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"FROM CONVENTIONAL PRACTICES TO SMART VILLAGES"-THE ROLE OF MECHATRONICS IN RURAL DEVELOPMENT AND LOCAL GOVERNANCE

(A study conducted in the Kizhakkenchery Panchayath of Palakkad)

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Abstract - *During the time of Rigveda (1200BC) evidences suggest that self governing village bodies called sabhas existed. With the passage of time, these bodies became panchayats (Council of five persons), In mother toungue we call it as Naattukoottam. Panchayats were functional institutions of grass roots governance in almost every village. The village panchayat , or elected council had large powers, both executive and judicial. Casteism and feudalistic system of governance under Mughal rule in the medieval period slowly eroded the self government in villages .A new class of feudal chiefs and revenue collectors (zamindars) emerged between the ruler and the people. During the pre independence period the panchayat was destroyed by the East India company when it was granted the office of Diwan in 1765. The company took two decisions. The first was that, it abolished the village land record office and created a company official called Patwari. The patwari became the official record keeper for a number of villages. The second was the creation of the office of the magistrate and the abolition of the village police. After 1857 the British tried to restore the panchayat by giving it powers to try minor offences and to resolve village disputes. The Post modern era transformed the village to a smart one with the help of Mechatronics and Local Self Government. This paper is significant in various ways to give insight to the researchers. The whole paper attempts to portray different types of technology tools intervene in to the rural Palakkad for its development.*

Key Words: Globalisation, Local Governance, Rural People, Mechatronics, Panchayathiraj, Smart Villages, Pada Sekhara Samithi, Portmanteau

1. INTRODUCTION

James Midgley conceives social development as a process of planned social change designed to promote the well-being of the population as a whole in conjunction with a dynamic process of economic development. The goal of social development in the context of modern welfare is to produce a social well being that makes people capable of acting and making their own decisions in the broadest sense. Although social development aims to promote the social and economic well being of societies or social groups, such units are always composed of individual actors. From reflexive perspectives social development is conceived as development of the individual human being and is therefore associated with self development. It stands for making specific individuals capable of acting, with the help of participation, serve as motors to drive forward the economic and social well being of the community as a whole. Economic development is a broad term that generally refers to the sustained, concerted effort of policymakers and community to promote the standard of living and economic health in a specific area. Such effort can involve multiple tasks including development of human capital, critical infra structure, regional competitiveness, environmental sustainability, social inclusion, health, safety, literacy, and other initiatives. Amartyasen points out economic growth is one aspect of the process of economic development.

Economic development was concerned in the expansion of people's entitlements and their corresponding capabilities, morbidity, nourishment, literacy, education and other socio economic indicators. Economic developments typically involves improvements in a variety of indicators such as literacy rates, life expectancy, and poverty rates. Essentially a country's economic development is related to human development, which emcompass, among other things, health and education. These factors are however closely related to economic growth so that development and growth often go together.

Human development is a development model that is about much more than the rise or fall of national incomes. It is about creating an environment in which people can develop their full potential and lead productive, creative lives in accordance with their needs and interests thus bringing the focus back onto people. People are the real wealth of nations.

The Human Development Index is a way for people and nations see the policy flows of regions and countries. The Human development Index is (HDI) is the normalised measure of life expectancy, literacy, education, standard of living, and GDP percapita for countries world wide. It is an

improved standard means of measuring wellbeing, especially child welfare and thus human development.

One of the crudest measures of Social development is Gross Domestic Product, (GDP) percapita, determined by the value of all goods and services produced within a region over a given time period, averaged per person. Several of the indicators of social development are used to measure progress towards the Millennium Development Goals (MDG) a set of targets agreed upon by United Nations member states as crucial for global human progress. There are targets for reducing extreme poverty, hunger, disease, and environmental impacts. Population, standard of living, water and sanitation, Health care Education, Employment, etc. are some of the indicators of social development. Social development includes economic development, human development etc.

Rural development is essential in a country like India. India's economy is predominantly rural in its character. More than 70% of the people are residing in rural area. In Gandhian views the real development had to begin from the rural area. Inorder to reduce the problems of the common folk, Local governments consistently supports the villagers especially in doing agriculture. They tries to reduce the gap between modern technology gadgets and common man. The modern Mechatronics tools reduce the issues of the poor farmers.

The following were the major established events for the emergence of Local self government in India.

1. Lord Mayo's Resolution (for decentralisation of power to bring about administrative efficiency)
2. The Ripon Resolution, which focussed on towns, provided for local bodies consisting of a large majority of elected non-official members and presided over by a non official chair person.
3. The Royal Commission on Decentralisation (1907) under the chairman ship of CEH Hobhouse recognised the importance of panchayats at the village level.
4. The Montague-Chemsford reforms (1919) brought local self government as a provincial transferred subject, under the domain of Indian ministers in the provinces.
5. Royal commission on decentralisation (1907), tried to elevate the activities of local self government.

In the post independent period, the panchayatiraj system was implemented by the Balwant Rai Mehta committee (1957). Panchayatiraj system is a three tier system in the state with elected bodies at the village, Taluk and district levels. It ensured greater participation of people and more effective implementation of rural development programmes. Various five year plans helped to concentrate in the village level and consequent developments. Local self government should be constitutionally recognised, protected and preserved. Reservation for the weaker castes and tribes (SCs and STs) have to be provided at all levels in proportion to their population in the panchayats. Not less than one third of the total seats for membership as well as office of chairpersons of each tier have to be reserved for women. The block development office should be the spinal cord of the rural development process. District planning should take care of the urban rural continuum.

Globalisation is a process rather than an out come . It spread out to each and every realms of human life. Globalisation increased the pace of the life. It increased the interconnectedness between the different parts of the world,that itself can be considered as a main factor for development. Internet, mobile phones, ATM, etc are the major product of globalization. contemporary societies cannot be away from these facilities.

Societies every where has been experiencing a drastic changes in its various profiles. These changes are considered as the after effect of the phenomenon known as globalization. Economic and social life patterns are the most affected domains by globalization.

The localization Industry standard Association(LISA) defines the process of localization as taking a product and making it linguistically and culturally appropriate to the target locale. A locale is a combination of language and country or region. Localisation involve various activities and consideration of features which might not be relevant to more traditional forms of translation.

Glocalization is a portmanteau word of globalization and localization. By definition the term global refers to the individual, group, division, unit, organization and community which is willing and able to "think globally and act locally". It is a term that that was invented in order to emphasise that the globalization of a product is more likely to succeed when the product or service is adapted specifically to each locality or culture it is marketed in. The term combines the word globalization with localization

The term first appeared in the late 1980s in articles by Japanese economists in the Harvard Business review. According to the sociologist Roland Robertson, who is credited with popularizing the term, glocalisation describes the tempering effects of local conditions on global pressures. At a 1997 conference on globalization and Indigenous culture, Robertson said that glocalisation means the simultaneity the co presence of both universalizing and particularizing tendencies.

Most developing countries are integrating with the world economy and devolving power to local governments and communities. There are mainly two types of processes globalization and localisation play an important role in development. The combination of Globalisation and

Localisation is best called glocalisation. Underlying both trend is a single force. Glocalisation improves the voice participation and prosperity of individuals and communities in urban and rural areas. Global experience of localisation are very mixed. It works only if the rulers are serious. About shifting powers from top to the bottom. Creating local government is not enough corresponding fiscal reforms are needed to empower community with real authority and resources. Mechatronics is an instrument of rural transition everywhere in the world, Palakkad is not an exemption. It is possible with the help of Local self government.

2. METHODS

An interview schedule consisting of 40 questions, administered in the area to collect the details in the Kizhakkenchery Panchayath. Purposive sampling method is used. Sample size is 10. The article is purely based on the opinions made by the farmers of different "Padasekhara Samithi".

3. RESULTS AND DISCUSSIONS

Agriculture which is the backbone of our economy is already in the throes of crisis today. The cost of agriculture have gone up due to rise in the price of seeds, fertilisers water and electricity and labour where the price of agricultural products have gone down. Social life of the rural people is highly harmonious. They always try to maintain the relationship through interaction, gift exchange etc. They follow patterns of life different from those living in urban areas. Rural social life has its own customs, tradition, values, morals, conventions, practices, and various political economic religious and cultural institutions. The interference of globalization altered the various features of social life. Now the people of Kerala experience a reverse trend that is interference of localisation as well as local self government made several changes in different realms of rural areas .Kerala has been the trend setter for decentralised development in the country. Experts came from inside the country and abroad to see the miracle that happened here in Kerala. The government is engaged in consolidating those gains and taking decentralised developments to new heights. It was successful to a great extend in stabilising and carrying forward the spirit of decentralisation making the Local self government institutions responsive to the local needs.

Rural society is predominantly based on agriculture. Village agriculture is sharply distinguished from urban industry by the fact that it is based on direct extraction from nature by man. Land is a basic means of production in the country side. From land the rural people produce, by means of modern Mechatronics tools and their labour power, a variety of agrarian products as food, cotton, jute, tea, coffee, tobacco and others produced. Local self government aid to these sectors through various ways. Experts fairly emphasise that local self government system should be designed taking in to account regional specifics. In the southern regions of our country especially in Kerala, the most important is natural and climatic conditions, vast populated areas, other networks and extremely high density of population. At the same time it seems that there exists certain universal scientific technology, tools and methodological provisions which serve as the local self government. Mechatronics introduced new tools, smart tools for farming and rural development. Which include smart irrigation, smart cultivation and all together a smart life to the villagers.

4. CONCLUSION

The government of Kerala supports farmers and villagers through local authorities, it should be more encouraged. The rural development happened through the local government. The tools of mechatronics should be introduced, Smart irrigation, Automated transplanter, Drone Sprayer, Crop health monitoring, Solar pump, Smart microgrid, coconut dehusking machine, Banana Chips machine should be introduced. Intensive research should be done in the rural areas of kzhakkenchery to regain the enthusiasm among the young farmers.

REFERENCES

1. Acharya, S. (2001). Globalization and its impacts in rural area: A case of Pokhara-33, Gairagaun, Kaski [Unpublished manuscript or thesis].

2. Acharya, S. (2006). Economic growths: Some reflections. Economic and Political Weekly, 41(43/44), 4573–4578.

3. Ajamadlin, K. (2006). Poverty in urban area. Adhayan Publishers and Distributors.

4. Allen, J. S. (1998). Regions of the world economy: The coming shape of global production, competition and political order. Oxford University Press.

5. Ambedkar, B. R. (1979). State and minorities. In Dr. Babasaheb Ambedkar writings and speeches (Vol. 1). Government of Maharashtra.

6. Ambedkar, B. R. (1989). Rock on which it is built. In Dr. Babasaheb Ambedkar writings and speeches (Vol. 5). Government of Maharashtra.

7. Analil, S. (Ed.). (2005). Development agenda of third world countries under the WTO regime. Serials Publications.

8. Anderson, J., Dyrston, B. H., & Poole, M. (1970). Thesis and assignment writing. Wiley Eastern Limited.

9. Arvind. (2002). Globalization: An attack on India's sovereignty. New Vistas Publication.

10. Babu, S. D. (2006, February). Ensuring liberalization: Economic and social. Seminar, (558).

11. Beck, U. (2001). What is globalization? Polity Press.

12. Behrman, J. N. (2003). Transformation of society: Implications for globalization. In J. H. Dunning (Ed.), Making globalization good (pp. 108–142). Oxford University Press.

13. Sigrimis, N., Antsaklis, P., & Groumpos, P. P. (2001). Mechatronic systems: industrial applications and modern design methodologies. IFAC Proceedings Volumes, 37(14), 1–5.

14. Velangi, R., Mukanavar, S. I., & Nadagoudar, R. (2018). A review of the use of mechatronics in agriculture. International Journal of Engineering Research and Applications (IJERA), 8(12), 169–174.

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