Bima Journal – Bussiness Management and Accounting
Available online at : http://journal.pdmbengkulu.org/index.php/bima
DOI:https://doi.org/10.37638/bima. 6.2. 1415–1422

Accelerating Sustainable Performance of Balinese Woven MSMEs Through Digital Innovation and Green Entrepreneurship

Made Ermawan Yoga Antara [1*)]

[1)]*Faculty of Economics and Business, Universitas Pendidikan Nasional, Denpasar, Indonesia*

***Corespondent Author:** madeermawan@undiknas.ac.id*

How to Cite :
Antara, M.E.Y., (2025). *Accelerating Sustainable Performance of Balinese Woven SMEs Through Digital Innovation and Green Entrepreneurship*. *Bima Journal : Business, Management and Accounting Journal,* 6 (2). 1415 - 1422. DOI: https://doi.org/10.37638/bima. 6.2. 1415–1422

ARTICLE HISTORY
Received [15 August 2025]
Revised [27 Sept 2025]
Accepted [24 December 2025]

KEYWORDS
innovation; green entrepreneurship; performance; creativity; endek weaving

ABSTRACT

Purpose: *How digital innovation and green entrepreneurship influence the performance of MSMEs is the main question to be examined in this study.* ***Methodology:*** *The study focused on endek ikat weaving MSMEs in the eastern region of Bali province. A quantitative approach and survey were used for data collection. SEM-PLS analysis was used to test the research hypotheses.* ***Results:*** *Digital innovation and green entrepreneurial orientation positively impact MSME performance. Conversely, green entrepreneurial orientation correlates with creativity, but not with digital innovation.* ***Findings:*** *Balinese endek ikat weaving MSMEs cannot simply focus on innovating with digital technology, but also need to encourage creativity in both managerial and marketing strategies to achieve optimal performance.* ***Novelty:*** *The integrated model of digital innovation and green entrepreneurship that targets the creativity and performance of MSMEs is the novelty of this research.* ***Originality:*** *This study contributes to the development of literature and practices on performance improvement in the context of MSMEs based on local Balinese culture.* ***Conclusion:*** *This study shows evidence that digital innovation has a positive impact on the performance of Balinese endek ikat weaving MSMEs, but on the other hand, it does not affect creativity.* ***Type of Paper:*** *Research article.*

INTRODUCTION

Bali, a province in Indonesia, is a major tourist destination for both foreign and domestic tourists, thus involving many MSMEs in this tourism industry (Wahyuni & Sara, 2020). The presence of souvenirs, often sought after by tourists as gifts, is crucial. Regarding these souvenirs, the role of MSMEs as producers, both supplying products to souvenir shops and marketing them themselves, is inseparable (Antara et al., 2024b).

One MSME product in Bali that is widely recognized as a product of local cultural value is the ikat endek woven cloth. Endek is a Balinese ikat woven cloth, a craft product that can be worn for formal, casual, and traditional ceremonies. Endek is a favorite among both domestic and international tourists as a typical Balinese souvenir (Martini et al., 2024).

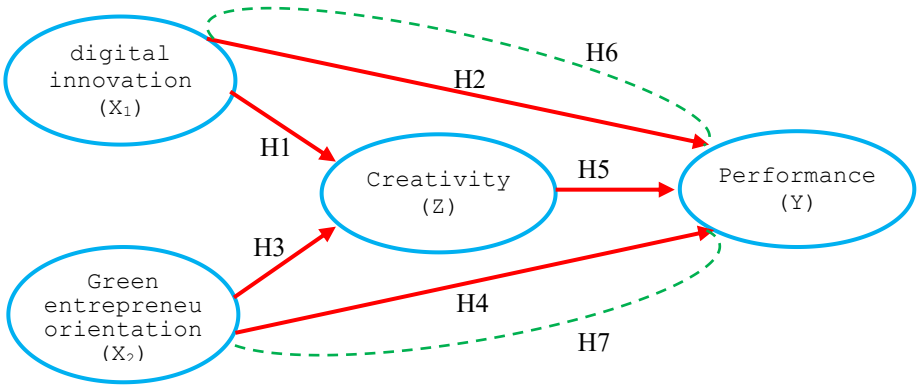
The Bali provincial government is currently promoting the use of endek cloth to increase its public awareness and to ensure its preservation, as it represents a valuable ancestral heritage of Balinese culture. The Bali provincial government has undertaken various efforts, including requiring government and private office employees, as well as academics, to wear endek cloth on certain days (Antara et al., 2024a). This effort is expected to help market Balinese ikat endek weaving. However, the quality and quantity of endek products produced are still not optimal. Based on observations and interviews with several endek ikat weaving MSMEs, it was identified that they are struggling to meet market demand due to suboptimal labor productivity.

The development of Balinese ikat endek weaving MSMEs currently faces labor constraints. Most weavers are housewives, so their time spent weaving is divided between household chores and traditional community activities in Bali. This impacts their productivity in producing endek woven products. Similarly, the challenges faced by most endek weaving MSMEs in eastern Bali include low production quality and output, limited capital, and limited information on market trends. The era of globalization, which demands increased competition among MSMEs in capturing market share, has not been matched by the performance of Balinese ikat endek weaving MSMEs (Aryani et al., 2020).

Performance is the result of work performed by employees based on the goals the organization wishes to achieve (Griffin et al., 2020). Muangmee et al. (2021) stated that performance is influenced by various factors, including digital innovation and entrepreneurial orientation. A study by Karatepe et al. (2020) stated that digital innovation significantly influences performance, while Wahyuni & Sara (2020) showed a significant relationship between entrepreneurial orientation and performance. However, studies by Setyaningrum & Muafi (2022) and Adisaksana (2022) yielded conflicting results, finding that digital innovation and entrepreneurial orientation had no significant effect on performance.

This research aims to confirm this research gap by incorporating creativity as a mediator to boost MSME performance. Studies by Adisaksana (2022) and Nguyen et al. (2021) have demonstrated that creativity is a crucial factor in supporting employee and overall organizational performance. In addition to the importance of researching the phenomena in the Balinese endek ikat weaving business, the integrated model of digital innovation and green entrepreneurship targeting MSME performance is also a novelty of this research.

Figure 1. Research Model



Based on Figure 1, the following research hypotheses can be proposed:
H1: Digital innovation has a significant effect on creativity
H2: Digital innovation has a significant effect on performance
H3: GEO has a significant effect on creativity
H4: GEO has a significant effect on performance

H5: Creativity has a significant effect on performance
H6: Creativity mediates digital innovation and performance
H7: Creativity mediates GEO and performance

METHOD

This research is classified as an explanatory study, a correlational study that predicts research results (Hair et al., 2021). This study uses a quantitative approach with a survey method because a quantitative design allows researchers to test the relationship between variables (Creswell & Creswell, 2018). This research was conducted at an endek ikat weaving MSME in eastern Bali. The population in this study were employees of the endek ikat weaving MSME in Bali. The sampling technique used proportional random sampling. The Slovin formula obtained a sample size of 93 respondents.

$$n=\frac{N}{1+N(e)^2}=\frac{1391}{1+1391(10)^2}=93$$

Note: n = number of samples, N = population, e = margin of error

Data were collected through a survey using a 5-point Likert-scale questionnaire. The data were then processed using inferential analysis using the SmartPLS program. Measurement of digital innovation variables was adapted from the study by Karatepe et al. (2020), e.g., "I enjoy finding creative ideas." GEO was measured using indicators from Luu (2021), e.g., "My organization always encourages green innovation." Creativity was adapted from the study by Adisaksana (2022), e.g., "I actively seek solutions to problems." Performance was measured using indicators from the study by Nguyen et al. (2021), e.g., "My organization's production quality has improved."

Hair et al. (2021) stated that the instrument testing criteria can be declared valid if the indicator's outer loading value is significant (p-value <α=0.05). Instrument reliability was tested using Cronbach's Alpha, where the instrument is considered reliable if the composite reliability and Cronbach's Alpha values are >0.60. The SEM-PLS analysis consists of three stages: measurement model evaluation/outer model, structural model evaluation/inner model, and significance testing (Hair et al., 2021). To test the influence between research variables, the criteria used were a t-statistic > t-table 1.96 and a p-value <0.05 (causality between the two variables has a real/significant influence).

RESULTS AND DISCUSSION

RESULTS

Outer Model Measurement

The results of the convergent validity test indicate that all research indicators meet the validity criteria, as seen from the t-statistic value >1.96 and p-value <0.05 (Table 1). The discriminant validity test resulted in all variables being declared valid because the square root of the AVE value > the correlation between latent constructs, this criterion is called the Fornell-Larcker criterion (Table 2). The AVE value of all variables has also met the validity requirements, namely >0.5 (Table 3). Meanwhile, the results of the instrument reliability test can be stated that all variables are classified as reliable as seen from the composite reliability value and Cronbach's Alpha >0.7 (Table 3).

Table 1. Convergent Validity Test

Indicator	Outer Loading	T Statistics	P Values	Note
X1.1 <- digital innovation	0.884	38.767	0.000	Valid
X1.2 <- digital innovation	0.793	10.589	0.000	Valid
X1.3 <- digital innovation	0.824	15.697	0.000	Valid
X1.4 <- digital innovation	0.766	13.317	0.000	Valid
X1.5 <- digital innovation	0.747	13.471	0.000	Valid
X2.1 <- GEO	0.890	34.869	0.000	Valid
X2.2 <- GEO	0.870	20.892	0.000	Valid
X2.3 <- GEO	0.646	5.753	0.000	Valid
X2.4 <- GEO	0.782	11.316	0.000	Valid
X2.5 <- GEO	0.697	6.050	0.000	Valid
Y.1 <- performance	0.778	15.473	0.000	Valid
Y.2 <- performance	0.675	9.931	0.000	Valid
Y.3 <- performance	0.818	19.098	0.000	Valid
Y.4 <- performance	0.781	19.599	0.000	Valid
Y.5 <- performance	0.721	13.412	0.000	Valid
Z.1 <- creativity	0.797	12.131	0.000	Valid
Z.2 <- creativity	0.881	18.804	0.000	Valid
Z.3 <- creativity	0.899	19.653	0.000	Valid
Z.4 <- creativity	0.656	2.552	0.011	Valid

Source: Processed data (2025)

Table 2. Discriminant Validity Test

Variable	creativity	digital	GEO	performance
creativity	0.766			
digital innovation	0.426	0.804		
GEO	0.615	0.631	0.766	
performance	0.531	0.611	0.712	0.756

Source: Processed data (2025)

Table 3. AVE and Reliability Test

Variabel	AVE	Cronbach's Alpha	rho_A	Composite Reliability	Note
creativity	0.587	0.730	0.810	0.839	Reliable
digital innovation	0.647	0.863	0.876	0.901	Reliable
GEO	0.587	0.824	0.882	0.874	Reliable
performance	0.572	0.813	0.819	0.869	Reliable

Source: Processed data (2025)

Inner Model Evaluation

The testing of this research model consists of the coefficient of determination (R^2), predictive relevance (Q^2), and Goodness of Fit (GoF).

Tabel 4. R Square

Variabel	R Square	R Square Adjusted
creativity	0.380	0.366
performance	0.561	0.547

Source: Processed data (2025)

Based on Table 4, the creativity determination coefficient is 0.380, meaning 38% of the creativity variable is influenced by digital innovation and green entrepreneurial orientation, while the remaining 62% is due to other factors outside the model. Similarly, the performance determination coefficient R^2 of 0.561 (56.1%) is influenced by the variables in this study.

$$Q^2=1-(1-R2_1)(1-R2_2)$$

$$GoF=\sqrt{\text{average } R^2 \times \text{average AVE}}$$

The Q^2 calculation results show a value of 0.728, indicating that the value is getting closer to one, indicating a high predictive value for this model. The GoF calculation results show a value of 0.530, indicating that the value is getting closer to one, indicating that this model is robust. Since the outer and inner model tests have met the requirements, we can proceed to hypothesis testing stage.

Hypothesis Testing

Based on Figure 2, digital innovation has no effect on creativity (p-value 0.579>0.05) which means H1 is rejected, however digital innovation has a significant effect on performance (p-value 0.020<0.05), so H2 is accepted. Green entrepreneurial orientation has a significant effect on creativity (p-value 0.000) and performance (p-value 0.000), so H3 & H4 are accepted. On the other hand, creativity has no effect on performance (p-value 0.168), and creativity does not play a mediating role in digital innovation and green entrepreneurial orientation on performance (p-value 0.656 and 0.226) so H5, H6, and H7 are rejected (Table 5).

Figure 2. PLS output

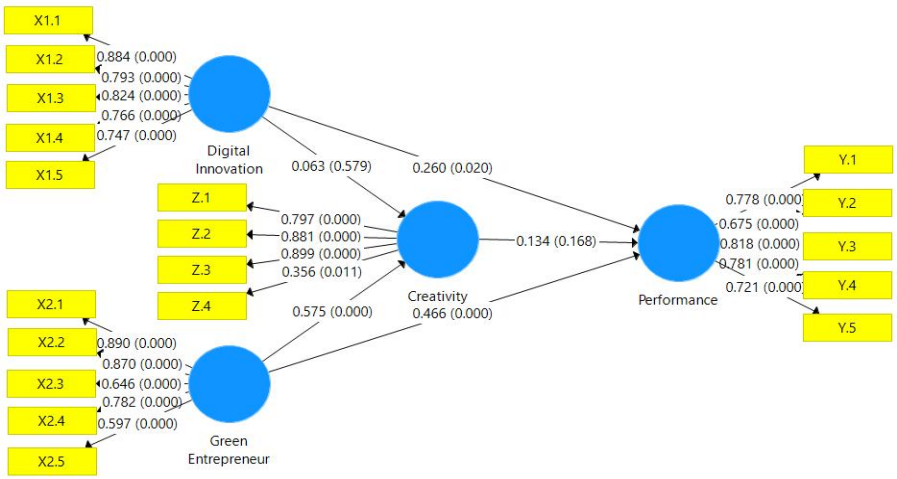


Table 5. Hypothesis Testing

Path Analysis	Path Coefficient	T Statistics	P Values	Note
digital innovation → creativity	0.063	0.556	0.579	H1 rejected
digital innovation → performance	0.260	2.332	0.020	H2 accepted
GEO → creativity	0.575	5.552	0.000	H3 accepted
GEO → performance	0.466	3.852	0.000	H4 accepted
creativity → performance	0.134	1.381	0.168	H5 rejected
digital innovation → creativity → performance	0.008	0.446	0.656	H6 rejected
GEO → creativity → performance	0.077	1.212	0.226	H7 rejected

Source: Processed data (2025)

DISCUSSION

The research results show that digital innovation has no significant impact on the creativity of Balinese endek weaving MSMEs. Although digital technology has been used, it has not been able to drive increased creativity in design or production. This finding is inconsistent with research by Karatepe et al. (2020), which found a positive relationship between digital innovation and creativity. These results support Barney's (1991) opinion, which emphasizes that not all resources (including digital technology) can provide competitive advantage unless these resources are valuable, rare, difficult to imitate, and crystallized within the organization.

In contrast, digital innovation significantly impacts MSME employee performance. The application of technology can improve work efficiency, accelerate communication, and simplify data management. These results align with research by Hanelt et al. (2021) and Mauliza (2023), which confirms the positive influence of digital innovation on performance. This finding is also consistent with Teece (2007) who emphasized that digital innovation reflects an organization's dynamic ability to integrate, build, and reconfigure resources to maintain superior performance.

A green entrepreneurial orientation has been shown to significantly influence MSME creativity. The application of sustainability principles encourages innovation in environmentally friendly products, from the use of natural materials to ecologically sound designs. This finding supports research by Luu (2021) and Dos Santos et al. (2020).

Furthermore, a green entrepreneurial orientation also significantly impacts employee performance. Implementing sustainability values increases work motivation, a sense of social responsibility, and job satisfaction. These results align with research by Putniņš & Sauka (2020) and Wahyuni & Sara (2020) which confirms the effect of entrepreneurial orientation on performance.

Other findings indicate that creativity has no significant effect on MSME performance. Design and production innovations have not had a direct impact on sales or operational efficiency. These results contradict research by Adisaksana (2022) and Nguyen et al. (2021), which found an effect of creativity on performance.

Creativity also failed to mediate the relationship between digital innovation and MSME performance. Technology does have a direct impact on performance, but it is not well integrated into creativity. These results are inconsistent with research by Nguyen et al. (2021) and Shafi et al. (2020), which showed creativity acted as a mediator.

A similar finding applies to the relationship between green entrepreneurial orientation and MSME performance. Creativity did not act as a mediator in improving sustainability-based business performance. This finding is inconsistent with research by Riva et al. (2021) and Dos Santos et al. (2020) which confirms the existence of a positive relationship through the role of creativity.

CONCLUSION

This study shows that digital innovation has no significant effect on creativity, but does significantly impact employee performance in Balinese endek ikat weaving MSMEs. Conversely, green entrepreneurial orientation is proven to significantly influence both creativity and employee performance. Although creativity is important in the context of product development, it does not significantly influence MSME performance and does not act as a mediator in the relationship between digital innovation and green entrepreneurship on MSME performance. These findings indicate that creativity is not yet a key element or bridge in improving overall business performance.

MSMEs are advised to focus not only on adopting digital technology but also on strengthening managerial aspects and marketing strategies so that creativity can significantly contribute to performance. Furthermore, the integration of green entrepreneurial values needs to be continuously enhanced as a long-term strategy to strengthen competitiveness. Training and mentoring related to technology utilization and sustainability-based product innovation need to be intensified and optimized.

Theoretically, this study contributes to the growing literature on the relationship between digital innovation, green entrepreneurship, creativity, and performance in the context of local culture-based MSMEs. Practically, these results provide input for MSMEs and policymakers to design development strategies that balance digitalization, creativity, and sustainability to achieve optimal performance improvements.

This research is limited in its scope to Balinese ikat endek weaving MSMEs, thus limiting the generalizability of the results. Future research is recommended to expand the study to other MSME sectors or regions to strengthen the generalizability of the findings. Furthermore, the addition of other variables, such as marketing strategy or managerial capabilities, could enrich the analytical model in understanding the factors influencing MSME performance.

REFERENCES

Adisaksana, H. (2022). The effect of digital transformation, business innovation models, and creativity on MSME performance with competitive advantage as intervening variable. Indonesian Interdisciplinary Journal of Sharia Economics (IIJSE), 5(2), 608-629. https://doi.org/10.31538/iijse.v5i2.2159

Antara, M. E. Y., Martini, I. A. O., & Sugianingrat, I. A. P. W. (2024a). Innovation Ambidexterity and Digital Capability as Drivers of SMEs' Sustainability. IEEE Access. https://doi.org/10.1109/ACCESS.2024.3470029

Antara, M. E. Y., Sugianingrat, I. A. P. W., & Martini, I. A. O. (2024b). Leadership strategy as the driver of achieving sustainable business: A case of endek weaving SMEs in Indonesia. Problems and Perspectives in Management, 22(4), 288-298. http://dx.doi.org/10.21511/ppm.22(4).2024.22

Antara, M. E. Y. (2025). Pengaruh Motivasi dan Manajemen Waktu Terhadap Kinerja Tenun Tinizhop Di Provinsi Bali. Media Bina Ilmiah, 20(1), 6667-6676. https://binapatria.id/index.php/MBI/article/view/1211

Aryani, S., Wiryono, S. K., Koesrindartoto, D. P., & Anggahegari, P. (2020). Global competition strategies for Indonesian SMEs. International Journal of Entrepreneurial Venturing, 12(4), 395-419. https://doi.org/10.1504/IJEV.2020.109592.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. https://doi.org/10.1177/014920639101700108.

Çalışkan, A., & Köroğlu, E. Ö. (2022). Job performance, task performance, contextual performance: development and validation of a new scale. Uluslararası İktisadi ve İdari Bilimler Dergisi, 8(2), 180-201. https://doi.org/10.29131/uiibd.1201880

Creswell, J. W., & Creswell, J. D. (2018). Research Design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE. https://uk.sagepub.com/en-gb/eur/research-design/book270550.

Dos Santos, J., Giri, E. E., & da Conceição Soares, A. (2020). The effect of entrepreneurial orientation and creativity on the development of small business credit union members on the Cu Lanamona, Maliana Timor Leste. ABM: International Journal of Administration, Business and Management, 2(2), 111-125. https://doi.org/10.31967/abm.v2i2.394

Green, A. E., Beaty, R. E., Kenett, Y. N., & Kaufman, J. C. (2024). The process definition of creativity. Creativity Research Journal, 36(3), 544-572. https://doi.org/10.1080/10400419.2023.2254573

Griffin, R. W., Phillips, J. M., & Gully, S. M. (2020). Organizational behavior: Managing people and organizations. CENGAGE learning. https://thuvienso.hoasen.edu.vn/handle/123456789/11937

Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). Partial least squares structural equation modeling (PLS-SEM) using R: A workbook (p. 197). Springer Nature. https://library.oapen.org/handle/20.500.12657/51463

Hanelt, A., Firk, S., Hildebrandt, B., & Kolbe, L. M. (2021). Digital M&A, digital innovation, and firm performance: an empirical investigation. European Journal of Information Systems, 30(1), 3-26. https://doi.org/10.1080/0960085X.2020.1747365

Karatepe, O. M., Aboramadan, M., & Dahleez, K. A. (2020). Does climate for creativity mediate the impact of servant leadership on management innovation and innovative behavior in the hotel industry?. International Journal of Contemporary Hospitality Management, 32(8), 2497-2517. https://doi.org/10.1108/IJCHM-03-2020-0219

Locke, E., & Latham, G. (2015). Goal-setting theory. In Organizational Behavior 1 (pp. 159-183). Routledge. https://doi.org/10.4324/9781315702018

Luu, T. T. (2021). Green creative behavior in the tourism industry: the role of green entrepreneurial orientation and a dual-mediation mechanism. Journal of Sustainable Tourism, 29(8), 1290-1318. https://doi.org/10.1080/09669582.2020.1834565

Martini, I. A. O., Gorda, A. E. S., Gorda, A. O. S., Sari, D. M. F. P., & Antara, M. E. Y. (2024). Impact of competence development, on work creativity, employee performance, and competitiveness of woven products. Cogent Business & Management, 11(1), 2353136. https://doi.org/10.1080/23311975.2024.2353136

Mauliza, P. (2023). The Influence of Creativity and Innovation on Business Success. Jurnal Manajemen Bisnis Eka Prasetya Penelitian Ilmu Manajemen, 9(2), 237-247. https://doi.org/10.47663/jmbep.v9i2.328

Muangmee, C., Dacko-Pikiewicz, Z., Meekaewkunchorn, N., Kassakorn, N., & Khalid, B. (2021). Green entrepreneurial orientation and green innovation in small and medium-sized enterprises (SMEs). Social Sciences, 10(4), 136. https://doi.org/10.3390/socsci10040136

Nguyen, P. V., Huynh, H. T. N., Lam, L. N. H., Le, T. B., & Nguyen, N. H. X. (2021). The impact of entrepreneurial leadership on SMEs' performance: the mediating effects of organizational factors. Heliyon, 7(6). https://doi.org/10.1016/j.heliyon.2021.e07326

Oakshott, L. (2020). Essential Quantitative Methods: for business, management and finance. Bloomsbury Publishing. https://www.bloomsbury.com/uk/essential-quantitative-methods-9781352005707/#

Putniņš, T. J., & Sauka, A. (2020). Why does entrepreneurial orientation affect company performance?. Strategic Entrepreneurship Journal, 14(4), 711-735. https://doi.org/10.1002/sej.1325

Riva, F., Magrizos, S., & Rubel, M. R. B. (2021). Investigating the link between managers' green knowledge and leadership style, and their firms' environmental performance: The mediation role of green creativity. Business Strategy and the Environment, 30(7), 3228-3240. https://doi.org/10.1002/bse.2799

Setyaningrum, R. P., & Muafi, M. (2022). The effect of creativity and innovative behavior on competitive advantage in womenpreneur. SA Journal of Human Resource Management, 20, 2069. https://doi.org/10.4102/sajhrm.v20i0.2069

Shafi, M., Lei, Z., Song, X., & Sarker, M. N. I. (2020). The effects of transformational leadership on employee creativity: Moderating role of intrinsic motivation. Asia Pacific Management Review, 25(3), 166-176. https://doi.org/10.1016/j.apmrv.2019.12.002

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319-1350. https://doi.org/10.1002/smj.640.

Wahyuni, N. M., & Sara, I. M. (2020). The effect of entrepreneurial orientation variables on business performance in the SME industry context. Journal of Workplace Learning, 32(1), 35-62. https://doi.org/10.1108/JWL-03-2019-0033

Wiesböck, F., & Hess, T. (2020). Digital innovations: Embedding in organizations. Electronic Markets, 30(1), 75-86. https://doi.org/10.1007/s12525-019-00364-9.