Youth and sustainable development – overview, theoretical framework and further research directions

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Abstract: Youth is the most versatile and active segment of an economy and are a vital source of creativity and innovation. This paper is concerned with the establishment of a relationship between youth and sustainable development. The major issue under investigation is to assess the contribution of youth towards the nations growth and prosperity. We have undertaken an extensive literature review which is considered as a base for deriving the interpretative structural model (ISM). It is an approach which drives the researchers to study various aspects and correlate variables. This paper reflects an understanding of the various areas of youth contribution towards sustainable development in a hierarchical manner. To the researchers, this survey has significant insights into the relationship between youth and sustainability. It also highlights the important variables which have been arrived at, based on systematic literature review as well as ISM approach and MICMAC analysis; coupled with the interrelationship between the varied elements of the concept of youth contribution towards sustainable development. In this paper, the researchers have attempted to answer the research questions if there exists a relation between youth and sustainable development and whether a research model can be developed based on literature review and theoretical framework for further research directions.

Keywords: youth; sustainable development; interpretive structural modeling; MICMAC analysis.


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Nehajoan Panackal is a mechanical engineer and has completed her Master’s in Business Administration. Her areas of research include business administration, sustainability and human resource management.
1 Introduction

India is a country which has the largest population of youth in the world. As per the statistical data more than 50% of the population of the Indian population is below the age of 25 years and more than 65% of the population is below the age of 35 years (2011 Census Data). The Indian youth today is anxious to participate in various activities that promote sustainable growth. Young women and men are called as full agents of change that enable change in their communities and societies. However, the issue of targeting youth in development policies is currently not sufficiently addressed. Youth can be seen as agents of change who through their knowledge, keen observation and continuous action will contest challenges that would help build a greener today and an environment that will nurture the future generations. Majority of the youth grow up to become valued members of their communities, but for those who do not become valued members, the consequences to the society and personally can be costly. Providing youth with a sense of purpose, worth and achievement is necessary to enhance sustainable growth. Engaging youth in an organised effort to promote environmental sustainability has important implications not only for the young people but also for the communities in which they live. Youth engagement is critical to achieve positive youth development which can subsequently contribute towards sustainable development (Gambone et al., 2004).

In developing countries, many of the development challenges have their origins locally. Youth initiatives are indispensable to help promote sustainable development. Local institutions can be instrumental in provoking economic growth, promoting socio-political development and protecting the environment in order to achieve sustainable development. Youth can be assigned new roles and responsibilities to ensure sustainable development in India. Thus, the capacity of youth should be enhanced so that they can play a meaningful role in the promotion of sustainable development (Hart, 2013).

1.1 Theoretical background

Sustainability has been established as an advanced and a world recognised term. It has been defined as an uninterrupted process within which there exists diversity of forms. Shediac-Rizkallah and Bone (1998) but there are no emphasis on measuring the extent of continuation Yin (1994) and typology of the organisational sub system (Katz and Kahn, 1978).

A conceptual analysis focusing on the metaphorical and epistemological basis of the different definitions is the first step towards developing a theory on sustainability (Mebratu, 1998). The World Commission on Environment and Development was asked to formulate a global agenda for change. The General Assembly of the United Nations was called upon to propose long-term environmental strategies in order to achieve sustainable development. The term sustainable development was discussed by the World commission on environment and development in 1987 in their report which was titled as ‘Our Common Future’. According to the report, the term indicates “Meeting the present needs of the current generation without compromising on the needs of the future generations”.

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The idea of ‘sustainability’ needs to pay attention to the poor of the present and future generation as they are the wealth of the nation (Sen, 2013). Kordestani et al. (2015) have summarised the area of research towards developing sustainability. McManners (2014) proposed sustainability economics as subservient to society. The concept of sustainability is important for all stakeholders, who take and implement the concept of sustainability in different stakes. HR policies and interventions are pivotal to the success of sustainability (Dubey and Gunasekaran, 2015).

It is necessary to translate the general principles and practices of sustainable development into business. This can be done by ensuring that sustainable development becomes more institutionalised with a concrete base in the regulations, norms, policies and mindsets of the youth (Bansal, 2002). The concept of sustainable development includes the overall social, cultural, ecological and environmental factors (Huovila, 1998). The challenges of how to formulate policies and strategies to respond to sustainability are a priority on the agendas of the world’s leading nations (Olsen, 2007).

The existing development challenges have to be tackled on an urgent basis. The obvious causes of rural poverty, hunger, deficiency and environmental damage in the developing countries include racial marginalisation, gender bias, unimproved production technologies, and poor access to markets, roads, public health services, education and basic infrastructure facilities. Infrastructural challenges should be met in a positive way to develop a strong base for the economy. The issue of environmental sustainability will have major consequences and cannot be neglected. According to the 12th five year plan of planning commission of India, there is a need for a concrete growth process which is consistent with protecting our environment and related factors (12th five year plan of planning commission of India).

1.2 Youth’s contribution towards sustainable development

As per United Nations Environment Programme (UNEP) out of the total world’s population, youth comprise of nearly 30%. The involvement of youth in environment related policies and development decision-making, implementation of programs is critical to the long-term success of nations.

Youth is considered as a vibrant source to bring about changes. They can contribute and bring about a positive change by fighting against corruption, bribes and every social ill. This can be achieved by applying their education for the good and progress of the country. Youth need to be the activist. Youth need to inculcate a sense of purpose, worth and achievement through their actions which will result in a difference. Researchers
repeatedly focus on the vital role of next generation leaders in the process of sustainability. Leaders can be formal and informal who can promote creativity, innovation and facilitate a sustainable life (Akerlund, 2000; Calsyn and Kenny, 1977; Steckler and Goodman, 1989). The field of sustainability is increasingly recognising youth as an important group, and youth are encouraged to directly participate in the sustainability processes. The practice of youth participation needs special consideration. It is very vital to have youth participation in terms of the impacts on the young participants and their communities; the capacity of youth to participate is unlimited and inevitable for achieving sustainability in the future.

2 Factors affecting youth’s contribution towards sustainable development

Based on the literature review, list of variables were identified relevant to the factors contribution for sustainability by youth under consideration. The key factors for sustainability and youth were arrived at for ISM.

Table 1: ISM reference table (variable identification from literature review)

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youths contribution to green economy/environment</td>
<td>V6 Hess (2010), Seeland et al. (2009), Birmingham and Barton (2014), Wals (1994) and Henderson (2007)</td>
<td></td>
</tr>
</tbody>
</table>

2.1 Social role/youth participation/youth activism

The concept and practices of global sustainable development is threatened due to the attitude of attaining individual sustainable development. It is necessary to ensure youth social role at the global level to attain sustainable development (Kreps et al., 1999).
Individual youth strength may not have a dramatic impact, however the strength and impact is powerful when drawn together (Blyth and Roehlepartain, 1993).

Science, community, culture are inter related to attain sustainability. Participatory action of youth with science, community and culture is necessary (Schensul, 2009). It is necessary to involve youth in the various stages of sustainable development; this includes the stages of problem identification and design. Youth clearly understand the needs of their peers and can develop means to reach them effectively. A ‘ladder’ of youth participation to bring about sustainable development has eight levels as follows: manipulation; decoration; tokenism; assigned but informed; young people consulted and informed; adult-initiated, shared decisions with young people; young person-initiated and directed; and young person-initiated, shared decisions (Kothari, 1996; Hart, 1992).

Youth participation is mandatory and should be an ongoing and inevitable process in which youth from all sections are engaged and all youth are invested (Pittman, 1991). The missing assessment criteria’s in sustainability are from within the social and economic dimensions of sustainability. The dynamicity of youth engagement is necessary to achieve sustainable goals of a community (Berardi, 2013). Youth has been seen as an important stakeholder group. Youth vary from adults in many aspects, youth participation needs special consideration (Frank, 2006).

Noor et al. (2015) state that university plays a vital role in educating the youth on sustainability and creating awareness among the youth. Sustainability can be promoted in college campuses to encourage youth to develop innovative ideas (Sadusky, 2014). Youth civic engagement leads to sustainability by initiating sustaining factors (Riemer et al., 2014).

### 2.2 Positive youth development skills and education

An inclusive mission for schools should be to educate students so that they can become knowledgeable, responsible, socially skilled and contributing citizens (Greenberg et al., 2003). Sustainable development can only flourish in a peaceful environment. The 21st century youth need to be carried along with sustainable development. In order to ensure that this gets materialised great attention has to be given to vocational education and employment of youth. Youth should be empowered through education to contribute towards community development (Lawson, 2005). Jackson and Davis (2000) emphasised on preparing the youth for the 21st Century. Youth participation are increased by the support and encouragement of family, school, and community protective factors (Bernard, 1991).

Developmental youth education is defined as education of the person which helps to stimulate intellectual and emotional growth, moral reasoning, social skills, competencies, and a sound body (Mosher, 1979). Complex social behaviours can be learnt through observational learning. Youth can learn and grasp better through example (Crain and Strauss, 1985). Learning should include a social setting that includes the attitudes and behaviour of both the adult and young person which will help to contribute to development. An integrative study of positive youth development was conducted by Barcelona (2011). Positive youth development aims to provide an environment where youth become empowered through the acquisition and development of skills that expand their personal resources. It provides opportunities for responsibility for activities that affect others. This responsibility helps youth to move towards mutually responsible and
rewarding involvement with people which results in social maturity. Ryan et al. (2010) concluded that work is needed to promote systemic change in educational arenas in order to promote sustainable development.

Youth development education can be directly related to freedom. Freedom in this case is defined as the varied number of options available and their right to express them (Bandura, 1969; Cisek and George, 1985; Pittman, 1991; Moser, 1980). The relation between education and sustainability cannot be external (Foster, 2001). The recognition of individual uniqueness and varied different needs, abilities, interests and behaviour is necessary for responsive curriculum design that educates youth on sustainability (Combs, 1981; Moser, 1979). Youth peer education is necessary to ensure complete involvement of all sectors of youth. A close connection can be established between the changing concerns about the environment and problems associated with it and the way environmental education is defined and conventional approaches to education varies from environmental education (Tilbury, 2011). Providing information and education to youth helps channelise their participation towards sustainability the concern for sustainability is success through innovation, competitiveness and improved quality of education (Harley et al., 2014). The involvement of youth in community issues promotes positive youth development outcomes (Yohalem and Martin, 2007). Murga-Menoyo (2014) has supported the role of education in ensuring sustainable development. Youth can create sustainable business environment (Kopnina, 2011). The focus is on Earth education at the global level which shows an intersection between education and sustainability. The role and responsibility of stakeholders in educating the youth is necessary for understanding sustainable development (Castor, 2014).

2.3 Youth leadership

Leadership is considered as a ‘mature field’ (Hunt and Dodge, 2001). Leadership development and education are two distinct terms (Brungardt, 1998). Leadership sustainability is affected by the psychological and physiological effects of stress that accompanies a leadership role (Boyatzis et al., 2006). Parents, educators and peers help youth to explore their leadership (Turkay and Tirthali, 2010). The entrepreneurship field helps youth to avoid the pitfalls experienced by experienced leaders (Cogliser and Brigham, 2004). Leadership has been defined as the giftedness, across major revisions, since its inclusion in the Marland Report. Analysis confirms that a consolidated theoretical framework for leadership giftedness has not yet materialised, although limited consensus may be emerging regarding the aspects of leadership that are more or less responsive to instruction (Matthews, 2004). Youth are collaborating together to demand a voice in the major decisions that influence their lives. In this way, they are responsible for changing policies and making institutions more accountable (Ginwright and James, 2002).

Youth are essential partners in community building, and community building can provide developmental opportunities for youth. The meaning of youth leadership development, leads to the potential connections, as well as the potential tensions and conflicts, between the inside and outside approaches (Libby et al., 2006). Youth leadership includes a clear criteria of positive environmental attitudes, behaviour, initiative, and involvement (Arnold et al., 2009).

Environmental stewards are the youth who will be the future environment conscious leaders.
2.4 Entrepreneurship

Entrepreneurship skills of youth are different from those of older people. The areas of differentiation include accumulation of resources and skills; psychological, and reaction to influences from the environment, culture and norms.

There exists a strong link between youth entrepreneurialism and environmentalism. A model called as Green-Works business model has been developed for attaining sustainability of the environment and social objectives of the organisation (Dixon, 2007). Entrepreneurship can be driven by moral attitudes (Anderson, 1998; Buller, 1989).

It has become important to give ecopreneurship a serious consideration as we are rapidly losing our natural resources which are the true capital of any nation. Unlike past decades where economic gains were the only measure of a nation’s progress, nowadays sustainability is given high importance.

Ecopreneurship is seen as an existential form of business behaviour committed to sustainability (Isaak, 2002). Ecopreneurship is considered as important because eco-innovations made by the youth will be the future competitive advantage of countries. In order to gain advantage it is necessary for youth to come up with new and innovative environmental technologies, services and processes which will be the more important sources of competitive advantage. The long-term sustainability of our economic system which will promote ecological aspects of the growth and sustainable development (Klimová, 2011).

The world population is expected to increase by 50% by 2050 and with it will come an increase in consumption. Although part of this consumption is important for relieving poverty in many emerging countries, most it will be done by affluent consumers and can have a negative impact on the ecosystems (Volery, 2002). Youth entrepreneurship is therefore of vital importance to find the new innovative technologies to protect the environment and to ensure sustainability, i.e., that there are enough resources to fill the needs of both the current population and future generations (Minola et al., 2014; Volery, 2002). Youth entrepreneur’s perception on information technology innovation adoption plays an important role.

In a market system, sustainable development requires sustainability innovation and youth entrepreneurs who can help to achieve environmental or social goals. They can contribute to solving the existing environmental problems and consequently help create economic value (Wagner, 2011). The green entrepreneur and business opportunities can help save the Earth (Berle, 2005).

2.5 Youth governance

Mirela et al. (2015) stated that human resource has a great impact on sustainability in every country. Human resource is the asset and wealth of a nation. Human capital development is the base of sustainable development (Šlaus and Jacobs, 2011). Youth believe in changing and solving the environmental issues and they believe that they are the agents of change.

Youth in governance indicates young people and adults forming mutual partnerships in order to address the needs in the community. Engagement of youth in governance and decision making is necessary to ensure social justice, youth representation and also helps in overall youth development (Zeldin et al., 2007). As youth develop their leadership ability, their natural progression is to become actively involved in building and rebuilding
themselves, their families, their communities and the larger institutions that shape the quality of life (Pittman, 1991).

Youth governance helps to develop positive personal attitudes among participants. It can subsequently stimulate the moral and ego development. Mosher (1979) which will help to enhance self esteem and subsequently increase social responsibility. Youth participation and governance helps youth make all the decisions related to sustainability (Pittman, 1991). Governance among the various stakeholders including youth will help address environmental issues in hand (Hemmati, 2002). Engaging youth in governance promotes positive youth development and effectiveness (Zeldin et al., 2007).

2.6 Youth’s contribution to green economy/environment

Public urban green spaces were found to play vital role for children and youths in making cross cultural friends, contacts, which is primary need for social inclusion (Seeland et al., 2009). The pressing nature of environmental issues requires citizens not only to understand relevant disciplinary knowledge but also to have the ability to use that knowledge to take action. As community members in relation to green energy issues youth needs to plan and implement community events (Birmingham and Barton, 2014; Hess, 2010). Upadhyay (2009) has written an article for promoting sustainable development through investing in children.

At the global level, the indications are to assess the world’s eco system with human well being. For the solution of global problems, youth needs to be connected to the environment. Student’s perception and experiences through environmental educators have positive implications on environment education; consequently, they can be the critical evaluators and positive contributors for green economy (Wals, 1994). Strategies for global sustainability and growing the green economy must address current economic models driving today’s unsustainable forms of globalisation (Henderson, 2007). Youth engagement in general is critical to positive youth development (Gambone et al., 2004).

3 Research methodology

This study is based on primary and secondary data collected from different sources. It includes literature review, survey-based research, interpretative modelling and case research methods from Ebsco, Emerald, Scopus, Jstor, Thomson Reuters and Google Scholar. Information has also been gathered from secondary data sources from books, articles that aid the study of sustainable development. Researchers opted for systematic literature review (SLR). Tranfield (2003) to understand the key dimensions derived from SLR. Based on the literature review, it is evident that there is a strong relation between youth and sustainable development. To understand the relationship among various variables that play a vital role in youth and sustainability isometric modelling technique is used to develop a model which is further analysed using MIC MAC analysis. Seminal articles related with the research topic have not been found, as the area of research is relatively new. Synthesis of review identified research gaps, it was noticed that limited work has been done in the area of youth and sustainable development probably because it is a relatively new area. The research will make an attempt to close the visible academic gap.
3.1 Identification of variables

3.1.1 Identification of factors

The preliminary six factors based on SLR have been discussed in the previous section. Both Indian and foreign studies were taken into account to provide a broader base to understand the variables linking youth and sustainability. The identified variables have been considered as they have emerged single or multiple times in the search. The bias in identification has been obviated, since even a single meaningful mention of a variable was given credence.

3.2 ISM modelling

Warfield (2003) was the first to propose ISM. It describes relationships between variables in a situation. ISM enables the individual or a group of them to manage the interrelations between two or more elements at a time without compromising and deviating from the actual properties of the original elements/issues (Morgado et al., 1999; Mishra et al., 2012; Ahuja et al., 2009). ISM provides a framework for delineation of a hierarchy amongst variables, influencers or elements of any project under consideration. This kind of modelling is seen as a useful tool that helps logical thinking and carefully approaching complex issues and then communicating the results of that thinking to others (Singh, 2013). Term ‘interpretive structural modelling’ connotes systematic application of elementary notions of graph theory in such a way that theoretical, conceptual, and computation leverage is exploited to efficiently construct a directed graph, or network representation, of the complex pattern of a contextual relationship among a set of elements (Malone, 1975; Jharkharia and Shankar, 2005). Attempts have been made to find relationship among various constructs and their relationship using ISM analysis (Dubey and Ali, 2014).

ISM is much more flexible than many conventional quantitative modelling approaches that require variables to be measured on ratio scales. It offers a qualitative modelling language for structuring complexity and thinking on an issue by building an agreed structural model (Morgado et al., 1999; Shahabadkar, 2012; Charan et al., 2008). Dubey et al. (2015) supports extant literature to adopt total interpretive structural modelling technique to generate theory.

ISM methodology is one of the most cited methodologies in social science research. As researchers we have used ISM methodology to impose order and direction on the complexity of relationships between youth and sustainability. It has made the study more analytical and conceptual for the researchers.

3.3 Research design

Details of various steps involved in ISM are as follows:

a List of variables were identified relevant to the factors contribution for sustainability by youth under consideration, through a literature review.

b Used ISM literature review to arrive at the key factors for sustainability and youth.
c Develop a structural self interaction matrix (SSIM) for variables, indicating pair-wise relationships among variables being studied.

d Convert the SSIM developed into a reachability matrix using binary digits.

e Test the reachability matrix for transitivity (if A depends on B and B depends on C, then by principle of transitivity, A depends on C), make modifications to satisfy the transitivity requirements and derive the final reachability matrix.

f Model levels are derived by iterative partitioning of the reachability matrix.

g Translate the relationships of reachability matrix into a diagraph and convert it into an ISM.

h The model is then reviewed for inconsistencies the model for conceptual inconsistencies and revised accordingly.

3.3.1 Structural self-interaction matrix Table 1

For development of structural self-interaction matrix (SSIM), ISM methodology suggests that experts’ views are used for defining contextual relationship among variables, in line with objectives of the study. Four symbols were used to denote the type and direction of relationship between a pair of barriers ‘i’ and ‘j’ (referring to serial number of a barrier in row and column respectively).

<table>
<thead>
<tr>
<th>i</th>
<th>j</th>
<th>V6</th>
<th>V5</th>
<th>V4</th>
<th>V3</th>
<th>V2</th>
<th>V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>V</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V2</td>
<td>V</td>
<td>V</td>
<td>V</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3</td>
<td>V</td>
<td>V</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V4</td>
<td>X</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V5</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following four symbols are used to denote the direction of relationship between two factors (i and j). The following four possibilities are considered for making Table 1 of SSIM.

- \( \text{i} \rightarrow \text{j} \) if that is true, the relationship is symbolised as \( V \).
- \( \text{j} \rightarrow \text{i} \) if that is true, the relationship is symbolised as \( A \).
- \( \text{i} \rightarrow \text{j} \) if that is true, the relationship is symbolised as \( X \).
- \( \text{j} \rightarrow \text{i} \) if that is true, the relationship is symbolised as \( O \).
3.3.2 Reachability matrix Table 2

SSIM developed from contextual relationships were converted into binary matrices called initial reachability matrices, by replacing V, A, X and O by a combination of 1s and 0s in accordance with the VAXO rules. If entry (i, j) in SSIM = ‘V’, enter element (i, j) as ‘1’ and (j, i) as ‘0’ in initial reachability matrix.

If entry (i, j) in SSIM = ‘A’, enter element (i, j) as ‘0’ and (j, i) as ‘1’ in initial reachability matrix.
If entry (i, j) in SSIM = ‘X’, enter element (i, j) as ‘1’ and (j, i) as ‘1’ in initial reachability matrix.
If entry (i, j) in SSIM = ‘O’, enter element (i, j) as ‘0’ and (j, i) as ‘0’ in initial reachability matrix.

Table 3  Final reachability matrix

<table>
<thead>
<tr>
<th>i</th>
<th>j</th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
<th>V4</th>
<th>V5</th>
<th>V6</th>
<th>Driving variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>V2</td>
<td></td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>V3</td>
<td></td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>V4</td>
<td></td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>V5</td>
<td></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>V6</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Dependent variable</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.3.3 Level partitioning

Final reachability matrix obtained after incorporating transitivity requirements is used for level partitioning. It involves comparing the ‘reachability’ and ‘antecedent’ sets of variables and delineating levels on the basis of intersection sets. It leads to a reachability set for a variable by considering the variable itself and other set of variables that causes an impact, whereas antecedent set comprises of the variable and a set of all those variables that have an impact on the primary variable. The hierarchy in ISM is decided by the level of similarity in reachability and intersection sets. These variables would not impact any other variables.

Table 4  Level 1 table

<table>
<thead>
<tr>
<th>i</th>
<th>j</th>
<th>Reachability set</th>
<th>Antecedent set</th>
<th>RS ⊓ AS</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td></td>
<td>1, 2, 3, 4, 5, 6</td>
<td>1, 3, 4, 5</td>
<td>1, 3, 4, 5</td>
<td></td>
</tr>
<tr>
<td>V2</td>
<td></td>
<td>2, 3, 4, 5, 6</td>
<td>1, 2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>V3</td>
<td></td>
<td>1, 3, 4, 5, 6</td>
<td>1, 2, 3, 4</td>
<td>1, 3, 4</td>
<td></td>
</tr>
<tr>
<td>V4</td>
<td></td>
<td>1, 3, 4, 6</td>
<td>1, 2, 3, 4, 6</td>
<td>1, 3, 4, 6</td>
<td>Level 1</td>
</tr>
<tr>
<td>V5</td>
<td></td>
<td>1, 5, 6</td>
<td>1, 2, 3, 5</td>
<td>1, 5</td>
<td></td>
</tr>
<tr>
<td>V6</td>
<td></td>
<td>4, 6</td>
<td>1, 2, 3, 4, 5, 6</td>
<td>4, 6</td>
<td></td>
</tr>
</tbody>
</table>
Level 1 is variable 1 alone, i.e., youth participation and youth activism.

**Table 5  Level 2 table**

<table>
<thead>
<tr>
<th>$i$</th>
<th>$j$</th>
<th>Reachability set</th>
<th>Antecedent set</th>
<th>$RS \cup AS$</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V2$</td>
<td>$V2$</td>
<td>2, 3, 4, 5, 6</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>$V3$</td>
<td>$V3$</td>
<td>3, 4, 5, 6</td>
<td>2, 3, 4</td>
<td>3, 4</td>
<td>Level 2</td>
</tr>
<tr>
<td>$V4$</td>
<td>$V4$</td>
<td>3, 4, 6</td>
<td>2, 3, 4, 6</td>
<td>3, 4, 6</td>
<td></td>
</tr>
<tr>
<td>$V5$</td>
<td>$V5$</td>
<td>5, 6</td>
<td>2, 3, 5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>$V6$</td>
<td>$V6$</td>
<td>4, 6</td>
<td>2, 3, 4, 5, 6</td>
<td>4, 6</td>
<td></td>
</tr>
<tr>
<td>$V2$</td>
<td>$V2$</td>
<td>2, 3, 4, 5, 6</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Level 2 is variable 4 alone, i.e., entrepreneurship.

**Table 6  Level 3 table**

<table>
<thead>
<tr>
<th>$i$</th>
<th>$j$</th>
<th>Reachability set</th>
<th>Antecedent set</th>
<th>$RS \cup AS$</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V2$</td>
<td>$V2$</td>
<td>2, 3, 5, 6</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>$V3$</td>
<td>$V3$</td>
<td>3, 5, 6</td>
<td>2, 3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>$V5$</td>
<td>$V5$</td>
<td>5, 6</td>
<td>2, 3, 5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>$V6$</td>
<td>$V6$</td>
<td>6</td>
<td>2, 3, 5, 6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Level 3 will be $V2$, $V3$, $V5$ and $V6$, i.e., education, youth leadership, youth governance and youth and green economy.

**Table 7  Level matrix**

| $V1$ – Youth activism | Level 1 |
| $V4$ – Entrepreneurship | Level 2 |
| $V2$ – Education and positive youth development skills | Level 3 |
| $V3$ – Youth leadership | Level 3 |
| $V5$ – Youth governance | Level 3 |
| $V6$ – Youth and green economy | Level 3 |

Figure 2 represents ISM model showing the interrelationship and the hierarchy of the factors. Since the contextual relation chosen was ‘leads to’, each row in the model implies the same. The six factors are divided into three levels, the digraph for ISM is drawn. Having identified the levels of the elements, the relations between the elements is drawn with the help of an arrow. The level 1 variable is in the top level in the hierarchy. The digraph completely depicts how positively youth and sustainability are correlated. It shows that youth activism and entrepreneurship have a direct relation with each other.
Youth and sustainable development

According to the model positive youth development leads to youth leadership and youth leadership can contribute immensely towards green economy leading to youth governance. Entrepreneurship is a result of education and positive youth development skill and influences youth and green economy.

4 MICMAC analysis

MICMAC is an abbreviation of Matrice d’Impacts croises-multiplication appliqué an classment (Cross-Impact Matrix Multiplication to Classification). It is used to examine the driving power and dependence power of the variables; based on which they have been classified into four categories viz. autonomous, linkage, dependent and driving variables.

Table 8  MICMAC matrix

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
<th>Driving variables</th>
<th>Dependant variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social role/youth participation/youth activism</td>
<td>V1</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Positive youth development skills and education</td>
<td>V2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Youth leadership</td>
<td>V3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>V4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Youth governance</td>
<td>V5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Youth s contribution to green economy/environment</td>
<td>V6</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

Figure 3 represents driving power dependence graph which classifies the factors. The driver is positive youth development skills. There are no autonomous variables. The important highlight is that the maximum are linkage variables.
Clusters 1 variable are those variables possessing weak driving and weak dependence nature. These are relatively disconnected in the system, with which they have few links, which may be very strong. In this cluster, we have do not have any variables. They are the autonomous variables. Cluster 2 variables are the dependent variables having strong dependence and poor driving power. They are unstable. Any action on them will have an effect on others and also feedback effect on themselves. In this cluster, we have one variable, i.e., V2 (positive youth development skills and education). Cluster 3 is the linkage variables are those variables which are having strong dependence and strong or weak driving power. The strong driving power is termed as key enabler. In this cluster, we have any variables V1, V4 and V3, (youth participation, youth leadership and entrepreneurship). Clusters 4 variables are the independent variables which are having poor dependence and strong driving power. The strong driving power is termed as key enabler. In this cluster, we have three variables, i.e., V5 and V6 (youth governance and youth’s contribution to green economy).

5 Conclusions

This study was based on the identification and modelling of factors affecting youth’s contribution towards sustainable development. All the identified factors were found to be important. Significant inter relations are revealed which are sometimes not exposed by mere observation. The framework proposed in this paper can be utilised to develop strategies towards sustainable development which are focused, practical and effective. Extensive literature review was the base for variable identification as shown in Table 2.
We further extended our discussion and proposed a conceptual framework. We have identified the role of youth towards sustainability and theoretical knowledge so that youth can be the positive agents for sustainability and can respond to the sustainability issues. We have outlined our theoretical contributions of our study.

The conclusion drawn from the ISM hierarchy shows a high interrelationship and interconnectivity between the youth and sustainability. The conceptual framework reconciles the contribution of youth in various ways towards sustainability. The analysis is based on extant literature review which is supported through ISM and MICMAC.

Our study is unique and innovative in that we focused on exploring the different effects of the relationship between youth and sustainability.

5.1 Limitations

Like any study our present study has its own limitations. We have developed our framework based on literature review.

The research limits itself to the deduction and understanding of the concept of youth contribution towards sustainability and its core elements; however it does not probe the nitty-gritty’s of the elements at a microscopic level. Our study only talks about the core relation between youth and sustainability. Our model includes factors at macro level. However, methodically this is not a sound approach and may attract criticism as it needs to be further investigated using survey data. Second, our present model does not include confounding variables. In fact when our model will be statistically validated the confounding variables need to be identified. Like many studies in past one may compromise with internal validity. Last, we have outlined further research directions based on our study findings.

5.2 Further research directions

There is a need for sustainable framework with young minds and challenges. The present study needs to be further investigated under the light of economic dimensions and issues.

An attempt can be made in future to investigate the negative impact of Youth Governance and role towards sustainability.

The ISM-based model is only hierarchical and does not reveal the relative weights associated with each factor (Kannan et al., 2009). This can be done using analytic network process. For understanding reasons behind the relationships, an advanced ISM technique, total interpretive structural modelling can be used. Also, structural equation modelling can be used for testing the validity of the model.

The limitations of our present study can further be extended in the future.

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References


Youth and sustainable development


Youth and sustainable development


