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WHERE DO WE STAND: FACTORS AFFECTING SUSTAINABLE DEVELOPMENT*

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Abstract

In this paper authors have tried to find out what is sustainable development and has deduced most important factors essential to achieve sustainable development. By the help of extensive literature review author have developed a self-designed questionnaire identifying 15 important factors for achieving sustainable development and found out most important factors. In order to do that author have collected responses of 200 respondents on a random basis and used factor analysis to obtain the desired result. Out of the possible 15 factors author has find out 3 most important factors to achieve sustainable development they are Economic Sustainability, Demographic Sustainability and Legal Sustainability. By changing sample size or by changing the area of research or the respondents of the research results might change. This study would help the present generation to find out the factors and few parameters that they need to save and preserve for the future generation without compromising their own needs. On 25 September, 2015 United Nation gave 17 global goals that were designed to achieve sustainable future for all. In this study author has tried to find out the most important factors that would help in achieving those 17 goals.

Keywords: factor analysis, future generation, self-designed questionnaire, sustainable development

1. Introduction

What is Sustainable Development and how to achieve it?

The sustainable development is a collection of 17 global goals that would act as a blueprint to achieve better future for our coming generation. They are No Poverty, Zero Hunger, Good Health and Well-Being, Quality Education, Gender Equality, Clean Water and Sanitation, Affordable and Clean Energy, Decent Work and Economic Growth, Industry Innovation and Infrastructure, Reduced Inequalities, Sustainable Cities and Communities,

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Responsible Consumption and Production, Climate Action, Life below Water, Life on Land, Peace and Justice Strong Institutions and Partnerships for the Goals; UN Report (2015) (Connor et al., 2015).

John Morelli (Morelli, 2011) states that sustainability stands for analyzing social costs minimizing them and meeting standards for protecting environmental assets. Sustainability is necessary for whole mankind and is important to invoke principles of sustainable development in all humans. Sustainable development is tool that erodes ecological limitation and supports human needs; (Rusko and Procházková, 2011). John Morelli (Morelli, 2011) states that an ecological definition of sustainable development as “meeting human needs without compromising the health of ecosystems”. Author also claims that sustainable development can’t be achieved by achieving environmental sustainability. Hence in order to achieve sustainable development first we need to achieve environmental sustainability.

Problems related with Sustainable Development and how to solve those problems?

Further development of an economy is important but this development is increasing environment contamination and threatening environment protection. Presently demand of humans for substances and energy is growing day by day hence it is creating a shortage of resources and energy (Rusko and Procházková, 2011). We must ensure development but after considering their effects on environment and human health. In (Siva et al., 2016) has discussed that quality management can be considered suitable to support sustainable development initiatives and has concluded that supporting sustainability through integration of management systems, Quality Management as support to the implementation of Environmental Management Systems and to the management of sustainability, supporting integration of sustainability considerations in daily work and supporting stakeholder management and customer focus can lead to sustainable developing without hampering or contaminating the environment.

Raatzsch explains that the present generation should use the present resources in such a manner that the generation to come should not strive for the current consumption. Moreover, one of the most important challenges faced by sustainability is economics profitability; it’s never easy to achieve economic profitability while working towards societal needs that relate to quality of life issues worldwide (Raatzsch, 2012). As the population of the world is increasing day by day and finally it is becoming really difficult to allocate resources in wise and equal manner for this growing population, which is a societal problem (Bateh et al., 2014).

2. Existing data analysis

Authors Veseli-Kurtishi et al. (2019) gave 15 factors to achieve sustainable development they are Poverty, Governance, Health, Education, Demography, Natural Hazards, Atmosphere, Land, Oceans Seas and Coasts, Fresh Water, Economic Development, Global economic partnership, Consumption and Production Patterns, Biodiversity and Employment.

(Kemp et al., 2005) examined and explained the elements essential for sustainable development and governance. In their study authors have also explained the relationship between sustainable development and governance in past 15 years to deduce a pathway for more sustainable future.

Mattheus Goosen (Goosen, 2012) stated their combined efforts for solving problems related to environment as well as sustainability faced by majority of countries across the globe. Hence there is need to understand the effect of sustainable development, human health, and environment on one another. More focus was given to globalization and sustained growth, bioethics and poverty, organizational performance and sustainability, environmental management and individual progress, human and ecosystem health, and water resources and recycling.

Mekuriaw and Teffera managed the study of Environmental Impact Assessment (EIA) which evaluates the social impacts & environmental on planned floriculture project. The main motive of the project was to grow & export nice quality flowers (Mekuriaw and Teffera, 2013). The study was categorized in 3 phases. In first phase the EIA analyzed the actual project documents & different proclamation, regulation & convention. In other phase socio-economic & biophysical data was accumulated. In the last phase the data was assessed by using both techniques i.e. Qualitative & Quantitative and simplified based on available standards & legal necessities. The project shows that it has numbers of potential positive impacts which are job opportunities, increase in income tax, introduction of modern technology, etc. On the other hand, there are potential negative impacts which includes water pollution, human health problems, water resource depletion, soil degradation, etc. The study of Environmental Impact Assessment (EIA) providing suggestion of identification of alternative sites either by reducing the project size or implementing it at a full scale for sustainable project.

Basiago stated that the economic, social, and environmental projection exercise of community embodying 'urban sustainability' penned been moved as antidotes to these unassertive urban aptitudes. Urban sustainability is doctrine diverse origins. The author feels the choice models of cultural development in Curitiba, Brazil, Kerala, India and Nayarit, Mexico personate the integral and interlink of economic, social, and environmental sustainability (Basiago, 1995). Curitiba become much livable city by building masterful intra-urban bus system and meet the ultimate necessity of urban poor. By emphasizing on equitable distribution of resources, Kerala has emerged as place of social harmony. Nayarit require a nature friendly development to defend the environment from the urban growth. It required elaborate trail of cultural development. The author through this research conclude that the example of the developing world becomes much difficult to be translated to cities of developed world, indicating a general sense of delusive policies that societies must implement in order to form urban sustainability.

Authors (Ahmad and Tahar, 2014) stated that organization of events being highly intensive can have adverse environment upshots like wastage of energy, materials and water. Thus, it becomes significant to implement the idea of green events in order to ensure sustainable development of managing events by taking appropriate, responsible decisions and through proper execution. Therefore, this paper covers objectives such as to characterize green event, development of plan to ensure sustainability, to overlook problems concerning management and green event staging and examining significance of key stakeholders and consideration of events following greening of the events. Further, its focal point is on energy efficiency, minimizing wastage, consumption of water and various other factors creating awareness sustainability of development. This research will help in educating, motivating and creating awareness to different individuals and societies in order to encourage all to come together and take steps regarding sustainable development of some C&DW management scenarios as potential alternatives to the actual system.

3. Research methodology

In this paper authors wants to find out the most important factors influencing the sustainable development. Authors use Factor analysis tool to extract the most important factors affecting the sustainable development. In this authors included 15 factors namely Poverty, Governance, Health, Education, Demography, Natural Hazards, Atmosphere, Land, Oceans, Seas and Coasts, Fresh Water, Economic Development, Global Economic Partnership, Consumption and Production Patterns, Biodiversity and Employment which are generally affecting the sustainable development. After the analysis of data authors found that Economic sustainability, Demographic sustainability and Legal sustainability plays an important role in affecting the sustainable development. Moreover, authors applied

Confirmatory factor analysis to prove the validity and reliability of their research. Based on the above mentioned tools authors concluded their research.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (Dodge, 2008) and Bartlett's Test of Sphericity (Bartlett, 1950; Tobias and Carlson, 1969) were used for the estimation of the correctness and reliability of the research results.

Due to limitation of the manuscript size authors do not provide the exact data were analyzed. However, the results of verification analysis is given below.

Case processing summary in Table 1 shows that there are no missing values and Reliability Statistics in Table 2 shows that the validity of the questionnaire is 79.90%.

Table 1. Case processing summary

<i>Case Processing Summary</i>			
		N	%
Cases	Valid	200	100.0
	Excluded*	0	0.0
	Total	200	100.0
*Listwise deletion based on all variables in the procedure.			

Table 2. Reliability statistics

<i>Reliability Statistics</i>	
Cronbach's Alpha	N of Items
0.799	15

KMO and Bartlett's test in Table 3 shows that the study is reliable as the value of KMO is more than 0.60.

Table 3. KMO and Bartlett's Test

<i>KMO and Bartlett's Test</i>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.758
Bartlett's Test of Sphericity	Approx Chi-Square	1481.214
	df	105
	Sig.	0.000

Table 4 shows that except one factor all factors are having a communality value more than 0.50 which shows that data is valid.

Table 4. Communalities

<i>Communalities</i>		
	Initial	Extraction
Poverty	1.000	0.582
Governance	1.000	0.850
Health	1.000	0.503
Education	1.000	0.484
Demography	1.000	0.518
Natural Hazards	1.000	0.672
Atmosphere	1.000	0.789
Land	1.000	0.680
Oceans, Seas and Coasts	1.000	0.783
Fresh Water	1.000	0.628
Economic Development	1.000	0.620
Global Economic Partnership	1.000	0.534
Consumption and Production Patterns	1.000	0.634
Biodiversity	1.000	0.833
Employment	1.000	0.562
Extraction Method: Principal Component Analysis		

Table 5 shows that the percentage of cumulative variance explained is almost 60% which shows that results are reliable and valid.

Table 5. Total variance explained

<i>Total Variance Explained</i>						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.831	32.207	32.207	4.831	32.207	32.207
2	2.153	14.356	46.562	2.153	14.356	46.562
3	1.723	11.486	58.048	1.723	11.486	58.048
4	1.208	8.056	66.104			
5	0.992	6.610	72.715			
6	0.872	5.816	78.530			
7	0.737	4.911	83.441			
8	0.527	3.510	86.951			
9	0.456	3.041	89.992			
10	0.399	2.659	92.651			
11	0.342	2.283	94.933			
12	0.261	1.740	96.673			
13	0.209	1.393	98.067			
14	0.191	1.271	99.338			
15	0.099	0.662	100.000			

4. Results and conclusion

Rotated Component matrix as shown in Table 6 shows that 3 factors can be extracted from given 15 factors. They are shown in Table 7.

Table 6. Rotated component matrix

<i>Rotated Component Matrix</i>			
	Component		
	Factor 1	Factor 2	Factor 3
Consumption and Production Patterns	0.791		
Economic Development	0.756		
Global Economic Partnership	0.657		
Atmosphere	0.638		
Land			
Fresh Water			
Employment			
Natural Hazards		0.709	
Health		0.697	
Demography		0.696	
Oceans, Seas and Coasts		0.634	
Education		0.610	
Governance			0.920
Biodiversity			0.838
Poverty			0.838

Table 7. Factor’s extraction

<i>Factor 1</i> <i>(Economic Sustainability)</i>	<i>Factor 2</i> <i>(Demographic Sustainability)</i>	<i>Factor 3</i> <i>(Legal Sustainability)</i>
Consumption and Production Patterns	Natural Hazards	Governance

Economic Development	Health	Biodiversity
Global Economic Partnership	Demography	Poverty
Atmosphere	Oceans, Seas and Coasts	
	Education	

The analysis data in Table 7 shows that there are 3 most important factors namely Economic Sustainability, Demographic Sustainability and Legal Sustainability for achieving sustainable development.

4.1. Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis in Fig. 1 shows that the factors derived from Factor Analysis are valid and reliable within the acceptable values of Correlation.

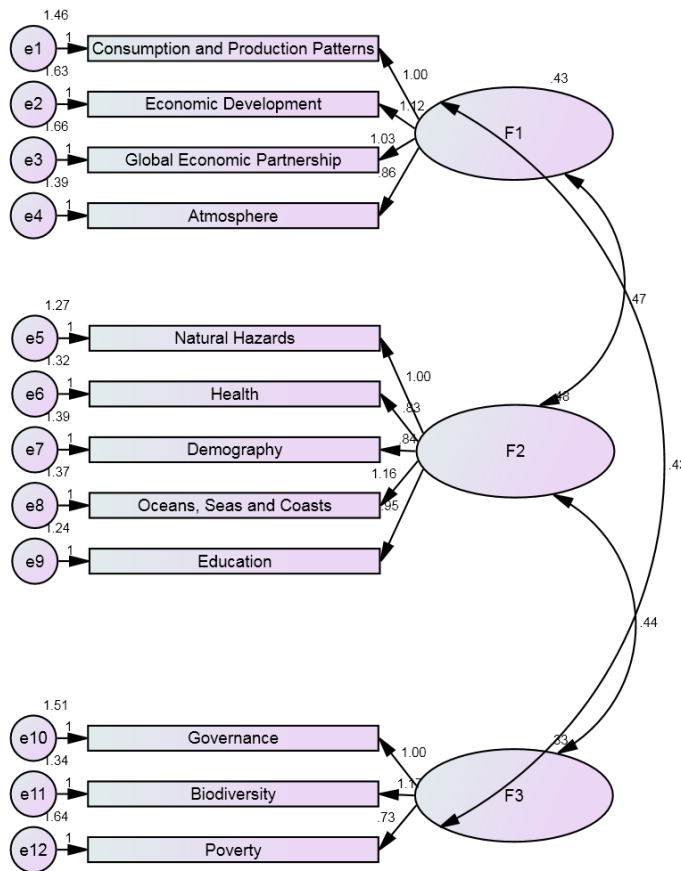


Fig. 1. Confirmatory factor analysis

Novelty: On the basis of extensive literature survey authors has deduced 15 most important factors for achieving sustainable development which also focuses on 17 goals established by United Nation on 25 September, 2015 to achieve sustainable future for all. Moreover by the use of factor analysis author extracted 3 factors namely Economic Sustainability, Demographic Sustainability and Legal Sustainability containing 12 sub-factors. As it is next to impossible to control all 15 factors but it is possible to control 3 factors to achieve sustainable development.

Results: Out of the 15 possible factors that would help in achieving sustainable development author has extracted 3 factors containing 12 sub-factors i.e.:

Factor 1 – Economic Sustainability – including Consumption and Production Patterns, Economic Development, Global Economic Partnership and Atmosphere.

Factor 2 – Demographic Sustainability – including Natural Hazards, Health, Demography, Oceans Seas Coasts and Education.

Factor 3 – Legal Sustainability – including Governance, Biodiversity and Poverty.

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