



## Building the Competitive Advantage MSMEs in the Digital Era: The Role of Digital Ecosystem and Pentahelix Synergy

### ABSTRACT

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This study investigates not only the impact of the digital ecosystem and pentahelix synergy on Malang City MSMEs' income, but also how it affects their sustainability. The study's purpose is to investigate the impact of pentahelix synergy and the digital ecosystem on competitive advantage, which is moderated by sales growth. 74 MSMEs were randomly selected as samples for the descriptive quantitative research, which focuses on MSMEs in Malang City that are more than five years old. The data was obtained via a questionnaire, and the assessment weight was established using a linkert scale. Data analysis employs validity tests, normality tests, and moderating variable regression. The findings revealed that the digital ecosystem and the three pentahelix characteristics, which are influenced by sales growth, had no discernible impact on MSMEs' competitiveness. The originality of study in which pentahelix synergy also engages the digital ecosystem in establishing MSMEs' competitive advantage, implies that MSMEs and pentahelix elements should understand the relevance of incorporating the digital ecosystem in achieving competitive advantage.

**Keywords:** Competitive Advantage; Digital Ecosystem; Pentahelix Synergy; Sales Growth

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### INTRODUCTION

Looking at Indonesia's current economic growth, MSMEs take a very large role in it. Referring to BPS data in 2023, there are approximately 66 million MSME business actors with a business unit coverage of around 99% of all existing business units. Gross domestic income received a contribution of 61% or around Rp. 9,580 trillion from MSMEs. 97% of the labor force is now employed by MSMEs, with 117 million people in total. In fact, the high number of MSMEs creates obstacles that stakeholders must overcome in the areas of innovation and technology, productivity, digital literacy, lawfulness, funding, branding and marketing, human resources, standardization and certification, equitable access to facilities, training, and guidance, as well as a single database. As a form of concern for the challenges faced by MSMEs, Kadin and the

Indonesian government together through digitalization implementation strategies encourage the improvement of MSME performance in order to increase competitiveness, become global players and export-oriented.

In Malang city, there are industrial centers that are the flagship of MSMEs, among others: Tempe chips, fashion, painting, ceramics, rattan, sanitary ware, pottery, furniture etc. The Malang city government through Diskoperindag provides support for MSMEs to export their business products. One form of support so that MSME products in Malang are worthy of export, is the provision of several facilities, one of which is the MSME clinic provided for consultation and assistance for MSME players for innovation, product packaging and also business legality. Giving MSME participants the chance to participate in the government agencies' 2024 procurement program for goods and services is another way to support them.

The role of MSMEs that can currently be taken into account in Indonesia's economic development is certainly inseparable from the policies launched by stakeholders and partnerships that support the development of MSMEs. Collaboration is very important by cooperating with the 5 main pillars (pentahelix), namely business actors/practitioners, communities, academics, government and media (Hidayatullah et al., 2022)

MSMEs often have quality product ideas and innovations with pentahelix synergy, but are often constrained when it comes to integrating their business with digital technology. By integrating digital technology, it can open market access for MSMEs, which has been one of the problems they face in marketing their products (Senyo et al., 2019).

In previous research, many have discussed the synergy of pentahelix in encouraging the sustainability of MSMEs, but there are also those who have the opposite opinion, who say that the role of digital technology will have more influence on MSMEs to gain wider marketing access (Juwita et al., 2022). MSMEs will have a greater chance of success if they use digital platforms (Naude & Liebrechts, 2020).

Taking the preceding explanation into account, the selection of MSMEs in Malang City as the subject of research is deemed extremely acceptable because the number of units increased from 7,920 to 29,058 between 2022 and 2023, according to BPS Malang City statistics. This rate of growth exceeds that of MSMEs in other East Java cities.

Research on the competitive advantage of MSMEs is still frequently focused on pentahelix synergy, which has not yet addressed the digital environment in an effort to build MSMEs' competitive advantage. So this research is very necessary to perform since the digital ecosystem continues to experience very quick development in order to uncover the pattern of MSME sustainability.

## LITERATURE REVIEW

### *Competitive advantages*

SMEs in Indonesia must have significant independence to achieve superior performance, competitiveness, and long-term profitability. SMEs in Indonesia must have significant independence to achieve superior performance, competitiveness, and long-term profitability (Setyaningrum et al., 2023). High innovation development capabilities will make it easier for SMEs to improve their business performance and get a competitive advantage. The government, media, universities, and associations have all provided support for thorough coaching, training, and mentoring efforts in the areas of innovation, environmental analysis, and risk judgments. It is important for SMEs to consolidate internally to strengthen their business managerial. SMEs that have sustainable innovation development can result in improved performance which will then have an impact on competitive advantage (Sulistyo et al., 2019). Internal and external environmental factors play a significant impact in the establishment and ownership of competitive advantages. These factors have a great influence on competitive advantage, SME owners should delegate decision-making to people who have managerial skills as a way of facing challenges in competition (Kraja, 2015a).

### *Triple Bottom Line Theory (TBL)*

According to the notion put forward by John Elkington in his 1998 book "Cannibals With Forks," a company's success is determined by its profit, human capital, and environmental impact (Ratna et al., 2019). According to this theory, MSMEs should strive for sustainability in their profit-making endeavors if they also support environmental conservation and society in order to strike a balance between social, economic, and environmental objectives.

### *The Digital Ecosystem*

SMEs must have leaders who are not only knowledgeable about digital technology, but also deeply devoted to and believe in the power of digital transformation. Leadership is magnetic, recruiting and maintaining the greatest digital talent, investing in workforce capabilities, and building a sense of empowerment in team members to help them make the right decisions. This leadership style is essential for digitally changed, data-savvy firms (Rumman et al., 2024). Digital platforms as a way of growing SMSEs, shows that in addition to utilizing e-commerce for digital marketing, digital technology is also useful in creating opportunities in all fields of industry (MP Dewi et al., 2021). The positive impact of digital transformation is felt by companies in the development of innovation, but it cannot be denied that SMEs also experience problems when entering the digitalization era. Ecosystem-based digital platforms help SMEs integrate internal and external sources of knowledge and resources in dealing with business dynamics and the environment (Juwita et al., 2022). The way businesses cooperate and compete has

drastically changed as a result of digital innovation (Senyo et al., 2019). Through the digital ecosystem, the digital footprints and digital shadows cast by online entrepreneurs will enable the matching of scarce resources with high-ability entrepreneurs, giving them a greater chance to succeed in their endeavors (Naude et al., 2020).

### ***Resource-Based View Theory (RBV)***

Wernerfelt first proposed this idea in 1984, highlighting the significance of internal resources as a crucial component in gaining and preserving competitive advantage. For example, developing new products and expanding into the digital ecosystem to get a competitive edge and ensure sustainability.

### ***Pentahelix Synergies***

The community and the community as business players are the main economic drivers in the pentahelix, and the government's role is to create legislation and encourage cooperation amongst stakeholders. The collaboration strategies amongst stakeholders in the pentahelix are quite varied (Hidayatullah et al., 2022). The joint efforts of MSMEs in the pentahelix elements resulted in the development and resilience of businesses during the crisis during the pandemic and were able to provide employment opportunities for low education levels (Rachmawati et al., 2022). In the Society 5.0 era, the role of parties comprising the Government, Society, Academics, Media Actors, and Business Actors has a favorable effect on SMEs' competitive advantage. The part that is experienced, among others, is in the form of increasing the ability of business actors and product quality. So that the profitability of SMEs increases and is able to extend the value chain and revive the nation's economy (Habibie et al., 2023). Collaboration among stakeholders can serve as a model for boosting MSMEs' competitiveness in international export markets (Wahyu Lestari et al., 2023).

### ***Stakeholder Theory***

According to Freeman (1984), businesses need to take into account the interests of all stakeholders, including consumers, workers, suppliers, communities, and the environment. In order to make the best decisions, business owners must consider the long-term success of their company. Additionally, when the business environment evolves, they must incorporate other stakeholders. By considering stakeholder suggestions and input to lower business risk, business owners' shortcomings in specific areas can be reduced (Permatasari et al., 2019).

### ***The influence of the digital ecosystem and pentahelix synergy and on the sustainability of MSMEs moderated by sales growth***

MSMEs should get support suited to their specific requirements and objectives, whether through managerial practices or policy incentives. Competitive advantage is valued

differently by enterprises of various sizes and sectors(Burch, 2018). Integration of the marketplace into digital marketing is decisive in maintaining the competitive advantage of MSME businesses (Santoso, n.d.2020). Efforts to develop innovation, digitalization and partnership-based businesses open up opportunities to streamline business processes so that MSMEs have competitive performance and competitive advantages (Wahyu Lestari et al., 2023).

### **Hypotheses of the research**

Support for MSMEs should be customized to fit various requirements and goals, whether through management strategies or policy incentives. Businesses of various sizes and industries place varying degrees of importance on competitive advantage (Burch, 2018) . To get a competitive edge, RBV theory recommends optimizing internal resources. One factor in preserving MSME enterprises' competitive edge is the incorporation of marketplaces into digital marketing (Santoso, 2020). In order to give MSMEs a competitive edge and competitive performance, efforts to foster innovation, digitization, and partnership-based enterprises create chances to streamline company procedures (Wahyu Lestari et al., 2023). The following theory can be developed in light of earlier studies:

H1 : Digital ecosystem affects competitive advantage moderated by Sales Growth.

MSMEs have several restrictions because they have limited human resources and must concentrate on a variety of areas, including technology application, product innovation, and sales techniques, in addition to their earnings. Pentahelix Synergy is an innovation model where the five existing elements (Academics, Industry, Government, Community, and Media) have significant influence. It is an attempt to improve the quality of internal resources as stressed in the triple bottom line theory to be able to achieve digital competitive advantage by collaborating with various pentahelix elements(Hidayatullah et al., 2022). The following formulation of hypotheses can be made for each pentahelix element:

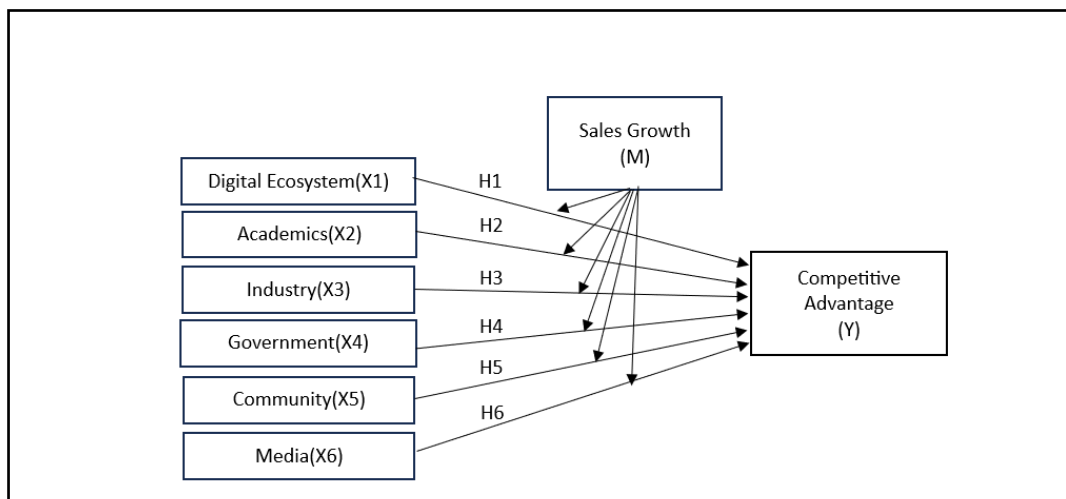
H2: Academia Synergy affects competitive advantage moderated by Sales Growth.

H3: Industry Synergy affects competitive advantage moderated by Sales Growth.

H4: Government Synergy affects competitive advantage moderated by Sales Growth.

H5: Government Synergy affects competitive advantage moderated by Sales Growth.

H6: Media Synergy affects competitive advantage moderated by Sales Growth.



Source(s): Figure by authors

Figure 1. Proposed Conceptual Framework

## METHODOLOGY

The data collection method used was to distribute questionnaires to respondents. This type of research is quantitative descriptive, with the goal of objectively describing a condition using numbers, beginning with data collection and progressing to data interpretation, presentation, and findings. The research population consists of MSMEs in Malang City, with a sample selection criteria of MSMEs older than five years in order to measure sustainability characteristics.

The data collection approach utilized is to distribute questionnaires to respondents. This style of research is quantitative descriptive, with the goal of objectively describing a situation using numbers, beginning with data collection and extending to data interpretation, appearance, and findings. The research population consists of MSMEs in Malang City, with a sample selection criteria of MSMEs above the age of five years in order to measure sustainability variables. We obtained 74 MSME data. The dependent variable in this study is competitive advantage as assessed by sustainability indices such as economic, social, and environmental (Kraja, 2015b). These sustainability indicators enable MSMEs to increase their long-term competitiveness. The first independent variable is the digital ecosystem, which is assessed by the adoption of digital platforms and support for digital payments (Widyastuti et al., 2023).

Furthermore, the pentahelix synergy variable is measured on the role of each element of academia, industry, government, community and media (Hidayatullah et al., 2022). Data analysis in the study using a linkert scale was carried out validity testing then continued data analysis to test data normality and hypothesis testing with regression analysis of moderating variables with SPSS 25 to determine the interaction between independent variables and moderation to find out how the combination of the two in influencing the independent variable.

**RESULTS**

How does the digital ecosystem, pentahelix synergy effect the competitive advantage of MSMEs, with sales growth as a moderating variable, using the following model summary at Table 1.

**Table 1.** R Square

<b>Model Summary</b>				
<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.844 <sup>a</sup>	.712	.650	1.940

a. Predictors: (Constant), X6M, TOTAL X4, TOTAL X3, TOTAL X1, TOTAL X5, TOTAL X2, TOTAL M, TOTAL X6, X4M, X2M, X5M, X3M, X1M

**Source(s):** Table by authors

The R square value of 0.712 indicates that the influence of the digital ecosystem variable (X1), synergy of Academics (X2), Industry (X3), Government (X4), community (X5) and Media (X6) to the MSME Sustainability variable after the moderation variable (Sales Growth) is 71,2%. So it can be concluded that after the moderation variable (Sales Growth) can strengthen the digital ecosystem and pentahelix synergy variable on MSME Sustainability.

**Table 2.** Moderation Test

<b>Coefficients</b>					
<b>Model</b>	<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>		
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>	<b>t</b>	<b>sig</b>
(Constant)	4.786	8.147		.587	.559
X1M	.012	.042	.288	.296	.769
X2M	.054	.023	1.523	2.305	.025
X3M	-.029	.029	-.749	-1.008	.318
X4M	-.051	.022	-1.370	-2.381	.020
X5M	.006	.030	.143	.195	.846
X6M	.036	.027	.858	1.351	.182

**Source(s):** Table by authors

The interaction variable between X1 has a recognized significance value Digital ecosystem(X1), industry (X3), Community (X5) and Media (X6) with revenue growth is 0.769, 0.318, 0.846 and 0.182 > 0.05, it concludes that the variable Sales growth (M) is unable to moderate the effect of digital ecosystem variables (X1), Industry (X3), Community (X5) and Media (X6) on competitive advantage variables (Y).

The interaction variable between academics is known to have a significant value (X2) and Government (X4) variables with sales growth (M) of 0.025 and 0.020 is < 0.05, it is concluded that the revenue growth variable (M) is capable of moderating the academic influence (X2) and Government (X4) variables on the competitive advantage variable (Y).

## **DISCUSSION**

### ***The influence of the digital ecosystem on competitive advantage with sales growth as a moderating***

The findings revealed that the digital environment had no significant influence on the competitive advantage of MSMEs in Malang, with sales growth serving as a moderating element. The digital ecosystem is thought to have played a minor effect in MSMEs' competitive advantage due to their limited ability to use digital technology into their business plan. MSME players, who also have a part in determining company strategy, are more focused on production operations and continue to struggle with formulating marketing and finance strategies, both using digital technology and traditional methods. Sales growth does not result in substantial changes for the digital ecosystem in terms of impacting MSMEs' competitive advantage. According to the triple bottom line theory and resource-based view theory, resource capability is a factor in competitive advantage. The outcomes of this investigation are consistent with studies of Juwita et al. (2022).

### ***The effect of Pentahelix Synergy on competitive advantage with sales growth as a moderating***

The results of the research on the synergy between the elements of the pentahelix and MSMEs in building competitive advantage experienced a variety of influences.

#### **Academics Element**

The collaboration between academics and MSMEs has a major impact on developing a competitive advantage, which is mitigated by sales growth. This is because the academy actively transfers knowledge and knowledge that MSME actors can apply in managing their businesses, allowing existing weaknesses to be overcome gradually, beginning with product innovation, marketing strategies, legality, and business management, allowing MSMEs to face business challenges and obstacles and achieve a competitive advantage. According to the TBL theory and the Stakeholder theory, external parties can help with decision making by providing additional understanding for business actors, particularly if MSMEs experience sales growth, which will increase enthusiasm for learning more from academics in order to gain a competitive advantage. This is consistent with the findings of Habibie & Sari (2023).

#### **Industry Elements**

The synergy of industrial elements has no significant effect on the competitive advantage of MSMEs in Malang. This is because Malang is not an industrial city, so the number of industries that can collaborate with MSMEs to achieve a competitive advantage is extremely limited. According to TBL theory, a competitive advantage can only be obtained if the environment supports it. The sales growth experienced by



MSMEs in Malang city is still insufficient to strengthen the influence of industry synergy, not due to a lack of concern from the industry in forming industry-sponsored partners for MSMEs with superior potential, but rather due to an imbalance between the number of industries and MSMEs in Malang city. This finding contradicts the research of Wahyu Lestari et al. (2023).

### **Government Elements**

The synergy of government factors influences the competitive advantage of MSMEs in Malang, which is controlled by sales growth. The poor city government recognizes that the potential of MSMEs in Malang is enormous; the variety of MSME businesses with unique characteristics that allow for the development of business centers makes the role of government very important in directing MSMEs to innovate and strategize in order to gain a competitive advantage. The government's efforts in terms of guidance and assistance, as well as its policies toward MSMEs, reflect the success of government synergy, as explained by TBL theory and stakeholder theory, in which the government, as an external party, can help MSMEs gain a competitive advantage. This supports the research of Sulistyio & Ayuni (2019).

### **Community Elements**

The community element has no significant effect on competitive advantage with moderated sales growth. According to RBV theory, the community is a component of the environment that influences competitive advantage. Even if business players have joined the MSME community, it is difficult to play a role in guiding MSMEs to gain a competitive edge without a supportive program for innovation and strategy development. Sales growth does not improve the impact of community aspects on efforts to achieve MSME excellence. This contradicts the findings of Wahyu Lestari et al. (2023).

### **Media Elements**

With moderate sales growth, there is no major influence on competitive advantage from the media factor. According to stakeholder theory, in addition to internal resources, external parties play a role in determining competitive advantage. Although the media plays an important role in introducing MSME products to consumers, it cannot be denied that consumers will assess the quality of products consumed and decide whether or not to make repeat purchases, so the media's role in this case is limited to introducing products; in order to achieve a competitive advantage, other factors must be considered in order to gain consumer trust. This contradicts the research of Permana & Cendana (2019).

## **CONCLUSIONS**

According to the findings of this study, sales growth does not improve the significance of the digital ecosystem in impacting MSMEs' competitive advantages. Meanwhile, sales growth can enhance the interaction between numerous aspects of pentahelix synergy, such as academics and government, in terms of affecting MSMEs' competitive edge, but it cannot strengthen industry, community, or media.

The research's management implications include that the pentahelix elements can further optimize their separate functions in the future, allowing MSMEs to gain a competitive advantage and deserve to be partners in the country's economic development. The theoretical implication is to provide insight into the development and management of scarce and irreplaceable resources in order to preserve a long-term competitive edge.

## **Limitations and Recommendations**

The drawback of this study is that the findings cannot be extended to all MSMEs due to the differences in obstacles experienced by MSMEs based on their domicile and the character of the city or region. Further study is expected to add factors to the function of leadership in developing and maintaining competitiveness advantage.

## **REFERENCES**

- Burch, S. (2018). *Small Businesses and Sustainability Innovation Confronting the Gap between Motivation and Capacity*.
- Habibie, S. A. M., & Sari, R. P. (2023). Sinergi Lima Bintang Guna Kebangkitan Ekonomi Bangsa Melalui Sustainability Industri Kecil Menengah Di Era Society. *Owner*, 7(2), 1342–1352. doi: 10.33395/owner.v7i2.1302
- Hidayatullah, S., Windhyastiti, I., Aristanto, E., Rachmawati, I. K., & Stella Alvianna. (2022). Creative Tourism Economic Development Strategy with the Penta Helix Collaboration of Batu City. *International Journal of Research in Engineering, Science and Management*, 5(4), 119–129.
- Juwita, O., Firdonsyah, A., Ali, M., Puji Widodo, A., & Rizal Isnanto, R. (2022). Studi Literatur Platform Digital Sebagai Sarana Dalam Mengembangkan UMKM. *Informatics Journal*, 7(1), 59-63.
- Kraja, Y. (2015a). Importance Of External And Internal Environment In Creation Of Competitive Advantage To Smes. (Case Of SMEs, In The Northern Region Of ALB. *Article in European Scientific Journal*. doi: 10.19044/esj.2015.v11n13p%25p

- MP. Dewi, & Mulyaningtyas. (2021). Digital Marketing Sebagai Startegi Pemasaran Macarani Ebol dalam Meningkatkan Jumlah Konsumen. *The 2nd Widyagama National Conference on Economics and Business (WNCEB 2021)*.
- Naude, W., & Liebrechts, W. (2020). Digital Entrepreneurship Research: A Concise Introduction. *IZA - Institute of Labor Economics Is Collaborating with JSTOR to Digitize, Preserve and Extend Access to This Content*.
- Permana, S. D. H., & Cendana, M. (2019). Pemanfaatan Sosial Media sebagai Strategi Promosi bagi Sustainability Bisnis UMKM. *ETHOS (Jurnal Penelitian Dan Pengabdian)*, 7(2), 163–169. doi: 10.29313/ethos.v7i2.4382
- Permatasari, M. P., Luh, N., & Setyastrini, P. (2019). Pengungkapan Tanggung Jawab Sosial Perusahaan Ditinjau Dari Teori Legitimasi dan Teori Stakeholder. In *Jurnal Akuntansi dan Perpajakan*, 5(1), 29-43. Retrieved from <http://jurnal.unmer.ac.id/index.php/ap>
- Rachmawati, I. K., Bahri, S., Bukhori, M., & Hidayatullah, S. (2021). *Collaboration Of Pentahelix Model And Jones Policy Implementation Model In Creative Economic Development Of Malang District Study On (Kebobang Village, Lopawon District) Gunung Kawi, Malang Regency. Conference: International Conference on Hospitality and Tourism Studies (ICONHOSTS)*, 1(1), 1-11.
- Ratna, L., Hasanah, U., Fakultas Hukum Universitas Hazairin, D., & Bengkulu, S. (2019). Triple Bottom Line Theory Dalam Perspektif Corporate Social Responsibility. *Majalah Keadilan FH UNHAZ*, 19(1).
- Santoso, R. (2020). Review of Digital Marketing & Business Sustainability of E-Commerce During Pandemic Covid19 In Indonesia Article History. *Jurnal Ilmu Ekonomi Terapan*, 5(2), 95-106.
- Senyo, P. K., Liu, K., & Effah, J. (2019). Digital business ecosystem: Literature review and a framework for future research. *International Journal of Information Management*, 47, 52–64. doi: 10.1016/j.ijinfomgt.2019.01.002
- Setyaningrum, R. P., Kholid, M. N., & Susilo, P. (2023). Sustainable SMEs Performance and Green Competitive Advantage: The Role of Green Creativity, Business Independence and Green IT Empowerment. *Sustainability*, 15(15), 12096. doi: 10.3390/su151512096
- Sulistyo, H., & Ayuni, S. (2019). Competitive advantages of SMEs: The roles of innovation capability, entrepreneurial orientation, and social capital. *Contaduría y Administración*, 65(1), 156. doi: 10.22201/fca.24488410e.2020.1983

Wahyu Lestari, T., Chasanah, U., & Mathori Program Studi Magister Manajemen STIE Widya Wiwaha Yogyakarta, M. (2023). Strategi Penguatan Umkm Melalui Model Pentahelix Di Kabupaten Purworejo. *Syntax Admiration*, 4(12).

Widyastuti, D. A. R., Wahyuni, H. I., & Wastutiningsih, S. P. (2023). Creating a digital ecosystem for sustainable development: Insights from Indonesian micro, small and medium enterprises. *Kasetsart Journal of Social Sciences*, 44(1), 27–38. doi: 10.34044/j.kjss.2023.44.1.04