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Hierarchy Model in Geopolitics and Environmental Sustainability

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Abstract
Recent research underscores the imperative for enhanced sustainability and reduced disease transmission. Hierarchical models, operating across diverse scales and employing varied tools, present a promising avenue for addressing these challenges. Prioritizing sustainability and adopting an isolation model can effectively mitigate risks and control the devastating impacts of global crises. By minimizing human interaction and implementing rigorous evaluation parameters, we can curtail disease spread and improve overall well-being. Data derived from secondary sources will be utilized to assess the effectiveness of this approach. This study will elucidate how a seemingly straightforward intervention, such as isolation, can exert a substantial influence on global sustainability and public health.

Keywords: Pandemic, Isolation Model, Environmental Sustainability, Education, Hierarchy of Control.

Introduction

The use of the word “sustainability” is widespread and incorporates a plethora of things and meanings within it. The hierarchy model of study will make the extant framework to be studied and reviewed for the structured study of the array of issues arising and associating them with sustainability. The isolation model has been related to isolating for improvement. Geopolitics and environmental sustainability are the new trends in society towards which every concern is raised and needs to be addressed. The research will focus on the isolation model by applying the hierarchy of control model to address the issues that arise. The isolation model is from the stage of the elimination level in the hierarchy model. The isolation model can be applied to mitigate the strategies and issues that arise and make the position equivalent to controls and protection within it. Societies are of the opinion that economic interest is high in conflict with environmental interest, but with the changing era, society is also thinking in a common direction for developing both geopolitics and sustainability. However, the arising new era and the research are making the case that the perspective of development with conservation for active counterproductive position to be developed. The isolation model from the stage of elimination will change the perspective and show how geopolitics can be developed with sustainability in this era of development. For the behavior of COVID-19, people provide a compartmental model in this paper. Research considers the existence of illnesses

along with three additional primary strategies that have been used by multiple countries in the past era to combat disease: isolation, elimination, and substitution. Society simulates isolation by dividing the crowd into two groups: one group is made up of critical employees who continue to work throughout the epidemic, while the other team is made up of individuals who are required or advised to remain at home. Clearly, one may include those who disregard social distance constraints, which has recently emerged as a big issue in several nations, in the category of persons who keep a greater contact rate. Complete isolation is what society refers to as quarantine, and it is used for proven instances of infection.

The emphasis of the research is on the hierarchy model of study which will be taking various stages in development and also applying various models which will be making the change in geopolitics and environmental sustainability.

The vision of the model is not the wholesome departure or isolation of the concept that has been offered. Multiple factors of a sustainable future need to be studied, but often these planned ideas consider the needs of nature and society in isolation from each other, using the analysis confined to the stagnant segments and geographies. The new concept of the research has focused on considering the global economic development phase and the need for conservation on a similar end in a more holistic and sustainable way. The isolation model in both concepts can be applied to take the path forward.

The research also used the major standards of the UN SDG, which gave 17 global measures of sustainability. The major emphasis of the research is on geopolitics and environmental sustainability. The isolation model will be applied in the theoretical basis of these SDGs which will show a position of development and state how the elimination model can be a key changing factor in the hierarchy model to show development and give the stages of change that offered development and impactful sustainability.

Literature Review

Framing the defensive tool in the hierarchy of controls in the stage of elimination is effective in posing the challenges for adopting better and more effective mitigation strategies for making the equivalent position of protection and controls. The sustainability goal needs to be drawn to the utmost position to make better implications, state the level of change in sustainability, and maintain the quality of the environment. The pandemic situation will be imposing controls and making better implementation to affected for isolation and better facilities for the pandemic and improving the environment.

Al-Saidi (2020) mentioned that the concerns about the environment are constantly rising and the growing realization that humanity has turned out to be as the geopolitics and sustainability aspects. The hierarchy of controls in the situation is referred to as a framework that is employed in the isolation model for improvement and a better understanding of relative effectiveness for making risk reduction of the geopolitics and environmental sustainability for determining better feasibility and effective solutions applied. The hierarchy model is an upside-down model which is showing various levels. The isolation model from the level of elimination stage will be studied in the model towards geopolitics and sustainability.

Talukder et al. (2017) stated that the major categories in the hierarchy model include the following stages represented in the effectiveness descending order: elimination stage, substitution stage, engineering controls level, administrative controls level, and the PPE stage. Also, while created to more readily oversee openings to word-related dangers and safeguard laborers, the model has the expansive condition in aiding medical services laborers, strategy producers, and the public to better comprehend the overall adequacy of techniques to forestall the transmission of an airborne irresistible infection like COVID-19, and the

worldview is progressively being embraced to conceptualize COVID-19 positional impact decrease. That's what the major thought behind the progressive system is: while various perilous controls are compelling at limiting gamble, those at the highest point of the model are more defensive than those at the base. As in word-related well-being and well-being, utilizing the best strategies first and most often can limit the gamble of COVID-19 transmission.

Aminjonov (2020) mentioned that Among all the stages, the stages of elimination and substitution are amongst the most effective controls, which involve the physical removal of the hazards and the risks associated with it, which shows the isolation model applied is less risky to both geopolitics and sustainability. The isolation model applied early in the stage can make an attempt to eliminate the risks in the communities and sustainability. While in effect, the isolation model is effective, its dire social position and economic and psychological impacts of it, limiting its long-term viability and necessitate its use. The isolation model is considered an additional means of elimination that reduces the risk and potential of spreading the risk.

Giannetti et al. (2019) expressed that Sustainability is a concept within and thus has distinct areas of study- human sustainability controls, social sustainability controls, economic controls sustainability, and environmental controls sustainability. Environmental sustainability in the area is considered to be the same as improving the welfare of humans using the protection of natural capital. The isolation model here can be applied in the programs and plans, which ensure that the requirements of the society are fulfilled without making any compromises with the arising requirements of the future generation. Isolating the resources and their usage to improve the conditions of the environment for future generations will also help. Isolation of unrestricted consumption shall be made as it imposes a significant toll on human life and welfare.

Helm et al. (2019), gave that the isolation model is a dynamic model which is operated in a decentralized and differential form, which is making the major emphasis on carrying the study in imposing the controls and improving the conditions of sustainability. In this study, the demonstration of elements of a spreading pandemic over a nation is thought of. Another dynamical and decentralized differential model is proposed with the goal of concentrating on the impact of various governmental issues of social seclusion over the populace to control the spreading and enforce the regulation of the pandemic. Next to the presentation of a probabilistic disease process with delays in the elements of COVID-19, the fundamental commitment of the proposed model is to present unequivocally the degree of collaboration between individuals of towns or areas creating the thought about the country. This permits the description of complete confinement plans at the territorial level and, furthermore, to form ideal control issues. Two ideal issues of control, as addressed, are pointed out by limiting similar token positions, including life losses and restarting economies as soon as possible. These two goals have been now the subject of polemics in various nations during the present COVID pandemic. Mathematical recreations are created to show the way of behaving during the pandemic under various confinement strategies with a perspective on understanding the elements and how best to illuminate arranging techniques to deal with the spread and battle the pandemic and the arising situations.

Ketprapakorn (2019) mentioned that the pace of technological and socio-economic change globally is leading society towards a new geopolitical dynamic that has a direct influence on the equitable position and on sustainability with its transmission. The position of geopolitics and situations of sustainability are connected and are highly driven by the growing realization that it needs to integrate both environment and security at a common pace. This is stating the position of the influence of changing power, its structure, governance ecosystem, and many more. The scarcity of resources is poorly understood for making the

determinant of science-related policies and research.

According to ***Low (2011)***, The work served as an inspiration for the concept of quantifying the epidemic's progress in relation to non-pharmaceutical therapies such as social exclusion and isolation. Researchers have developed an equation for the fundamental repetition ratio R_0 for the proposed model as a function of the illness and control parameters. In this approach, people are able to measure the impact of screening and isolation on the pandemic. To demonstrate various actual circumstances, they present a number of scenarios. Specifically, researchers contrast various tests and isolation levels. Out of the expression of R_0 and the simulation models, they draw the conclusion that testing among asymptomatic cases and social isolation are the two most important steps in pandemic control. The more stringent these initiatives are and the quicker they are put into place, the more efficient they are at straightening the infection curve. Furthermore, our research demonstrates that being isolated greatly lowers one's chance of spreading the disease. Hence, risk areas should be encouraged to keep their contact rates low while the outbreak is active.

Methodology

The researcher used the secondary method of study with the qualitative perspective, along with the analysis of the isolation model applied to the conditions of sustainability and geopolitics. The isolation model will be proposed in the paper to study the dynamics of sustainability and the prevailing pandemic conditions. We will also consider the main policies and regulations that have been adopted to contain the pandemic. In the elimination stage in the hierarchy model, with the tool of people in isolation, the level of contact is reduced, and the parameters are better for making the evaluation at every stage. A probabilistic situation also affected the process and made the levels of the proposed model look explicitly at all stages of the hierarchy model stated.

The data will be collected from secondary sources, considering the previously conducted research and the articles on a topic similar to those conducted previously. This research and study will be considered as the basis for conducting further analysis and developing environmental sustainability and geopolitics on the basis of this model adopted. The secondary data collection has considered the researcher to collect the data from already published articles, journals, and other research. For this, the analysis will be made from the perspective of the qualitative analysis for this secondary data, which will show the implications of the isolation model in sustainability and geopolitics along with the hierarchy of models that are applied.

The isolation model will be applied in the research which will be giving the application-based study on it showing how this can help in making the improvement in geopolitics and environmental sustainability.

Research Aim

The aim of the research is to study the isolation model from the elimination stage of hierarchy and studying that how it can be applied to geopolitics and environmental sustainability to bring growth and development to it. Isolation model analysis will be the aim of these two components and show how the isolation of it can bring prosperity to the factors considered.

Problem of the statement

To address the issue of environmental sustainability by adopting the isolation model from the hierarchy.

Objectives of the study

1. To study the isolation model for making better environmental sustainability

2. For analyzing the impact that isolation can impose on making the hierarchy better and improved

Research Questions

1. How the isolation model can be used for making better environmental sustainability?
2. What is the impact that isolation can impose on making the hierarchy better and improved?

Research Significance

The significance of the research is to study how the isolation model can be helpful in making sustainability conditions improved. The isolation model will be studied in deep in the research along with the stage of elimination level in the hierarchy model. The analysis will be made for the geopolitics and the environmental sustainability and application of the isolation model into it for improvement and growth.

Hypothesis:

H0- Hierarchy model will lead to a positive influence on geopolitics and environmental sustainability.
H1- Isolation model will give a positive impact on success and sustainability.

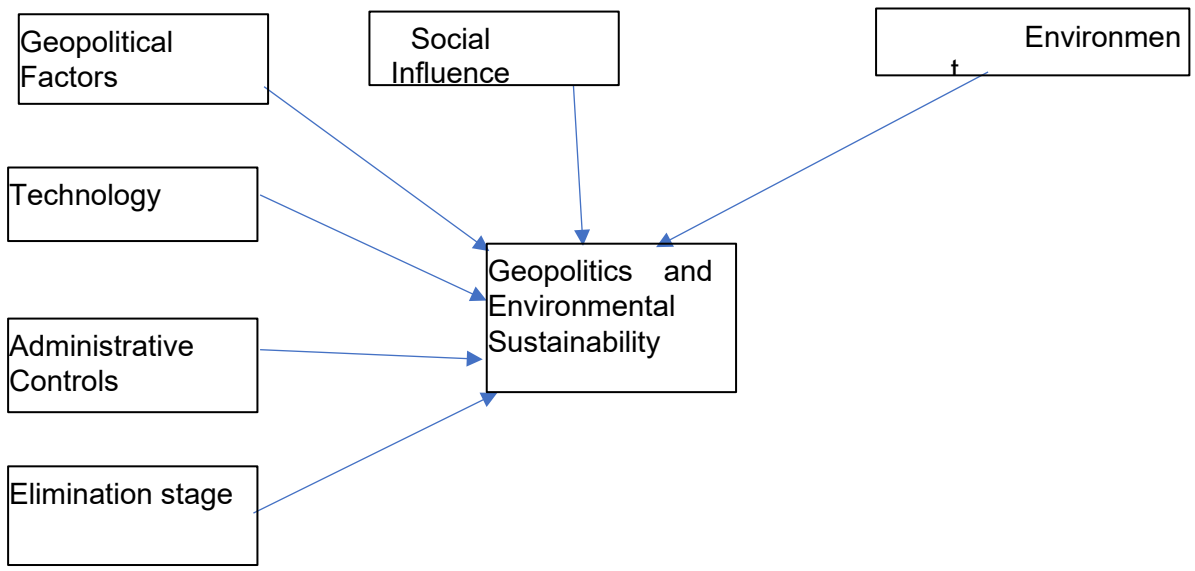

Figure 1: Model

Construct	***Headings***	***Citation***	***Definition***
Geopolitical factors	*Geopolitics Climate Environment*	***Vakulchuk et al. (2020).***	*Influence of the geographical, demographic, and*
Social Influence	*Unified approach IT acceptance Motivational model TAM*	***Venkatesh et al. (2003).***	*It includes the social pressure on health which can impact the health position.*
Technical skills- Technology	*ITC Entrepreneurship model Micro entrepreneurship*	***Chatterjee et al. (2020)***	*Various technological models for making the skills to be developed technically.*

Administrative Controls	*Proper handling procedure Personnel Rotation*	***Low (2011).***	*It is a kind of hazard control that is helpful in improving safety and sustainability.*
Elimination Stage	*Eliminating position Risk reduction Risk controls*	***Talukder et al. (2017).***	*It is the stage that is used for eliminating and reducing the risks.*
Environment	*Environmental Sustainability Environmental Regulations*	**Evans M. (2020).**	*The surroundings or the natural world and all the related social and living areas.*

Table 1 : Table of constructs

Analysis

The research paper will also focus on analyzing and studying the impact of facility-based isolations in comparison to the isolation of another model that is continuing in the situation of a pandemic. The hierarchy model gives a layered defense to the proposed models that are conceptualized and applied, already expressed by ***Morgunova (2021).*** The isolation model is helpful in making a better analysis and understanding of the differential lying applicability and also the effective precautionary measures that are to be undertaken. This is imposing better controls and effective strategies for hazard control to minimize the impact and retain the environmental sustainability goals, which is also justified in the study by ***Spigarelli (2020).***

The effectiveness and the better compliance of the isolation model in this situation made the continuing pandemic spread and conditions to be improved. Also, the compartment model of this tool is developed for simulating the transmission of the pandemic and calibrating it with the measures of the pandemic and with a better educational sustainability goal.

The prolonged isolation model can impose a profound impact on society and making implications for the environment's sustainability also. The risks increase with it which is making the change in the situation and shows how a slight change can impose a huge impact on overall sustainability and the prevailing conditions of a pandemic.

The already applied model 3- overlapping circles model in sustainability which is acknowledging the intersection of economic aspects, environment, and societal factors as stated. On the basis of the mindset, sustainability lies in the position in which all these three circles meet. In this circular model, one of the factors takes the dominant position over the other two factors. Sustainability is different in all aspects and from all perspectives as a factor; one can be dominating for one, while the other may not be that dominating. The environment will then be among the smallest as it is among the most external to the business standard metric, according to ***Raza et al. (2021).*** Unfortunately, this is only applied in the economy which is operating independently of all its factors. The 3-nested dependencies model reflects the co-dependent reality that exists. This model states the position that humans are an entirely owed part of the environment, and without it, humans cannot survive.

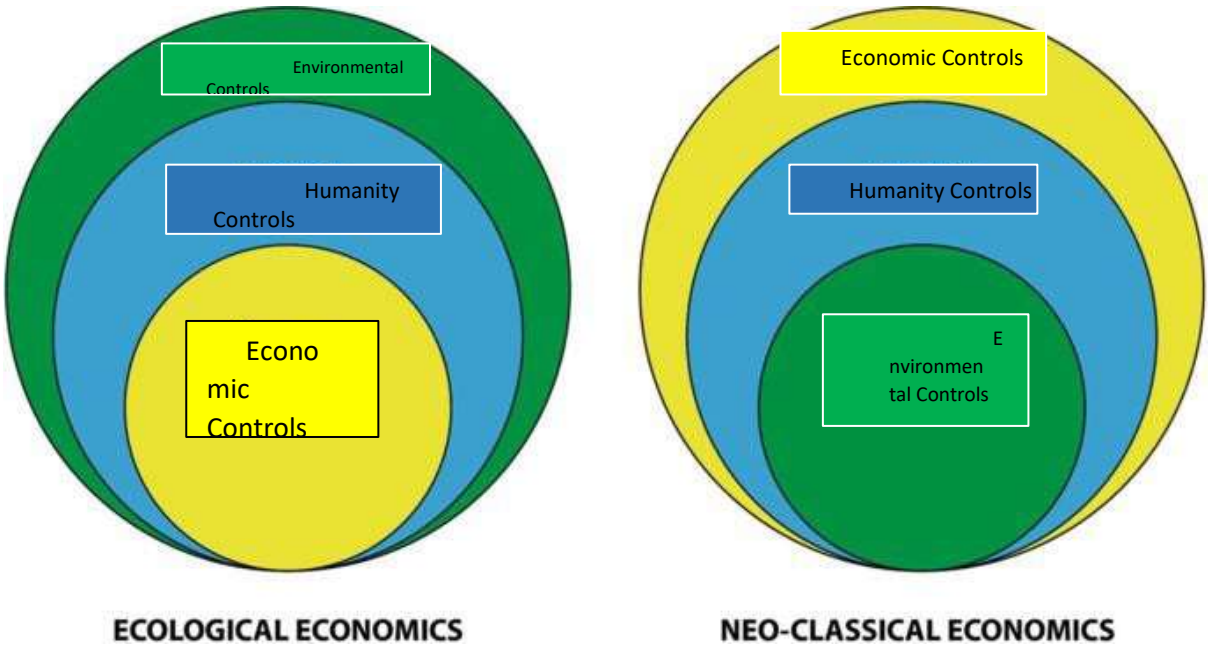

Figure 2: 3-Nested Regenerative Future Model adapted from Ecological and neo-classical economies of
Source: Plastow (2023)

In societies, it is humans who decide how they will move and how this economic model will run. As humans create their own economies, they can develop the current economic models for making the quality of their lives. In all honesty, the public economy relationship is advantageous. During the new downturn, the monetary slump altogether affected individuals' personal satisfaction, concluded ***Panda et al. (2020).*** Steady employment is so critical to a lively current society that maintainability champions who depict the economy as docile to society are in some cases blamed for being credulous about how "this present reality" works.

It may very well be valuable to include the image of Earth in the adjoining slide to remind a few pundits about the genuine "genuine world." This characterization photograph shows water, air mists, and land, considering the climate. The photograph likewise helps us to remember a distinct reality; there is no umbilical line heading off to someplace else, and the researcher should reside inside the conveying limit of the planet. Society can't see them in the photo; however, groups of individuals ashore structure social orders inside that bigger climate. Also, it's those social orders that conclude how they will trade labor and products inside and between themselves, their imperceptible economies. The 3-nested dependencies model mirrors this reality ***Panda et al. (2020).***

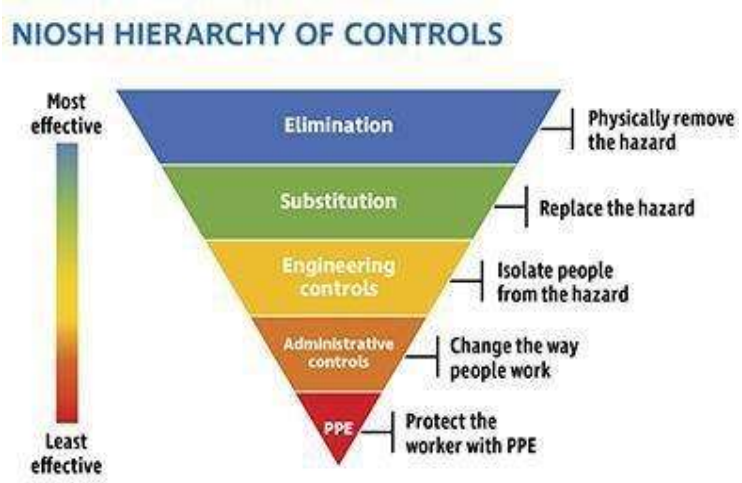

Figure 3: Niosh Hierarchy of Control Framework adapted from Source: Morris and Cannady (2019)

According to **Morris** and **Cannady (2019),** the isolation model, if applied, will be considered the most striking trend in sustainability and geopolitics in the previous few years, aligned with sustainability and ERM processes planned. The isolation model will reduce the risk and its implementation. This model will be considered a highly effective one in helping companies and society to integrate with sustainability, addressing the blind areas, and developing robust strategies. The isolation model will take their focus on sustainability and risk having the reasons for the skeptical position toward one another; it will foster the position of sustainability and reduce the risks arising. Risk reduction with the isolation model will not be biased and will consider the factors of change that will act toward mitigating this impact. This model will lead to a tendency toward risk-led approaches to a regressive position. The shared value approach will be considered in the isolation model, which considers sustainability to be pursued with the approaches of societal concerns developed. The isolation model will be applied with the chance of developing a more equitable world with high-end sustainability and better transformations of it, as stated by ***Müller et al. (2021).***

Modelling

Since the start of the epidemic, several mathematical models for sustainability and COVID-19 have surfaced. It is currently challenging to keep up with all the papers because of the high publishing flow. Secondly, we list and discuss a few models that share characteristics with ours. A directly applied model with diseased and reporting contaminated sectors was analyzed in the study of Casella (2021), and they made the assumption of transmission rate by β that is regarded as a function of control u, or β=(u). The study of Casella (2021) gave the study the response control schemes, in which the determination of control is based on the reported case proportion, which is in the category of as moderate or severe infection, with the latter having comparatively reduced transmission rate as it is thought that they occur majorly in the case of isolation. They model the decrease in connections for the overall population using a time-dependent control, and they optimize with regard to this regulation. The SIDARTHE model, which is also comparable to ours and distinguishes infected patients based on their diagnosis status and the intensity of their symptoms, isolates the confirmed ones. Other models have been produced that share certain characteristics with ours.

Conclusion

The isolation model will be the changing trend in the era of sustainability. It will be applied with the position of the change in the existing models and making the risk reduction show an improved stage of geopolitics and environmental sustainability. The hierarchy model given by NIOSH has been applied, and the stage of isolation model will be applied to it which will make the position most effective which will be showing the physical removal of the existing hazards and applying the better stage of sustainable development. Models help to arrange the considerations of researchers and specialists who are crossing disciplinary limits. They uncover and make quantifiable key components in friendly and socio-natural cycles. Every hypothesis is general in that it can deal with a few restricted measures of detail. Some efforts to make models super-complex have taken forward in the feeling of being socially and politically helpful. Other efforts to accomplish intricacy have been bombed due to the disregard of the current writing on intricacy. The specific increases to information on intricacy hypothesis include: First, each interaction can be separated into a progression of stages, and movement is way reliant. Another is that one can focus on different kinds of units all at once point, which can prompt a wide arrangement of directions. This is a disaggregated, staggered type of way reliance. Subsequently, positioning that the subjective elements can be consolidated in the models and direction exchanging can be tuned to answer recorded multinomial and modular measures. Third, inert measures can be applied within.

References

1. Al-Saidi, M., 2020. From Economic to Extrinsic Values of Sustainable Energy: Prestige, Neo-Rentierism, and Geopolitics of the Energy Transition in the Arabian Peninsula. *Energies*, *13*(21), p.5545.
2. Aminjonov, F., 2020. Policy innovations and rationale for sustainable energy transition in the UAE. *Social Science Quarterly*, *101*(7), pp.2398-2412.
3. Aronna, M.S., Guglielmi, R. and Moschen, L.M., 2021. A model for COVID-19 with isolation, quarantine and testing as control measures. *Epidemics*, *34*, p.100437.
4. Casares, M. and Khan, H., 2020. A dynamic model of COVID-19: Contagion and implications of isolation enforcement.
5. Casella, F., 2020. Can the COVID-19 epidemic be managed on the basis of daily data? Evans, M., 2020. What is environmental sustainability? Sustainable Business. Resources.
6. Giannetti, B.F., Sevegnani, F., Almeida, C.M., Agostinho, F., García, R.R.M. and Liu, G., 2019. Five sector sustainability model: A proposal for assessing sustainability of production systems. *Ecological Modelling*, *406*, pp.98-108.
7. Helm, P.J., Greenberg, J., Park, Y.C. and Pinel, E.C., 2019. Feeling alone in your subjectivity: Introducing the state trait existential isolation model (STEIM). *Journal of Theoretical Social Psychology*, *3*(3), pp.146-157.
8. Ketprapakorn, N., 2019. Toward an Asian corporate sustainability model: An integrative review. *Journal of Cleaner Production*, *239*, p.117995.
9. Low, S.P., 2011. Building and sustainability controls in Singapore: A journey in time. *Procedia Engineering*, *20*, pp.22-40.
10. Morgunova, M., 2021. The role of the socio-technical regime in the sustainable energy transition: A case of the Eurasian Arctic. *The Extractive Industries and Society*, *8*(3), p.100939.
11. Morris, G.A. and Cannady, R., 2019. Proper use of the hierarchy of controls. *Professional Safety*,

64(08), pp.37- 40.
12. Müller, J., Acevedo-Duque, Á., Müller, S., Kalia, P. and Mehmood, K., 2021. Predictive sustainability model based on the theory of planned behavior incorporating ecological conscience and moral obligation. *Sustainability*, *13*(8), p.4248.
13. Panda, T.K., Kumar, A., Jakhar, S., Luthra, S., Garza-Reyes, J.A., Kazancoglu, I. and Nayak, S.S., 2020. Social and environmental sustainability model on consumers' altruism, green purchase intention, green brand loyalty and evangelism. *Journal of Cleaner production*, *243*, p.118575.
14. Plastow, H.R., 2023. Marketing in a Post-Growth Economy: the Regenerative Future of Advertising.
15. Raza, S.A., Qazi, W., Khan, K.A. and Salam, J., 2021. Social isolation and acceptance of the learning management system (LMS) in the time of COVID-19 pandemic: an expansion of the UTAUT model. *Journal of Educational Computing Research*, *59*(2), pp.183-208.
16. Spigarelli, C., 2020. Understanding the hierarchy of controls through a pandemic. *Professional Safety*, *65*(5), pp.20-21.
17. Talukder, B., Blay-Palmer, A., Hipel, K.W. and VanLoon, G.W., 2017. Elimination method of multi-criteria decision analysis (MCDA): A simple methodological approach for assessing agricultural sustainability. *Sustainability*, *9*(2), p.287.
18. Vakulchuk, R., Overland, I. and Scholten, D., 2020. Renewable energy and geopolitics: A review. *Renewable and Sustainable Energy Reviews*, *122*, p.109547.