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The Environmental and Sustainable Factors on the Special Economic Zones Development

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Abstract

The process towards sustainability is indeed very complicated, given the increasing need of the population for infrastructure to support human activities. The objective of the study is to analyze the influence of environmental factors and their awful effects on infrastructure projects with sustainable construction models in special economic zones. The methodology used are mixed methods, combination of quantitative and qualitative approaches with the total respondent are 80 persons. The respondents involved are divided by company/institution, company's qualifications, and stakeholders. The first validity shows that all factors have a value above 0.5, by using Fornell Lacker Criterion, it is found that the CDV value met the requirements from all variables involved. The validation was calculated by a cross-loading method called discriminant validity. After validity, it is continued to obtain model fit value and the final model fit is 0.568 means good model. The NFI value released was 56.8%. It means that the declared model was good enough to be implemented within sustainability in SEZs. This result supported the previous research, which stated that a sustainable construction model using a multi-criteria approach is a good model choice for the development of a sustainable construction model.

Keywords: Environment; Strategy; Sustainable Construction; Special Economic Zones; Building Engineering.

1. Introduction

The challenge in operational strategy and construction management is environmental degradation. Environmental factors have become an important concern in the world of sustainable construction in the last 15 years [1]. Furthermore, industrial construction, namely infrastructure, can affect the improvement of the quality of human life. The increase in population led to an increase in construction, especially of infrastructure that supports the activities of the population. Zea Escamilla stated that the construction industry accounts for 35% of the total global carbon dioxide (CO_2) emissions [2]. In practice, it was also found that the waste that is disposed of can produce 40–65% of total construction waste. Industrial construction has a series of supporting activities that can release 30% of harmful greenhouse gas emissions from the process, and the processing of construction materials has 18% of these uses. Alencar argues that development infrastructure must be able to change the mind-set of actors who originally focused on increasing user satisfaction but are more active towards environmental balance and social ethical responsibility [3]. This is what causes the threat of global warming to the environment and, especially, to humans. Therefore, ongoing studies on formulating environmentally friendly construction models and minimizing CO_2 emissions need to be carried out effectively and efficiently. Sustainable development should be able to minimize environmental impacts in the form of global warming, ozone depletion, and various mixtures of air, water, and noise pollution. Figure 1 explains in detail the impacts of construction and its process.

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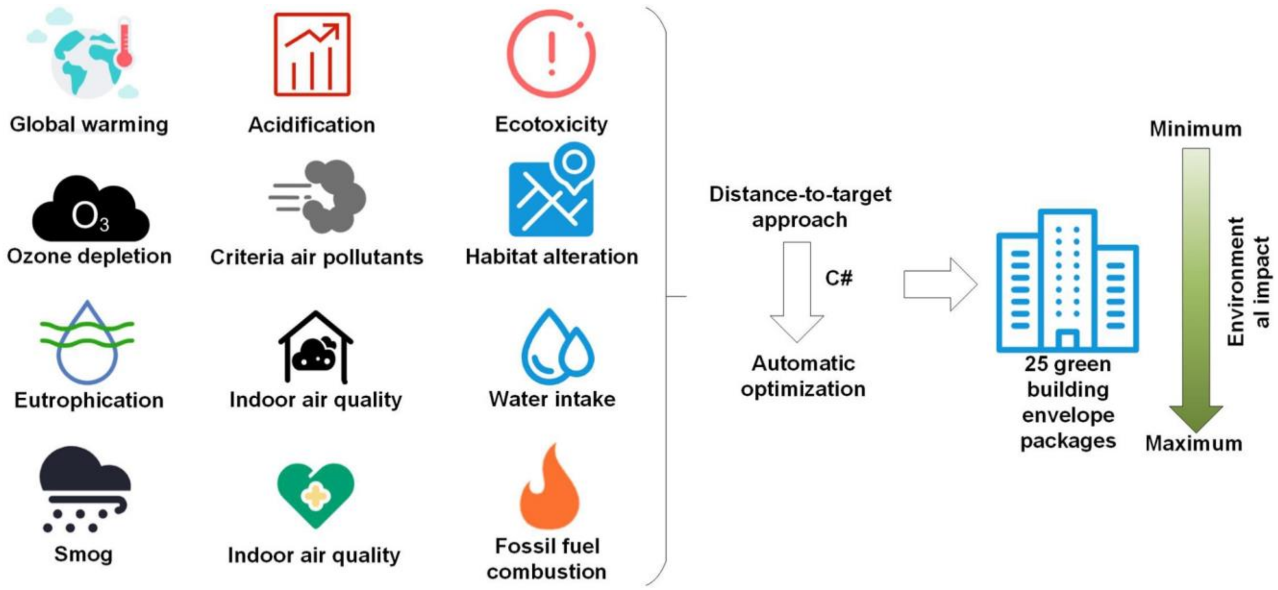

Figure 1. The effects of construction industries in the world [4]

Sustainable construction is planned to improve the quality of life, minimize pollution, and bring about potential changes in the function of buildings in the future. This shows that sustainable construction ensures development to meet needs without compromising the capabilities of future generations. Sustainability means that the construction industry can assist with proactive measures to meet the needs of present and future generations to conserve water, energy, and natural resources [4, 5]. This can be done through recycling processes, minimizing pollution and waste, and developing innovative designs to minimize the negative impact of the construction process on the environment [6]. This concept is very important to encourage construction industry stakeholders who have a strategic role in providing input and ideas in the design process to increase the efficiency of construction design as well as in the procurement and construction processes.

During the sustainable development process, the environment is one of the most decisive factors in many developing countries [7]. Environmental factors are very important to ensure the impact that will occur after a construction building operates. This is also necessary to ensure the limitations that must be considered in construction [8]. Various solutions have been developed, such as careful planning with simulation beforehand [9], building regulations that accommodate environmental factors as an important part that must continue to be a determining factor for the success of development [10], using a more holistic approach [11, 12], and various other components that are critical factors in sustainable construction [13, 14]. Financing the implementation of environmental factors is a component that continues to be analyzed, and solutions are sought [15, 16]. This is intended so that environmental factors can remain a priority in the development of sustainable construction. In addition, the leadership component is also a determining factor in its implementation. Therefore, adequate assessment is needed to ensure that the critical success factors for sustainable construction can be implemented properly. However, of the various solutions that have been implemented, none of them specifically provides an adequate solution to the strategy for implementing environmental factors, especially in the development area of special economic zones with tourism specifications in developing countries. This is important because many developing countries focus on infrastructure development but pay less attention to environmental factors as an important part of sustainable construction development. The aim of the study is to analyze the influence of environmental factors and their awful effects on infrastructure projects with sustainable construction models in special economic zones. This research is focusing on building a strategy, particularly on the implementation of environmental factors. It was very important to use a sustainable construction model in the development of special economic zones.

2. Materials and Method

Environmental factors will influence many aspects of the construction industry. The methodology of this research is a collaboration of quantitative and qualitative methods called "mixed methods". It is a research design based on philosophical assumptions and the questionnaire. The methodology provides directions on how to analyze data using mixed approaches through several phases. They combined a single study with a series, whose central premise was used as a basis. This methodology produces more comprehensive facts when examining research problems.

The research was started by mapping the probability factors using qualitative approaches and 80 respondents. It used to see the characteristics of the data and available factors in the field, filter the suitable model and justify the result for quantitative method. For instance, the quantitative method will be more observable and measurable. The researcher continued with the qualitative method to recap and analyze the whole set of data holistically, dynamically, and understandably. It is used to gain an understanding when building a strategy in line with the objectives as described in the Figure 2.

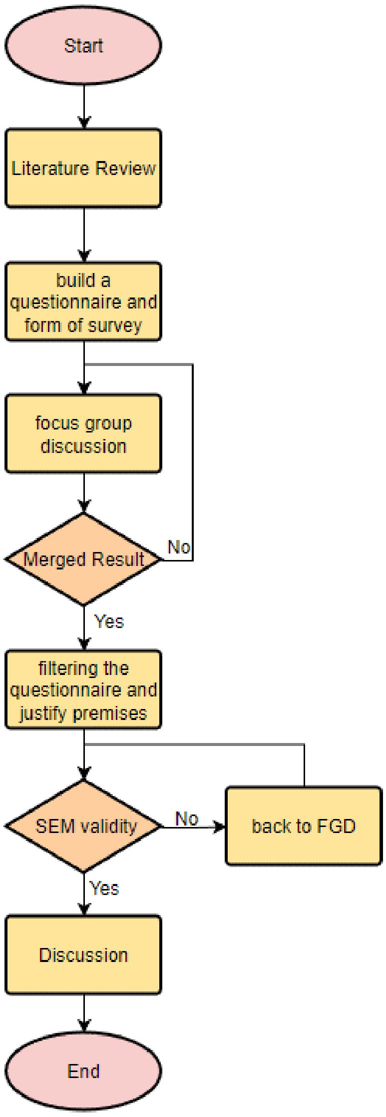

Figure 2. The flow Chart of the Research

3. Results

The results were collected and differed in several aspects, namely institution, qualification, and risk level. Over 80 respondents have filled out the form, and the data has been collected.

3.1. Distribution of Respondents by Institution/Company

The distribution of respondents based on institution has been completed. It was found that 73.8% are private companies with international, national, and local scales. The remaining 12.5% are companies or government agencies, both national and local. The composition of the respondents also consisted of members of the public and academics from universities, which made up 8% and 3.75%, respectively. The full amount can be seen in Table 1.

Table 1. Distribution of respondents by agency/company

No	Agencies/Companies	Amount
1	Government	10
2	Private companies	59
3	Public	8
4	University	3
Total		**80**

3.2. Distribution of Respondents by The Company Qualification

The distribution of respondents by using the Company's Qualification found more detail. The data found are described in the Table 2.

Table 2. Distribution of respondents based on company qualifications

No	Company Qualifications	Total
1	Not Filling	17
2	Small	1
3	Intermediate	29
4	Big	33
Total		**80**

The results from Table 2, show that 63 respondents are work and involved on the SEZs companies. It can be said that over 78.75% of the total respondent are concisely know about sustainability in the construction project. As can be seen In the Table 2, it is obtaining that 52.38% respondent are involved on the big company qualifications, while 46.03% are involved on the intermediate qualifications. The minority found that only 1 respondent was from small company qualifications in the SEZs. Over 21.25% of the total respondents are not identified, due to the qualification of the respondent are from community members, academics, and government.

According to Liu et al. (2019) [17] the company's qualification will reflected to the result of the project. It seems more suitable to declare as a finding in the special cases such as building construction and public space. Other than that, sustainable construction is a way for the construction industry to achieve sustainable development by considering social, economic, environmental, and cultural issues. To gain the four considerations, it comes from the company's qualification [18]. It can be concluded that respondents who involved and worked for the companies could be qualified based on large, medium, and small categories. Subsequently, the Special Economic Zones (SEZs) campaign more sustainability in construction. This category was created to analyze the types of company's qualifications involved in SEZs.

3.3. Distribution of Respondents by Role as Stakeholders

Table 3 shows that the distribution of respondent by role as stakeholders are mostly coming from contractors and consultants. The remaining respondents involved are from different role namely academician, investors, government, community, and owner.

Table 3. Distribution of respondents by stakeholder

No	Stakeholder	Amount
1	Academics	2
2	Investors	1
3	Consultant	12
4	Contractor	47
5	Public	7
6	Government	7
7	Owner	4
Total		**80**

4. Discussion

4.1. The Sustainable Construction Model Test Results

The convergent validity test or Average Variance Extracted (AVE) was using to analyzed and calculated the model used. The AVE value is used to meet the measurement value of ≥ 0.5 for each variable. Table 4 is explained The AVE value test results.

Table 4. The Value Average Variance Extracted

Variable	Cronbach's Alpha	rho_A	Composite Reliability	AVE
X (LI)	0.895	0.918	0.922	0.702
Y (SC)	0.831	0.832	0.887	0.664

The result shows that all factors have a value above 0.5. by using Fornell Lacker Criterion to calculated and do the validation. The determination of Discriminant Validity engaged the variables correlation. Table 5 described the validity calculation and the requirements is X (LI) > Y (SC).

Table 5. Calculated Discriminant Validity by using Fornell Lacker Criterion

Variable	X (LI)	Y (SC)
X (LI)	0.838	
Y (SC)	0.481	0.815

As can be seen on the Table 5, the X (LI) value was 0.838 which is greater than Y (SC) and classified as approved value to be implemented. It has been met the requirements. The validation discriminant using cross loading method was highlighted that the validity between the indicator values should be greater than other variables.

The computing reliability involved composite and Cronbach's Alpha as can be seen in the Table 6. The reliability value should be greater than 0.7 for X and Y variables.

Table 6. The value of Compute Reliability (Composite Reliability and Cronbach's Alpha)

Variable	Cronbach's Alpha	rho_A	Composite Reliability	AVE
X (LI)	0.895	0.918	0.922	0.702
Y (SC)	0.831	0.832	0.887	0.664

The result show that all variables have met the requirements by having reliability value for X and Y is 0.922 and 0.887, respectively. The value was greater than 0.7 and classified as reliable, so it can be said that the indicators is effectively use for evaluation. The model evaluation is carried out by calculating several indicators as follows:

4.1.1. Inner Model Test (R-Square)

The Inner Model Test (R-Square) is a value that is only owned by the Y variable (Sustainability Construction). This value shows how much the independent variable (X1) affects the dependent variable Y. The calculation results show that the value of Y = 0.457 x 100% = 45.7% is influenced by X, as can be seen in Table 7.

Table 7. Inner Model Test Value (R-Square)

	R Square	R Square Adjusted
Y (SC)	0.457	0.405

4.1.2. Inner Model Test (Path Coefficients)

The value that shows the direction or relationship on positive and negative variables called inner model test using path coefficients. It will show the direction of variable X to Y variables and continues. The value of acceptance must be 0 and below. If there was a value 0 > Y > 1 then will classified as positive impact, whereas the Y value is in between -1 to 0, categorised as negative. Table 8 shows the inner model test value using path coefficient.

Table 8. The result of path coefficient on the Inner Model Test value

Variable	X (LI)	Y (SC)
X (LI)		-0.192
Y (SC)		

As can be seen on the Table 8, the direction on the X (LI) variable has a NEGATIVE effect to Y (SC). It can be said that the indication will reflect negatively to sustainability.

4.1.3. Inner Model Test (Significance T-STATISTIC)

The Inner Model Test Evaluation (Significance T- STATISTIC) is the significant value of a variable. This value can be seen in the results of the T-STATISTIC calculation which described how significant the influence of the variable on the Y variable represented as a sustainable construction. The acceptance value is the significance level used alpha = 0.05 or the T-Statistic value > 1.96 = SIGNIFICANT

Table 9 shows that the opposite happens to factor X, namely the environment. It can be seen that the environment variable has a negative effect of -0.192 and only has a T-statistic value of 0.972, which means it is smaller than the standard T-statistical significance of 1.96. Thus, environmental factors only have a negative and insignificant effect on sustainable construction. Both environmental variables only have a negative effect on sustainable construction. It is due to the SEZ development process with a sustainable construction approach still pays attention to the profitability value rather than pay attention to the environment. These results are in line with the previous study stated by El-Mahdy et al. (2022) that the use of sustainable construction materials can reduce production costs, due to efficiency and effectively utilizing widely available materials such as sand and salt [18]. The sustainable materials will fit into environmentally friendly materials.

Meanwhile, more researchers focus on a broader issue, namely the sustainable construction model. It is proven that economic and environmental factors contributed to sustainable construction. It was found by Nasereddin & Price (2021) that the capital cost is strongly important in sustainable construction [19]. Their approach provides better benefits in terms of reducing operational costs. This model is well received in Jordan and is in line with the results obtained in this study. It shows that economic factors in the form of capital have an influence on the implementation of sustainable construction.

Several studies have found that sustainable construction reduces disposal or waste. Liu et al. (2021) found that the BIM algorithm saved materials and provided solutions for sustainable construction. This model can reduce waste material by enabling savings on material cutting for roof cladding [20]. Thus, the economic factor has become one of the key factors in the successful implementation of sustainable construction. Other researchers have also shown that the use of excavated material, which is a stable mixture of soil, aggregate, and water consolidated with high-velocity projections rather than mechanical compaction, can be used to obtain structural and non-structural elements [21–24]. It proves that the waste indicator contributes to environmental factors in the implementation of sustainable construction. It also stated that sustainable construction is closely related to the professionalism, responsibility, performance, and experience of the project management team. The more professional the human resources involved, the greater the success of sustainable construction projects.

It can be concluded that the economic factors, environmentally friendly materials, and policies are strongly support sustainability in the construction projects.

Table 9. Model calculation results: Inner Model Test (Significance T-STATISTIC)

	Original Sample (0)	Sample mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
X(LI)·>Y[SC)	-0.191	-0.160	0.197	0.972	0.331

4.1.4. Inner Model Test Results (Predictive Relevance)

By using blindfolding through the PLS system, predictive relevance to test the inner model can be analyzed. The predictive relevance has an acceptance rate value for X and Y variables greater than 0 and will be classified as a good model. As can be seen in Table 10, the predictive relevance value was greater than 0. It is found that PR value was 0.237, means that the observation rate made was good model.

Table 10. The result of predictive relevance or Inner Model Test Results

Variable	SSO	SSE	Q^2 (=1-SSE/SSO)
X (LI)	405.000	405.000	
Y (SC)	324.000	247.125	0.237

4.1.5. Results of the Inner Model Test (Model Fit)

The model fit test was used to see how fit or good the implemented model. To measure the model fit value, this study uses PLS tools that involve a saturated and estimated model. Table 11 describes the model fit test analysis.

Table 11. Inner Model Test Value (Model Fit)

	Saturated Model	Estimated Model
SRMR	0.092	0.092
d_ULS	5.948	5.948
d_G	3.595	3.595
Chi_Square	1266.411	1266.411
NFI	0.568	0.568

The results show that the Model Fit value is 0.568, which means that the model built is good. The NFI result obtained is 56.8% declared fit and can be implemented in the sustainable construction of SEZs. This result supported the previous research, which stated that a sustainable construction model using a multi-criteria approach is a good model choice for the development of a sustainable construction model [25, 26]. The implementation strategy has an internal aspect that can be utilized to seize and maximize the identified opportunities. The strategy developed in this study is also in accordance with previous studies that focused on the use of environmentally friendly materials, such as revising the concrete mix by using alternative substitutes for waste products, which will pave the way for reducing environmental problems, the harmful effects of waste due to improper disposal processes, appropriate, dependence on non-renewable substances, and the promotion of sustainable construction [7, 18, 26–28]. By developing a strategy for the use of environmentally friendly materials, the implementation of sustainable construction in the SEZ project results in a well-controlled environmental impact.

Furthermore, another step to describe strategies based on real social factors that can be implemented, the McFarlan Grid method [26], was used. It derives strategies based on four main values, namely, strategic values (S), key performance (K), high potential (H), and support (U).

Table 12 shows that the strategies should be carried out immediately. The result obtained two strategies are being the key performance. They are the strategic values (S) and Key Performance (K). There are also two strategies remaining which is more potential to do but still can be postponed to the near future. It can be said that in the priority analysis were carried out, strategic values, Key Performance and support are main important thing to immediately conducted to reach the sustainability in construction.

Table 12. Analysis of Priority Strategy on Environmental Factors

Strategy	Priority
Use of environmentally friendly materials insustainable construction projects	H
Application of efficiency to material use andwaste reduction	S
Spatial mapping in the context of investmentaccording to land use by taking into account the carrying capacity of the environment	S
Utilization of open space for ecotourism andsupport for the environment	K
Increasing the company's ability to maintainthe balance of the environmental ecosystem	K
Use of recycled materials to reduceenvironmental impact	U
Application of Health protocols and provisionof health facilities in all development projectsand tourist sites in the Likupang SEZ	H
Use of a disaster mitigation system to anticipate various natural disaster events	S
Increased promotion and international standard tourist attraction by taking intoaccount environmental factors	S
Use of recycled materials in the constructionof SEZ Likupang	H

5. Conclusion

Sustainable construction is more comprehensive when it involves several aspects of daily life. After conducting research and a survey on the factors that affected sustainability in the Special Economic Zones (SEZs), it can be concluded that environmental factors used to be a key factor in various projects, particularly in developing countries. After validation, it is found that the implemented model is fit to a 0.568 value and classified as a good model with an NFI value of 56.8%. This result supported the previous research, which stated that a sustainable construction model using a multi-criteria approach is a good model choice for the development of a sustainable construction model. It can be said that the strategy for implementing environmental factors should be prioritized based on the efficiency of environmentally friendly materials, reducing waste, and effective investment. It also highlighted the use of disaster mitigation systems to anticipate various natural disasters and increase world attraction by focusing on environmental factors.

6. Declarations

6.1. Author Contributions

Conceptualization, S.H., D.P., and E.A.; methodology, S.H.; investigation, S.H.; writing—original draft preparation, S.H., D.P., and E.A.; writing—review and editing, S.H., D.P., and E.A. All authors have read and agreed to the published version of the manuscript.

6.2. Data Availability Statement

Data sharing is not applicable to this article.

6.3. Funding

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6.5. Conflicts of Interest

The authors declare no conflict of interest.

7. References

[1] Lima, L., Trindade, E., Alencar, L., Alencar, M., & Silva, L. (2021). Sustainability in the construction industry: A systematic review of the literature. Journal of Cleaner Production, 289, 125730. doi:10.1016/j.jclepro.2020.125730.

[2] Zea Escamilla, E., Habert, G., & Wohlmuth, E. (2016). When CO2 counts: Sustainability assessment of industrialized bamboo as an alternative for social housing programs in the Philippines. Building and Environment, 103, 44–53. doi:10.1016/j.buildenv.2016.04.003.

[3] Alencar, M. H., Priori, L., & Alencar, L. H. (2017). Structuring objectives based on value-focused thinking methodology: Creating alternatives for sustainability in the built environment. Journal of Cleaner Production, 156, 62–73. doi:10.1016/j.jclepro.2017.03.221.

[4] Xu, X., Xu, P., Zhu, J., Liu, J., & Xue, Q. (2022). How to minimize the embodied environmental impact of green building envelope? An automatic optimization method. Environmental Impact Assessment Review, 93, 106732. doi:10.1016/j.eiar.2021.106732.

[5] Aigbavboa, C., Ohiomah, I., & Zwane, T. (2017). Sustainable Construction Practices: "a Lazy View" of Construction Professionals in the South Africa Construction Industry. Energy Procedia, 105, 3003–3010. doi:10.1016/j.egypro.2017.03.743.

[6] Oke, A. E., Aigbavboa, C. O., & Semenya, K. (2017). Energy Savings and Sustainable Construction: Examining the Advantages of Nanotechnology. Energy Procedia, 142, 3839–3843. doi:10.1016/j.egypro.2017.12.285.

[7] Solaimani, S., & Sedighi, M. (2020). Toward a holistic view on lean sustainable construction: A literature review. Journal of Cleaner Production, 248, 119213. doi:10.1016/j.jclepro.2019.119213.

[8] Mi, R., Pan, G., Liew, K. M., & Kuang, T. (2020). Utilizing recycled aggregate concrete in sustainable construction for a required compressive strength ratio. Journal of Cleaner Production, 276, 124249. doi:10.1016/j.jclepro.2020.124249.

[9] Agyekum-Mensah, G., Knight, A., & Coffey, C. (2012). 4Es and 4 Poles model of sustainability: Redefining sustainability in the built environment. Structural Survey, 30(5), 426–442. doi:10.1108/02630801211288206.

[10] Li, K., & Cheung, S. O. (2020). Alleviating bias to enhance sustainable construction dispute management. Journal of Cleaner Production, 249, 119311. doi:10.1016/j.jclepro.2019.119311.

[11] Mohandes, S. R., & Zhang, X. (2021). Developing a Holistic Occupational Health and Safety risk assessment model: An application to a case of sustainable construction project. Journal of Cleaner Production, 291, 125934. doi:10.1016/j.jclepro.2021.125934.

[12] Qazi, A., Shamayleh, A., El-Sayegh, S., & Formaneck, S. (2021). Prioritizing risks in sustainable construction projects using a risk matrix-based Monte Carlo Simulation approach. Sustainable Cities and Society, 65, 102576. doi:10.1016/j.scs.2020.102576.

[13] Sánchez-Garrido, A. J., Navarro, I. J., & Yepes, V. (2022). Multi-criteria decision-making applied to the sustainability of building structures based on Modern Methods of Construction. Journal of Cleaner Production, 330, 129724. doi:10.1016/j.jclepro.2021.129724.

[14] Sharma, S., & Kumar Sharma, N. (2022). Advanced materials contribution towards sustainable development and its construction for green buildings. Materials Today: Proceedings. doi:10.1016/j.matpr.2022.07.394.

[15] Det Udomsap, A., & Hallinger, P. (2020). A bibliometric review of research on sustainable construction, 1994–2018. Journal of Cleaner Production, 254, 120073. doi:10.1016/j.jclepro.2020.120073.

[16] Murtagh, N., Scott, L., & Fan, J. (2020). Sustainable and resilient construction: Current status and future challenges. Journal of Cleaner Production, 268, 122264. doi:10.1016/j.jclepro.2020.122264.

[17] Liu, H., Sydora, C., Altaf, M. S., Han, S. H., & Al-Hussein, M. (2019). Towards sustainable construction: BIM-enabled design and planning of roof sheathing installation for prefabricated buildings. Journal of Cleaner Production, 235, 1189–1201. doi:10.1016/j.jclepro.2019.07.055.

[18] Rajabi, S., El-Sayegh, S., & Romdhane, L. (2022). Identification and assessment of sustainability performance indicators for construction projects. Environmental and Sustainability Indicators, 15, 100193. doi:10.1016/j.indic.2022.100193.

[19] Pelli, P. (2021). Service innovation and sustainable construction: Analyses of wood vis-à-vis other construction projects. Cleaner Engineering and Technology, 2, 100061. doi:10.1016/j.clet.2021.100061.

[20] El-Mahdy, D., Gabr, H. S., & Abdelmohsen, S. (2021). SaltBlock as a 3D printed sustainable construction material in hot arid climates. Journal of Building Engineering, 43, 103134. doi:10.1016/j.jobe.2021.103134.

[21] Negash, Y. T., Hassan, A. M., Tseng, M. L., Wu, K. J., & Ali, M. H. (2021). Sustainable construction and demolition waste management in Somaliland: Regulatory barriers lead to technical and environmental barriers. Journal of Cleaner Production, 297, 126717. doi:10.1016/j.jclepro.2021.126717.

[22] Pham, H., & Kim, S. Y. (2019). The effects of sustainable practices and managers' leadership competences on sustainability performance of construction firms. Sustainable Production and Consumption, 20, 1–14. doi:10.1016/j.spc.2019.05.003.

[23] Li, Y., Gu, Y., & Liu, C. (2018). Prioritising performance indicators for sustainable construction and development of university campuses using an integrated assessment approach. Journal of Cleaner Production, 202, 959–968. doi:10.1016/j.jclepro.2018.08.217.

[24] Hashmi, A. F., Shariq, M., & Baqi, A. (2021). An investigation into age-dependent strength, elastic modulus and deflection of low calcium fly ash concrete for sustainable construction. Construction and Building Materials, 283, 122772. doi:10.1016/j.conbuildmat.2021.122772.

[25] Ristić, V., Maksin, M., Nenković-Riznić, M., & Basarić, J. (2018). Land-use evaluation for sustainable construction in a protected area: A case of Sara mountain national park. Journal of Environmental Management, 206, 430–445. doi:10.1016/j.jenvman.2017.09.080.

[26] Vugec, D. S., Pejic-Bach, M., & Spremić, M. (2019). IT Strategic Grid: A Longitudinal Multiple Case Study. Handbook of Research on Contemporary Approaches in Management and Organizational Strategy. IGI Global, Hershey, United States. doi:10.4018/978-1-5225-6301-3.ch006

[27] Ranjetha, K., Alengaram, U. J., Alnahhal, A. M., Karthick, S., Zurina, W. J. W., & Rao, K. J. (2022). Towards sustainable construction through the application of low carbon footprint products. Materials Today: Proceedings, 52, 873–881. doi:10.1016/j.matpr.2021.10.275.