Triple Helix Innovation Ecosystem: The Role of Small and Medium Enterprises Community in Enhancing Performance

by Stefanus Yufra M. Taneo

Submission date: 15-Oct-2023 06:34AM (UTC-0500)
Submission ID: 2192283219
File name: Artikel_nomor_6_Triple_Helix_Ecosystem.pdf (290.12K)
Word count: 5475
Character count: 31492

Triple Helix Innovation Ecosystem: The Role of Small and Medium Enterprises Community in Enhancing Performance

DOI: 10.12776/QIP.V27I1.1759

Sunday Noya, Stefanus Y.M. Taneo, Melany

Received: 2022-09-17 Accepted: 2023-03-05 Published: 2023-03-31

ABSTRACT

Purpose: This study seeks to reveal the relationship between the triple helix innovation ecosystem and Small and Medium Enterprises (SMEs') performance and the role of the SME community as the mediator between the triple helix innovation ecosystem and SMEs' performance.

Methodology/Approach: This study uses a quantitative approach. Data were collected using an online questionnaire from 386 SME managers who are members of the SME community in Malang Regency, East Java, Indonesia. SEM-PLS was used to analyse the data to examine the relationship of three latent variables: triple helix ecosystem, SME community, and SMEs' performance.

Findings: The triple helix ecosystem in this study was the collaboration of three agents, namely the government, large companies, and universities. This study proves that the triple helix ecosystem innovation is positively and significantly related to the performance of SMEs. Another important finding is that the SME community partially mediates the triple helix innovation ecosystem relationship and SME performance. The SME community has a strategic role in the triple helix agents intervention process to improve the performance of SMEs.

Research Limitation/Implication: The data were collected through an online questionnaire so that it could not reveal the process of operational interventions of triple helix agents to improve SMEs' performance. The performance of SMEs did not measure internal business processes, such as the presence of technology in processes, product development, and time savings.

Originality/Value of paper: This research contributes to the literature through triple helix analysis as an ecosystem in improving the performance of SMEs.

Category: Research paper

Keywords: triple helix; innovation ecosystem; SMEs; community; performance

1 INTRODUCTION

Business innovation is considered an important factor for the development of a firm. This factor is the basis for increasing the firm's competitive advantage and sustainability. In the context of Small and Medium Enterprises (SMEs), for various reasons, it is often considered beyond their capacity so it is not a serious concern. Whereas various studies have confirmed innovation as an antecedent of SME performance (Cruz-Ros, Guerrero-Sánchez and Miquel-Romero, 2021; Chege and Wang, 2020; Afriyie, Du and Ibn Musah, 2019; Falahat et al., 2020; Ebrahimi et al., 2018). In fact, SMEs are actually aware of this, but various things prevent them from carrying out and implementing innovations in their businesses. Limited resources are one of the main reasons for the inability of SMEs to innovate, and improve their competitiveness and performance (Taneo et al., 2020).

An organization that has limited resources will instinctively try to complement its resources through external partners (Thornhill, 2019). SME in its limitations will try to connect itself with various networks to obtain resources for its development. Networking will give SMEs greater access to resources for innovation and development.

Limited resources are not only experienced by SMEs, but every firm must also have limited resources to build innovations (Benitez, Ayala, N and Frank, 2020). Resource Dependency Theory proposed by Pfeffer and Salancik (1978) explains that every company has a need to interact and collaborate with its external environment to access resources. Collaborations are a must for a company to enable long-term business growth. Networks keep the firm up to date with knowledge and information, letting them have a resource to innovate. External networks and cooperation are means to perform information and knowledge transfer between firms, between communities, between firms and communities, between firms and academics, as well as between firms and the government.

Networking and collaboration with fellow SMEs in a community may not be enough. Several studies suggest the importance of the role of SME synergy with the government, academia, and big companies to support SME innovation and performance (Harwiki and Malet, 2020; Ueasangkomsate and Jangkot, 2017). The concept of a triple helix innovation ecosystem (Government-Academic-Business) was first introduced by Etzkowitz and Leydesdorff (1995). This concept was developed to develop national and regional innovation, then it was developed in relation to the development of SMEs. The triple helix concept also later developed into an n-tuple helix by involving other elements such as society, consumers, and media in the innovation ecosystem (Lew and Park, 2020).

The role of the community in the triple helix innovation ecosystem for the growth of SMEs has not become a special concern for researchers. Previous research on the triple helix has focused on research institutions (Zhang, Chen and Fu, 2019), regional innovation performance in South Korea (Yoon and Park, 2017), enterprises located in an emerging economy (Guerrero and Urbano, 2017),

globalized industry (Ryan et al., 2018), and organizations in general (Ribero and Nagano, 2021). Therefore, this study seeks to reveal the relationship between the triple helix innovation ecosystem and SMEs' performance and the role of the SME community as the mediator between the triple helix innovation ecosystem and SMEs' performance.

2 LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 SME Performance

SMEs' performance has become the object that is often researched. Positive performance is needed by an SME to encourage its growth (Nam, 2014). Performance is a measure of how far a firm achieves its objectives. Yildiz, Baştürk and Boz (2014) define performance in business as the ability of a company to optimally manage its goals to produce products or services that meet customer expectations. In this study we use five indicators to measure performance, they are the increase in sales, the increase of customers, customers' satisfaction, and stakeholders' satisfaction (Gronum, Verreynne and Kastelle, 2012; Franco, Haase and Pereira, 2016; Wood, 2006).

2.2 Innovation Ecosystem

Networks and collaboration have been considered an alternative solution to resources limitation. The Resources Dependency Theory states that all organizations need cooperation with external parties. In the context of innovation, external collaboration facilitates sharing of information, knowledge, and new ideas among organizations (Etzkowitz and Dzisah, 2008). Inter-organizational interactions enable the transfer of knowledge among them, and it will stimulate innovation. Recent innovation strategies are characterized by a trend towards openness, where organizations rely on external information and collaboration to develop their products, services, and production processes. This concept was first introduced by Chesbrough (2003) with the term open innovation. The innovation paradigm has evolved from closed innovation to ecosystem network innovation (Rupčić, Majić and Stjepandić, 2020).

The innovation ecosystem dynamically enables the transmission of material, energy, and information by connecting its actors. The term innovation ecosystem developed after it was first introduced by Adner (2006) to describe the actors of innovation. The primary advantage of participation in the innovation ecosystem is access to resources (Elvekrok et al., 2017). The innovation ecosystem conditions are a good environment to grow. The literature study conducted by Gronum, Verreynne and Kastelle (2012) on research concerning collaboration conducted by SMEs found that apart from innovativeness, performance is also one of the main benefits obtained by SMEs. In line with that, a study by Lin and Lin (2016) shows that SMEs who are members of a network get benefits for their

performance. Harwiki and Malet (2020) confirmed the correlation between the innovation ecosystem and SME performance.

2.3 Triple Helix

The concept of the national innovation system of the triple helix was first introduced by Etzkowitz and Leydesdorff (1995). It is defined as innovative systems that are supported by the interaction among academic-business-government to build a conducive condition for promoting innovation (Etzkowitz, 2003). Innovation is created when there is an exchange of knowledge and technology among these three entities. The academic sector is a source of knowledge and information, the business sectors support the academic in the implementation of new technology in product and process development in a more practical way, while the government support by providing funding and supporting regulation.

Some studies revealed that triple helix interaction not only affects scientific performance (Zhang, Chen and Fu, 2019) and innovation performance (Yoon and Park, 2017; Guerrero and Urbano, 2017; Ueasangkomsate and Jangkot, 2017; Ryan et al., 2018) of industrial sectors but also their marketing performance (Tubagus, 2018) and organization performance (Ribero and Nagano, 2021). It was noted that SMEs get many benefits from the triple helix innovation ecosystem (Ueasangkomsate and Jangkot, 2017). Based on the above-mentioned discussion, the following hypothesis is derived.

H1: Triple helix innovation ecosystem has a positive and significant relationship with SME Performance.

2.4 SMEs Community

Networks are created for gaining access to resources. Through networks and collaborations, firms gain access to resources beyond their borders (Andersson, Forsgren and Holm, 2002). Networks also help firms to intensify greater change of ideas and greater integration of knowledge (Al-Badi and Al-Qayoudhi, 2014). Networks and collaborations are also expanding market reach through market sharing (Ryan, Geoghegan and Hilliard, 2018). Studies show that SME networks and collaboration support SME performance (Zulu-Chisanga, Chabala and Mandawa-Bray, 2021; Gerschewski, Evers and Nguyen, 2020; Wang et al., 2015).

In the context of the collectivist culture in Indonesia, SMEs collaborate by joining forces with each other, forming a community to make them stronger against competitors. The SMEs community in this study is defined as a group of SMEs that share common interests and goals, make a collaboration, and learn and share knowledge with each other to grow together. The phenomenon of the very large number of SMEs in Indonesia, to facilitate communication and coordination, the community is often used as a mediator between SMEs and the

government, universities, or industries. Considering its very important role, Dhewanto et al. (2021) involved the SME community as the fourth element in the innovation ecosystem (quadruple helix). Regarding SMEs Community, this study proposes the following hypothesis:

H2: SMEs Community mediates the relationship between the triple helix innovation ecosystem and SME Performance.

The relationship between the variables studied is presented in the conceptual framework as shown in Figure 1.

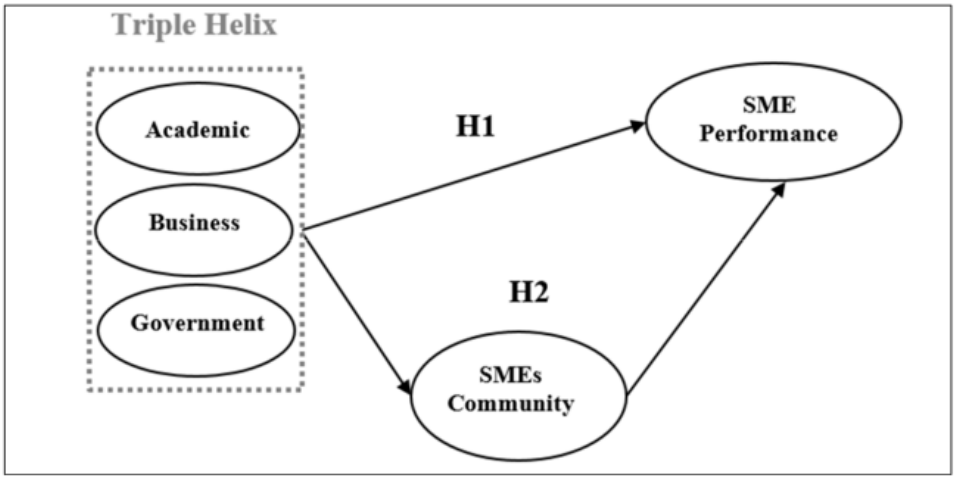

Figure 1 – Conceptual Framework

3 METHODOLOGY

The study aims to examine the relationship of the triple helix innovation ecosystem with the performance of SMEs and the role of the community as a mediation of the relationship between the triple helix innovation ecosystem and the performance of SMEs. Therefore, the variables of the study are the performance of SMEs as the dependent variable, the triple helix innovation ecosystem as the independent variable, and the community as the mediating variable. The triple helix consists of three sub-variables: academics, business, and government. Table 1 presents the variables and indicators and their references. All indicators were measured using Likert 5 gradations, ranging from strongly disagree, disagree, neutral, agree, and strongly agree.

Data were collected using an online questionnaire during the first and second weeks of August 2022, after testing the validity and reliability. Non-probability sampling was used in the selection of samples due to the unavailability of the number of SMEs who are members of the association in the Malang Regency area. Data were collected from 386 respondents who are managers that understand the condition of SMEs.

Table 1 – Variable and Indicators

Variables	Sub Variables	Indicators	References
Triple helix	Academic	1. Application of research results to SMEs	Ueasangkomsate and Jangkot (2017), Schroth and Häußermann (2018), Sun et al. (2021)
		2. Training for SMEs	
		3. Assistance to SMEs	
		4. Research Infrastructure	
		5. Communication	
		6. Collaboration	
	Business	1. Opening the market for SME products	Ueasangkomsate and Jangkot (2017), Sun et al. (2021)
		2. Become the "Mentor" of SMEs	
		3. Knowledge transfer	
		4. Collaboration	
		5. Communication	
	Government	1. Shopping for SME products by the government	Bappenas (2020), Ueasangkomsate and Jangkot (2017), Sun et al. (2021)
		2. Collaboration	
		3. Credit interest subsidies and taxes	
		4. Financial support	
		5. Information access	
		6. Communication 7. Training	
Community		1. Channelling the aspirations of SMEs	Hamidah et al. (2021)
		2. Drivers of SME motivation	
		3. Build business cooperation	
		4. Building synergy in the community	
		5. Product marketing	
SME's performance		1. Sales turnover 2. Profit 3. Number of customers 4. Customer satisfaction 5. Stakeholder satisfaction	Gronum, Verreynne and Kastelle (2012), Franco, Haase and Pereira (2016), Newman, Prajogo and Atherton (2016), Afriyie, Du and Ibn Musah (2019)

The data were analysed using Partial Least Square-Structural Equation Modelling (WarpPLS-SEM) software. This software is used because it can show the effect

of mediating variables directly so there is no need to do manual calculations such as the Sobel test (Sholihin and Ratmono, 2013; Hair et al., 2014).

4 RESULTS AND DISCUSSION

Examination of the overall measure of the fit model is guided by the Model Fit and Quality Indices according to the WarpPLS 5.0 User Manual (Kock, 2015). Some of the indices referred to are Average Path Coefficient (APC), Average R-squared (ARS), and Average Adjusted R-square (AARS). A summary of the goodness of fit model is presented in Table 2.

Table 2 – Evaluation of the Goodness of Fit PLS Model

Goodness of Fit	Indices (p-value)	Cut-off	Information
Average Path Coefficient (APC)	0.426 (0.001)	0.05	Significant (good)
Average R-Squared (ARS)	0.647 (0.001)	0.05	Significant (good)
Average Adjusted R-squared (AARS)	0.646 (0.001)	0.05	Significant (good)
Average Block VIF (AVIF)	2.225	≤ 5: Acceptable ≤ 3.3: ideal	Ideal
Average full collinearity VIF (AFVIF)	Inf.	≤ 5: Acceptable ≤ 3.3: ideal	Due to the relationship of all latent variables is significant
Tenenhaus GoF (GoF)	0.682	≥ 0.1: Small ≥ 0.25: Medium ≥ 0.36 Big	Big
Sympson's paradox ratio (SPR)	1.000	≥ 0.7: Acceptable 1: ideal	Ideal
R-squared contribution ratio (RSCR)	1.000	≥ 0.9: Acceptable 1: ideal	Ideal
Statistical suppression ratio (SSR)	1.000	≥ 0.7: Acceptable	Acceptable
Nonlinear bivariate causality direction ratio (NLBCDR)	1.000	≥ 0.7: Acceptable	Acceptable

Based on the parameters presented in Table 2 and the rules of thumb evaluation of the model according to Hair et al. (2014) and Kock (2015), it can be concluded that the structural model is good so that the overall model is acceptable to test the research hypothesis. The infinite AFVIF value indicates full collinearity in each significant latent variable.

The fit measurement model was checked using validity and reliability. Validity uses cross loading and Average Variances Extracted (AVE), while reliability

uses composite reliability and Cronbach Alpha. The measurement model in this study is valid and reliable based on the rules of thumb evaluation of the measurement model according to Hair et al. (2014). Table 3 shows that the cross loading of all variables is greater than 0.70 and the AVE is greater than 0.50. The composite reliability and Cronbach Alpha values for all variables are greater than 0.70.

Table 3 – Evaluation of Model Fit Measurement

Variable	Subvariable/ dimension	Validity		Reliability	
		Cross loading	AVE	Composite Reliability	Cronbach Alpha
Triple helix		0.890	0.803	0.924	0.877
	Academic	0.718	0.636	0.946	0.936
	Business	0.753	0.707	0.960	0.954
	Government	0.784	0.682	0.927	0.903
Community		0.847	0.676	0.974	0.969
SMEs' performance		0.713	0.803	0.967	0.963

Figure 2a shows that the triple helix innovation ecosystem has a direct significant effect on the performance of SMEs and Figure 2b shows that the SME community partially mediates the effect of the triple helix innovation ecosystem on the performance of SMEs. The direct effect path coefficient is 0.66 and it decreases to 0.39 but remains significant.

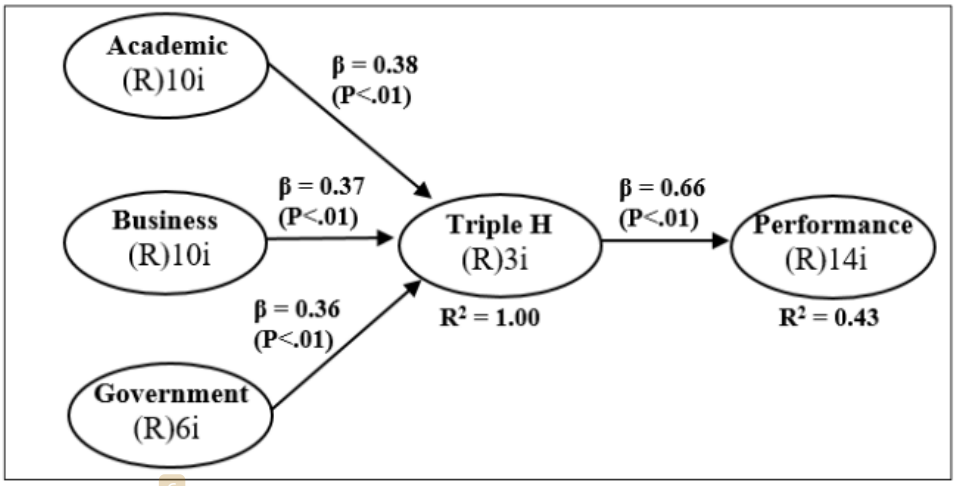

Figure 2a – The Relationship Between the Triple Helix Innovation Ecosystem and SMEs' Performance

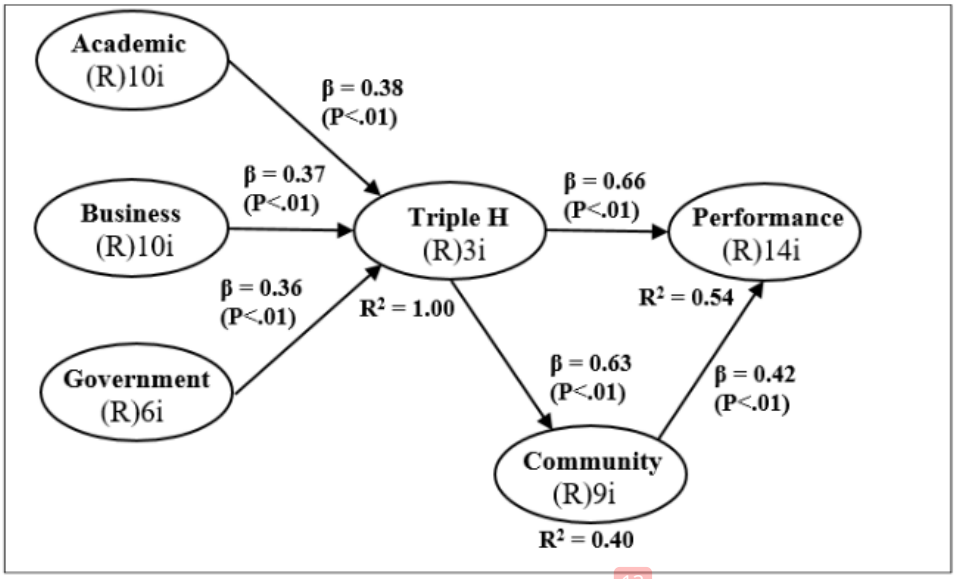

Figure 2b – The Mediating Variable of Community on the Relationship Between the Triple Helix Innovation Ecosystem and SMEs' Performance

The results of the analysis (Figure 2 and Table 4) prove that all the hypotheses proposed in this study are accepted. This means that the triple helix innovation ecosystem has a significant effect on the performance of SMEs and the SME community partially mediates the effect of the triple helix innovation ecosystem on the performance of SMEs. According to Hair et al. (2014), Variance Account For (VAF), which is a comparison of indirect effects with a total effect, above 80% is said to be full mediation, it is categorized as partial mediation if the VAF is between 20% and 80%, and almost no mediating effect if the VAF is less than 20%. The VAF value in this study was 40.4%.

Table 4 – Coefficient of Relationship between Triple Helix Innovation Ecosystem and SME Performance Mediated by Community

	Academic	Business	Government	Triple helix	Community
Triple helix	0.378 (0.001)	0.372 (0.001)	0.359 (0.001)		
Community				0.635 (0.001)	
SMEs' Performance				0.392 (0.001)	0.424 (0.001)

Notes: The number in brackets is the p-value.

The findings of this study prove that the triple helix innovation ecosystem in Indonesia plays an important role in improving the performance of SMEs directly or indirectly through the SME community. During the COVID-19 pandemic, the Malang Regency Government facilitated the cooperation of the Industry and

Trade Office with universities and large companies and the collaboration significantly increased the resilience of SMEs (Taneo et al., 2022). The government facilitates brand licensing, while branding and product quality assistance is carried out by universities, and the marketing of SME products is organized by large companies (e.g. Goedang Oleh-Oleh, souvenir store). The SME community plays a role in motivating SME managers to participate in the mentoring process and maintain the trust of large companies in marketing products by controlling product quality.

The results of this study reveal the potential benefits of the triple helix innovation ecosystem for improving the performance of SMEs in developing countries. Ueasangkomsate and Jangkot (2017) found that the cooperation of food industry SMEs with triple helix agents in Thailand provides many benefits in improving the innovation performance of SMEs. A study by Maziriri, Mapuranga and Lose (2021) in South Africa confirms that the triple helix agents are instrumental in stimulating product innovation and SME business performance. However, the collaboration referred to in the research of Ueasangkomsate and Jangkot (2017) and Maziriri is between government-university, government-company, university-company, and SME-government, SME-company, and SME-university. While the collaboration referred to in this study is university-company-government as an ecosystem, following the definition of Etzkowitz (2003).

5 CONCLUSION

This study proves that the triple helix innovation ecosystem plays an important role in improving the performance of SMEs directly or indirectly through the SME community. The role of the government in emerging economies is very important as a regulator and facilitator in building a triple helix innovation ecosystem. The commitment of government officials greatly determines the dynamics of the innovation ecosystem. The best practice for government officials who manage SMEs needs to be maintained by their successor officials. As an innovation ecosystem, large companies and universities also need to play a role in maintaining the best practices that have been achieved.

The SME community as a mediator between the triple helix and SMEs plays an important role in conveying the aspirations of SMEs to the triple helix agent, on the contrary in certain contexts the SME community needs to translate the mission of cooperation from the triple helix agent to SMEs. The selection of SME Community administrators is crucial to be able to carry out the mediation role properly.

Although this research makes some contributions, it has limitations. First, the data were collected through an online questionnaire so that it could not reveal the triple helix agent cooperation process of interventions to improve the performance of SMEs. Second, the performance of SMEs is measured by

marketing and customer and stakeholder satisfaction. In the context of the innovation ecosystem, it will be more complete if the performance of SMEs is measured by internal business processes such as the presence of technology in new processes, new product development, and time savings from production to marketing processes.

ACKNOWLEDGEMENTS

We would like to thank the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia for funding this research through a decentralized grant for the Higher Education Leading Basic Research scheme for the 2022 Fiscal Year.

REFERENCES

Adner, R., 2006. Match your innovation strategy to your innovation ecosystem. *Harvard Business Review*, 84(4), pp.98-107.

Afriyie, S., Du, J. and Ibn Musah, A.A., 2019. Innovation and marketing performance of SME in an emerging economy: the moderating effect of transformational leadership. *Journal of Global Entrepreneurship Research*, [e-journal] 9(40), pp.1-25. DOI: 10.1186/s40497-019-0165-3.

Al-Badi, A. and Al-Qayoudhi, W., 2014. Adoption of Social Networks in Business: Study of Users and Potential – Users in Oman. *International Business and Economics Research Journal*, [e-journal] 13(2), pp.401-418. DOI: 10.19030/iber.v13i2.8457.

Andersson, U., Forsgren, M. and Holm, U., 2002. The strategic impact of external networks: Subsidiary performance and competence development in the multinational corporation. *Strategic Management Journal*, [e-journal] 23(11), pp.979-996. DOI: 10.1002/smj.267.

Bappenas (Badan Perencanaan Pembangunan Nasional), 2020. *Review of Policies for Mitigating the Impact of COVID-19 on MSMEs: Recovery Survey for Indonesian MSMEs.* [online] Available at: <https://aptika.kominfo.go.id/wp-content/uploads/2020/12/BAPPENAS-Penanggulangan-Dampak-Covid-19-terhadap-UMKM-Final-v1_0.pdf> [Accessed 15 September 2022].

Benitez, G.B., Ayala, N.F. and Frank, A.G., 2020. Industry 4.0 innovation ecosystems: An evolutionary perspective on value cocreation. *International Journal of Production Economics*, [e-journal] 228 (March), 107735. DOI: 10.1016/j.ijpe.2020.107735.

Chege, S.M. and Wang, D., 2020. The influence of technology innovation on SME performance through environmental sustainability practices in Kenya. *Technology in Society*, [e-journal] 60, 101210. DOI: 10.1016/j.techsoc.2019.101210.

Chesbrough, H., 2003. The era of open innovation. *MIT Sloan Management Review*, 44(3), pp.35-41.

Cruz-Ros, S., Guerrero-Sánchez, D.L. and Miquel-Romero, M.J., 2021. Absorptive capacity and its impact on innovation and performance: findings from SEM and fsQCA'. *Review of Managerial Science*, [e-journal] 15(2), pp.235-249. DOI: 10.1007/s11846-018-0319-7.

Dhewanto, W., Herliana, S., Yunita, F., Nur Rizqi, V. and Williamson, I.O., 2021. Quadruple helix approach to achieve international product quality for Indonesian food SMEs. *Journal of the Knowledge Economy*, [e-journal] 12(2), pp.452-469. DOI: 10.1007/s13132-020-00644-2.

Ebrahimi, P., Shafiee, B., Gholampour, A. and Yousefi, L. 2018. Impact of organizational innovation, learning orientation and entrepreneurship on SME performance: The moderating role of market turbulence and ICT. In: D. Khajeheian, M. Friedrichsen and W. Mödinger, eds. 2018. *Competitiveness in Emerging Markets. Contributions to Management Science*. Cham: Springer. Pp.447-480. DOI: 10.1007/978-3-319-71722-7_23.

Elvekrok, I., Veflen, N., Nilsen, E.R. and Gausdal, A.H., 2017. Firm innovation benefits from regional triple-helix networks. *Regional Studies*, [e-journal] 52(9), pp.1214-1224. DOI: 10.1080/00343404.2017.1370086.

Etzkowitz, H. and Dzisah, J., 2008. Rethinking development: circulation in the triple helix. *Technology Analysis & Strategic Management*, [e-journal] 20(6), pp.653-666. DOI: 10.1080/09537320802426309.

Etzkowitz, H. and Leydesdorff, L., 1995. The Triple Helix -University-Industry-Government Relations: A Laboratory for Knowledge Based Economic Development. *EASST Review*, 14(1), pp.14-19.

Etzkowitz, H., 2003. Innovation in Innovation: The Triple Helix of University-Industry-Government Relations. *Social Science Information*, [e-journal] 42(3), pp.293-337. DOI: 10.1177/05390184030423002.

Falahat, M., Ramayah, T., Soto-Acosta, P. and Lee, Y.Y., 2020. SMEs internationalization: The role of product innovation, market intelligence, pricing and marketing communication capabilities as drivers of SMEs' international performance. *Technological Forecasting and Social Change*, [e-journal] 152(November), 119908. DOI: 10.1016/j.techfore.2020.119908.

Franco, M., Haase, H. and Pereira, A., 2016. Empirical study about the role of social networks in SME performance. *Journal of Systems and Information Technology*, [e-journal] 18(4), pp.383-403. DOI: 10.1108/JSIT-06-2016-0036.

Gerschewski, S., Evers, N. and Nguyen, A.T., 2020. Trade Shows and SME Internationalisation: Networking for Performance. *Management International Review*, [e-journal] 60, pp.573-595. DOI: 10.1007/s11575-020-00421-y.

Gronum, S., Verreynne, M. and Kastelle, T., 2012. The Role of Networks in Small and Medium-Sized Enterprise Innovation and Firm Performance. *Journal of Small Business Management*, [e-journal] 50(2), pp.257-282. DOI: 10.1111/j.1540-627X.2012.00353.x.

Guerrero, M. and Urbano, D., 2017. The impact of Triple Helix agents on entrepreneurial innovations' performance: an inside look at enterprises located in an emerging economy. *Technology Forecast & Social Change*, [e-journal] 119, pp.294-309. DOI: 10.1016/j.techfore.2016.06.015.

Hair, J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, M., 2014. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM).* Washington: Sage Publications.

Hamidah, R.A., Alam, A., Wijayanti, D. and Nurrahmhan, A., 2021. The Role of the Muslim Entrepreneur Community in Sharia Business Amid the Covid-19 Pandemic (Case Study: Jogja Muslimah Preneur). *BISNIS: Jurnal Bisnis dan Manajemen Islam*, [e-journal] 9(2), pp. 225-252. DOI: 0.21043/bisnis.v9i2.11914.

Harwiki, W. and Malet, C., 2020. Quintuple helix and innovation on performance of SMEs within ability of SMEs as a mediator variable: A comparative study of creative industry in Indonesia and Spain. *Management Science Letters*, [e-journal] 10(6), pp.1389-1400. DOI: 10.5267/j.msl.2019.11.018.

Kock, N., 2015. *WarpPLS 5.0 User Manual.* Texas: Laredo, ScriptWarp SystemsTM.

Lew, Y.K. and Park, J.Y., 2021. The evolution of N-helix of the regional innovation system: Implications for sustainability. *Sustainable Development*, [e-journal] 29(2), pp.453-464. DOI: 10.1002/sd.2143.

Lin, F.-J. and Lin, Y.-H., 2016. The effect of network relationship on the performance of SMEs. *Journal of Business Research*, [e-journal] 69(5), pp.1780-1784. DOI: 10.1016/j.jbusres.2015.10.055.

Maziriri, E.T., Mapuranga, M. and Lose, T., 2021. Are Triple Helix Agents the Answer for Promoting SME Development? Invigorating Innovation and Enhancing Performance of SMEs in South Africa. *Journal of Critical Review*, [e-journal] 8(1), pp.880-901. DOI: 10.31838/jcr.08.01.98.

Nam, V.H., 2014. The roles of human and social capital in the development of manufacturing SMEs in Vietnam. *Journal of Economics and Development*, [e-journal] 16(1), pp.5-22. DOI: 10.33301/2014.16.01.01.

Newman, A., Prajogo, D. and Atherton, A., 2016. The influence of market orientation on innovation strategies. *Journal of Service Theory and Practice*, [e-journal] 26(1), pp.72-90. DOI: 10.1108/JSTP-02-2015-0044.

Pfeffer, J. and Salancik, G.R., 1978. *A resource dependence perspective. In Intercorporate relations. The structural analysis of business.* Cambridge: Cambridge University Press.

Ribero, S.X. and Nagano, M.S., 2022. Benefits of New University-Business-Government Arrangements for the Performance of Organizations: A Triple Helix Approach. In Contextual Strategic Entrepreneurship. In: N. Faghih and A. Forouharfar, eds. 2022. *Contextual Strategic Entrepreneurship. Contributions to Management Science*. Cham: Springer. pp.173-190. DOI: 10.1007/978-3-030-86028-8_10.

Rupčić, N., Majić, T. and Stjepandić, J., 2020. Emergence of Business Ecosystems by Transformation of Platforms Through the Process of Organizational Learning. *Journal of Industrial Integration and Management*, [e-journal] 5(2), pp.181-203. DOI: 10.1142/S2424862220500086.

Ryan, P., Evers, N., Smith, A. and Andersson, S., 2018. Local horizontal network membership for accelerated global market reach. *International Marketing Review*, [e-journal] 36(1), pp.6-30. DOI: 10.1108/IMR-03-2017-0061.

Ryan, P., Geoghegan, W. and Hilliard, R., 2018. The microfoundations of firms' explorative innovation capabilities within the triple helix framework. *Technovation*, [e-journal] 76, pp.15-27. DOI: 10.1016/j.technovation.2018.02.016.

Schroth, F. and Häußermann, J.J., 2018. Collaboration strategies in innovation ecosystems: An empirical study of the German microelectronics and photonics industries. *Technology Innovation Management Review*, [e-journal] 8(11), pp.4-12. DOI: 10.22215/timreview/1195.

Sholihin, M. and Ratmono, D., 2013. *SEM-PLS Analysis with WarpPLS 3.0 for Nonlinear Relationships in Social and Business Research.* Yogyakarta: Penerbit ANDI.

Sun, Y., Li, L., Chen, Y. and Kataev, M.Y., 2021. An empirical study on innovation ecosystem, technological trajectory transition, and innovation performance. *Journal of Global Information Management (JGIM)*, [e-journal] 29(4), pp.148-171. DOI: 10.4018/JGIM.20210701.oa7.

Taneo, S.Y.M, Noya, S., Melany, M. and Setiyati, E.A., 2020. *Disruptive Innovation: Strategies to Win Business*. Yogyakarta: Penerbit ANDI.

Taneo, S.Y.M., Noya, S., Melany, M. and Setiyati, E.A., 2022. The Role of Local Government in Improving Resilience and Performance of Small and Medium-Sized Enterprises in Indonesia. *The Journal of Asian Finance, Economics and Business*, [e-journal] 9(3), pp.245-256. DOI: 10.13106/jafeb.2022.vol9.no3.0245.

Thornhill, J. 2019. *Prizes are a powerful spur to innovation and breakthroughs.* Financial Times. [online] Available at: <https://www.ft.com/content/d45c4340-8356-11e8-a29d-73e3d454535d> [Accessed 15 September 2022].

Tubagus, I., 2018. Building innovation capability through triple helix model sinergy to improve SME's marketing performance. *International Journal of Civil Engineering and Technology*, 9(7), pp.1403-1412.

Ueasangkomsate, P. and Jangkot, A., 2017. Enhancing the innovation of small and medium enterprises in food manufacturing through Triple Helix Agents. *Kasetsart Journal of Social Sciences,* [e-journal] 40(2), pp.380-388. DOI: 10.1016/j.kjss.2017.12.007.

Wang, G., Dou, W., Zhu, W., and Zhou, N., 2015. The effects of firm capabilities on external collaboration and performance: The moderating role of market turbulence. *Journal of Business Research*, [e-journal] 68(9), pp.1928-1936. DOI: 10.1016/j.jbusres.2015.01.002.

Wood, E.H., 2006. The internal predictors of business performance in small firms: A logistic regression analysis. *Journal of Small Business and Enterprise Development*, [e-journal] 13(3), pp.441-453. DOI: 10.1108/14626000610680299.

Yıldız, S., Baştürk, F. and Boz, İ.T., 2014. The Effect of Leadership and Innovativeness on Business Performance. *Procedia - Social and Behavioral Sciences*, [e-journal] 150, pp.785-793. DOI: 10.1016/j.sbspro.2014.09.064.

Yoon, J. and Park, H.W., 2017. Triple helix dynamics of South Korea's innovation system: a network analysis of inter-regional technological collaborations. *Quality & Quantity*, [e-journal] 51(3), pp.989-1007. DOI: 10.1007/s11135-016-0346-x.

Zhang, Y., Chen, K. and Fu, X., 2019. Scientific effects of Triple Helix interactions among research institutes, industries and universities. *Technovation*, [e-journal] 86, pp.33-47. DOI: 10.1016/j.technovation.2019.05.003.

Zulu-Chisanga, S., Chabala, M. and Mandawa-Bray, B., 2021. The differential effects of government support, inter-firm collaboration, and firm resources on SME performance in a developing economy. *Journal of Entrepreneurship in Emerging Economies*, [e-journal] 13(2), pp.175-195. DOI: 10.1108/JEEE-07-2019-0105.

ABOUT THE AUTHOR / ABOUT AUTHORS

Sunday Noya[0000-0002-2377-4725] (S.N.) – Department of Industrial Engineering, Faculty of Science and Technology, Universitas Ma Chung, Indonesia, e-mail: sunday.alexander@machung.ac.id.

Stefanus Yufra M. Taneo[0000-0003-3769-8652] (S.Y.M.T.) – Master of Management Innovation Management Department, Faculty of Business and Economics, Universitas Ma Chung, Indonesia, e-mail: stefanus.yufra@machung.ac.id.

Melany[0000-0002-3238-6468] (M.) – Department of English Letters, Faculty of Language and Arts, Universitas Ma Chung, Indonesia, e-mail: melany.agustina@machung.ac.id.

AUTHOR CONTRIBUTIONS

Conceptualization, S.N. and SYMT.; Methodology, S.Y.T.M. and S.N.; Software, S.Y.M.T. and S.N.; Validation, M.; Formal analysis, S.N. and S.Y.M.T.; Investigation, S.N, S.Y.M.T. and M.; Resources, M.; Data curation, M. and S.Y.M.T.; Original draft preparation, S.N. and S.Y.M.T.; Review and editing, S.N. and M.; Visualization, M. and S.N.; Supervision, S.N. and S.Y.M.T.

CONFLICTS OF INTEREST

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

ISSN 1335-1745 (print) ISSN 1338-984X (online)

Triple Helix Innovation Ecosystem: The Role of Small and Medium Enterprises Community in Enhancing Performance

ORIGINALITY REPORT

23%	17%	17%	9%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Southern New Hampshire University - Continuing Education Student Paper	2%
2	Submitted to University of Portsmouth Student Paper	2%
3	Submitted to Universitas Brawijaya Student Paper	2%
4	koreascience.or.kr Internet Source	1%
5	journals.ums.ac.id Internet Source	1%
6	Chunyan Zhou, Henry Etzkowitz. "Triple Helix Twins: A Framework for Achieving Innovation and UN Sustainable Development Goals", Sustainability, 2021 Publication	1%
7	www.qip-journal.eu Internet Source	1%
8	Mário Franco, Heiko Haase, Ana Pereira. "Empirical study about the role of social networks in SME performance", Journal of	1%

	Systems and Information Technology, 2016 Publication	
9	"Sustainable Education and Development – Sustainable Industrialization and Innovation", Springer Science and Business Media LLC, 2023 Publication	1 %
10	scholar.unair.ac.id Internet Source	1 %
11	Ton Duc Thang University Publication	1 %
12	Pittawat Ueasangkomsate, Alisara Jangkot. "Enhancing the innovation of small and medium enterprises in food manufacturing through Triple Helix Agents", Kasetsart Journal of Social Sciences, 2017 Publication	1 %
13	link.springer.com Internet Source	1 %
14	Tao Zhuang, Zhixia Zhou, Qingjun Li. "University-industry-government triple helix relationship and regional innovation efficiency in China", Growth and Change, 2020 Publication	<1 %
15	Submitted to Universitas Dian Nuswantoro Student Paper	<1 %
16	triplehelixconference.org Internet Source	<1 %

17	ideas.repec.org Internet Source	<1 %
18	publications.aston.ac.uk Internet Source	<1 %
19	www.mdpi.com Internet Source	<1 %
20	submissions.ijoqm.org Internet Source	<1 %
21	"Competitiveness in Emerging Markets", Springer Science and Business Media LLC, 2018 Publication	<1 %
22	gnanaganga.inflibnet.ac.in:8080 Internet Source	<1 %
23	ijsrm.net Internet Source	<1 %
24	null Hamdani. "The Perceptions of Cooperative Management on the Understanding of Financial Statements to the Punctuality in Conducting the Annual Members", Journal of Finance and Accounting, 2018 Publication	<1 %
25	www.namibian-studies.com Internet Source	<1 %
26	Sayed Darwish Elgarhy. "Effects of Service Quality, Loyalty Programs, Pricing	<1 %

Strategies, and Customer Engagement on Firms' Performance in Egyptian Travel Agencies: Mediating Effects of Customer Retention", Journal of Quality Assurance in Hospitality & Tourism, 2022
Publication

27	digitalcommons.odu.edu Internet Source	<1 %
28	scholarworks.waldenu.edu Internet Source	<1 %
29	www.cliffsnotes.com Internet Source	<1 %
30	www.frontiersin.org Internet Source	<1 %
31	Arkadiusz Świadek, Piotr Dzikowski, Jadwiga Gorączkowska, Marek Tomaszewski. "The National Innovation System in a catching-up country: empirical evidence based on micro data of a Triple Helix in Poland", Oeconomia Copernicana, 2022 Publication	<1 %
32	hdl.handle.net Internet Source	<1 %
33	Grisna Anggadwita, Nurul Indarti, Paresha Sinha, Hardo Firmana Given Grace Manik. "The internationalization performance of Indonesian SMEs during COVID-19 pandemic: exploring a mediation model",	<1 %

Review of International Business and Strategy, 2023
Publication

---

34 Jaradat, Mohammed-Issa Riad Mousa, and Khaled M. S. Faqih. "Investigating the Moderating Effects of Gender and Self-Efficacy in the Context of Mobile Payment Adoption: A Developing Country Perspective", International Journal of Business and Management, 2014.
Publication

<1 %

---

35 José Ribamar Marques de Carvalho, Willian Vitor Trigueiro Amorim, Enyedja Kerlly Martins de Araújo Carvalho. "Organizational Performance of a Public Higher Education Institution: An Analysis from the Perspective of Absorptive Capacity and Innovation", International Journal of Business and Management, 2022
Publication

<1 %

---

36 Stella Zulu-Chisanga, Mwansa Chabala, Bernadette Mandawa-Bray. "The differential effects of government support, inter-firm collaboration and firm resources on SME performance in a developing economy", Journal of Entrepreneurship in Emerging Economies, 2020
Publication

<1 %

---

37 ebin.pub
Internet Source

<1 %

38	hull-repository.worktribe.com Internet Source	<1 %
39	journal26.magtechjournal.com Internet Source	<1 %
40	muqtasid.iainsalatiga.ac.id Internet Source	<1 %
41	repository.petra.ac.id Internet Source	<1 %
42	repository.uhamka.ac.id Internet Source	<1 %
43	Khanh D.P. Tran, Thuy Vo T.N., Tram Thai N.B.. "The effect of innovation on competitive advantage and SMEs performance in Vietnam: the moderating role of customer orientation", International Journal of Innovation Science, 2023 Publication	<1 %
44	Sepehr Ghazinoory, Shohreh Nasri, Masoud Afshari-Mofrad, Negin Taghizadeh Moghadam. "National Innovation Biome (NIB): A novel conceptualization for innovation development at the national level", Technological Forecasting and Social Change, 2023 Publication	<1 %
45	"Open Innovation in Small Business", Springer Science and Business Media LLC, 2023 Publication	<1 %

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	On		