., 2025; S. P. Pratiwi et al., 2025). Moreover, sustainable development itself depends on the integration of economic, social, and community dimensions rather than reliance on a single institutional driver (Churchman & Sadan, 2004). In the context of Aceh, this means that the pentahelix model is not simply adopted, but reinterpreted through the institutional logic of Islamic higher education and regional development priorities.

Within this configuration, the role of government emerges as particularly decisive. The findings show that government institutions extend beyond regulatory functions to

include entrepreneurial training, incubation, and financing support that directly complement university limitations. This reflects a developmental partnership model in which the state actively enables entrepreneurial capacity rather than merely supervising it (Supriyanto, 2014). Such involvement is especially significant because entrepreneurship education has been shown to influence entrepreneurial intention even in contexts where such intention is initially weak (Walter and Block, 2016). Yet, the study also reveals a structural tension: government programs often exist in fragmented forms that are not systematically connected to university-based entrepreneurial pathways (Herlina et al., 2025). The implication is clear—policy effectiveness depends less on program availability and more on institutional connectivity that allows these programs to function as part of a continuous entrepreneurial pipeline.

A comparable dynamic is observed in the private sector. Entrepreneurship education ultimately operates within an economic system where access to capital, markets, and professional networks determines whether knowledge can be transformed into viable enterprises. This finding is consistent with evidence that private stakeholders play a significant role in economic growth and MSME development (Aaltonen, 2011; Sofyan, 2017). Prior research has also emphasized the importance of entrepreneurial financing for student ventures (Dragomir et al., 2024). However, the present study highlights a persistent gap between availability and accessibility. Financial resources may exist, but they are not always structured in ways that accommodate early-stage student entrepreneurs. This positions universities as critical intermediaries that must not only generate entrepreneurial ideas, but also prepare and translate them into investable ventures. In this sense, collaboration with the private sector should be understood not as transactional sponsorship, but as long-term ecosystem development.

The roles of media and community organizations further reinforce this ecosystem perspective by expanding the spatial and social reach of entrepreneurship education. Media functions extend beyond information dissemination to include exposure, communication, and experiential learning opportunities such as internships and public engagement, thereby shaping entrepreneurial awareness and legitimacy in society (Makhshun & Khalilurrahman, 2018). Community organizations, on the other hand, provide mentoring, training, equipment support, and monitoring functions that are difficult to institutionalize within universities. These contributions represent forms of external human investment that strengthen entrepreneurial capacity at the grassroots

level (ACDP, 2013). In addition, the influence of family background on Islamic entrepreneurial skills among students in Aceh (Sulaiman et al., 2023; Lailatussaadah et al., 2025) further confirms that entrepreneurship development is embedded within broader social structures that extend beyond formal educational settings.

A distinctive contribution of this study lies in the way it reveals the interaction between the pentahelix model and Aceh's Islamic institutional context. The findings suggest the emergence of an Islamic value-based pentahelix in which stakeholder collaboration is not only structured by functional roles, but also shaped by normative and ethical frameworks derived from Islamic economic principles. Instruments such as *zakat*, productive *waqf*, and *qardhul hasan* operate as contextual mechanisms that enable resource redistribution and entrepreneurial empowerment. Importantly, this does not simply add religious elements to an existing model, but indicates that stakeholder ecosystems are fundamentally value-laden systems in which norms influence how resources are mobilized, how participation is justified, and how outcomes are socially defined. This interpretation extends emerging scholarship on religion-informed entrepreneurship ecosystems and stakeholder collaboration (Bischoff et al., 2018; Bunyamin & Wahjusaputri, 2023; Moya & Toledano, 2025; Syed & Spicer, 2025), while remaining consistent with broader developments in pentahelix-based innovation and regional development frameworks (Nugraha & Sumaryatiningsih, 2023).

The findings also clarify the position of entrepreneurship education within regional development processes. At the university level, entrepreneurship is not limited to classroom instruction, but is embedded in integrated academic functions including teaching, research, and community engagement (Lailatussaadah et al., 2020; Lailatussaadah, Hayati, et al., 2023). This integrated approach has the potential to shift students' orientation from employment dependency toward entrepreneurial agency (Sandhya et al., 2026; Towers et al., 2020). However, the study makes it clear that such transformation does not automatically translate into regional economic impact. The transition from entrepreneurial learning to enterprise creation requires sustained interaction with external systems of finance, policy, markets, mentoring, and innovation infrastructure. International evidence supports this conclusion, showing that entrepreneurship contributes meaningfully to regional development only when universities are embedded within broader innovation ecosystems, as demonstrated in Spain and Singapore (Guerrero et al., 2020; Wong et al., 2007).

Comparative insights from Malaysia further reinforce this argument, where coordinated engagement between government and educational institutions has

strengthened entrepreneurial competencies such as initiative, opportunity recognition, and responsibility (Lope Pihie et al., 2002). Similarly, structured collaboration between universities and industry has been shown to enhance entrepreneurial capacity and regional development outcomes (Basardien et al., 2016), while university contributions to innovation depend on applied research collaboration and innovation infrastructure (Burdakova et al., 2018). Taken together, these findings converge on a central conclusion: the effectiveness of entrepreneurship education is determined less by curricular design alone and more by the institutional architecture that connects universities to external entrepreneurial ecosystems.

From a broader international perspective, the study contributes to ongoing discussions on value-driven entrepreneurship ecosystems. Public institutions and societal actors are widely recognized as key enablers of entrepreneurship education and venture creation (Galvão et al., 2020). Within this context, the Islamic value-based pentahelix identified in Aceh should be understood as a context-specific articulation of a broader global trend toward integrating ethical, social, and institutional values into entrepreneurship systems. Its relevance extends to other Muslim-majority contexts such as Malaysia and Brunei, while also offering conceptual resonance for global debates on social and sustainable entrepreneurship. Importantly, the contribution of this study is not to propose a universal model, but to demonstrate how global multi-stakeholder frameworks can be meaningfully reconfigured through locally grounded ethical and institutional resources.

From a policy standpoint, the findings point toward the need for a shift from fragmented entrepreneurship initiatives toward coordinated stakeholder governance. Universities should move beyond ad hoc partnerships and short-term sponsorship arrangements and instead develop structured mechanisms that align stakeholder resources with the full lifecycle of student entrepreneurial development. Such an approach enables integration between academic learning, financing, mentoring, market access, community engagement, and public communication within a single ecosystem logic. In the context of Aceh, Islamic economic instruments provide additional institutional leverage to strengthen this integration and enhance inclusive entrepreneurial development.

The proposed framework should nevertheless be interpreted within the empirical boundaries of this study. Because the analysis draws on a descriptive qualitative inquiry conducted within the specific institutional setting of Banda Aceh, involving purposively selected stakeholders and documentary evidence, the

relationships identified in this study represent potential configurations of stakeholder collaboration rather than evidence of an already established and fully functioning entrepreneurial ecosystem. The study also does not establish a causal relationship between stakeholder collaboration and regional development outcomes, nor does it compare how the proposed configuration operates across different universities or regional settings. Consequently, the findings offer a contextually grounded conceptual explanation rather than a universally generalizable model. These boundaries are particularly important when considering the transferability of the Islamic value-based pentahelix beyond Aceh and should inform subsequent empirical examination of the framework across different institutional and socio-cultural contexts.

D. Conclusion

This study demonstrates that strengthening entrepreneurship education in Islamic higher education requires more than improving curriculum and campus-based entrepreneurial activities. Its effectiveness depends on the capacity of universities to mobilize a broader ecosystem of stakeholders whose resources and institutional functions complement one another. The stakeholder mapping identifies five interconnected sectors — higher education, government, private sector, community organizations, and media — with differentiated roles in education, policy facilitation, financing, mentoring, market-oriented support, and public communication. In the Aceh context, these relationships indicate that entrepreneurship education has the potential to move from a fragmented university program toward a collaborative ecosystem that connects entrepreneurial learning with wider regional development resources.

The principal contribution of this study lies in extending the conventional pentahelix perspective through an Islamic value-based institutional context. The incorporation of zakat, productive waqf, and qardhul hasan demonstrates that stakeholder collaboration is shaped not only by functional relationships among institutions but also by ethical values and locally embedded mechanisms of economic empowerment. This perspective broadens the understanding of entrepreneurship education ecosystems by showing how a global multi-stakeholder framework can be contextually reconfigured through religious, social, and institutional resources. Practically, the framework provides universities and policymakers with a basis for identifying potential partners and aligning their respective capacities with different needs in student entrepreneurial development.

These findings also carry broader policy implications. Entrepreneurship education should not be governed as an isolated academic intervention or through temporary partnerships, but as a coordinated institutional ecosystem linking universities with financing, mentoring, markets, community networks, government support, and public communication. In Aceh, Islamic economic instruments provide an additional opportunity to connect entrepreneurial development with socially embedded mechanisms of empowerment. Rather than prescribing the Aceh configuration as a universal model, its wider relevance lies in demonstrating how entrepreneurship ecosystems can be adapted to different ethical, institutional, and socio-cultural environments.

Based on the limitations acknowledged in the Discussion, future research should empirically examine whether the stakeholder relationships mapped in this study develop into sustained forms of collaboration and how such collaboration influences entrepreneurial and regional development outcomes. Given the context-specific nature of the present study, comparative research across Islamic higher education institutions, regions, and different socio-cultural settings is also needed to examine the transferability of the Islamic value-based pentahelix and further refine its institutional dimensions. Future studies may also extend the present stakeholder mapping by examining differences in stakeholder influence, interests, coordination mechanisms, and the effectiveness of collaboration across different stages of student venture development.

Finally, entrepreneurship education becomes developmentally meaningful when universities cease to operate as isolated producers of entrepreneurial knowledge and instead become institutional connectors within a wider ecosystem. The significance of the Aceh case lies precisely in this proposition: sustainable entrepreneurship education requires not only entrepreneurial competence, but an ecosystem capable of transforming knowledge, values, institutional resources, and collaboration into socially meaningful economic opportunities.

Declaration of Competing Interest

The authors declare that they have no known competing financial or non-financial interests that could have appeared to influence the work reported in this paper.

Declaration of Generative AI

During the preparation of this manuscript, the authors used Grammarly tool to improve the clarity and readability of the text. Output generated by the tool were carefully

reviewed and edited by the authors, who take full responsibility for the content of this article. All substantive intellectual contributions, including conceptualization, analysis, interpretation of data, and final decisions regarding content, arguments, and conclusions, were carried out solely by the authors. The authors take full responsibility for the integrity, originality, and academic quality of this article.

References

- Aaltonen, K. (2011). Project Stakeholder Analysis as an Environmental Interpretation Process. *International Journal of Project Management*, 29(2), 165-183. <https://doi.org/10.1016/j.ijproman.2010.02.001>
- ACDP. (2013). *Pengembangan Strategi Kemitraan Perguruan Tinggi, Industri , dan Pemerintah di Indonesia*.
- Adnan, G., Lailatussaadah, L., Bin Jamil, A. I., Jannah, M., Muslim, B., & Erfiati, E. (2020). The Problems and Alternative Solutions for the Implementation of Entrepreneurship Education in the Higher Education: A Literature Review. *Tadris: Jurnal Keguruan Dan Ilmu Tarbiyah*, 5(2), 349-361. <https://doi.org/10.24042/tadris.v5i2.7264>
- Arendt, K. M., Christensen, B. T., Jensen, V. M., & Rangvid, B. S. (2024). Beyond Entrepreneurship Education: The Long-Term Impact of Higher Education Teaching Models on New Venture Creation. *International Journal of Entrepreneurial Behavior & Research*, 31(11), 26-45. <https://doi.org/10.1108/IJEBR-02-2024-0174>
- Aulia, R., Ibrahim, A., & Tarigan, I. R. R. (2020). Operasionalisasi Lembaga Keuangan Baru dan Dampaknya Terhadap Pertumbuhan Usaha Mikro. *IJHBIZ:Global Journal of Islamic Banking and Finance.*, 2(1), 57. <https://doi.org/10.22373/jihbiz.v2i1.8579>
- Azwar, H., Hanafiah, M. H., Salehuddin, M., Zahari, M., Gani, A., & Ferdian, F. (2025). Does Penta-Helix Multi-Stakeholder Collaboration Serve as a Sustainable Development Strategy for Community-Based Tourism (CBT)? A Qualitative Inquiry of Agam Regency, Indonesia. *Routledge*, 1-17. <https://doi.org/10.1080/21568316.2025.2540535>
- Basardien, F., Friedrich, C., & Twum-Darko, M. (2016). Evidence-Based Practices of Promoting Entrepreneurship Education in Higher Education Institutions in Africa. *Journal of Economics and Behavioral Studies*, 8(5), 68-81. [https://doi.org/10.22610/jeb.v8i5\(j\).1432](https://doi.org/10.22610/jeb.v8i5(j).1432)
- Bastian, R. A., & Fitri, C. D. (2025). Analisis Kebijakan Pemerintah dalam Mendukung Perkembangan Industri Halal: A Sytematic Literature Review. *Desultannah-Journal Education and Social Science*, 03(02), 95-104. <https://doi.org/10.69548/d-jess.v3i2.50>

- Bischoff, K., Volkmann, C. K., & Audretsch, D. B. (2018). Stakeholder Collaboration in Entrepreneurship Education: an Analysis of the Entrepreneurial Ecosystems of European Higher Educational Institutions. *Journal of Technology Transfer*, 43. <https://doi.org/10.1007/s10961-017-9581-0>
- Bunyamin, B., & Wahjusaputri, S. (2023). Entrepreneurial Learning through Penta-Helix Model in Indonesian Vocational High School. *Journal of Education Research*, 4(4), 2335–2340. <https://doi.org/10.37985/jer.v4i4.687>
- Burdakova, G., Byankin, A., & Kuladzhi, T. (2018). Development of a Regional Innovative System Based on “Triple Spiral” Model. *Proceedings Of The International Scientific Conference Competitive, Sustainable And Secure Development Of The Regional Economy: Response To Global Challenges*(CSSDRE 2018).
- Caniato, M., Vaccari, M., Visvanathan, C., & Zurbrügg, C. (2014). Using Social Network and Stakeholder Analysis to Help Evaluate Infectious Waste Management: A Step towards a Holistic Assessment. *Waste Management*, 34(5), 938–951. <https://doi.org/10.1016/j.wasman.2014.02.011>
- Churchman, A., & Sadan, E. (2004). Public Participation in Environmental Design and Planning. *Encyclopedia of Applied Psychology, Three-Volume Set, December 2004*, 793–800. <https://doi.org/10.1016/B0-12-657410-3/00948-X>
- Colvin, R. M., Witt, G. B., & Lacey, J. (2016). Approaches to Identifying Stakeholders in Environmental Management: Insights from Practitioners to Go Beyond the “Usual Suspects.” *Land Use Policy*, 52, 266–276. <https://doi.org/10.1016/j.landusepol.2015.12.032>
- Creswell, J. W., & Creswell, J. D. (2018). Research Design. In *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (Fifth). sage Publication.
- Diandra, D. (2019). Program Pengembangan Kewirausahaan untuk Menciptakan Pelaku Usaha Sosial yang Kompetitif. *Jurnal Administrasi Publik*, 10(1), 1340–1347. <https://jurnal.polban.ac.id/ojs-3.1.2/proceeding/article/view/1424>
- Dragomir, C., Zamfirache, A., & Foris, T. (2024). Experience of Student Entrepreneurs in the Implementation of Businesses Financed with Non- Reimbursable Funds. *Studies in Business and Economics*, 19(3), 87–103. <https://doi.org/10.2478/sbe-2024-0045>
- Etzkowitz, H. (2008). *The Triple Helix: University Industry Government Innovation in Action*. Routledge Publishers.
- Etzkowitz, H., Ranga, M., Benner, M., Guarany, L., Maculan, A. M., & Kneller, R. (2008). Pathways to the Entrepreneurial University: Towards a Global Convergence. *Science and Public Policy*, 35(9), 681–695. <https://doi.org/10.3152/030234208X389701>
- Galvão, A. R., Marques, C. S. E., Ferreira, J. J., & Braga, V. (2020). Stakeholders’ Role in Entrepreneurship Education and Training Programmes with Impacts on Regional Development. *Journal of Rural Studies*, 74, 169–179. <https://doi.org/10.1016/j.jrurstud.2020.01.013>

- Guerrero, M., Urbano, D., & Gajón, E. (2020). Entrepreneurial University Ecosystems and Graduates' Career Patterns: Do Entrepreneurship Education Programmes and University Business Incubators Matter?. *Journal of Management Development*, 39(5), 753-775. <https://doi.org/10.1108/JMD-10-2019-0439>
- Hendro. (2011). *Dasar-Dasar Kewirausahaan: Panduan bagi Mahasiswa untuk Mengenal, Memahami, dan Memasuki Dunia Bisnis*. Erlangga.
- Herlina, L., Hadisaputra, P., Yaqin, L. N., & Zulkifli, M. (2025). Analysis of Student Product Quality In Integrative, collaborative, and Project-Based Learning Viewed From Islamic Religious Education In Higher Education. *Ulumuna*, 29(2), 1099-1134. <https://doi.org/10.20414/ujis.v29i2.1295>
- Izharuddin, M. (2026). Investigating University-Industry Collaborations for Sustainable Entrepreneurship. *Industry and Higher Education*, 1-13. <https://doi.org/10.1177/09504222261438595>
- Kumar, R. (2011). *Research Methodology: A step-by-step guide for beginners* (3rd ed.). Sage Publication.
- Kurnia, C. F., Yuwana, N. N., & Cahyani, A. P. (2018). Pengembangan Jiwa Kewirausahaan di Kalangan Mahasiswa dengan Memanfaatkan Teknologi Digital. *Sinergitas Quadruple Helix: E-Business Dan Fintech Sebagai Daya Dorong Pertumbuhan Ekonomi Lokal*, 188-192.
- Lailatussaadah, L., Jamil, A. I. Bin, & Kadir, F. A. B. A. (2020). The Implementation Formula of Entrepreneurship Education at Higher Education as a Solution for the Social Problem. *International Journal of Higher Education*, 9(6), 10-25. <https://doi.org/10.5430/ijhe.v9n6p10>
- Lailatussaadah, L., Jamil, A. I. Bin, & Kadir, F. A. B. A. (2023). Designing and Assesing an Islamic Entrepreneurship Education Model for Islamic Higher Education (IHE). *Islam Futura*, 23(1), 38-59. <https://doi.org/10.22373/jiif.v23i1.17556>
- Lailatussaadah, Jamil, A. I. Bin, Rekan, A. A., Hayati, S., & Nurmayuli, N. (2025). Influence of Family Background on Islamic Entrepreneurial Skills among Students in Aceh's Islamic Higher Education Institutions. *El-Usrah: Jurnal Hukum Keluarga*, 8(1), 389-405. <https://doi.org/10.22373/we1tth63>
- Lailatussaadah, L., Hayati, S., Jamil, A. I. Bin, & Abdul Kadir, F. A. Bin. (2023). Mapping TPACK Components in Implementing Edupreneur-Profiled Curriculum at Teacher Training and Education Institutions in Aceh. *Tadris: Jurnal Keguruan Dan Ilmu Tarbiyah*, 8(2), 373-387. <https://doi.org/10.24042/tadris.v8i2.16755>
- Lope Pihie, Z., Bakar, A., & Konting, M. (2002). Pelaksanaan Pendidikan Keusahawanan di Malaysia: Kesan terhadap Aspirasi Keusahawanan Pelajar. *Pertanika Journal of Social Sciences & Humanities*, 10(1), 53-61.

- Majid, M. S. A., Dewi, S., Aliasuddin, & Kassim, S. H. (2019). Does Financial Development Reduce Poverty? Empirical Evidence from Indonesia. *Journal of the Knowledge Economy*, 10, 1019–1036. <https://doi.org/10.1007/s13132-017-0509-6>
- Makhshun, T., & Khalilurrahman, K. (2018). Pengaruh Media Massa Dalam Kebijakan Pendidikan. *TA'DIBUNA: Jurnal Pendidikan Agama Islam*, 1(1), 57. <https://doi.org/10.30659/jpai.1.1.57-68>
- Moya, S., & Toledano, N. (2025). The Space for Religion and Spirituality in Business, Management, and Entrepreneurship Education: Reflections on the Main Contributions and Tentative Directions. *Journal of Business Ethics*, 198(1), 155–175. <https://doi.org/10.1007/s10551-024-05787-9>
- Nansadiqa, L., Masbar, R., & Shabri, M. (2019). Does economic growth matter for poverty reduction in Indonesia? *East African Scholars Journal of Economics, Business and Management*, 2(2), 46–51. <https://doi.org/10.36349/easjebm.2019.v02i0>
- Nugraha, Y. K., & Sumaryatiningsih, S. (2023). The Pentahelix Model: Strengthening Innovation Potential and Fostering Science and Education Integration. *Proceeding of International Conference on Islamic Education (ICIED)*, 8(1), 540–554. <http://conferences.uin-malang.ac.id/index.php/icied/article/view/2649>
- Nugrahadi, E. W. (2015). Analisis Alur Pembentuk Karakter Jiwa Kewirausahaan, Kompetensi Kewirausahaan dan Kemampuan Analisis Kelayakan Bisnis Kewirausahaan. *Sustainable Competitive Advantage (SCA)*, 5(1).
- Paco, A. do, Ferreira, J., Raposo, M., Rodrigues, R. G., & Dinis, A. (2010). Universities Entrepreneurship Education and Regional Development: A Stakeholders Approach. *Working Papers de Gestão, Economia e Marketing (Management, Economics and Marketing Working Papers)*, 2(3), 1–20. http://econpapers.repec.org/paper/cshwpecon/td02_5f2010.htm
- Pratiwi, R., Takhim, M., Wardhani, W. N. R., Ragimun, Sonjaya, A., Rahman, A., Basmar, E., & Pambudi, B. (2024). The Collaboration of Penta Helix to Develop Halal Tourism Villages in Batang, Cental Java. *International Journal of Sustainable Development and Planning*, 19(7), 2753–2761. <https://doi.org/10.18280/ijstdp.190732>
- Pratiwi, S. P., Rofiaty, R., & Sudjatno, S. (2025). Synergy of Pentahelix Model in Digital Startup Acceleration: A Collaborative Strategy Analysis in Malang Raya. *Millennial Asia*, 0(0), 1–26. <https://doi.org/10.1177/09763996251346943>
- Raposo, M., and Do Paço, A. (2011). Entrepreneurship Education: Relationship Between Education And Entrepreneurial Activity. *Psicothema*, 23(3), 453–457.
- Rauch, A., & Hulsink, W. (2015). Putting Entrepreneurship Education Where the Intention to Act lies: An Investigation into the Impact of Entrepreneurship Education on Entrepreneurial Behavior. *Academy of Management Learning and Education*. <https://doi.org/10.5465/amle.2012.0293>

- Rizun, N., Pawłyszyn, I., Ryzhkova, H., & Alexopoulos, C. (2024). Employment of University Graduates in the Era of Digitalization and Artificial Intelligence: Challenges and Prospects. *25th Annual International Conference on Digital Government Research (DGO 2024)*, June 1114, 2024, Taipei, Taiwan, 1(1), 1037–1039. <https://doi.org/10.1145/3657054.3659123>
- Saha, N., Sáha, T., & Sáha, P. (2020). Entrepreneurial Universities Perception and Regional Innovation System: Do they Really Create an Environment for Regional Economic Development? *Journal of Entrepreneurship Education*, 23(2), 1–15.
- Sandhya, M., Prabhu, R., Rao, S. J., & Roopesh. (2026). Entrepreneurship Education and Entrepreneurial Intention: Mediating Effects of Technical Skills, Technological Advancement, and Entrepreneurial Mindset. *Higher Education, Skills and Work-Based Learning*, 0(0), 1–17. <https://doi.org/10.1108/HESWBL-09-2025-0417>
- Sassi, M., & Mshenga, P. M. (2025). Unlocking The Potential of University-Industry Collaborations in African Higher Education: A Comprehensive Examination of Agricultural Faculties. *Industry and Higher Education*, 39(1), 102–114. <https://doi.org/10.1177/09504222241254694>
- Schmeer, K. (1999). Guidelines for Conduction a Stakeholder Analisis, Partnerships for Health Reform. In *Abt Associates Inc* (Vol. 2). Bethesda, MD.
- Shil, M., Shahriar, M. S., Sultana, S., Rahman, S. N., & Zayed, N. M. (2020). Introduction to University Based Entrepreneurship Ecosystem (U-BEE): A Model Case Study from Bangladesh. *International Journal of Entrepreneurship*, 24(1), 1-9.
- Siwu, H. F. D. (2019). Strategi Pertumbuhan dan Pembangunan Ekonomi Daerah. *Jurnal Pembangunan Ekonomi Dan Keuangan Daerah*, 19(3), 1–11. <https://doi.org/10.35794/jpek.d.16464.19.3.2017>
- Sofyan, S. (2017). Peran UMKM (Usaha Mikro, Kecil, dan Menengah) dalam Perekonomian Indonesia. *Bilancia*, 11(1), 33–63.
- Sulaiman, Yusnaini, S., & Widyanto, A. (2023). Development of Islamic Sharia-Based Curriculum In Islamic Universities In Aceh: A Study on the Implementation of Aceh Qanun Number 9 of 2015. *Ulumuna*, 27(1), 89–114. <https://doi.org/10.20414/ujis.v27i1.521>
- Sulistiyowati, R., Maula, F. I., Mahendra, A. M., & A'rasy, F. (2024). Ecosystems and Entrepreneurial Intention Among Students: The Mediating Role of Islamic Values. *Perspektivy Nauki i Obrazovania*, 69(3), 113–129. <https://doi.org/10.32744/pse.2024.3.7>
- Supriyanto, S. (2014). *How To Become A Successful Entrepreneur*. Andi Offset.
- Syed, R. T., & Spicer, D. (2025). Entrepreneurial University Development Through the Lens of Stakeholders. Why? What? and How? *Journal of Innovation and Entrepreneurship*, 14(1), 36. <https://doi.org/10.1186/s13731-025-00500-0>

- Tolstykh, T., Gamidullaeva, L., & Shmeleva, N. (2021). Universities as Knowledge Integrators and Cross-Industry Ecosystems: Self-Organizational Perspective. *SAGE Open*, 0(0), 1–6. <https://doi.org/10.1177/2158244020988704>
- Towers, N., Sulkowski, N., & Jameson, J. (2020). Entrepreneurial Capacity-Building in HEIs for Embedding Entrepreneurship and Enterprise Creation – a Tripartite Approach. *International Journal of Retail & Distribution Management*, 48(8), 881–899. <https://doi.org/10.1108/IJRDM-06-2019-0185>
- Varblane, U., & Mets, T. (2010). Entrepreneurship Education in the Higher Education Institutions (HEIs) of Post-Communist European Countries. *Journal of Enterprising Communities: People and Places in the Global Economy*, 4(3), 204–219. <https://doi.org/10.1108/17506201011068219>
- Walter, S. G., & Block, J. H. (2016). Outcomes of Entrepreneurship Education: An Institutional Perspective. *Journal of Business Venturing*, 31(2), 216–233. <https://doi.org/10.1016/j.jbusvent.2015.10.003>
- Widanan, I. wayan, & Gunawarman, A. A. G. R. (2021). Identifikasi Stakeholder Dan Impikasinya Terhadap Kesuksesan Sebuah Proyek Studi Kasus: Proyek the Baladewa Villas-Bali. *Jurnal Arsitektur ZONASI*, 4(2), 257–266. <https://doi.org/10.17509/jaz.v4i2.34428>
- Wong, P., Ho, Y., & Singh, A. (2007). Towards an “Entrepreneurial University” Model to Support Knowledge-Based Economic Development: The Case of the National University of Singapore. *World Development*, 35(6), 941–958. <https://doi.org/10.1016/j.worlddev.2006.05.007>