

Gandhian Perspective on Tribal Development in India

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Abstract: The purpose of the present chapter is to know the Gandhian perspective on tribal development. It throws light on the culture and the atmosphere where the future Mahatma was brought up. Every great man's early life bears testimony, and gives a necessary background to the readers to understand his perceptions, concepts, his attitude and approach to life, and his personality as a whole. It is well known that more has already been written about Gandhiji than about any other leader in modern Indian History, and that numbering among these thousands of works are, to date, more than four hundred biographies of him. The innumerable works produced on Gandhiji show what kind of man he was, and his influence on people throughout the world in general, and India in particular. The present study makes an attempt to estimate Gandhiji's contribution to tribal development, as a great leader who fights for the welfare of the masses. Gandhiji contributed most to the uplifting of a demoralized nation from a state of passive submission to foreign rule to becoming heroic fighters against tyranny and injustice. He was a moral force who created a consciousness of great oppression and injustice within the Indian society. It is, therefore, not his private ideas of moral life which made him a figure of historical significance, but his contribution to the basic ferment relating to India's emergence as a new nation and a new society. His political ideas were intelligible even to the illiterate masses of the country.

Keywords: Tribal, gandhian approach, development, moral.

1. Introduction

The philosophy of nationalist leader and its implementation in own life in socio-political, economical, spiritual and ethical of folks, created an ideology. It created an example ahead of Indian society that's referred to as a 'Gandhism'. Since from Indian-independence, Gandhiji has been reverentially called the father of nation. The Gandhiji's name has been mentioned with respect and devotion in India and also outside of India. As the contemporary society facing a lot of problems, philosophy of Mahatma Gandhi offer a powerful avenue to discern on what path to follow. Developing understanding of the multi-dimensional thoughts and Gandhiji's philosophy offers great opportunities to negotiate the challenges of modern day society. In the backdrop of the materialistic culture that dominates our world, Gandhi's idea of simple living and strong faith in the power of truth, nonviolence, simple living are be the guiding principle for new generation people (Szenkovics, 2013). He had deep faith in the goodness of every individual (Bawa, 2016).

For him, all human beings are interconnected to all facets of the universe and cannot live in isolation. Each individual needs others for the survival. Now a day, there is a grater realisation than from the past that humanity needs to give more attention to Gandhian ideology and practices for a sustainable future. It is at our own fault that present generation ignored his ideas and now paying the price for it. As we face huge amount of challenges such as ever-increasing violence, poverty, growing inequalities, diseases and climate change all of which increases serious problem on our future existence. For which we once again turn to Gandhiji's ideas and practices to overcome from these challenges (Mitra, 2019).

Many of the ideas of Gandhi are about the ethics of governance, public service and policy-making, which can be useful to resolve the challenges faced by the tribal community. No doubt Gandhiji did not give any comprehensive definition for the development of 'Tribals' but he think for the upliftment of the culturally and economically marginalization sections of the society (Preet, 1994). His principle can be applied while framing policies for tribal development.

1) Tribal Development

Tribal constitutes 8.63% of the total population of India out of which about 88.2% of tribal in India are of Hindu religion. Christian tribal constitutes 7.4% and rest religious groups comprising only 4.2% as per 2011 census. Both union and state government departments deal with the issues relating to the development of tribals in India. Ministry of Tribal Affairs, which is the nodal ministry for overall planning, policy and co-ordination of programmes for the development of STs. It has been setup in October 1999. It gives attention to integrated socio-economic development of the STs, the most underprivileged sections of the Indian society, in a coordinated and planned manner. Besides, both the central Government and state Governments of different states also formed many other body for the development of tribal people such as The National Council for Schedule Tribes, Commission for Scheduled Tribes and Scheduled Areas, National Scheduled Tribes Finance and Development Corporation (NSTFDC), Department of Tribal Welfare, Tribes Advisory Councils (TAC), Cooperative, Marketing Federation and Finance and Development

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Table 1
Literacy rate of all populations and tribal populations in India

Census Year	All Population			ST Population		
	Persons	Males	Females	Persons	Males	Females
1961	28.3	40.4	15.35	8.53	13.83	3.16
1971	34.45	45.96	21.97	11.3	17.63	4.85
1981	43.57	56.38	29.76	16.35	24.52	8.04
1991	52.21	64.13	39.29	29.6	40.65	18.19
2001	64.83	75.26	53.67	47.1	59.17	34.76
2011	74.04	82.14	65.46	59	68.5	49.4

Source- censusindia.gov.in (2011) and Annual Report 2015-16, Ministry of Tribal Affairs, Government of India

Table 2
Drinking Water facilities in India (Census 2011)

Area	Total number of household (all categories)			Total number of household (ST)		
	Within the Premises	Near the Premises	Away	Within the Premises	Near the Premises	Away
India	46.6	35.8	17.6	19.7	46.7	33.6

Source: Statistical Profile of Scheduled Tribes in India 2013

Table 3
Percentage of household having latrine and bathing facility within premises and waste water outlet (Census 2011)

Area Name	Number of households having latrine facility within the premises		Night soil Removed by human		Number of households not having latrine facility within the premises		Open defecation		Number of households having bathing facility within the premises		Waste water outlet Connected To (Closed drainage)	
	ST	All	ST	All	ST	All	ST	All	ST	All	ST	All
India	22.6	46.9	0.1	0.3	77.4	53.1	74.7		17.3	42	6.1	18.1

Source: Statistical Profile of Scheduled Tribes in India 2013

Table 4
Percentage of all household and ST households and their main source of lighting (Census 2011)

Area name	Main source of lighting							
	Electricity		Kerosene		Solar energy		Others	
	ST	All	ST	All	ST	All	ST	All
India	51.7	67.2	45.6	31.4	1.1	0.4	1.6	0.9

Source: Statistical Profile of Scheduled Tribes in India 2013

Corporation etc. Many major Tribal Development Strategy and Programmes were also initiated by the Government of India for the welfare and development of tribal communities like Special Central Assistance (SCA) to the Tribal Sub-Plan (TSP) was started during 1974-75 and till the end of the IX Five Year Plan. It is funded by Consolidated Fund of India and is an additive to state plan funds and efforts for tribal development. The grant in use for economic development of Integrated Tribal Development Agency (ITDA), Integrated Tribal Development Project (ITDP), Modified Area Development Approach (MADA) Pocket and Clusters, PVTs and dispersed tribal population. Presently, there are 194 ITDA/ ITDPs in the country including the States/ Union Territories, 259 MADA pockets are working in nine states and 82 clusters have been identified in seven TSP States (Gangele, 2019). The condition of tribes continues to be worse off than any other sections of population in India. There are some indicators of development like the literacy rates, good health, infant mortality rates and maternal mortality, access to safe drinking water and sanitation facilities like bathroom or toilet through which one can measure the development of tribals in comparison to other sections of the society.

2) Education

Education is a key feature to development and growth. In fact it is one of the primary factors of transformation towards

development. The fundamental mechanism for developing human skills and knowledge is the formal educational system. Most Third World countries have been led to believe or have wanted to believe that the rapid quantitative expansion of educational opportunities is the key to national development. The more education, the more rapid developments (Todaro, 2011). Education leads development, including aspects of economic growth, basic needs and political participation for individual including tribals (McCowan, 2019). However it is an input not only for economic development of tribes but also for inner strength of the tribal communities which helps them in meeting the new challenges of life. Education is a most important indicator of tribal development. Gandhiji's ideal society is a society with equity among all members including tribals in fundamental necessities of life including education. However from the above table indicates that the literacy rate of tribal community is much less than the other community of people and it can be seen from the all decades. As per the 2011 census the literacy rate of all populations are 74.04% whereas literacy rate of tribals are 59% only.

3) Health

“Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (WHO, 1948). Another definition of health in a more clear way is that “A resource for everyday life, not the objective of living.

Health is a positive concept emphasizing social and personal resources, as well as physical capacities” (WHO, 1986). This indicates that health is a resource to support an individual’s function in a vast society, rather than an end in itself. A good health provides the people the means to lead a better lifestyle with meaning and purpose. Health is one of the fundamental rights of every human being without distinction of race, religion, caste, political belief, and place of birth which provides better economic and social condition of all community of peoples. However, the problem of poor health status of ST peoples is global. Tribals are habitats all over the region in India with a huge diversity. But the common problem of each tribal community in India is that they have lower health status, vast burden of morbidity and mortality and not access better healthcare services. There is a common argument that the health status of the ST people in India is very poor. The widespread poverty, illiteracy, malnutrition, absence of safe drinking water facility and poor sanitation, poor maternal and child health, inaccessibility to health care systems, have been found the various major factors for the poor health status of the tribes in India (Basu, 1994). Following are some of the parameters that indicate the health status of tribal people.

4) *Drinking water facility*

Safe drinking water supply is the main source of sustainability and safe sanitation practices to the tribal people in India. The safe drinking water and proper sanitation are the symbol healthy life. However, contaminated drinking water and living in unhygienic conditions are the main causes of disease and death. As per WHO report 80% of all the diseases are caused due to lack of access of safe drinking water. Sanitation indicates “science of safe guarding health” (Pradhan, 2015). Where as in most of tribals do not access safe drinking water within their premises. Only 26.66 % of total tribal population in India are not accessing to safe drinking water as per 2011 census (Times of India, 2018). Following table discuss about drinking facilities available in India. Most of the tribal villages are situated in hills and forest area. Water supply through pipe connection is very difficult to these areas. So, they dependent on hand pump, river water, lack etc are the main sources of drinking water. Above table give a clear picture about the comparison view of sources of drinking water between all categories and ST Population in India. It could be seen that majority of tribal people go outside for drinking water in comparison to all categories of peoples.

5) *Latrine and bathing facility*

Hygiene is one of the major factors to ensure good health and prevents many diseases. The department of Drinking water and Sanitation Government of India has taken various steps towards construction of individual household toilets and bathing facilities within their premises. With this respect Swatch Bharat Mission was launched on October 2, 2014 and many steps were taken to provide toilet facilities to all rural house hold in India. But still 75% ST household in the country were defected in open space and they do not have toilet facilities as per 2011 census (Times of India, 2018). Following table represents toilets and bathing facility in India.

Open defecation is commonly practised by the rural people

including tribals in India. In our country, about 53.1% of all households do not have latrine facilities within their premises. The percentage of ST household is much higher which constitutes 77.4% who don’t have latrine facility within the premises as compared to all household. Only 46.9% all household have latrine facility within the premises and in case of ST it constitutes 22.6% as per 2011 census. In case of all household, only 42% have bathrooms facility within the premises and 17.3% of ST households have bathing facility within the premises. The rest of the households have no bathing facility within the premises.

6) *Lighting facility*

The lighting and cooking energy are very major factors for tribal development which touching every aspect of tribal lifestyle. A good lighting facility supports the tribal residential schools in India. In most of the tribal students don’t have proper access to lighting facilities in their home which impact their education system. So, proper lighting facilities increases better educational outcome among the tribal students. Good Electricity facilities also reduces crime rate in tribal areas. Due to lack of proper cooking energy most of the tribals in India using wood, fossil energy, kerosene, coal etc which are the non-renewable resources for their cooking purposes as they are not sufficient gas supplied facility by the government. Using wood, fossil energy, kerosene, coal for cooking is not eco-friendly. Following table discuss about the main source of lighting in India.

Above table discloses that as many as 67.2% total households have electricity connection and 51.7% of ST households. The next main source of lighting is Kerosene, which is reported in 31.4% of all households as against 45.6% in case of ST households in India. The use of solar energy is very less. Only 0.4% population use solar energy where as in case of ST household it is 1.1% and other source of lighting is 1.6% for ST and 0.9% for all household in our country.

2. Gandhian Perspectives towards Tribal Development

The main perspectives towards tribal development of Mahatma Gandhi’s are as follows:-

- i. *Non-violence*: Gandhiji’s five pillars of nonviolence: respect, understanding, acceptance, appreciation and compassion are basic to our existence. For every individual there is a need to follow all these habits. By inculcating these habits we can lead a very decent life and also make others happy. The main purposes of non-violent are communal unity, removal of untouchability, prohibition of alcoholic and intoxicating drinks, adult education, village improvement, peasant upliftment and development, economic and social equality, decentralization economic production and distribution through promotion of cottage and village industries, and even relates to the empowerment of women, tribal’s development and empowering them (Kujur, 2013). By following Gandhian perspective many rights have been given to the tribal peoples by the constitution of India for their socio-economic development. The

- Gandhiji's faith in the power of nonviolence can be reflected by this quote, "Nonviolence is the first article of my faith. It is also the last article of my creed."
- ii. *Satyagraha*: For the contemporary society, Gandhiji's prescription on the power of truthfulness gives us the new direction of what path to follow. On the essence of truth, Gandhi had said, "An error does not become truth by reason of multiplied propagation, nor does truth become error because nobody sees it. Truth stands, even if there be no public support. It is self sustained." Everybody should stand by truth by all means. In the year 1915, Gandhiji came to India from South Africa and he came across Indian tribes during the period of Satyagraha of Champaran in 1916. He did not separated tribes of India with other marginalised people called Harijans. Both the communities face the same deplorable condition (Gandhi, 1984). Gandhiji also advised his Congress followers to work for the welfare of Harijan and tribes. Gandhiji's approach motivated the tribal people in India to adopt Satyagraha as means of protest against their exploitation instead of violence means like armed protest. This method not only an effective method of protest for the tribals but also changed the attitude of other community people who generally considered tribes to be violent and aggressive. (Chakrabarty, 2019).
 - iii. *Sarvodaya*: Gandhi's always tried to improve the condition of all marginalized sections of the society. He expressed his idea of independence and the service to all individuals in his concept Sarvodaya or 'good of all'. The welfare of the depressed communities, the dalits and the tribes always remains a priority under sarvodaya. Thus, the term is often referred to as antodaya, i.e., 'rise to the last men' (Sengar, 2001).
 - iv. *Concept of Politics*: Gandhi looks for people's politics and not party politics. For him politics opens the door of 'service' not for using power. He stressed party less democracy. He resists injustice and exploitation and thus purifies the politics. Gandhiji also held the opinion of empowerment of Panchayat for the development of rural areas including tribals.
 - v. *Decentralization in democracy*: Democracy depends upon the equality of all individual. They have the freedom to participate in social and political transformation, to live in dignity. Political decentralization means dispersal of decision making powers, accompanied by delegation of required, authority to authority to individuals or units at all levels of organization. Introduction of Panchayati Raj Institutions in India is a dream project of Mahatma Gandhi for village swaraj with strong decentralization in character (Devi, 2015). According to Gandhiji's opinion every village to be a republic, must be provided full power for managing its own matters and defending itself against the whole world (Vagwan, 1996).
 - vi. *Concept of Economic*: The Gandhian project of strengthening the village economy is the basis of the Gandhian model of economic development (Baviskar, 1995). The main features of Gandhiji's programme was strengthen the village community and craft production by giving opportunities to indigenious and simple technology that would provide jobs for the youth and local rural populations (Singh, 1997). Gandhiji favoured small scale and cottage industries, including those based on Khadi, to provide employment to all and thereby solve the problems of poverty and unemployment (Dash, 2006) and argued for maintaining the principle of equality and equal distribution of income in the society and believed in village economy (Pyarelal, 1997). Gandhiji stated that progress of the country depends in the development of the rural peoples and the development of rural economy depends in the development of village industries (Mishra, 2015). Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is define as a "Silver Bullet" for removing rural poverty and unemployment, by creating demand for productive labour force in villages. MGNREGS is one of the most efficient schemes to uplift the quality of rural livelihood by improving the income levels. It guaranteed to every registered rural household including tribals 100 days of wage employment in a financial year that ultimately reduced poverty (Mohanty, 2012).
 - vii. *Education system*: Mahatma Gandhi gave importance to Basic Education and it should be provided by the medium of mother tongue. Education should be making the children more skill and talented. Since ever, Gandhiji's teachings are still valid today.
- Gandhiji always gave primary importance to education and so is the case for the tribes. The Government has built many schools in remote tribal areas. As a result, most of the tribal children have easily access to primary schools near their villages. Ashram residential schools also provided by the Government of India those who come from remote interior areas (Mitra, 2019). Besides, Model Residential Schools also established by the Ministry of Tribal Affairs to impart quality education to tribal children in remote areas.

3. Relevance of Gandhian Philosophy in the Contemporary Tribal Society

Mahatma Gandhi was a saint and moral philosopher. His philosophy exercised the most powerful influence on modern world. While Gandhi lived most of the people thought that his ideas are relevance only to win freedom for India and it works only political level (Parida, 2019). But there is a great relevancy of Gandhian Philosophy in the contemporary society also. Mahatma Gandhi's ideas of grama swaraj, constructive programme, ahimsa, satyagraha, sarvodaya, decentralization in democracy and education system have become more relevant in present times than in the past (Muneer, 2015). Gandhiji believed in self-sacrifice. His philosophy is no comprehensive

that it has left no aspect of human life untouched. In his philosophy there is very clear indication of his love for all individual and national freedom. He had a many sided personality with clear vision and definite approach to problems which faced India. Gandhi is believed to have greater relevance in the present world of modern science & technology that produced geographical neighbourhood but become highly individualistic co-operation has been replaced by competition and consumerism (Ghosal, 1968). Gandhi very exhaustively dealt not only with political or economical but also with social and moral problems of Indian society. It is very difficult to discuss all the theories of Gandhi to examine its relevancy. I make attempt to show the relevancy of Gandhian theory by some of his most important principles which had its relevance in today's world. One of them is philosophy of nonviolence has great relevancy it contemporary 21st century (Vijaylaxmi & Ananth 2016). In India most of the violent issues are solved by using nonviolence and peaceful means. He also advised tribal people to adopt non-violence method for their protest against exploitation. Gandhi always raise voice to all forms of oppression and exploitation and saw himself as the spokesman and champion of the poor and the depressed persons of the society. He motivated people to unite and mobilized against all type of exploitation (Renoj 2015).

According to the Gandhi non-violence does not mean meek submission to the will of the evil doer. It is the soul force or truth force. Non-violence is regarded as the highest law of human kind. Under the leadership of Mahatma Gandhi and his non violence weapon he brought freedom to India from the colonial rule. In spearheading the campaign against the alien rule, Gandhiji adopted the innovative techniques of civil disobedience and social transformation, which had several exemplary features (Devarajan, 2010). Another most powerful weapon of Mahatma Gandhi is Satyagraha. Satyagraha is the central concepts of Gandhi's philosophy. A Satyagraha campaign is undertaken only after all other peaceful means have proven ineffective. The aim and objectives of Satyagraha is to fight against injustice and tyranny. A Satyagrahi should have moral force, must have patience and he makes understand by means of reason. Physical force must not be used. Satyagraha indicates a life committed to truth, chastity, non attachment and hard-work. It involves transformation of wrong path to right path. For extent of some time it was known as Gandhi's method of Satyagraha and it have no relevancy in contemporary society but with the passing of time it proved how it was important to us. By following Satyagraha method one can lead a very peaceful life. He can also enjoy freedom. By using Satyagraha method one can be a hard-worker. One can made himself self employed. Even all his strategies are highly relevant in India. He advised tribals to adopt Satyagraha method to get justice against any kind injustice to them. The motive of Gandhiji,s is to empower the tribes in the socio-political and economic field by increasing their participation in the process of decision-making at all levels (Surjith 2015). Still today many people of India follow all those methods for the fulfilment of their necessary demands.

4. Conclusion

To conclude, Gandhian philosophy is not only simultaneously political, moral and religious, it is also traditional and modern simple and complex. By adopting simple traditional technology development of rural people including tribal can easily possible because rural people can easily handle simple technology. There is much in it that is not at all new. This is why Gandhi could say "I have nothing to teach the world. Truth and non-violence are as old as the hills". After many years of martyrdom, Gandhi is no more relevant on global level than before. His relevance in different fields is unquestionable unchallengeable. For the very survival of human being, it is a imperative on our part to an act open his advice because only on his relevance, we shall survive together or if we fail in our venture, we are bound to perish together.

References

- [1] Annual Report (2015-16). Ministry of Tribal Affairs. Government of India.
- [2] Basu, S. (1994). Genetic Disorders and Health Care. Delhi: Shri Kala Prakashan.
- [3] Baviskar, A. (1995). In the Belly of the River. New Delhi: Oxford University Press.
- [4] Bawa, B. (2016). Philosophy and Mahatma Gandhi. Your Airticle Library.
- [5] Bhagwan, V. (1996), "Indian Political Thinkers", Atma Ram and Sons, Delhi Census of India (2011).
- [6] Chakrabarty, K. Tribe and Tribal Welfare in Gandhian Thoughts. *Journal of the Anthropological Survey of India*, vol. 68, no. 2, pp. 225–233, 2019.
- [7] Dash, S. (2006). "Gandhi and Nehru". Orissa Review. December.
- [8] Devarajan, R. (2010). Relevance of Mahatma Gandhi. The Hindu. Gandhi/article15584138.ece
- [9] Devi, C.L. (2015). Gandhi: as an early Green. Kerala Institute of Local Administration (KILA). Kerala, India.
- [10] Gangele, A. An overview of a tribal development programmes: in Madhya Pradesh state. *International journal of basic and applied research*. vol. 9, pp. 333-344, 2019.
- [11] Ghosal, A.k. (1968). A Glimps of the Political Philosophy of Mahatma Gandhi and its Relevance to the Present Age. *The Indian Journal of Political Science*, vol. 29, pp. 294-303.
- [12] Gandhi, A. (Ed.). (1984). Gandhian approach to rural development. Seminar Proceedings Held at Lonavala, 12–14 November 1984
- [13] Kujur, R. Relevance of Gandhian Economic and Political Ideas in Contemporary Period: A Study on the Prospects of the Tribals. *The Indian Journal of Political Science* vol. 74, no. 4, pp. 759-768, 2013.
- [14] Mc Cowan, T. (2019). The Role of Education in Development. Palgrave Studies in Global Higher Education.
- [15] Mishra, C. R. (2015). Gandhian Economic Model as an Alternative. Kerala Institute of Local Administration (KILA). Kerala, India.
- [16] Mitra, R. P. Mahatma Gandhi and Tribal Development . *Journal of the Anthropological Survey of India*, vol. 68, no. 2, pp. 234–244, 2019.
- [17] Mohanty, S. (2012). Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and Tribal Livelihoods: A Case Study in Sundargarh District of Odisha.
- [18] Muneer, M.K. (2015). Gandhiji Gram Swaraj Decentralisation :Context and Content Kerala Institute of Local Administration (KILA). Kerala, India.
- [19] Parida, O. (2019). Relevance of Gandhianism in today's world. Times of India.
- [20] Pradhan, G. (2015). Hygienic Practices among Tribal Communities: Case Study of Odisha. Paripex- *Indian Journal of Research*. vol. 4, no. 2.
- [21] Preet, S. (1994). Tribal Problems: A Gandhian Perspective. *Indian Anthropologist* vol. 24, no. 2, pp. 29-38,
- [22] Pyarelal (1997). Mahatma Gandhi on Human Settlements. Ahmedabad: Navajivan Publication.
- [23] Renoj ,N.K. (2015). Gandhian Mode of Protest: Locating the Movements of Disables in India. Kerala Institute of Local Administration (KILA). Kerala, India.

- [24] Sengar, B.N. (2001). Gandhian Approach to Tribals. Proceedings of the Indian History Congress.vol. 62, pp. 627-636.
- [25] Singh, S. (1997). Timing the Water. New Delhi: Oxford University Press. p.59 Statistical Profile of Scheduled Tribes in India 2013 Ministry of Tribal Affairs Statistics Division, Government of India
- [26] Surjith,M. (2015). Local Democracy and the Marginalized: Scheduled Tribes in Kerala. Kerala Institute of Local Administration (KILA). Kerala, India.
- [27] Szenkovics, D. (2013). The Relevance of Mahatma Gandhi's Philosophy for the 21st Century. Acta University Sapientiae European And Regional Studies, 89-99.
- [28] Times of India, (2018). 27% of tribal population do not have access to safe source of drinking water: Govt. Retrieved from <https://timesofindia.indiatimes.com>
- [29] Todaro, M. P. (2011). Education and Development. Retrieved from <http://www.c3l.uni-oldenburg.de/cde/Todaro>
- [30] WHO (1948). What is good health. Retrieved from <https://www.medicalnewstoday.com>
- [31] WHO (1986). What is good health. Retrieved from
- [32] Vijaylaxmi, N., Ananth., D. R. (2016). Relevance of Gandhian Philosophy in the 21st century. *International Journal of Research in Engineering, IT and Social Science*, vol. 6, 2016.