

Fostering local SDGs performance with green government initiative: Insights from Sidoarjo Regency, Indonesia

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Abstract. Implementing Green Government Practices has become a significant focus in efforts to achieve Sustainable Development Goals (SDGs) locally, including in Sidoarjo Regency, Indonesia. Government policies and actions toward environmental sustainability positively impact integrating economic, social, and ecological aspects. This study aims to analyze the role of green government practices in the Sidoarjo Regency on the performance of Local SDGs with government information system moderation interventions. This study chose a survey-based quantitative approach in the State Civil Apparatus (ASN) of Sidoarjo Regency. Data collected from 140 respondents were analyzed using PLS-SEM analysis techniques. The results showed that Green Service Design and Sustainability Governance Orientation significantly influenced the performance of SDGs in Sidoarjo Regency. The implementation of green services and sustainable governance orientation by local governments help achieve SDG targets, such as health, sanitation, and energy sustainability. Government information systems are essential in moderating this relationship, highlighting the importance of investing in information technology to support sustainable practices.

1 Introduction

Six of the 17 Sustainable Development Goals set by the United Nations are focused on efforts towards environmental sustainability and addressing ecological challenges. This focus includes measures to achieve harmony between economic, social, and environmental aspects to meet financial and social development needs while preserving ecosystems [1]. The government's involvement as a regulator and example provider for the community is vital in achieving environmental conservation goals. It involves developing policy products, processes, services, and technologies focusing on economic and ecological benefits [2]. They facilitate the implementation of sustainable practices, including waste management, renewable energy, public transportation, and environmental protection [3]. Through spatial

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planning, environmental regulation, and sustainable project funding, local governments promote inclusive economic growth, social security, and overall community well-being [4]. This is following Presidential Regulation Number 59 of 2017 concerning the Implementation of the Achievement of Sustainable Development Goals. The legal product mandates that to achieve the SDGs target, 3 (three) planning documents will be prepared, namely: the SDGs Roadmap, the SDGs National Action Plan (RAN), and the Provincial SDGs Regional Action Plan (RAD).

Green Government practice is an approach that focuses on sustainability and environmental protection in government policies and actions [5]. The World Governance Council defines a Green Government as a "government that works to ensure that sustainable development is integrated into all aspects of governance.". Its main principle is minimizing negative environmental impacts and improving overall social well-being [6]. Green Government implements renewable energy policies, sustainable waste management, environmentally friendly transportation, and protection of natural habitats [7]. It also involves an inclusive approach involving community and industry participation in decision-making [8]. Green Government encourages technological innovation and investment in sustainable solutions, including developing a green economy. The goal is to create a society that balances economic, environmental, and social needs [9]. Green Government also seeks to strengthen environmental awareness and education to encourage sustainable behavior among its citizens [10]. Green Government is critical in achieving the Sustainable Development Goals (SDGs) at the local level [11]. The function facilitates collaboration between the government, the private sector, and the community to create sustainable solutions [12].

Sidoarjo Regency, located in East Java Province, Indonesia, is rich in history, culture, and economic potential. Known as the center of industry and trade, Sidoarjo plays an essential role in the regional economy [13]. The city is also known for its tourism potential, such as exotic beaches and fascinating cultural heritage. Well-developed infrastructure supports economic growth and well-being, such as transport networks and public services. However, the district faces several challenges in achieving the Sustainable Development Goals (SDGs). One is economic inequality between urban and rural areas, affecting access to essential services such as education and health [14]. There are still gaps in the availability of adequate infrastructure, especially in rural areas, which hinder population accessibility and mobility [15]. Environmental issues such as water and air pollution and waste management still affect people's health and well-being. Lack of awareness of the importance of environmental conservation is also an obstacle in efforts to achieve SDG goals related to environmental protection [16].

With the above conditions, green government practices in the governance of the Sidoarjo Regency Government have become a must. Merawati [15] and Rumiati et al [16]. documented the initial efforts being made by the Sidoarjo Regency Government through various initiatives to integrate sustainability principles in government policies, programs, and practices. This includes developing sustainable transportation, designing energy-efficient government buildings, digital administrative governance, and multisector collaboration in SDG action plans. Several related studies have examined the impact of Green Government practices on service performance in various contexts. Chen [17], Dong [18], and Li [19] stated that green government is a strategic policy in China's local authorities. Another study found the role of green government in creating pro-environmental behavior [5,20]. Another study highlights the importance of digital administration policy practices as part of green government in creating community satisfaction [21, 22]. In general, the literature evidence supports the existence of green government in the efficiency of environmentally friendly governance.

However, existing studies have not further examined the impact of green government implementation on the 'performance of SDGs,' which are obligations a government must

achieve. In addition, the study above mainly focuses on the opinions of people with limited understanding of green government practices. So, this study aims to analyze the role of green government practices in the Sidoarjo Regency on the performance of Local SDGs with government information system moderation interventions. Theoretically, this study builds a renewed understanding of the relationship between green government practices and achieving Sustainable Development Goals by considering the progress of local government information systems. In practical terms, this study can provide valuable insights for policymakers and practitioners in advancing the sustainable development agenda through the strategic implementation of green government.

2 Methods

This study chose a quantitative approach involving surveys to examine insights from research respondents. The questions in this survey are from previous field research. The questionnaire is divided into two different parts. The first part focuses on collecting demographic information. These details include various aspects such as Work Unit, Position, and Service Period. The second part consists of 24 questions to explore respondents' perspectives on green government practices (green service design-sustainability governance orientation), local SDG performance, and government information systems. In detail, green service design as many as six items from the literature [23–25], Sustainable Governance Orientation as many as five items from the literature [23–25], and Government Information Systems as many as eight items from the literature [24, 26, 27] and local SDGs Performance as many as five items from [28, 29]. All variables are connected by two primary and two moderation hypotheses with the model in Figure 1.

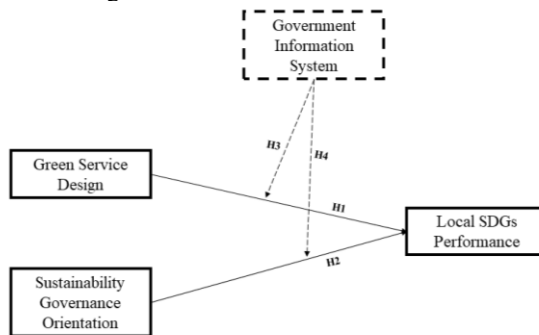


Fig. 1. Research Model

Information:

H1. Green service design has a significant positive effect on the local SDGs performance of Sidoarjo Regency

H2. Sustainability governance orientation has a significant positive effect on the local SDGs performance of Sidoarjo Regency

H3. Government information system plays a role in moderating the relationship between green service design and local SDGs performance of Sidoarjo Regency

H4. The government information system plays a role in moderating the relationship between sustainability governance orientation and local SDGs performance of Sidoarjo Regency

This study focuses on Civil Servants of Sidoarjo Regency with a minimum service period of 5 years. The primary purpose of these investigations is to collect survey responses from specific groups. This study chose convenience sampling withdrawal techniques in consideration of ease of access and availability of relevant respondents for accurate data analysis. Determining the minimum sample considers the opinion of Hair et al. (2018), where the minimum sample is based on a calculation of five times the total indicator [30]. Thus, this

study must reach a minimum sample of 120 research respondents to be eligible for further processing. The distributed questionnaires that have been developed occur through face-to-face interaction with staff, with a dissemination period of 3 months (February-April 2024).

This study chose the Partial Least square-structural Equation Modeling (PLS-SEM) analysis technique with the SmartPLS Version 3 analysis tool. The main advantage of PLS-SEM is its ability to handle complex models with latent variables and measurements that may be correlated [31]. In addition, PLS-SEM is more tolerant of violations of normality assumptions and small sample sizes than traditional SEM methods [32]. This makes it more suitable for social sciences and business research, which often involve complex models with limited sample sizes. PLS-SEM also enables powerful predictive analytics, allowing researchers to partially test and validate models throughout the research process [33].

PLS-SEM analysis consists of two main stages: outer model measurement and structural equation modeling. At the measurement stage of the outer model, the focus is on checking the quality of the measurements or constructs used in the model [34]. It involves evaluating the reliability and validity of each indicator or variable that represents a construct. This analysis includes measuring internal reliability using Cronbach's alpha coefficient and construct validity through confirmatory factor analysis or convergent and discriminant tests. After validating the outside model, the next step is to model the structural equation. It involves constructing and evaluating relationships between latent variables in the model. PLS-SEM considers small factors and complex effects, allowing researchers to examine cause-and-effect relationships between variables [35].

3 Result and Discussion

3.1 Characteristics of Respondents

This study obtained 140 respondents of ASN Sidoarjo Regency who were willing to participate, with the results of tabulating the characteristics in Table 1. Respondents came from various agencies, primarily the Environment and Hygiene Office of Sidoarjo Regency, the Regional Secretariat, and other agencies. Their functional positions are divided into expertise and skills. Most respondents had a tenure of between 5-10 years, followed by 11-15 years, 16-20 years, and more than 20 years.

Table 1. Characteristics of Respondents

Characteristic	Total	Percentage
<i>Origin Agency</i>		
Regional Secretariat of Sidoarjo Regency	15	15%
Environment and Hygiene Office of Sidoarjo Regency	39	28%
Etc	86	61%
<i>Functional Position</i>		
Skill	91	35%
Skills	49	65%
<i>Working Period</i>		
5-10 Years	94	67%
11-15 Years	37	26%
16-20 Years	7	5%
>20 Years	2	2%

3.2 Research Reliability Validity Test

Validity and reliability testing is essential in ensuring research models' quality and reliability. Validity refers to the extent to which a research instrument measures what it is supposed to measure. Good validity considerations are determined by the loading factor value of each indicator on variables above 0.7 [33]. Validity is also evaluated through Average Variance Extracted (AVE), with an AVE value of ≥ 0.5 considered adequate [36]. The validity test results in Table 2 show that all indicators meet the minimum value of loading factor and AVE accumulation on each variable above the standard. Thus, the validity of the study has been achieved. Reliability assesses the internal consistency of indicators, usually using Composite Reliability (CR) and Cronbach's Alpha (CA), with CR values ≥ 0.7 considered adequate [37]. The reliability test results in Table 2 show that the overall CA and CR values of variables exceed the minimum number, so it can be concluded that reliability has been achieved. Researchers have ensured that the PLS-SEM model is valid and reliable through validity and reliability tests.

Table 2. Student Validity and Reliability Test

Variable	Loadings Factor	AVE	CA	CR
<i>Green Service Design</i>				
The design of new services and facilities in Sidoarjo Regency Government was thoroughly tested before launch to ensure sustainability and positive environmental impact	0.746	0.595	0.934	0.915
Sustainability and environmental friendliness take precedence over cost reduction	0.747			
ASNs from various levels and agencies are actively involved in service design to ensure sustainability aspects	0.874			
Environmental impacts are considered before implementing new policies or programs in the Sidoarjo Regency Government	0.733			
The involvement of external parties is necessary to design services that focus on sustainability and environmental well-being	0.717			
Information and communication technology is used in Sidoarjo Regency Government to reduce environmental footprint and improve the efficiency of public services	0.760			
<i>Sustainability Governance Orientation</i>				
The Sidoarjo Regency Government consistently implements environmentally friendly policies to support sustainability.	0.844	0.561	0.928	0.906
PNS Sidoarjo understands environmentally oriented governance practices well	0.849			
The Sidoarjo government provides sufficient support and incentives for environmental initiatives by agencies under its authority	0.870			
The Sidoarjo government actively involves the community in decision-making related to the environment	0.881			
PNS Sidoarjo actively participates in training to increase understanding of green governance	0.850			
<i>Government Information System</i>				
Regional administrative information systems collect and analyze agency performance data well	0.884	0.721	0.884	0.850
We can manage and analyze administrative and governance data	0.771			
Information helps improve community processes, products, and services	0.723			
Community and performance data allows us to monitor service and administrative performance	0.781			
We have easy access to necessary government information	0.752			
We can obtain information promptly through administrative and governance information systems	0.755			
Important data collected in administrative and governance information systems are presented and communicated to all interested ASNs	0.863			

Variable	Loadings Factor	AVE	CA	CR
Our information systems are regularly evaluated and improved	0.765			
Local SDGs Performance				
The Sidoarjo Regency Government has implemented SDGs programs well	0.892	0.738	0.915	0.921
I have a clear role to play in achieving the SDGs in my workplace	0.827			
The available resources are sufficient to support SDGs programs in Sidoarjo Regency	0.877			
Communication between units of civil servants in Sidoarjo Regency supports the achievement of SDG goals	0.851			
Performance monitoring and evaluation to achieve SDGs targets in Sidoarjo Regency functions effectively	0.861			

3.3 Test the Research Hypothesis

After validity and reliability are achieved, the stage continues with the research hypothesis test. In PLS-SEM studies, hypothesis testing is carried out through the stages of the inner structural model. It refers to the part of the model that shows how one or more independent (exogenous) variables affect the dependent variable (endogenous) in a research model [38]. The inner model analysis involves testing structural hypotheses by looking at the strength and direction of relationships between constructs, represented by path coefficients [39]. Figure 1 is the output of the research model tested through the SmartPLS Version 3 application.

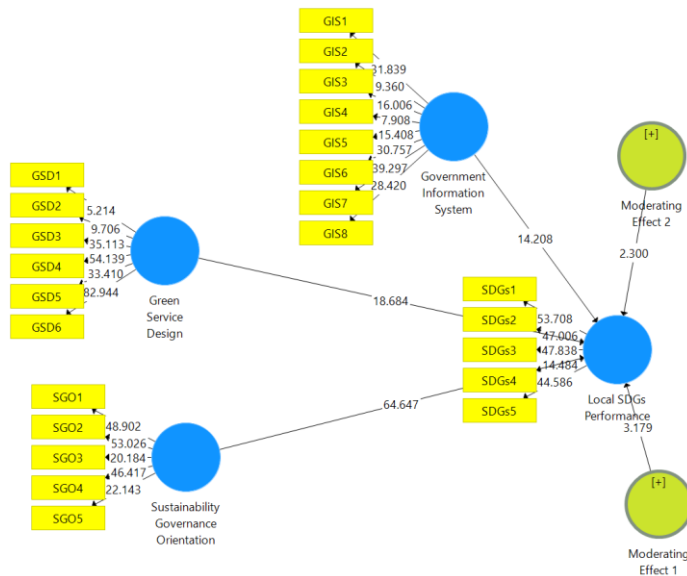


Fig 2. Output Bootstrapping

A hypothesis can be accepted if the charge path coefficient value is positive, the t-statistic value >1.96 , and the p-value <0.05 [40]. The results of the hypothesis test (table 3) show that Green Service Design and Sustainability Governance Orientation are significantly positively related to Local SDG performance, with path coefficients of 0.555 and 0.840, respectively, as well as high t-statistical values and significant p-values ($p < 0.05$). In addition, the Government Information System was found to moderate the relationship between Green Service Design - Sustainability Governance Orientation and Local SDG performance. R-squared testing is a parameter that indicates how well the model can explain variations in endogenous variables. R² values range from 0 to 1, where the higher the value, the better the

model can explain data variations. The results of the R-Square test in Table 3 show that the accumulative independent variable strongly influences Local SDG performance by 0.807 or 80.7%. In contrast, other variables outside the study affect the rest.

Table 3. Test Hypothesis and R-Square

Hypothesis	Path Coefficient	t-statistic	p-value	Decision	R-Square
Green Service Design → Local SDGs Performance	0.555	18,684	0.000	Accepted	0.807
Sustainability Governance Orientation → Local SDGs Performance	0.840	64,647	0.000	Accepted	
Green Service Design ← Government Information System → Local SDGs Performance	0.027	3,179	0.002	Accepted	
Sustainability Governance Orientation ← Government Information System → Local SDGs Performance	0.021	2,300	0.024	Accepted	

4 Discussion

The results of hypothesis testing show that Green Service Design significantly affects local SDGs' performance in Sidoarjo Regency. These results support previous literature showing that Green Service Design drives resource efficiency and sustainability, directly contributing to the Region's environmental and social goals [41, 42]. This indicates that the green service approach adopted by the local government positively impacts the achievement of the Sustainable Development Goals (SDGs) in the area. Green Service Design refers to designing and delivering environmentally friendly public services, such as efficient waste management, using renewable energy, and promoting sustainable transportation. The significance of this influence also means that initiatives that include environmentally oriented government policies and programs have proven effective in fostering various SDG indicators, such as health and well-being (SDG 3), clean water and sanitation (SDG 6), clean and affordable energy (SDG 7), and sustainable cities and communities (SDG 11). In other words, the better the implementation of Green Service Design, the more the performance of local governments will increase in achieving SDG targets. These findings are essential for Sidoarjo Regency because they provide empirical evidence that investment and focus on green services impact environmental conservation and directly strengthen sustainable development. This encourages local governments to continue to expand and improve the implementation of Green Service Design as an integral part of sustainable regional development strategies.

The results of the next hypothesis test show that Sustainability Governance Orientation in green government practices significantly affects the performance of Local SDGs. These results are in line with previous literature showing that sustainability-focused governance orientation helps local governments implement policies that are more effective and efficient in achieving SDG targets [7, 43, 44]. In more depth, these results indicate that the government's orientation in implementing sustainability principles is not only a policy formality but has a tangible impact on achieving SDGs at the local level. Sustainability Governance Orientation reflects the commitment and strategy of local governments to integrate sustainability aspects into various fields of government, including environmental, economic, and social. Green government practices involve environmentally friendly policy-making, resource efficiency, and community participation in preserving nature. When this orientation is applied consistently and effectively, the results are seen in improvements in SDGs indicators. SDGs cover various aspects, such as poverty alleviation, quality of education, access to clean water, and affordable energy. The significant influence of SGO on local SDGs shows that sustainable policies and practices implemented by the Sidoarjo

Regency government can improve the community's quality of life, preserve the environment, and encourage inclusive economic development. This reflects that the government's sustainability-focused approach is theoretical and delivers practical results that society can feel. Thus, this success provides a clear example to other regions that applying green government principles and sustainability orientation in governance is an effective strategy to achieve sustainable development goals. It also reinforces the importance of severe commitment and implementation in sustainability policies to bring about measurable positive change.

The results of hypothesis testing show that the government information system moderates the relationship between green service design in green government and the performance of local SDGs in Sidoarjo Regency. Moderation by government information systems indicates that the success of green service design in influencing green government practices and SDGs' performance largely depends on existing information systems' effectiveness. Sophisticated and integrated information systems enable better data collection, processing, and analysis, supporting more informed and evidence-based decision-making. Thus, local governments that want to improve the performance of the SDGs need to invest in developing and maintaining effective information systems. This relationship of moderation also demonstrates the importance of transparency and accountability in government. A sound information system enables faster and more accurate dissemination of information to the public and other stakeholders, which can increase public participation in green programs and SDG initiatives. This strengthens the link between green service design and government practices, as informed citizens are more supportive and engaged in sustainability efforts. These results underscore the importance of synergies between information technology and sustainability efforts. Innovative green service design requires information technology support to be implemented effectively. For example, digital applications and platforms can aid in waste management, energy efficiency, and environmental reporting, all contributing to achieving the SDGs. These findings imply that Sidoarjo District should integrate the development of government information systems as part of a strategy to improve green service design and government practices to achieve better SDG performance [7, 14]. This is relevant for Sidoarjo and can also be a model for other regions that seek to improve their sustainability and sustainable development performance.

Finally, the results of hypothesis testing show that the government information system moderates the relationship between sustainability governance orientation in green government practices and the performance of local SDGs. This means that the existence and quality of government information systems can strengthen or weaken the impact of sustainable governance orientation on environmentally friendly government practices. In other words, an influential government information system enables local governments to manage and monitor sustainability initiatives better. This includes collecting relevant data, analyzing it, and making more targeted data-driven decisions to achieve sustainability goals. Moderation by government information systems also indicates that information and communication technology (ICT) is crucial in implementing sustainable policies and practices. Sophisticated information systems can provide a platform for multiple stakeholders to collaborate, share information, and track progress against local SDG targets. This helps create transparency and accountability, which encourages the implementation of more consistent and effective green government practices. Furthermore, this relationship also shows the importance of local governments' investment in ICT infrastructure. By adopting the right technology, the Sidoarjo district government can increase its capacity to implement better sustainable policies and improve the performance of local SDGs. This could include the development of public information portals, digital reporting systems, and environmental monitoring applications. Finally, these results reinforce that solid policies and an orientation toward sustainable governance are not enough to achieve optimal local SDG performance.

There must be adequate technological support to implement and monitor the policy effectively. It underscores the importance of a holistic approach that incorporates policy, technology, and management practices in achieving sustainable development goals at the local level.

5 Conclusion

From the results of the study, it was concluded that the implementation of Green Service Design and Sustainability Governance Orientation significantly affected the performance of local SDGs in Sidoarjo Regency. Green Service Design, which includes efficient waste management, the use of renewable energy, and the promotion of sustainable transportation, is proven to improve SDG indicators such as health (SDG 3), clean water (SDG 6), clean energy (SDG 7), and sustainable cities (SDG 11). Similarly, the Sustainability Governance Orientation shows that sustainability-focused governance significantly improves the quality of life, conserves the environment, and promotes inclusive economic development. In addition, the Government Information System moderates the relationship between green service design and sustainable governance with the performance of the SDGs, suggesting that sophisticated and integrated information systems are essential for more informed and evidence-based decision-making.

Recommendations for the Sidoarjo Regency Government are to improve the implementation of Green Service Design and Sustainability Governance Orientation and strengthen Government Information System (GIS) infrastructure in Green Government practices. The importance of this strategic integration is evident in research results that show a significant impact on the performance of local SDGs. Concrete measures could include the development of more environmentally oriented policies, promoting green practices in all areas of government, and investing in sophisticated and integrated information systems. In the context of Green Service Design, a focus on resource efficiency, renewable energy, and sustainable transportation will amplify positive environmental and social impacts. Meanwhile, sustainability governance orientation must be strengthened by integrating sustainability principles into all government decisions. This requires a solid commitment to incorporating sustainability in all governance policies and practices. In addition, expanding and improving the quality of GIS infrastructure will enhance the government's ability to collect, process, and analyze relevant data to support evidence-based decision-making.

Based on the study's results, academics need to underline that implementing Green Service Design and Sustainability Governance Orientation plays a vital role in improving the performance of local SDGs in Sidoarjo Regency. They recommend further exploring the link between green services and sustainable governance practices in achieving the SDGs. In addition, further research can be conducted to understand the moderation mechanisms of government information systems more deeply. This will help design more effective strategies for local governments to achieve sustainable development goals through the holistic integration of policies, technologies, and management practices. Limitations of the study include focusing on one particular district, which may not reflect the same conditions in other areas. In addition, this study may be limited in measuring the long-term impact of the implementation of Green Service Design and Sustainability Governance Orientation on the performance of SDGs. For future research, it is necessary to conduct comparative studies between regions to broaden the generalization of findings. In addition, longitudinal research will provide insight into changes in SDG performance over time. Furthermore, research can explore other factors that influence the effectiveness of sustainable policy implementation, such as cultural and social factors.

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References

1. T. Ambrizzi, T. M. Gomes, F. da Rocha Brando, F. P. Martins, T. Malheiros, D. C. R. Espinosa, and P. S. de Almeida, *World Sustainability Series* **5** (2021)
2. B. Perry, K. Diprose, N. Taylor Buck, and D. Simon, *Frontiers in Sustainable Cities* **3**, (2021)
3. M. Mohieldin, S. Wahba, M. A. Gonzalez-Perez, and M. Shehata, *Business, Government and the SDGs: The Role of Public-Private Engagement in Building a Sustainable Future* (Sustainable Development Network, 2022)
4. F. Naert, *Handbook of Collaborative Public Management* (Edward Elgar Publishing Ltd., 2021)
5. A. Azhar and K. Yang, *Rev Public Pers Adm.* (2021)
6. K. Mao and P. Failler, *Int J Environ Res Public Health* **19**, (2022)
7. A. Iwan and K. K. Y. Poon, *International Journal of Sustainable Development and Planning* **13**, 556 (2018)
8. T. Ding, Y. Zhang, P. Zhou, and X. Zhao, *Managerial and Decision Economics* (2023)
9. M. Artmann, M. Kohler, G. Meinel, J. Gan, and I.-C. Ioja, *Ecol Indic* **96**, 10 (2019)
10. J. Cifuentes-Faura, *J Clean Prod* **419**, (2023)
11. J. Carpenter and D. Valler, in *Urban Book Series* (Springer, 2023)
12. J. Corbett and S. Mellouli, *Information Systems Journal* **27**, 427 (2017)
13. I. S. Rahmawati and N. Handayani, *Jurnal Ilmu Dan Riset Akuntansi (JIRA)* **8**, (2019)
14. A. A. S. A. Widyastuty, S. Suning, L. D. Rohmadiani, S. N. Rukmana, M. Shofwan, and A. B. Tribhuwaneswari, *SNHRP 1430* (2022)
15. A. T. Rumiati, N. Z. Salsabila, H. J. Sari, and L. F. Riza, *International Journal of Research in Business and Social Science* (2147-4478) **11**, 316 (2022)
16. D. Merawati, *Jurnal Integrasi Dan Harmoni Inovatif Ilmu-Ilmu Sosial* **3**, 294 (2023)
17. Z. Li, Y. Hou, J. Cao, Y. Ding, and X. Yuan, *Environmental Science and Pollution Research* **29**, 5454 (2022)
18. T. Chen, Y. Chen, M. Hague, A. W. Lin & Z. Wu, What is decidable about string constraints with the replaceall function, in *Proceedings of the ACM on Programming Languages*, 2(POPL), (2017)
19. B. Dong and Y. Xu, *Environ Dev Sustain.* **9**, 1 (2024)
20. Y. Lin, J. Li, and L. Xiang, *Front Psychol.* **13**, 973160 (2022)
21. J.-C. Hong, M.-Y. Hwang, T.-Y. Ting, K.-H. Tai, and C.-C. Lee, *Turkish Online Journal of Educational Technology* **12**, 313 (2013)
22. X. Yang, R. Ran, Y. Chen, and J. Zhang, *Energy Policy* **187**, (2024)
23. E. Erna and Z. Mutaqin, *International Journal of Energy Economics and Policy* **13**, 552 (2023)
24. H. S. Al-Dhaafri and M. S. Alosani, *International Journal of Quality and Reliability Management* **40**, 2166 (2023)

25. F. Ugolini, G. Sanesi, A. Steidle, and D. Pearlmutter, *Forests* **9**, (2018)
26. S. McLeod, L. Papavassiliou, and R. Clydesdale, *Public Integrity* **24**, 126 (2022)
27. M. Skordoulis, P. Alasonas, and V. Pekka-Economou, *International Journal of Productivity and Quality Management* **22**, 82 (2017)
28. Y.-C. Chen, Y.-H. Chiu, T.-H. Chang, and T.-Y. Lin, *J Happiness Stud* **24**, 1549 (2023)
29. I. H. Osman and F. Zablith, *J Bus Res* **131**, 426 (2021)
30. J. F. Hair, J. J. Risher, M. Sarstedt, and C. M. Ringle, *European Business Review* **31**, 2 (2018)
31. J.-M. Becker, J.-H. Cheah, R. Gholamzade, C. M. Ringle, and M. Sarstedt, *International Journal of Contemporary Hospitality Management* **35**, 321 (2023)
32. E. E. Rigdon, M. Sarstedt, and C. M. Ringle, *Marketing ZFP* **39**, 4 (2017)
33. M. Sarstedt, C. M. Ringle, and J. F. Hair, in *Partial Least Squares Path Modeling* (Springer International Publishing, Cham, 2017), pp. 197–217
34. M. Sarstedt, L. Radomir, O. I. Moisescu, and C. M. Ringle, *J Bus Res* **138**, 398 (2022)
35. M. A. Memon, R. T., J.-H. Cheah, H. Ting, F. Chuah, and T. H. Cham, *Journal of Applied Structural Equation Modeling* **5**, 1 (2021)
36. D. Russo and K.-J. Stol, *ACM Comput Surv* **54**, 1 (2021)
37. M. Sarstedt, C. M. Ringle, J. H. Cheah, H. Ting, O. I. Moisescu, and L. Radomir, *Tourism Economics* **26**, 531 (2020)
38. S. Schubring, I. Lorscheid, M. Meyer, and C. M. Ringle, *J Bus Res* **69**, 4604 (2016)
39. S. Streukens and S. Leroi-Werelds, *European Management Journal* **34**, 618 (2016)
40. J. Hair, C. L. Hollingsworth, A. B. Randolph, and A. Y. L. Chong, *Industrial Management and Data Systems* **117**, 442 (2017)
41. C. Baedeker, C. Liedtke, and M. J. Welfens, in *Living Labs: Design and Assessment of Sustainable Living* (2016), pp. 35–52
42. A. A. Smith and O. F. Offodile, *International Journal of Logistics Systems and Management* **19**, 417 (2014)
43. C. Koliba, M. Egler, and S. Posner, *Sustainable Wellbeing Futures: A Research and Action Agenda for Ecological Economics* (Edward Elgar Publishing Ltd., 2020)
44. N. K. Tyagi and M. Goyal, *Digital Cities Roadmap: IoT-Based Architecture and Sustainable Buildings* (Springer, 2021)