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INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

Vol. 03, Issue 05, May 2023, pp : 732-736

e-ISSN : 2583-1062

Impact Factor : 5.725

DIMENSION OF COMMUNITY PARTICIPATION IN CLIMATE CHANGE MITIGATION AND ADAPTATION INITIATIVES

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ABSTRACT

Climate change is one of the most serious global problems that have long-term effects on all nations' sustainable development. This study aimed to identify the dimensions of community participation in climate change mitigation and adaptation initiatives utilizing the Exploratory Factor Analysis (EFA) technique. The study was conducted in Davao Region, where 150 locals were identified as research participants. A questionnaire validated by an examiner was utilized as the research instrument for the data collection. Rotated component matrix discarded 7 items out of 30. Out of the remaining 23 items, the study found three dimensions that contribute to the dimensions of community participation in climate change mitigation and adaptation initiatives. These dimensions include empowering communities, promoting sustainability and resilience, enhancing accountability and transparency, promoting community involvement, leveraging local knowledge and experience, and tailoring climate change initiatives to community needs and circumstances.

Keywords: Climate change, dimension, mitigation, adaptation, exploratory factor analysis, sustainability, resilience, accountability, transparency, leveraging

1. INTRODUCTION

The repercussions of climate change are most frequently felt first in communities, which are also on the front lines of its effects. Climate change causes extreme weather that destroys entire communities and slows down social and economic progress (Torrentira Jr, M. C., & Makilan, M., 2018). Moreover, the significant societal impacts on the problem of climate change cover a wide range of topics, including how we choose to use resources and live our daily lives, how we cope with an unprecedentedly rapid rate of environmental change, and how we discuss and implement related community transitions in response to the impacts of climate change (Whitmarsh, L., O'Neill, S., & Lorenzoni, I. 2013). The climate of the planet has changed dramatically both globally and regionally since the pre-industrial era, with some of these changes being brought on by human activity (Rincón, M. F. G., & Virtucio, F. K. 2008). The Philippines is rife with cases of environmental risks that have been caused by widespread land use conversion for commercial purposes, business and illegal logging, watershed degradation, large-scale open-pit mining, coal-fired power plant expansion, improper waste management, and resource extraction in general (Gera, W., 2016). Typhoons and floods, two extreme weather events, are the most common manifestations of how climate change is affecting the country (Rincón, M. F. G., et. al., 2008). Climate change is an issue that requires the involvement of diverse stakeholders, inclusive of communities, with the support of the government to effectively address its devastating impacts. Governments actively support individual efforts to combat climate change to increase the communities' resilience to climate change (Mees, H. L., Uittenbroek, C. J., Hegger, D. L., & Driessen, P. P., 2019). In the Philippines, public involvement in environmental concerns is required by a strong institutional framework (Gera, W., 2016). Despite the importance of community involvement, little is known about the dimensions that impact community participation in climate change initiatives. Therefore, the community needs to be made aware of the risks of climate change, be educated on the various options for action, and be given the authority to make their own decisions on climate change initiatives. (Khatibi, F. S., Dedekorkut-Howes, A., Howes, M., & Torabi, E., 2021). This research on the dimension of community participation in climate change mitigation and adaptation initiatives is vital for inclusive decision-making, locally relevant solutions, empowerment and ownership, social equality and justice, and sustainable outcomes. The efficacy and viability of initiatives to address the effects of climate change and foster resilience in vulnerable communities can be improved by comprehending how communities may participate meaningfully in climate action.

2. METHODOLOGY

This study was conducted in Davao Region, where 150 locals were identified as research participants. The survey questionnaire was analyzed and validated by experts in this field. The researcher conducted and administered the survey online, utilizing different social media platforms (Torrentira, 2020). With the use of the Kaiser-Meyer-Olkin measure of sampling adequacy, the degree of partial correlations among variables was examined. Exploratory Factor Analysis (EFA) was employed to determine the dimensions. Through exploratory factor analysis, the underlying dimensions of many observable variables are often identified (Auerswald & Moshagen, 2019). The dimensions were represented

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e-ISSN : 2583-1062

Impact Factor : 5.725

graphically and identified using a scree plot. The dimension of community participation in the climate change framework was created by examining facts and costs using content analysis methods. Bartlett's test of sphericity was used to test the correlation matrix's identity.

3. RESULTS AND DISCUSSION

This section shows the analysis and interpretation of the gathered data KMO and Bartlett's Test. Table 1 presents the results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The KMO score of .954 indicates that the samples exhibit strong correlations, making them suitable for factor analysis. In addition, Bartlett's test of Sphericity yielded a value of 3917.941 and a significance level of less than .001, which indicates that the data is appropriate for community participation in climate change mitigation and adaptation initiatives dimension analysis. Furthermore, rejecting the null hypothesis based on Bartlett's test of Sphericity implies that there is indeed a dimension of community participation in climate change mitigation and adaptation initiatives.

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.9540
Bartlett's Test of Sphericity	Approx. Chi-Square	3917.941
	df	435
	Sig.	.000

Scree Plot. Figure 1 graphically shows the overall variance and the Eigenvalues plotted against each dimension. The Scree Plot shows the declining trend of Eigenvalues and assesses each component's suitability depending on its significance. This scree plot is a valuable tool in deciding the number of dimensions to be retained, where the inflection point is where the curve flattens. In this study, the curve becomes flatter at component number seven since Eigenvalues of less than one start to appear. If the items of each dimension fall below the minimum threshold, the dimension will be eliminated. Consequently, the analysis only kept 3 dimensions.

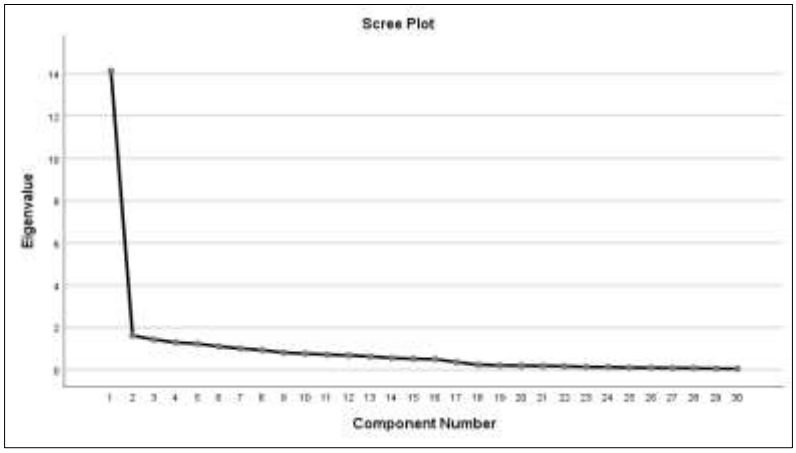

Figure 1: Graphical Explanation of Total Variance

Rotated Component Matrix. - Table 2 shows the attributes grouped as "Empowering Communities, Promoting Sustainability and Resilience, and Enhancing Accountability and Transparency". It refers to initiatives to persuade localities to implement environmentally friendly behaviors so they can adapt to the consequences of climate change and lessen the impact they have on the environment while ensuring that they are involved in climate change adaptation and mitigation initiatives and that steps are being made toward attaining sustainability goals. The data show that participants rated Item 29 with a score of .921, indicating that they believe that community involvement in combating climate change can increase public awareness and support for action. Participants also rated Item 26 with a score of .920, suggesting that they perceive that climate change efforts should encourage communities to share best practices and lessons learned. Item 1 and Item 13 received lower scores, with scores of .655 and .647, respectively. These findings are consistent with previous research that emphasizes the importance of empowering communities, promoting sustainability and resilience, and enhancing accountability and transparency in climate change initiatives (Faedlulloh, D., Prasetyanti, R., & Irawan, B., 2019; Hughes, S., Giest, S., & Tozer, L., 2020; Ni'mah, N. M., Wibisono, B. H., & Roychansyah, M. S., 2021; Pauw, W. P., Klein, R. J., Mbeva, K., Dzebo, A., Cassanmagnago, D., & Rudloff, A., 2018).

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Table 2: Rotated component matrix with grouped attributes of Empowering Communities, Promoting Sustainability and Resilience, and Enhancing Accountability and Transparency

Dimension	Attributes	Loading
Emp owering Communities, Promoting Sustainability and Resilience, and Enhancing Accountability and Transparency	Item 29-The participation of communities in climate change can help build public awareness and support for action.	.921
	Item 26- Climate change initiatives should encourage the sharing of best practices and lessons learned among communities.	.920
	Item 27- Climate change efforts should prioritize the development of sustainable and long-term solutions.	.918
	Item 24- Communities should be involved in the monitoring and evaluation of climate change initiatives.	.913
	Item 28- Communities should be provided with opportunities to participate in the implementation of climate change initiatives.	.913
	Item 23- Climate change initiatives should take into account the cultural and traditional knowledge of communities.	.900
	Item 25- Community participation in climate change can lead to greater accountability and transparency in decision-making.	.900
	Item 8- Climate change initiatives should empower communities to take action and make changes in their own lives.	.897
	Item 17- Communities should be provided with access to information and education on climate change.	.894
	Item 11- Climate change initiatives should be developed with the input and feedback of community members.	.887
	Item 9- Communities should be provided with the necessary resources and support to participate in climate change efforts.	.883
	Item 19- Climate change efforts should aim to build community resilience and adaptability.	.880
	Item 30- Climate change initiatives should aim to promote social and environmental justice for communities.	.877
	Item 20- Community members should have the opportunity to provide feedback on the effectiveness of climate change initiatives	.847
	Item 7- The voices of marginalized and underrepresented communities should be heard in climate change discussions.	.841

Table 3 relates to "Promoting Community Involvement, and Leveraging Local Knowledge and Experience," which implies actively involving local communities in the development and implementation of strategies and actions to mitigate the impacts of climate change and adapt to its effects. It also recognizes that communities are uniquely positioned to provide valuable insights and solutions based on their local knowledge and experiences. The data show that participants rated Item 4 the highest, with a score of .671, indicating a strong belief community members should have the opportunity to contribute their knowledge and experience to climate change efforts. Participants also rated Item 3 highly, with a score of .655, suggesting that they perceive Communities to have an important role to play in developing climate change policies and strategies. Item 16 and Item 2 received scores of .647 and .521, respectively. These results suggest that participants have confidence that climate change programs can be made more efficient, equitable, and sustainable by encouraging community involvement and utilizing local knowledge and experiences. Additionally, it can support the development of stronger, more resilient communities that are better able to withstand the effects of climate change. These findings are consistent with previous research emphasizing the importance of community engagement, leveraging local knowledge and experience in climate change mitigation and adaption initiatives (Apollo, A., & Mbah, M. F., 2021; Makondo, C. C., & Thomas, D. S., 2018; Khatibi, F. S., Dedekorkut-Howes, A., Howes, M., & Torabi, E., 2021).

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Table 3: Rotated component matrix with grouped attributes of Inclusivity, Promoting Community Involvement, and Leveraging Local Knowledge and Experience

Dimension	Attributes	Loading
Promoting Community Involvement, and Leveraging Local Knowledge and Experience	Item 4- Community members should have the opportunity to contribute their knowledge and experience to climate change efforts.	.671
	Item 3- Communities have an important role to play in developing climate change policies and strategies.	.655
	Item 16-Climate change initiatives should prioritize the most vulnerable communities and individuals.	.647
	Item 2- Community involvement is necessary to ensure effective action on climate change.	.521

Table 4 relates to "Tailoring Climate Change Initiatives to Community Needs and Circumstances," which refers to the approach of creating climate change initiatives and efforts that are tailored to the particular characteristics, circumstances, and priorities of each community. The data show that participants rated Item 14 the highest, with a score of .671, indicating a strong belief that Climate change initiatives should be tailored to the specific needs and circumstances of communities. Participants also rated Item 1 highly, with a score of .655, suggesting that they perceive community participation as crucial in addressing climate change. Item 13 received a score of .647. These results suggest that participants have confidence that the possibility that different communities may have various vulnerabilities, resources, and competencies for addressing the effects of climate change shall be taken into account. Initiatives to combat climate change can be made more successful, pertinent, and prevalent in the community by being tailored to local needs and conditions. These findings are consistent with previous research emphasizing the importance of community engagement, leveraging local knowledge and experience in climate change mitigation and adaption initiatives (Burton, I., Diringer, E., & Smith, J., 2006; Holm, F., 2003; Cooper, P. J., Dimes, J., Rao, K. P. C., Shapiro, B., Shiferaw, B., & Twomlow, S., 2008).

Table 4: Rotated component matrix with grouped attributes of Tailoring Climate Change Initiatives to Community Needs and Circumstances

Dimension	Attributes	Loading
Tailoring Climate Change Initiatives to Community Needs and Circumstances	Item 14- Climate change initiatives should be tailored to the specific needs and circumstances of communities.	.671
	Item 1- I feel that community participation is crucial in addressing climate change.	.655
	Item 13- Community participation in climate change can lead to more equitable and just outcomes.	.647

4. CONCLUSION

Based on the findings, the researchers concluded that there are three dimensions of community participation in climate change mitigation and adaptation initiatives, namely Empowering Communities, Promoting Sustainability and Resilience, Enhancing Accountability Transparency, Promoting Community Involvement, and Leveraging Local Knowledge and Experience, and Tailoring Climate Change Initiatives to Community Needs and Circumstances.

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