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EDITORIAL

It gives me immense pleasure to present before you Vol. VIII No.2 of Business Spectrum, the peer reviewed fully referred e-Journal of IAA South Bengal (Midnapore) Branch. In this issue we have accommodated six qualitative articles on different areas of business.

Debnath, Kallol and Goswami Suvarun in their article entitled 'Global Environmental Governance: A New Discourse of International Politics' has focused on the issues on degradation of environment not only at national level but also at global level. MNCs and NGOs create governance model in the management and conservation of environment.

Ghosh Swati, Chandra Buddhadeb and Sanyal Bishan in their article titled 'The Analysis of Productivity of Scheduled Commercial Banks in India after Global Financial Crisis-An Application of Data Envelopment Analysis using Malquist Index on Productivity' has documented that efficiency and productivity of banking industry has changed and banking industry in India is rapidly progressing with wide customer base, improved technology and managerial efficiency.

Islam Mirajul and Dhar Pranam in their article on entitled 'Financial Reforms of the Pharmaceutical Sector: A Present Indian Scenario' has established the relationship between dividend pay-out and company's performance.

Ray, Nibedita in her article titled 'Impact of Financial Leverage on Profitability-An Empirical Analysis on FMCG Companies in India' has focused on significant positive relationship between leverage and profitability.

Kapasi Baneswar in his article entitled 'E-Accounting of Finances of the Gram Panchayats in West Bengal-A Case Study Based Gram Panchyats in Burdwan District' has mentioned that in West Bengal considerable number of Gram Panchayats are using accounting software on regular basis and there has been considerable improvement in Panchayet accounting both in quantitative and qualitative terms.

Mandal Jyoti Prakash in his article titled 'Conditions of and Distressing Factors of Lac Agriculture in Purulia District of West Bengal' has mentioned that for lac industry total cost of production was higher for medium size group compared to marginal and small size group of the farm.

Before I conclude I profusely thank to the paper writers, reviewers, executive editor and desk editor for their hearty co-operation in bringing out this volume of Business Spectrum.

Professor Samir Ghosh
Editor in Chief
Business Spectrum

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Global Environmental Governance: A New Discourse of International Politics

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Abstract

In the backdrop of globalization, the preponderant role of the territorial form of government with regard to framing law, regulation has undergone a severe change. External relations among nations today are not only guided by peace and war. Several issues like degradation of environment, threats from terrorism enter into domain of foreign relations. It has been observed that political consensus among nations is often built up for the larger interest of human civilization. But the major setback towards implementing the legal provision is the authoritative role of each nation state over its natural resources and environment. When the environmental tragedy transcending domestic territory, creates an affliction for the whole civilization, it becomes shaped as global agenda in international politics. Globalization opened up a new avenue to the Multi National Corporations (MNCs) and Non Governmental Organizations (NGOs). It allowed them to articulate several human grievances, which the national actors were unable to root out. The scope of International Politics today is enlarged by the incorporation of several new discourses. Global environmental politics is such a new one in international politics. The distinctive feature of this new politics has been the influential presence of MNCs and NGOs. As environmental degradation is a type of shared problems, it creates a governance model in the management and conservation of environment. While NGOs seek to lay down a non-institutional form of global authority to effectively reduce environmental woes, MNCs are endeavoured to materialize the model of green governance, in which corporate environmental policies would be smoothly implemented. This study mainly relied upon secondary resources, would explore a new paradigm of environmental governance.

Keywords: Environment, Business, Global, Governance, Politics

Introduction

Any deliberation over global governance today illuminates the role of the transnational actors and intergovernmental organizations. The Governance model of the world politics has been developed in the backdrop of the breakdown of the 'Westphalian order' based on the full sovereign rights of the nation – state. Now it raises eyebrows of the academicians of International Relations, who are fond of the realist literature of international politics. Necessarily, it is not only realist or idealist but most of the positivist thinkers when illustrate international Relations, emphasis on the objective content of political process, in which the state to state interaction ,peace and war were the cardinal features of international politics. Since the last half of the twentieth century, the emergence of the post-positivist approach to International Relations at the theoretical level and of the practical issues like environmental degradation, terrorism, constant resource depletion bound up the whole world community. Nation state and intergovernmental organization like United Nations Organizations, European Union are not the fully competent authority to obliterate the century old human woes. However, at the end of the Stockholm conference on Human Environment in 1972, there was a consensus among the participants for developing the effective environmental conservation strategy. Though this task was traditionally undertook by the domestic government of every nation state, the world today need the collaborating effort and endeavour of all political and social institutions including non authoritative organizations. It means global community must be aware of the environmental crisis like temperature hike, loss of bio diversity, irregular rainfall, and desertification, which are not restricted to any circumscriptions. Basically, the extra territorial impact of these affects resulted in the establishment of the world environment governance, in which the transnational business corporation and non-governmental organization often collaborate with the United Nations Environmental programme, representing the world society in a manner of non-authoritative arrangement of international politics. In this respect, the transnational actors especially the non-governmental Organization went on to boost up the awareness programme for the marginal sections, while the MNCs sought to rollback the command authority from the world green governance.

However, global environmental governance removing the orthodox notion of 'government,' recognized the existence of multiple contenders in the global environmental politics. That is why, global environmental or green governance should not be inevitably understood from the state centric view of international politics, but rather the pluralist approach to international politics could effectively substantiate the necessity for constituting the environmental governance at the global level. Accordingly, a network of the non authoritative social actors influences every nation-state in framing up environmental policies, agenda and delegates the national government at the global environmental summit.

II. A Conceptual Framework

The nation-state traditionally, has been the key actor in international relations. Every traditional theory of International Relations considers it as the final policy maker in world politics. Territory and sovereignty of the nation states privilege them to deal with external issues and to establish themselves as constituent unit of international relations. In the backdrop of globalization, political 'hegemony' of the state is being constantly depreciated. At the theoretical level, the incompetence of the positivist approach, to resolve the current global issues due to its obscurity in finding the level of power politics beyond state structure and process, rendered the disenchantment among the academicians of International politics. As a result, new dimensions of world politics came out of the effort of post modern thinkers. Their standpoint of analysis is politics. It refers to the fact that subjective interpretation of politics is required for the modification of the discipline. Today, the relations between nations are connected to innumerable transnational actors or non-state actors namely inter governmental organization (UNO, EU), Non Governmental organization and Multinational Corporation. Every scholar must concentrate on the role of these transnational organizations as their effort in inserting core human values like development, participation to the discourse of International Relations significantly transforms the nature of global interaction. However, in the twenty- first century, an alternative approach is necessary to deal with the common issues which equally affect the global community. It ranges from development, prosperity to the sustainable uses of material and natural resources in pursuit of survival of the whole global society. It is well known to the students of international politics that excessive force of a state in terms of its defence and financial capability is no more the guiding principle of power politics as several soft issues like environmental degradation, human rights violation, deprivation, climate change are considered to be the driving agenda in the present century of international politics.

Globalization was defined as being the catalyst in the development of the global governance because it on the one hand, weakened the national boundary for the sake of economic integration of domestic market with the global financial structure and expressed the lack of rules and standards for establishing a world government .So the uniformity in the market rules and internationalization of the domestic and local issues are two derivatives of globalization which result in the constitution of a global governance. Further, while globalization in course of external relations of the states reduces the potency of the virtual border in order to ease access to local resources, it accelerates 'the world wide interconnectedness in all aspect of contemporary social life'. However, the practitioners of international relations in an effort to resolve the contention between the domestic autonomy of the nation state and internationalization of every environmental, social, political issue entailed the mechanism like global governance to the discourse of global politics (Goldstein & Pevehouse, 2014:17).

Since the beginning of the twenty –first century, the need for setting up the global environmental governance has been recurring at every forum of the intergovernmental organization. As the members of every inter governmental organization like UNO, NATO, Arab League, have their sovereign territory, these organizations in many instances, have failed to reach the consensus for establishing environmental regime. This view is endorsed by the unwillingness among the developed and developing nation against the implementation or execution of many environmental protocol.

III. Methodology

The Study is explorative in nature. The time span selected for the instant research is post liberalization, globalisation and privatization period. i.e. 1991 and onwards to till date i.e. the study is undertaken at the backdrop of introduction of LPG Model in India vis-a-vis introduction of open economy . The instant research is based on secondary date base as has been gathered by the authors keeping in mind the topic of research and results of literature review in the respective domain. The data has been collected from different websites, books, journals, newspapers etc the details of which has been incorporated in the Reference section. That information which appeared to be more dependable and authenticate has been taken into consideration in the article.

The article is the outcome of study undertaken in the relevant field only at an initial stage. The study can be further improved by undertaking future research taking into consideration the results obtained so far by the authors. It is pertinent to mention that the selection of the topic is based on the fact that Environment is considered to be one of the important pillars now-a-days towards achieving sustainability. Besides that there has been a growing importance towards environment especially in the period understudy.

IV. A Brief Historical Backdrop

Early initiative in reforming the traditional international relations was launched by an intergovernmental organization namely the United Nations through its United Nations Environment Programme in the 1990s. Since the last half of the twentieth century, it is unanimously considered that for removing the hazards sprang from environmental degradation, the World needs a host of new actors, which have non-authoritative character and emphasis on the sustainable development of the world population. In fact, the institutional arrangement to set up environmental governance was commenced with the adoption of the United Nations Environment Programme (UNEP). While the economic integration of the globe and growing competition among the developing countries to swell their GDP growth were largely responsible for long time environmental degradation, the UNO seeking a common future of the world population and their sustainable development laid a flock of rules and standards which would monitor the environmental activities of the member states (Baylis, Smith & Owens, 2008: 353).

The emergence of global environmental governance was the outcome of several environmental conferences in the post Stockholm period. In this regard, the United Nations Conference on Environment and Development was held1992 in the Rio-De-Janeiro of Brazil. It manifested the need for a governance system to obliterate the environmental woes. That is why, the conference clarified that the peace, security and development in traditional term were no more the leading agenda of international relations. Basically, the Agenda 21 of the Rio declaration emphasises on a comprehensive guiding principle which assists the UNO, national government and other world group to their coordinating effort for preventing the ill effect of environmental crisis (Elliott, 1998:130). However, the Rio conference disclosed the fact that for the survival of the Earth and its environment the effort of all stakeholders are to be considered in a perfect manner. In this paragraph we are trying to point out the major environmental hazards including impacts out of these crises and formation of global environmental regimes against the concerns. It is described in table 1 below.

Table-1: ENVIRONMENTAL REGIMES FOR REMOVING DIFFERENT ENVIRONMENTAL THREATS

Number of Environmental Hazards	Impact	Formation of Environmental Regimes against particular concerns
Global warming	Climate change and excessive emission of green house gasses	Kyoto Protocol (1997)
Ozone layer depletion	Increase in sun's ultraviolet radiation	Montreal Protocol (1987)
Loss of bio-diversity	Loss of habitat or ecology of environment	Convention held but no global mechanism yet
Desertification	Loss of the biological productivity of land	Convention held for combating desertification but no global regime yet

Source: self compiled by the authors

As the United Nations led environmental conferences played the significant role in the formation of environmental governance, The 1992 Rio conference is the pioneer negotiation because since that period, the non-governmental organizations and Multinational Corporations have been regularly participating in the subsequent environmental negotiations. It resulted in the consolidation of their claim for global environmental governance. While Non- Governmental organizations depends on a network of environment groups and often establish solidarity among the independent environmental groups, the corporate industries work out several strategies with which they can respond to the present need for forming environment friendly industrial project. To materialize their effort, the MNCS seek joint partnership with the state with regard to sustainable development of the world community (Elliott, 1998:133). An account of the environmental conferences and their agenda is described in table 2 below.

Table-2: LIST OF TABLE ENVIRONMENTAL CONFERENCE AND THEIR AGENDA

No	United Nations Environmental Conference	Host country	Year	Agenda
I	The United Nations Conference on the Human Environment	Stockholm	1972	Ecosystem integrity, biological diversity, human health
Ii	The United Nations Conference on environment and development (known as Rio Declaration)	Rio-de-Janiro, Brazil	1992	Sustainable development of the world community
iii	World Summit on Sustainable development (Johannes burg Summit)	Johannesburg	2002	Voluntary, multi-stakeholder, international, national local level partnership for sustainable development
Iv	The United Nations Conference on sustainable development (Rio + 20)	Brazil	2012	Uses of 'green economy' n sustainable development

Source: self compiled by the authors.

V. Who are the Major Players of Global Environmental Policies?

It is quite correct that nation – state is yet the main actor of international politics. Before 1990s, many non – governmental organizations were formed based on local ecological and environmental issues. For instance, we can refer to NGOs which were remained as a local pressure group in the late nineteen and early twentieth century not only in the European society but also in the colonial ones. UK's The Royal society for the protection of Birds (1891), the National Wildlife Federation (1936) are two examples. Moreover, in the early post –colonial era, innumerable NGOs were formed but they articulated issuer related to the underdevelopment of the third world country. Their whole agenda consists of poverty alleviation, the loss of local ecology and degradation of local environment (Elliott, 1998:133).

However, the significant change in global environmental politics was occurred with the emergence of the 'third generation NGOs'. The Friend of Earth (FOE), the Greenpeace International, Asia pacific peoples Environment Network belong to this category. Since the last half of the twentieth century, the number of environmental risks has been extended in the backdrop of the growing corporate interest in the environmental resources. The Non Governmental organizations of this period, in pursuit of global environmental governance have built joint partnership with the state and often with the corporal industries. The nature of NGOs activities largely depends on their motivation. Today many NGOs of the developing countries, establish a network of organization to speed up local level environmental movement. Apart from this, NGOs participation in the successive environmental negotiation makes them as one of the contenders for environ mental protection (Elliott, 1998: 134).

Multinational Corporation is another type of transnational organizations. As they are mostly profit making group, Their business related activities are mostly responsible for environmental calamities. When the environmental conferences set their agenda for the sustainable development of the world community and resource, the leading MNCs are in constant effort to engage themselves with the transnational networks and non – profit organization. In this respect the world Business Council for sustainable Development and the international chamber of commerce have launched several environment friendly business policies and often allotted funds for the environmental organization. The larger goad if the prominent MNS amidst building environmental awareness, activism, movement, is to promote commercial benefit (Betsill, 2014: 178). The types and the role of the transnational actors in environmental politics are described in table 3 below.

Table-3: TYPES OF TRANS NATIONAL ACTOR AND THEIR ROLE

NO	Types of Trans National Actor	Role in global Environmental Governance
(i)	Inter Governmental Organization or Supra National Organization (UNO, EU)	Environmental negation and conferences
(ii)	Non Governmental Organization (FOE,WWF)	Partnership with the state and other environ mental organization, delegation to the environmental conferences.
(iii)	Multi National Corporations	Network building, lobbying with the domestic government and influencing the policy formation during environmental negotiation.

Source: self compiled by the authors

VI. Role of Non-Governmental Organization in Global Green Governance

Global Green governance is a type of mechanism with which the non-governmental organization became the powerful actors in leading to the creation of global green public sphere. Inevitably, the role of the NGOs is not merely restricted to the participation in environmental conferences, as many of these are organized under the host of any inter governmental organization like United Nations state (UNO) in many instances, the invincible political authority of the nation –states minimizes the functions of the global environmental regimes. It necessarily, undermined the effort of the institutional arrangements in removing global environmental woes. The transnational actors especially the NGOs, since the last half of the twentieth century, had proposed that 'non – institutional forms of organization' could effectively respond to present needs of the environment (Kutting, 2011).

Though it is unanimously considered that green nongovernmental organization have been operating as a type of pressure group but it often misleads us because the role of NGOs will be largely determined by the parameter within which they perform. As globalization laid several new possibilities for the social

actors to reorganize and articulated there demand, many green NGOs were in the effort to radicalize their demand. More surprisingly, they often ruled out the partnership strategy with the states. Here we can refer to the environmental agenda of the leading world NGOs, friends of earth (FOE). It is described as the emancipator NGO as FOE puts forth participatory democracy in order to increase environmental activism at the grass root level. In this regard, NGOs like Friends of Earth (FOE), Greenpeace instead of collaborating with a particular Nation state, rely upon the network formation among the local, regional and global environmental groups. Instead of any authoritative arrangement in resolving the environmental and ecological crisis, Friends of Earth ensures full autonomy of its affiliated regional groups. The flexible nature of the intra-organization of the FOE as the former can independently sets its agenda considering the needs of the local environment in which it operates. Environmental NGOs today, consider the whole environment as the global civil society in which they delegated to the nation state at the world conferences held on environmental and sustainable developmental issues. However, when the NGOs work as global pressure group, they prolong negotiation with the national actor that is state as well as the intergovernmental organization like European Union, United Nations. The aim of long time negotiation and participation at the environmental conferences is to expedite the institutional process and establish mechanisms under the jurisdiction of the intergovernmental organization for reducing the green house gas emission, minimising the production of Cloro-fluro –carbon and other risks. The fact cannot be denied today that unless a strong political orientation, the NGOs would not have succeeded in their claim for establishing global environmental governance. The Greenpeace International though has a highly centralized structure, sets its agenda exclusively on the environmental issues. When it organizes environmental campaign, direct mass mobilization camp, the main intent of this organization is to alter 'state centric system of environmental governance'. As a result, many 'social movements and networks of non-state actors' in this respect mainly work in a constant competition with the nation states and intergovernmental organization (Elliott, 1998 :132).

Non-Governmental Organizations, when lead to the social, environmental movements at the local level, they emphasis on the social, human and ecological values as the constituting elements of international politics, NGO s, for serving this end encourage environmental activism at the grass root level. Their effort benefits the peripheral sections, which are on the skirt in the global governance. But when economic integration of globe was initiated, no resource of the margin was unutilized. As in the second paragraph of this section, we have mentioned that the nature of the NGOs depends on the parameter; it is the fact that NGOs, which are unwilling for being involved in the process of environmental activism, endeavour to enlarge joint partnership with the state for collectively addressing environmental concerns (Doyle & Eachern, 2014: 154).

The World Wide Fund for Nature instead of direct action at the local level for resolving environmental risks collaborates with the government, financial institutions and other transnational corporations. Its purpose is to assist the national government as well as intergovernmental organization in launching the framework for effective environmental governance. Another NGO, International Union for the conservation of Nature seeks solidarity among the global actors for mitigating the present environmental crisis. In this regard, NGOs consider the subjective participation of the world community is meaningful way to the establishment of global green governance. It is the world mechanism to boost up consensus among every contender at least with respect to environment and the 'sustainable development' of the society at large (Doyle & Eachern, 2014).

VII. The Role of Multinational Corporations in Environmental Governance

Generally, we consider Multi-national Corporations as commercial organization. They are largely criticised for their contribution to environmental pollution globally. It is quite correct that in pursuit of business interest, MNCs have destroyed the local livelihood and polluted the environment. The fact must be noted that they are 'the largest users of raw materials globally and the top 500 MNCs generate more than half the greenhouse gas emissions produced globally' (Elliott, 1998: 123). In the developing countries, they constantly encourage pesticide sell, and significantly control the agriculture land use pattern by increasing the cultivation of profitable export crops. It resulted in the reduction in the fertility of cultivated land and in health crisis, particularly at the rural area of the developing nations. Multinational corporation, which have Japanese origin, were responsible for the deforestation in South East Asia, while the weak government of the third world countries for enlarging their GDP, depend on the investment by the financially powerful world MNCs, the latter causes the destruction of local ecology, weakening the rules and standards for preventing the environment hazards came out of their activities with regard to production, transportation of the commodity.

Multinational corporations not only influence the domestic government of a country with which they are associated but exert their control over many inter government organizations, when these groups deliber over the establishment of global environmental regimes. We can cite the major activities of the USCFC producers and user industries. In the past, when the global environmental regimes step up pressure over its member states for reducing green house gas emission, the production of CFC, the countries, which are the home of powerful MNCs first object to the implementation of the programme. It reminds us the activities of the MNCs of the United States during the Montreal protocol and the Kyoto protocol negation. As the top US MNCs were unwilling against the enforcement of any regulation over ozone depletion substances and over the green house gas emission, the whole agenda of both negotiations were not implemented and surprisingly, United States did not ratify the Kyoto protocol. Another instance is

biodiversity negotiation. Multi National Corporations which have biotechnology industry, utilize genetically rich regions of the south Asia and south-East Asian nations. While biotechnology industries most of the time, use local knowledge and genetic resources for accruing commercial benefits, they do not provide adequate compensation and often no little compensation to indigenous community of the region (Elliott, 1998 : 125).

There has been a broader consensus among the powerful MNCs that an institutional arrangement of their own needs to respond to the global environmental disasters could substantiate their claim for free environ mental governance based on voluntary engagement of the actors. In 1978, MNCs formed commission on the Environment under the stewardship of the International Chamber of commerce. The tusk of the commission is to bring out –'environmental policies for industry.' It recommends over the environmental policies or measure framed by the intergovernmental organization. Expressing that collective measure of the intergovernmental organization and MNCs for securing environment friendly business profit, International Cumber of commerce in 1984 with the assistance of the United Nation Environment program, organized world Industrial Convention on Environment and Management (WTCEMI). The subsequent conference was held in 1991to work out business environment policies in respond to the United Nations Conference on Environment and Development (UNCED) (Elliott, 1998: 126).

The growing environmental awareness at the local level and a number of environment related causalities led to the rectification in the behaviour and activities of corporate agencies. The MNCs now seek for the abolition of binding regulation over their activities as they consider that self regulation and voluntary codes of conduct are quite suitable for fulfilling their environmental accountability to the world community. In fact, since the last half of the twentieth century, MNCs have been trying to build moral faith among the world community in their environmental credentials. It is worthwhile to speak that after the United Nations Conference on Environment and Development was held, the MNCs became eager to form the 'global green governance' in which 'command and control regimes' with regard to prevention of environmental concerns would defunct and opportunity for green investment would be swelled. In this regard, the International Chamber of Commerce in 1990 brought out the 'Business Charter for sustainable Development. The aim of this Charter is to appraise the fact that today, corporate business interest and sound corporate environmental policies substitute one another. As a result, MNCs build a close association with the environmental programme launched by UNCED. MNCs through their Business council for sustainable Development participate in many programmes, held with regard to the sustainable development of the environment and the world community .The purpose of their growing concern for the sustainability of the environment is to increase the uses of green technology worldwide.

VIII. Conclusion

Our study over the nature and the mode of operation of the global environmental governance triggers some new features of international environmental politics. In the post Stockholm era, the environmental activism at the grass root level and the regular participation of the transnational actor in successive environmental negotiations led to the formation of 'global governance' .Today it is unanimously viewed that the global governance minimizes the state centralism. However, the constituent units of the environmental governance do not have similar interest. While the NGOs participation in the environmental politics bring an extensive opportunity for the grass root organization and movement, the MNCs over the last decade of the present century, intend to burgeon their investment in green technology. So economically, MNCs effort for setting up a green public sphere free from commanding authority of the state would result in the abolition of the control mechanism. If the control mechanism for preventing environmental risk and international rules and standards are adequately strengthened, the transnational organizations especially the MNCs would not have dared to compromise with local lively hood and ecology. It is surprising that when environmental negotiations took place, the UN member states of the third world, instead of protesting in a concerted way against discriminatory provision of the environmental regime, raise concern after the environmental agreement has been over. In fact, the development agenda of the third world nations is in constant conflict with the sustainable development of the world community. As a result, The United Nations in its successive environmental negotiations since the 1990s,seek the voluntary engagement of all stake holder for the successful implementation of the environmental declaration but most often the developed countries mainly united state which is the home of the world top MNCs does not ratify the agreement. However, the mechanism of global governance can assist the Nation state and inter governmental organization but direct action by the transnational organizational over the environment is undesirable as international relations are yet being free from the evil impact of power politics.

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The Analysis of Productivity of Scheduled Commercial Banks in India after Global Financial Crisis-An Application of Data Envelopment Analysis using Malmquist Index of Productivity

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Abstract

This study investigates the change in efficiency and productivity of banking industry during 2009 to 2016. This study analyses the effects of various indicators on the efficiency of 6 State Bank group banks, 20 each Nationalised, Private and Foreign banks depending on availability of data during the period of study. Malmquist index is used to measure efficiency and productivity of 66 selected commercial banks of India. The components of Malmquist productivity index used in the performance measurement are changes in technical efficiency, technological change, change in scale efficiency and the change in total factor productivity. As a whole, results show that the productivity change of commercial banks in India has improved over the sample period just following the period of global financial crisis in the year 2007-08. However, the improvement in the financial performance of different banks was unbalanced, because some of them were declining in terms of the total factor productivity. Moreover, decomposition of the DEA based Malmquist Index shows that the bulk of the improvement in total factor productivity of commercial banks in India has been attained through the rapid technological improvement in banking sector which is partially offset through a reduction in the technical efficiency change. So, from the study, it can be said that as far as the Indian banking industry is concerned, although, the banks in India are not as technologically advanced as their counterparts in the developed world; they are following the majority of international trends in the IT domain. To conclude, we can say that, the banking industry in India is rapidly progressing with increased customer base and due to newly improved and innovative facilities offered by the technology and should have to focus on improving managerial efficiency of the banking sector.

JEL Classification Codes: C14, C61, C67, D24, G21, O16.

The globalization of financial markets and banking industry has affected the actions of many nations especially up-and-coming countries. Banking industry plays a vital role in stability of financial system through efficient mobilization of savings and transforming them to investment. Investment plays a key role in promoting economic growth of any country. In India, banking sector plays the pivotal role in financial sector in terms of contribution of credit to accumulate investment. So, measuring efficiency and productivity of banking sector is crucial to foster economic growth of India.

Theoretical Background of the Study:

In 1988, RBI set up a committee on computerization of banks and in 1991, Narasimham Committee come up with set of recommendations for reforming Indian Banking system. In 1998, Narasimham Committee –II report came up with second set of recommendations aiming at stronger banking sector. Vimal Jalan, the then RBI Governor gave 3 to 4 years to banks to implement the Narasimham Committee Report-II. In 2007, Global financial crisis began all over the world. In 2008, intensity of global financial crisis was diluted to some extent. This paper studies the change in productivity of commercial banks in India as a whole from the year 2009 to 2016 using panel data in the post global financial crisis era. As Banking Sector Reforms have been implemented since 1991 and in 1998, Narasimham Committee Report-II has come into force. After 10 years of Narasimham Committee Report-II which can be referred as finishing touch in structural change in banking sector, we can assess the impact of financial sector reforms on productivity of Indian Banking Sector.

Review of Literature:

In 1953, Sten Malmquist, a Swedish economist and statistician first derived a quantity index for use in consumption analysis in Trabajos de Estadistica (Malmquist, 1953). Later Caves et al. (1982) adapted Malmquist's idea for production analysis and they named the productivity changes index after Sten Malmquist. The application of data envelopment analysis based on Malmquist total factor productivity index is widely used in the comparison of countries and aggregate comparisons of productivity between countries (Fare et al. 1994; Yörük & Zaim, 2005) as well as various economic sectors such as agriculture (Tauer, 1998), airlines (Barros & Weber, 2008), telecommunications industry (Calabrese et al. 2001)etc. Berg et al. (1992) presented the first application of the Malmquist index to measure productivity growth in the Norwegian banking system in the pre and post deregulation era (1980-89), using the value added approach. Their analysis showed that the productivity exhibited a lackluster performance in the pre-deregulation era, however, the productivity increased remarkably in the post-deregulation era suggesting that deregulation led to more competitive environment, especially for larger banks. Likewise, using a generalized Malmquist productivity index, Grifell-Tatje & Lowell (1997) analyzed the sources of

productivity change in Spanish banking over the period 1986-1993 and found that the commercial banks had a lower rate of productivity growth compared to saving banks, but a higher rate of potential productivity growth. Drake (2001) studied efficiency and productivity changes in the main UK banks over the period 1984 to 1995 and suggested that bank scale inefficiencies were a more severe problem than X-efficiencies. Drake's Malmquist productivity indices suggested that, on the whole, UK banks exhibited positive productivity growth over the period. Sathye (2002) also used Malmquist index to analyze productivity changes from 1995-1999 in a panel of 17 Australian Asian Journal of Finance & Accounting ISSN 1946-052X 2013, Vol. 5, No. 2 225 www.macrothink.org/ajfa banks to assess the effects of deregulation and the reforms introduced by the Wallis report of 1997. Sathye (2002) found a decline of 3.1 per cent in technical efficiency over the period and of 3.5 per cent in the total factor productivity index, although annual productivity grew by 1.3 per cent. Likewise, Neal (2004) measured X-efficiency and productivity change of Australian banks for the period of 1995-1999. The findings displayed that overall efficiency had a declining trend until 1997 but rose in 1998 as well as 1999, and allocative efficiency of banks was higher than technical efficiency. Handful of research has also been devoted to investigate the efficiency of banks in Asian countries. Bhattacharyya et al. (1997) examined the productive efficiency of Indian commercial banks during 1986-1991 and found a marginal increase in overall average performance after 1987 and the average efficiency of publicly owned banks is much higher than in the privately owned or foreign owned banks. Galagedera & Edirisuriya (2005) used data envelopment analysis and Malmquist Index in a sample of Indian commercial banks over the period of 1995-2002 and found no significant growth in productivity during the sample period. He found that there has been no growth in productivity in private sector banks where as the public sector banks appeared to demonstrate a modest positive change through 1995-2002. Sinha & Chatterjee (2008) tried to make a comparison of fund based operating performance and total factor productivity growth of selected Indian commercial banks for the five year period 2000-01 to 2004-05 using data envelopment analysis and Mamlquist total factor productivity index. The findings displayed that the mean technical efficiency of the in-sample private and foreign banks is somewhat higher than the in-sample public sector banks. However, in-sample public sector commercial banks exhibited higher Malmquist index than the in-sample private sector banks. Likewise, Rezvanian et al. (2008) also used Malmquist index to examine the effects of the ownership on efficiency, efficiency change, technological progress, and productivity growth of the Indian banking industry over the period of 1998-2003 They found that foreign banks were operating significantly more efficient than privately owned and publicly owned banks.

Biwesh Neupaneanalyzes the effects of various indicators on the efficiency of the twenty two commercial banks in Nepal. He used as to measure the efficiency and productivity where as Tobit regression used as

to analyze the determinants of efficiency. Results showed that the productivity change of commercial banks in Nepal had improved over the sample period and that the increase in productivity change in Nepalese commercial banks was due to the technical progress rather than efficiency components. It also reported that the decline in efficiency change was due to decline in both pure efficiency change and scale efficiency change analyzed the effects of various indicators on the efficiency of the twenty two commercial banks in Nepal.

Research Methodology:

We have used Data Envelopment Analysis to judge efficiency and productivity of selected 66 scheduled commercial banks for year 2009 to 2016. Data is collected from "Statistical Tables Relating to Banks in India" obtained from RBI website www.rbi.og.in. The technique DEA with its multiple input-output nature and non linear relationship between inputs and outputs, defines an efficiency measure of a production unit by its position relative to the frontier of the best performance represents the efficiency of production units which attain 100% efficiency.

Malmquist Productivity Index is used to measure the total factor productivity and its corresponding changes in its components between 2009 and 2016. Among the alternative measures of productivity changes using the DEA, the Malmquist Index, suggested by Fare, et al (1994), has the advantages over the other measures, the Fisher Index and Tornquist Index. The advantages of the Malmquist Index are-it neither require the profit maximization assumption nor the cost minimization assumption, it does not require the information about the prices of inputs and outputs and moreover, in case of panel data, this approach allows the decomposition of productivity change into technical efficiency change or, catching up and technological change. But in this approach, it is necessary to compute the distance function. There are two types of distance functions-the input distance functions and the output distance functions based on input oriented and output oriented measures of change in productivity. In this study, we use the output oriented Malmquist index where the output oriented distance functions consider the maximum proportional expansion of output with a given set of inputs.

The Malmquist index measures the change in total factor productivity of a firm over a time period, by calculating the ratio of the distance functions in respect to a common technology. For the Malmquist index, we assume that for each period of time, production technology $S_t=(x^t, y^t)$ where x^t produces y^t.

According to Fare et al (1994), the output oriented Malmquist index for changes in total factor productivity of a particular DMU_i at time (t+1) and t is:

$$M_i=[\{D_i^t(x^{t+1}, y^{t+1})/ D_i^t(x^t, y^t)\}\{ D_i^{t+1}(x^{t+1}, y^{t+1})/ D_i^t(x^{t+1}, y^{t+1})\}]^{1/2} \quad .....1$$

The above output based Malmquist productivity index can be decomposed according to Fare et al (1992, 1989) as:

$M_i(x^{t+1}, y^{t+1}, x^t, y^t) = \{D_i^{t+1}(x^{t+1}, y^{t+1})/ D_i^t(x^t, y^t)\}[\{D_i^t(x^{t+1}, y^{t+1})/ D_i^{t+1}(x^{t+1}, y^{t+1})\}\{ D_i^t(x^t, y^t)/ D_i^{t+1}(x^t, y^t)\}]^{1/2}$

Where M_i=Malmquist productivity index,

D_i =output distance function, x & y represent inputs and outputs respectively over the time period t to t+1.

The ratios inside the brackets is geometric mean of productivity indexes representing the changes in production technology(TECHCH) between two time periods t and t+1 whereas the ratio outside the brackets measures the change in technical efficiency(EFFCH) between the time periods t and t+1, capturing changes in efficiency over time, that is whether production become closer or more distant from the efficient frontier. Therefore, the Malmquist index or the total factor productivity change is the product of the two components the technical efficiency change (EFFCH) and technological change (TECHCH).

Fare(1994) also decomposed the Malmquist index by decomposing the technical efficiency change (EFFCH) into pure technical efficiency change (PECH) and scale efficiency change(SECH). The pure efficiency change measures the managerial ability to convert inputs into outputs while the scale efficiency change measures how much the operators can take advantage of returns to scale by altering its size towards optimal size. All the components of Malmquist total factor productivity greater than one indicates improvement or progression, on the other hand, the values less than one indicates deterioration or regression, while the values equal to one implicate that there is neither improvement nor deterioration has been occurred.

In order to select the variables (i.e. inputs and outputs) in performance analysis of banks using the DEA technique we mostly depend on the definition of a bank's function. In the banking literature there are mainly two approaches which discuss the activities of banks –the production approach and intermediation approach. The intermediation approach views banks as the intermediary of financial services whereas the production approach defines the banks' activity as production of services. In this paper, we use the intermediation approach for identification of inputs and outputs. The intermediation approach transforms the money borrowed from depositors into the money lent to borrowers.

In this study, the output variables taken are advances, other earning assets, interest income and non-interest income. Input variables taken here are deposits, fixed assets, interest expenses, non-interest expenses and capital reserves.

As per definition of RBI, advances equal to Bills purchased and discounted plus cash credits, overdrafts and loans plus term loans secured by tangible assets plus term loans covered by bank/government guarantees plus unsecured loans plus Advances in India(Priority sector as defined by RBI, public sector, banks and others) plus Advances outside India. Other earning assets are assets other than advances which generate income such as rental property, interest on dividend earning accounts, certificate of deposits etc. Interest income consist of interest earned on advances, income on bills' discounting, income on investments, interest on balances with RBI and other interbank funds etc. Non-interest income includes deposit & transaction fees, insufficient funds fees (NSF), annual fees like fees on out of network ATM transaction, fees for issuing cheques, loan-servicing fees, monthly fees like fees for extending brokerage service, account service charge etc.

Deposits of banks consist of demand deposits from banks & others, savings bank deposits, term deposits from banks & others, deposits of branches both in and outside India. Fixed assets comprise of premises, fixed assets under construction & other fixed assets. Interest expenses of banks include interest on deposits, interest on RBI/ other banks' borrowing etc. Non-interest expenses constitute of payments to and provisions for employees, rent, taxes & lighting, printing and stationary, advertisement & publicity, depreciation on bank's property, directors' fees, allowances & expenses, auditors' fees & expenses, legal charges, postage, telegrams, telephone etc. charges, repairs & maintenance cost, insurance and other expenditure. Capital reserves for banks is set up to meet regulatory requirements and acts as buffer during financial repression and they also absorb the adverse impact of a drop in asset values of banks or, anticipated losses on their loan books.

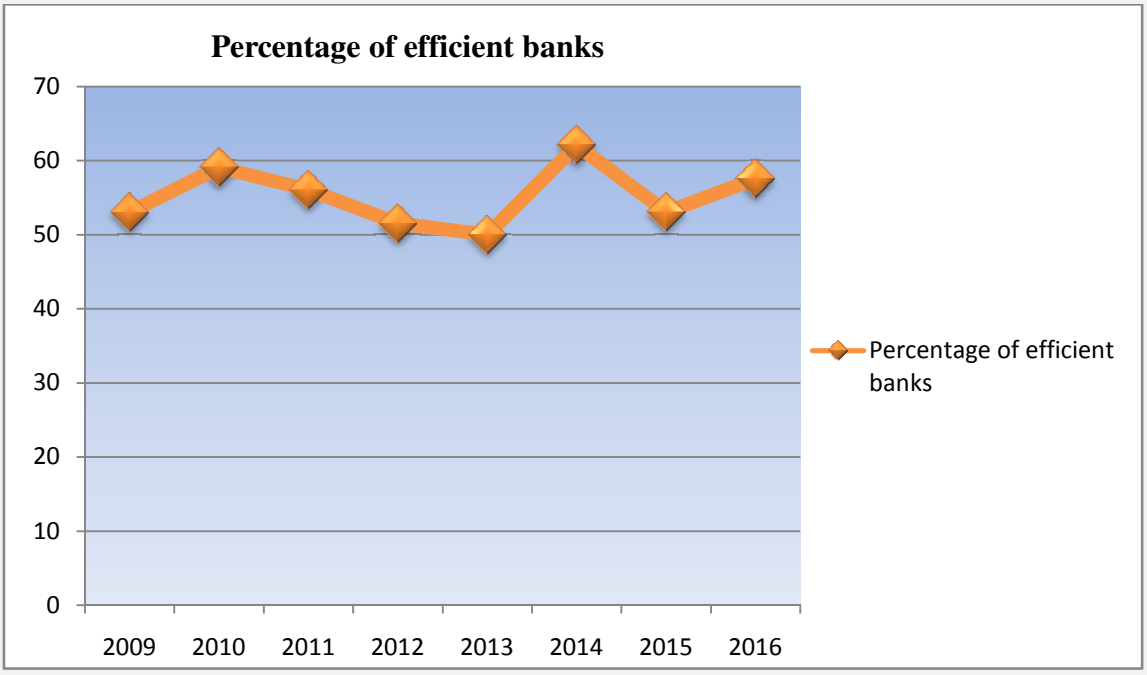
We have employed panel data with about 528 observations that appears in 8 years of our empirical study. The components of Malmquist productivity index used in the performance measurement are changes in technical efficiency, technological change, change in scale efficiency and the change in total factor productivity. Among 66 banks, 20 private, 20 foreign and 26 public sector banks have been studied.

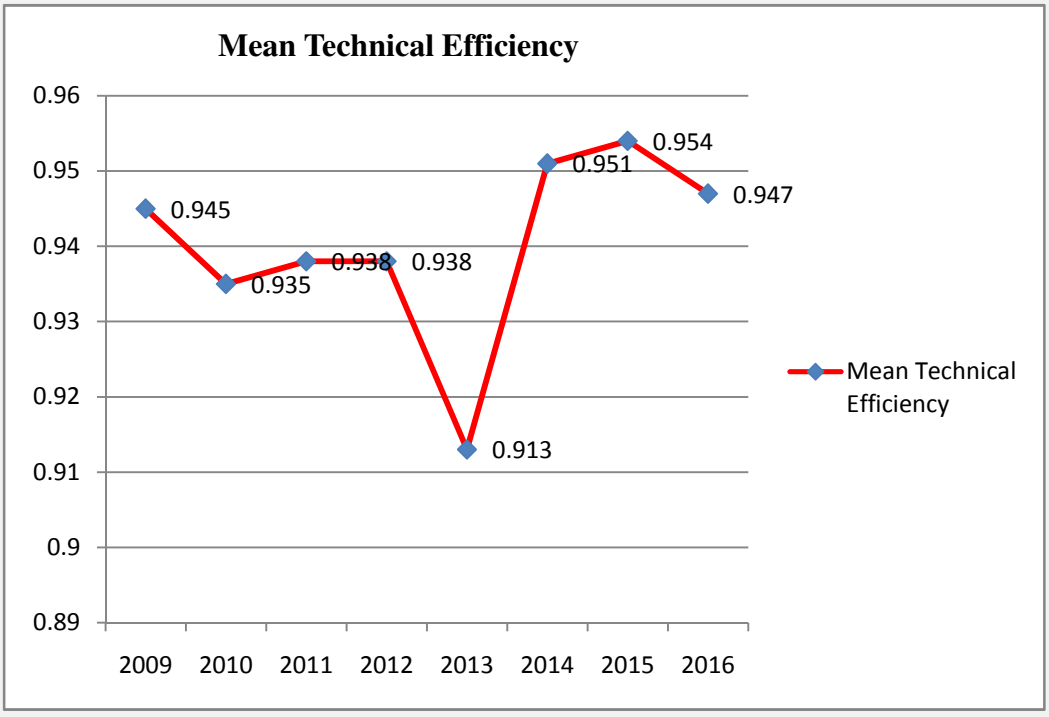
Empirical Results:

The results show mean variable return to scale (VRS) technical efficiency from 2009 to 2016, reflecting the development of efficiency of Indian commercial banks. The table below shows the mean variable returns to scale (VRS) technical efficiency from 2009 to 2016.

Year	Mean Technical Efficiency	Percentage of efficient banks
2009	0.945	53.03
2010	0.935	59.09
2011	0.938	56.06

2012	0.938	51.52
2013	0.913	50
2014	0.951	62.12
2015	0.954	53.05
2016	0.947	57.58

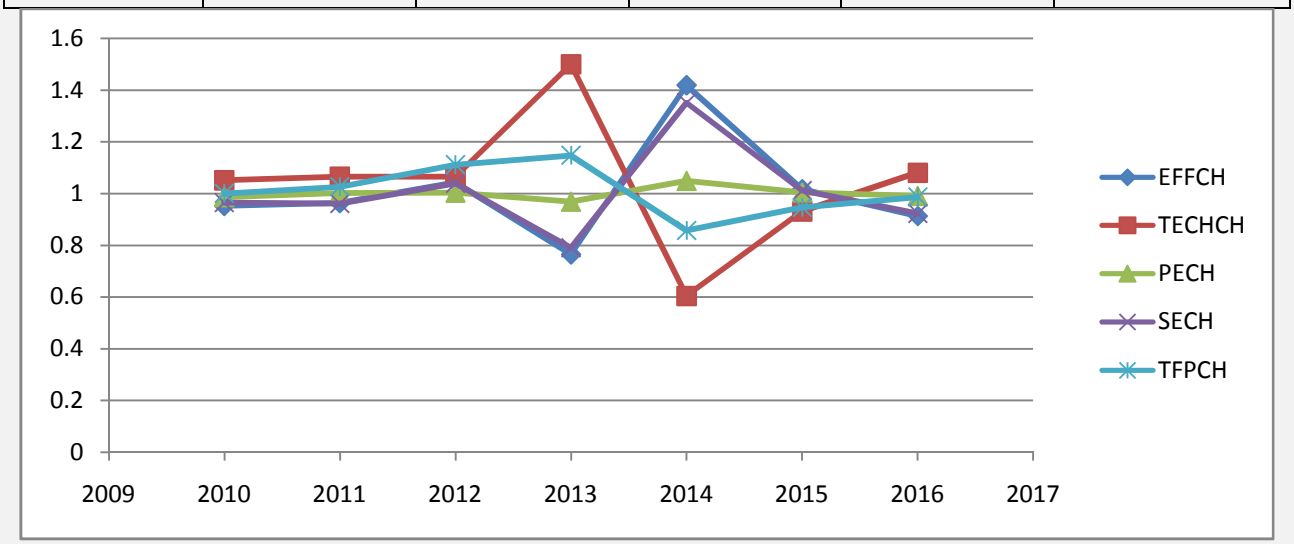




Efficiency begins to fall abruptly in the year 2009 to 2010 just after the global financial crisis from 0.945 to 0.935 but it revives in the next year increasing to 0.938. Again in 2012 to 2013, efficiency falls rapidly than before from 0.938 to 0.913. After that, technical efficiency of banks gradually improved. From 2009 to 2010, percentage of efficient banks increased from 53.03% to 59.09% but it begins to fall from 2010 to 2013 when percentage of efficient banks falls to 50%. Percentage of efficient banks attain maximum in the year 2014 with 62.12%. The results obtained from Data Envelopment Analysis, regarding components of Malmquist productivity index used in the performance measurement are as follows:

Table-Malmquist index summary of annual means

YEAR	EFFCH	TECHCH	PECH	SECH	TFPCH
2010	0.952	1.051	0.986	0.965	1.000
2011	0.963	1.065	1.002	0.961	1.026
2012	1.043	1.065	1.003	1.039	1.111
2013	0.765	1.499	0.968	0.790	1.147
2014	1.418	0.604	1.049	1.351	0.857
2015	1.016	0.931	1.004	1.012	0.946
2016	0.913	1.080	0.990	0.922	0.986
Mean	0.994	1.012	1.000	0.994	1.006



Percentage analysis of table mentioned above is:

effch < 1 =4=57% techch<1=2 =29% pech<1=3=43% sech <1=4=57% tfpch<1=3=43%

effch >1 =3=43% techch>1=5 =71% pech>1=4=57% sech >1=3=43% tfpch>1=3=43%

effch = 1 =0=0% techch=1=0 =0% pech=1=0=0% sech =1=0=0%
tfpch=1=1=14%

The components of Malmquist productivity index used in performance measurement are changes in technical efficiency, technological change, change in scale efficiency and the change in total factor productivity.

Summary of annual means of Malmquist index shows that most of the years due to revolutionary up gradation of technology in banking, technological change are more than 1 in all the years except 2014 & 2015. Pure efficiency showing change in managerial efficiency shows mean 1 with 2011, 2012, 2014 & 2015 showing more than one value. Scale efficiency change is highest in 2014 balancing the adverse effect of technology change to some extent. Total factor productivity change shows 0.6% increase despite decline in technical efficiency by 0. 6% because of 0.6% decline in scale efficiency during the study period. This is owing to 1.2% increase due to technology change.

The above table indicates that commercial banks have shown improvement in technical efficiency by 43% of the study period, technical change by 71% of the study period, pure technical change improvement by 57% of the study period and scale efficiency change by 43% of the study period. The annual means of the Malmquist index show that the scale efficiency change deteriorates by 0.6%, efficiency change deteriorates by 0.6%, technological change improves by 1.2%, and total factor productivity change improves by 0.6%, whereas pure technical efficiency change neither deteriorates nor improves.

The year 2012 recorded improvement in technical efficiency change by 4.3% and the improvement in efficiency change by 6.5%resulting in an improvement in commercial banks' total factor productivity change by 11%. In the year 2013, the technological change recorded highest improvement by 49.9% but the technical efficiency change recorded deterioration by 23.5% leading to total factor productivity change of commercial banks to be 14.7% which is highest improvement in the whole study period. This improvement owes to huge improvement in technological efficiency.

Table: Malmquist index summary of bank means:

BANKS	EFFCH	TECHCH	PECH	SECH	TFPCH
STATE BANK OF BIKANER & JAIPUR	1.000	1.020	1.000	1.000	1.020
STATE BANK OF HYDERABAD	0.983	1.007	1.000	0.983	0.989
STATE BANK OF INDIA	0.998	1.025	1.000	0.998	1.024
STATE BANK OF MYSORE	0.992	1.000	0.992	0.999	0.992

STATE BANK OF PATIALA	0.971	1.002	1.000	0.971	0.973
STATE BANK OF TRAVANCORE	0.989	0.998	1.000	0.989	0.987
ALLAHABAD BANK	1.004	0.999	1.005	0.999	1.003
ANDHRA BANK	1.018	0.998	1.002	1.015	1.016
BANK OF BARODA	0.988	1.015	1.000	0.988	1.003
BANK OF INDIA	0.985	0.996	0.991	0.994	0.981
BANK OF MAHARASHTRA	1.015	1.014	1.011	1.004	1.029
CANARA BANK	1.005	0.987	1.000	1.005	0.992
CENTRAL BANK OF INDIA	0.976	1.017	0.988	0.988	0.992
CORPORATION BANK	1.019	1.003	1.000	1.019	1.021
DENA BANK	0.998	0.992	0.996	1.002	0.990
IDBI BANK LIMITED	0.994	0.985	1.000	0.994	0.980
INDIAN BANK	1.003	1.000	0.997	1.006	1.003
INDIAN OVERSEAS BANK	0.991	0.988	0.994	0.996	0.978
ORIENTAL BANK OF COMMERCE	1.002	0.992	0.999	1.003	0.994
PUNJAB AND SIND BANK	1.024	0.994	1.008	1.015	1.017
PUNJAB NATIONAL BANK	1.001	1.005	1.000	1.001	1.006
SYNDICATE BANK	0.995	1.007	1.000	0.995	1.002
UCO BANK	1.027	0.988	1.004	1.022	1.014
UNION BANK OF INDIA	0.996	0.999	1.000	0.996	0.996
UNITED BANK OF INDIA	1.007	0.985	1.003	1.005	0.992
VIJAYA BANK	1.009	0.990	1.003	1.006	0.998
AXIS BANK	1.004	1.038	1.008	0.996	1.042
CATHOLIC SYRIAN BANK LTD	0.995	1.011	0.997	0.999	1.006
CITY UNION BANK LIMITED	0.995	0.994	1.000	0.995	0.989
DCB BANK LIMITED	0.967	1.036	1.005	0.963	1.003
DHANLAXMI BANK	0.972	1.059	0.990	0.982	1.029
FEDERAL BANK	0.965	0.999	0.983	0.982	0.964
HDFC BANK	0.977	1.042	1.000	0.977	1.017
ICICI BANK	1.003	0.991	1.000	1.003	0.995

INDUSIND BANK	1.067	1.081	1.025	1.041	1.153
ING VYSYA BANK	1.010	1.027	1.037	0.974	1.037
JAMMU & KASHMIR BANK LTD	0.983	0.985	0.998	0.985	0.967
KARNATAKA BANK LTD	0.992	0.983	1.001	0.991	0.976
KARUR VYSYA BANK	0.983	0.989	1.001	0.982	0.972
KOTAK MAHINDRA BANK LTD	0.918	1.001	1.000	0.918	0.919
LAKSHMI VILAS BANK	1.010	0.994	1.004	1.006	1.004
NAINITAL BANK	0.965	1.008	0.970	0.995	0.973
SOUTH INDIAN BANK	0.970	0.990	0.995	0.975	0.961
TAMILNAD MERCANTILE BANK LTD	0.993	1.000	0.999	0.994	0.992
THE RATNAKAR BANK LIMITED	1.001	1.052	1.024	0.978	1.054
YES BANK LTD.	1.003	0.967	1.007	0.996	0.970
AB BANK LIMITED	1.000	1.080	1.000	1.000	1.080
ABU DHABI COMMERCIAL BANK	1.026	1.062	1.003	1.022	1.089
BANK OF AMERICA N.A.	1.000	0.994	1.000	1.000	0.994
BANK OF BAHRAIN & KUWAIT B.S.C.	0.991	1.055	0.989	1.002	1.045
BANK OF CEYLON	1.000	0.977	1.000	1.000	0.977
BANK OF NOVA SCOTIA	1.000	0.984	1.000	1.000	0.984
BANK OF TOKYO-MITSUBISHI UFJ LTD	1.000	0.988	1.000	1.000	0.987
BNP PARIBAS	1.000	1.077	1.000	1.000	1.077
CITIBANK N.A.	0.965	0.950	1.000	0.965	0.917
DBS BANK LTD.	1.000	1.090	1.000	1.000	1.090
DEUTSCHE BANK AG	1.004	0.986	1.000	1.004	0.990
HONGKONG AND SHANGHAI BANKING CORPN.LTD.	0.975	0.942	0.985	0.990	0.918
JP MORGAN CHASE BANK N.A.	1.000	1.165	1.000	1.000	1.165
KRUNG THAI BANK PUBLIC COMPANY LIMITED	1.058	1.101	1.043	1.014	1.164
MASHREQ BANK PSC	1.000	1.060	1.000	1.000	1.060
MIZUHO BANK LTD	1.000	1.105	1.000	1.000	1.105
SHINHAN BANK	1.000	1.031	1.000	1.000	1.031

SOCIETE GENERALE	0.935	1.038	0.956	0.978	0.971
SONALI BANK	0.935	0.967	1.000	0.935	0.903
STANDARD CHARTERED BANK	0.997	0.933	1.000	0.997	0.930
Mean	0.994	1.012	1.000	0.994	1.006

Summary of bank means of Malmquist index of selected commercial banks show improvement in pure efficiency occurred in following Public Sector Banks such as Bank of Maharashtra(by 1.1%), Allahabad Bank (by 0.5%), UCO(by 0.4%), Andhra(by 0.2%), Punjab & Sind Bank(by 0.8%), UBI & Vijaya Bank(each by 0.3%). Technology change effect is somewhat lower in case of these banks. Among private banks, INDUSIND bank performed the best in this study period with total factor productivity growth showing 15.3% increase owing to 8.1% technological change and the rest in technical efficiency consisting of 2.5 % increase in pure efficiency signifying improvement of managerial efficiency. Among other private sector banks, AXIS(TFPCH 1.042), Catholic Syrian(1.006), DCB(1.003), Dhanlaxmi Bank(1.029), Lakshmi Bilas Bank(1.004) and The Ratnakar Bank Limited(1.054) revealed positive total factor productivity arising out of improvement in technological change. This means that rapid change in banking technology plays the key role in maintaining positive total factor productivity. Among foreign banks, best performing banks in terms of total factor productivity are JP Morgan Chase Bank N.A. (1.165) & Krung Thai Bank Public Company Ltd. (1.164). The later one Krung Thai Bank and Abu Dhabi Commercial Bank shows improvement in managerial efficiency that is pure efficiency PECH value 1.043 and 1.003 respectively. Otherwise, like private sector banks show improvement in technology mostly.

Bank group wise analysis of Malmquist summary of bank means show the following results:

Bank Group	EFFCH	TECHCH	PECH	SECH	TFPCH
Public Sector	0.999615	1.000231	0.999731	0.999731	0.999692
Private Sector	0.98865	1.01235	1.0022	0.9866	1.00115
Foreign	0.9943	1.02925	0.9988	0.99535	1.02385

This group-wise means shows that on an average private sector banks improved a bit in terms of PECH that is managerial efficiency. Otherwise, more than one TECHCH signify rapid improvement in banking technology in this study period contributed to improvement in total factor productivity change (TFPCH).

All Malmquist index averages are geometric means.

effch < 1 =32=48.5% techch<1=32 =48.5% pech<1=17=25.7% sech <1=4=57% tfpch<1=35=53%

effch >1 =22=33.3% techch>1=31 =47% pech>1=18=27.3% sech >1=19=28.8% tfpch>1=31=47%

effch = 1 =12=18.2% techch=1=3 =4.5% pech=1=31=47% sech =1=12=18.2% tfpch=1=0=0%

The above table shows that the total factor productivity of commercial banks recorded an improvement by 0.6% and the technological change recorded an improvement by 0.6% and the technological change recorded an improvement by 1.2%. There is deterioration in both the change in technical efficiency and change in scale efficiency by the same amount by 0.6% but there is no change in pure technical efficiency change.

The table indicates that 48.5% of commercial banks recorded deterioration in efficiency changes while 33.3% of commercial banks indicated improvement in efficiency change and 18.2% of commercial banks recorded no improvement in efficiency change. In case of technological progress, 48.5% of commercial banks recorded deterioration in technical change, 47% of commercial banks recorded improvement in technological change and only 4.5% commercial banks did not show any change in technological progress. With regard to pure efficiency change of commercial banks, 25.7% shows deterioration, 27% shows improvement and 47% shows no change.

Among the selected commercial banks in India, the JP Morgan Chase Bank N.A. bank recorded the highest improvement in total factor productivity change by 16.5% during the study period. The only component of such total factor productivity improvement was change in the technological efficiency by 16.5%, since change in efficiency remains the same.

The bank Krung Thai Public limited Company Bank obtained the second largest improvement in total factor productivity during the study period. It is observed that its increase of 16.4% in total factor productivity is predominantly due to technological change, which incurred an increase of 10.1%. However, the component of efficiency change did not suffer deterioration, but an improvement of 5.8%. The change in efficiency occurred mainly due to improvement in pure efficiency by 4.3% while the change in scale efficiency recorded an increase of 1.4% of input usage relative to the best practice bank. That is, banks on average could have produced the same amount of output with 0.06% fewer input resources. There is relatively less waste of valuable resources in the Indian banking industry over the study period. The decomposition of overall technical efficiency into pure technical efficiency and scale efficiency shows that the average value of pure technical efficiency and scale efficiency are 0.994 and

1.000 respectively. This suggests that the overall technical inefficiency was due to pure technical inefficiency which can be attributed to managerial errors such as selecting incorrect input combinations.

From the table, we see that the commercial banks of India exhibit a mean overall efficiency score of 0.994, signifying a high level of efficiency. This suggests that banks in India wasted 0.06% of inputs.

Conclusion:

Using output-oriented DEA based Malmquist productivity index, we have assessed the changes in financial performance of the commercial banks of India eight years after global financial crisis in 2007-08 based on their total productivity. The analysis finds that there was a progress in performance of commercial banks of India during the study period. However, the improvement in the financial performance of different banks was unbalanced, because some of them were declining in terms of the total factor productivity. Moreover, decomposition of the DEA based Malmquist Index shows that the bulk of the improvement in total factor productivity of commercial banks in India has been attained through the rapid technological improvement in banking sector which is partially offset through a reduction in the technical efficiency change. So, from the study, it can be said that as far as the Indian banking industry is concerned, although, the banks in India are not as technologically advanced as their counterparts in the developed world; they are following the majority of international trends in the IT domain. To conclude, we can say that, the banking industry in India is rapidly progressing with increased customer base and due to newly improved and innovative facilities offered by the technology and should have to focus on improving managerial efficiency of the banking sector.

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Financial Reforms of the Pharmaceutical Sector: A Present Indian Scenario

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Abstract

The study on financial reforms of the pharmaceutical sector, but in this paper discussed only the dividend related issue and reforms, on Impact of Dividend Payout on Firm's Financial Performance, on pharmaceutical Sector in India. And the objectives of this study are investigate the relationship between dividend pay-out (net profit) and investigate the relationship between dividend pay-out (cash profit) and company's performance. In this two model used, in the first model the predicted or depend variable is return on assets and predictor or in depend and variable. Constant part is 125.923 in the whole model and x_1 represent the dividend pay-out on the net profit is positively influence to the ROA. On the other hand, x_2 means the dividend pay-out on cash profit is not influence to the ROA. And in second model the predicted or depend variable is net profit margin and predictor or in depend and variable. Constant part is 18.82 in the whole model and x_1 represent the dividend pay-out on the net profit is not influence to the NPM. On the other hand, x_2 means the dividend pay-out cash profit is positively influence to the NPM.

1. Introduction

Dividend policy is a controversial factor for the outsider and decision maker of the company. The lot of academician had been proved that the determinants of the dividend must be affected on the firm performance. In initially Modigliani and Miller thought about two empirical schools of thought on the dividend policy. Firstly they conclude with the help of few experiments, the dividend policy had irrelevance to the firm's performance. On the other hand, the second school of thought had been express that dividend policy had a relevant to the firm's performance, it may positive or negative.

The amount of profit of a company made available for the distribution among its share holder is called dividend. The dividend may be fixed annual percentage of paid-up capital as in the case of preference shares or it may vary according to the prosperity of the company as in the case of ordinary share. The decision for distributing or paying a dividend is taken in the meeting of Board of Director and is

conformed generally by the annual general meeting of the shareholder. The economic soundness company is generally judge by the amount of dividend declared paid by it by the shareholder. Dividends are cash payments made to stockholders. Decisions about when and how much of earnings should be paid as dividends are part of the firm's dividend policy. Earnings that are paid out as dividends cannot be used by the firm to invest in projects with positive net present values—that is, to increase the value of the firm.

Researchers argue whether there exists an optimal dividend policy. Some academicians argue that a firm's dividend policy does not affect the value of a firm (dividend irrelevance theory); while other argues that the dividend policy is an important factor in the determination of a firm's value (dividend relevance theory).

Dividend is a part of distribution among the shareholder. The basic question before the Board of Director is how much profit should be divided among the share holder the future expansion and distribution of dividend are desirable but two aims are conflict. Hence, allocation of dividend pay - out on the base of net profit and on the base on cash profit.

This study on the financial performance of a company based on the dividend payout, the common thing we know that the company paid dividend two ways: a. dividend payout on the based on net profit and b. dividend payout in the based on cash profit. Dividend pay-out is a controversial point between net profit and cash profit from the point of view of the outsider and decision maker of the company. There are conflicting theories of dividend theories regarding the impact of dividend pay-out decision on the value on the firm with financial performance.

2. Research Questions

Dividend distribution is an important part of the firm; few researchers said that dividend distribution had an effect on firm's performance. On the other hand few researchers said that dividend distribution had not any effect on firm's performance. In this study the question is in case of pharmaceutical company in India, the distributions of dividend have any effect on firm's performance. The purpose of this study only to investigate the relationship of distribution of dividend and firm's performance of pharmaceutical company based on listed to the Bombay Stock Exchange (India).

3. Literature Review with Past Studies on Relationship

1. Mehdi Moradi,Mahdi Salehi & Shahnaz Honarmand (2010) studied on the factor affecting dividend policy and empirical evidence on IRAN. They fitted a model and examine the effects of dividends in relation to profitability, size, and beta rate, the rate of retained earnings, P/E, and debt ratio. They consider the period 2008 from 2008 and sample selected all companies listed in Tehran stock exchange. They showed that relationship between dividend and profitability, reverse relationship of these factors with P/E, beta rate and debt

ratio and furthermore, the results of the study show that there is no meaningful relationship between the dividend policy and a company's size and rate of retained earnings.

2. Pandy (2001) scrutinize the dividend payment behavior in Malaysia. He used sample 248 listed corporations in and time period from 1993 to 2000, included building industries, consumer products, industrial products, agricultural products, real estate, and service enterprises. They found that dividend payment ratios among different industries are different in Malaysia. His finding supported that profitability, firms' size and investment opportunities affect dividend payments, also suggested that larger and more profitable companies pay higher dividends.

3. Arnort and Ashess (2002) found out that relationship between the growth in dividends and revenues. They conclude why the dividend payment ratio decreased but price/earnings per share ratio continued to increase from 1995.The study reported that lower dividend payment ratio and higher price earnings per share ratio (EPS) showed the future growth in revenues.

4. Velnampy.T(2013) studied on the corporate governance and firm performance and used samples of 28 manufacturing companies and times periods of 2007 – 2011 state that determinants of business ethic not correlated to the performance measures of the company. Regression model signify that corporate governance don't affect companies' performance (ROE and ROA).

5. Velnampy.T and Nimalathasan, B. (2009) studied on the relation between organizational growth and profitability of Commercial bank in Sri Lanka the period of the studies10 years from 1997 to 2006. They found that, sales are positively associated with profitability ratios except operating profit, return on equity and number of depositors are negatively correlated to the profitability ratios except operating profit and return on equity. Likewise, number of advances is also negatively correlated to the return on average shareholders' funds.

6. Amidu (2007) studied on the dividend policy affects firm performance which is measured by the return on assets (ROA). The studied showed that the significant relationship between return on assets (ROA), return on equity (ROE), growth in sales and dividend policy. The results showed that a statistically significant relationship between profitability and dividend payout ratio.

7. Howatt et al. (2009) concluded that positive fluctuated in dividends are associated with positive future changes in earnings per share.

4. Objectives of Study

The objectives of studies are:

- To investigate the relationship between dividend pay-out (net profit) and company's performance

- To investigate the relationship between dividend pay-out (cash profit) and company's performance.
- To examine which one is more effective between cash and net profit dividend for company's performance.

5. Significance of Study

In India few studies have analyzed the relationship between the company's performance and dividend pay-out. Net earnings are divided into two parts – on the based on cash profit and on the base on net profit. The retained earnings of the business may be reinvested and treated as a source of long-term funds. The dividend should be distributed to the shareholders in order to maximize their wealth as they have invested their money in the expectation of being made better off financially. Therefore, the present study mainly analyses how far the level of dividend payout affects the shareholders' wealth, particularly in pharmaceutical company in India.

6. Research Methodology

- Dependent Variables

  In this study for the objective of investigate the financial performance affected by the dividend pay-out. So, selected two financial measurement tools first is a return on assets (ROA) and second tools is a net profit margin (NPM).

- Independent Variables

  For the purpose of simplifying interpretation in our study used the log value of each observation 1. Log of Dividend payout on net profit 2. Log of Dividend payout on cash profit 3. Log difference of Dividend payout on net profit .4 Log difference of dividend payout on cash profit.

- Models for this Study

  MODEL-1

  $ROA_{it} = \alpha+\beta_1 x_1+\beta_2 x_2+\beta_3 x_3+\beta_4 x_4+\varepsilon_i$ ---------- (1)

  ROA= return of assets

  α= constant of the model

  β=coefficient of independent variable

  x_1= Log of Dividend payout on net profit (l_DPONP)

  x_2= Log of Dividend payout on cash profit (l_DPOCP)

  x_3= log difference of Dividend payout on net profit (ld_DPONP)

  x_4= Log difference of dividend payout on cash profit (ld_DPOCP)

  t= time 14 years i=no. of independent variable

MODEL-2

$NPM_{it} = \alpha+\beta_1x_1+\beta_2x_2+\beta_3x_3+\beta_4x_4+\varepsilon_i$ ----------(2)

NPM= net profit margin

α= constant of the model

β=coefficient of independent variable

x_1= Log of Dividend payout on net profit (l_DPONP)

x_2= Log of Dividend payout on cash profit (l_DPOCP)

x_3= log difference of Dividend payout on net profit (ld_DPONP)

x_4= Log difference of dividend payout on cash profit (ld_DPOCP)

t= time 14 years i=no. of independent variable

- Sample and Data Collection and Period of the Study

The study used only secondary data which are collected from BSE in moneycontral web side. Analytical method is used for interpreting the data. The data collected from this source have been compiled and used with due care as per the requirements of the study

Originally the sample for this study has been planned to choose from the list of companies listed in Bombay Stock Exchange (NSE). Since the number of companies listed in the BSE has been chosen 5 companies according to the highest total assets from 172 listed companies in BSE.

The data used for the analysis are relating to the selected pharmaceutical Companies for the period of Ten years (2004-2017).

- Hypothesis Development

H01: There is no relationship between dividend pay-out (cash profit) and firm's financial performance (NPM).

H02: There is no relationship between dividend pay-out (net profit) and firm's financial performance (ROA).

7. Results and Findings

7.1. Summery Statistic:

Table-1: Summary Statistics, using the observations 1:01 - 5:14
(Missing values were skipped)

Variable	Mean	Median	Minimum	Maximum
NPM	38.426	16.820	-99.990	1583.5
ROA	12.032	12.270	-20.440	98.100
DPONP	9.6707	18.340	-688.60	231.02

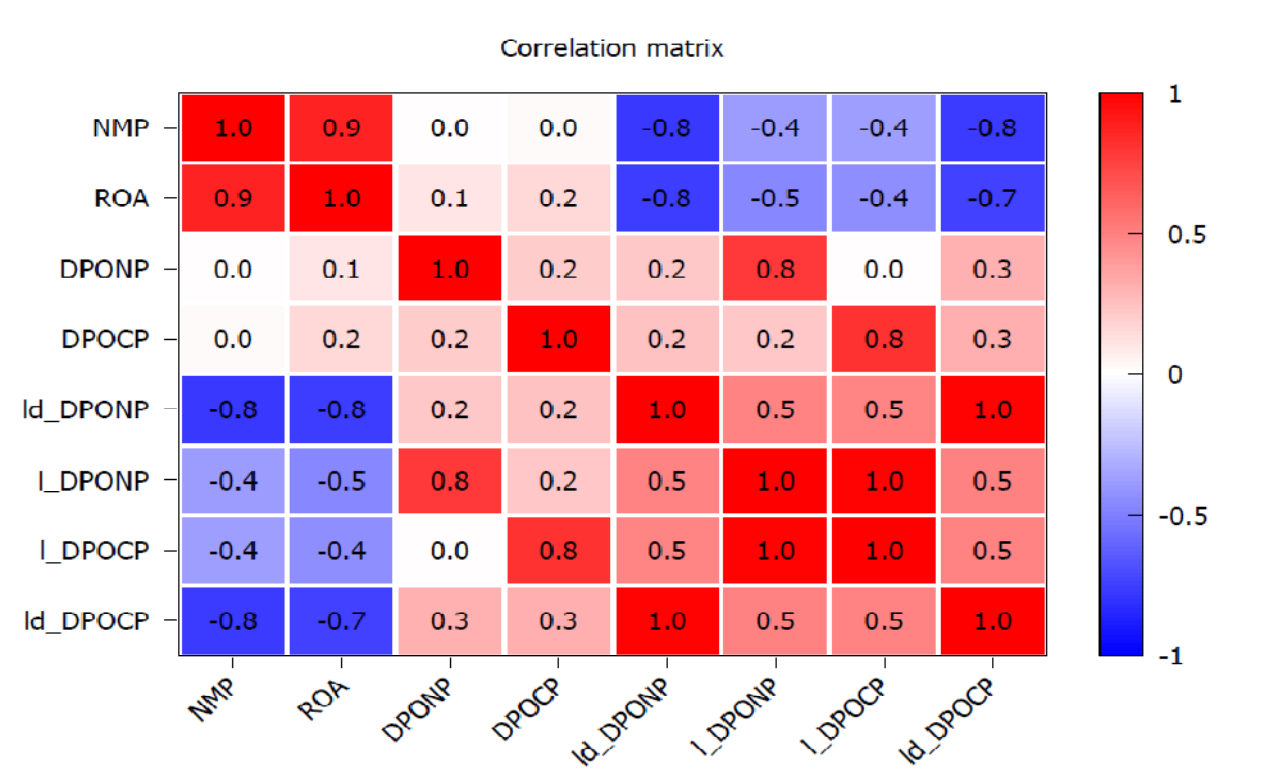
DPOCP	9.4819	14.600	-308.38	145.81
ld_DPONP	0.024629	0.089203	-5.0042	2.7989
l_DPONP	2.8925	2.9922	0.43825	5.4425
l_DPOCP	2.7148	2.8006	0.43178	4.9823
ld_DPOCP	0.0057683	0.093989	-4.5505	2.6161
Variable	Std. Dev.	C.V.	Skewness	Ex. kurtosis
NMP	188.32	4.9008	8.0533	63.629
ROA	12.696	1.0552	4.2135	28.872
DPONP	95.997	9.9266	-5.6022	39.158
DPOCP	52.887	5.5777	-3.7931	20.514
ld_DPONP	0.86848	35.263	-2.9320	19.267
l_DPONP	0.82187	0.28414	0.054692	1.8902
l_DPOCP	0.76466	0.28167	-0.077376	1.5187
ld_DPOCP	0.80629	139.78	-2.7390	17.914

Variable	Missing obs.
NMP	0
ROA	0
DPONP	0
DPOCP	0
ld_DPONP	12
l_DPONP	6
l_DPOCP	6
ld_DPOCP	13

Above table showed the summery statistic of our study where the mean value of the variable, such as Net Profit Margin is 38.426 and median value is 16.820 and also showed the minimum value, maximum, stander deviation, coefficient of variance, skewness and kurtosis values are: 16.820,-99.990, 1583.5, 188.32, 4.9008, 8.0533 and 63.629. And the other hand showed the missing value of the each observation. In this study used five company and period is fourteen years, summery statistic showed that the mean value and stander deviation is a big gap and coefficient of variance is small, so in the data set the values of observation clearly fulfilled the objective of this study. In another conclusion while convert the log and log difference of the observation values automatically negative value are omitted in our calculation so missing value are showed in this study.

Table-2

a. Correlation Matrix



In the table-2 showed the correlation between the variable which consider in this study. In general this study consider the different tolls of financial statement of the company such as; Net Profit Margin (NPM) and Return On Assets (ROA) those variable measure the financial performance of the company, on the other side Dividend Pay- out Ratio on the base of net profit (DPONP) and Dividend pay-out ratio on the based on cash profit (DPOCP) and other four variables are constructed for the study with the help of mathematical tolls of log and log difference. With the help of econometrical software formed a correlation matrix which clearly presents the relationship among the variable between measurement scales of +1 to -1. In table -2 the relation of association between the ROA and DPOC is 0.2 between the +1 to -1.

b. **Model 1: Table-3**

Pooled OLS, using 57 observations
Included 5 cross-sectional units (57*5=285 data)
Time-series length: minimum 9, maximum 13
Dependent variable: NPM

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	125.923	89.4438	1.408	0.1651	
l_DPONP	64.0223	215.861	0.2966	0.7680	

l_DPOCP	−95.8616	219.994	−0.4357	0.6648	
ld_DPONP	−388.111	259.834	−1.494	0.1413	
ld_DPOCP	231.219	277.608	0.8329	0.4087	

Mean dependent var	47.64965	S.D. dependent var	207.3005
Sum squared resid	902283.6	S.E. of regression	131.7255
R-squared	0.625066	Adjusted R-squared	0.596225
F(4, 52)	21.67281	P-value(F)	1.44-10
Log-likelihood	−356.4640	Akaike criterion	722.9281
Schwarz criterion	733.1433	Hannan-Quinn	726.8981
Rho	0.293338	Durbin-Watson	0.914321

In the table-3, used the pool ordinary lest square model for the purpose of knowing the impact and relation of association between the respondent variable and predicted variable. The regression model is a Respondent = predicted + error, in his study the respondent variable is net profit margin(NPM) of the company and predicted variable are log and log difference of DPONP and DPOCP. On the other hand dependent variable NPM and independent variables is log and log difference of DPONP and DPOCP. In this model R-squared vale is 0.625 it's a more than the 0.5 means the statistically the model is good explain the regressed and repressor. The table-3 gives some descriptive statistics. The R^2 (the coefficient of determinants) vale =0.625 means about 62% of the variation in NPM is explained by the variation of the explanatory variable. It might be seen that this R^2 vales is rather high, but it keep it mind that we have 285 data observation with varying values of the regressand and regressor. This part also gives the adjusted R^2 value, which are high then the unadjusted R^2 value. Since, we are not comparing our NPM model, the adjusted R^2 is not of particular importance.

In this study the hypothesis that all that all the coefficient in the NPM regression are simultaneously equal near the zero. In the present study this F vale (21.67281) this null hypothesis can be rejected because P value (1.44-10) is very low. In our study suggest that all explanatory variables have an impact on dependent variable. so, first hypothesis is accepted according to the statistic calculation.

The table-3 also list several statistics, such as Akaike criteria, Schwarz criterion and Hannan-Quinn (722.9281, 733.1433 and 726.8981)which are choose among the competing models, Durbin-Watson statistic (0.914321) which is measure of the correlation in the error terms, and the Log-likelihood statistic (−356.4640), which is useful if we used Maximum Likelihood method.

The table -3, shows that the variables log of Dividend payout on net profit, l_DPONP its coefficient value about(64.0), the stander error of the coefficients value (215.861), the t statistic of each coefficient value

(0.2966), which is simply the ratio of the estimated coefficient divided by the stander error and the p value (0.7680) or exact the level of significant of t statistic. For the coefficient, the null hypothesis is that the population value of the coefficient is bigger than the zero. That is, the particular regressor has influence on the regressand, after holding the other regressor value constand.

On the other hand , The table -3, shows that the variables log of Dividend payout on cash profit, l_DPONP its coefficient value about(−95.8616), the stander error of the coefficients value (219.994), the t statistic of each coefficient value (−0.4357), which is simply the ratio of the estimated coefficient divided by the stander error and the p value (0.6648) or exact the level of significant of t statistic. For the coefficient, the null hypothesis is that the population value of the coefficient is bigger than the zero. That is, the particular regressor has influence on the regressand, after holding the other regressor value constant.

7.4. Model 2: Table-4

Pooled OLS, using 57 observations
Included 5 cross-sectional units (57*5=285 data)
Time-series length: minimum 9, maximum 13
Dependent variable: ROA

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	18.8293	5.51216	3.416	0.0012	***
l_DPONP	−10.6289	13.3029	−0.7990	0.4279	
l_DPOCP	9.67610	13.5576	0.7137	0.4786	
ld_DPONP	−10.7293	16.0128	−0.6700	0.5058	
ld_DPOCP	0.836421	17.1082	0.04889	0.9612	

Mean dependent var	14.39930		S.D. dependent var	12.20970
Sum squared resid	3426.783		S.E. of regression	8.117861
R-squared	0.589523		Adjusted R-squared	0.557948
F(4, 52)	18.67050		P-value(F)	1.44e-09
Log-likelihood	−197.6248		Akaike criterion	405.2496
Schwarz criterion	415.4648		Hannan-Quinn	409.2196
Rho	0.423654		Durbin-Watson	0.813369

*** means of 10% level of significant

In the table-4, used the pool ordinary lest square model for the purpose of knowing the impact and relation of association between the respondent variable and predicted variable. The regression model is a Respondent = predicted + error, in his study the respondent variable is Return on Assets (ROA) of the

company and predicted variable are log and log difference of DPONP and DPOCP. On the other hand dependent variable ROA and independent variables is log and log difference of DPONP and DPOCP. In this model R-squared vale is 0.59 it's a more than the 0.5 means the statistically the model is good explain the regressed and repressor. The table-3 gives some descriptive statistics. The R^2 (the coefficient of determinants) vale =0.59 means about 59% of the variation in ROA is explained by the variation of the explanatory variable. It might be seen that this R^2 vales is rather high, but it keep it mind that we have 285 data observation with varying values of the regressand and repressor. This part also gives the adjusted R^2 value, which are high then the unadjusted R^2 value. Since, we are not comparing our NPM model, the adjusted R^2 is not of particular importance.

In this study the hypothesis that all that all the coefficient in the NPM regression are simultaneously equal near the zero. In the present study this F vale (18.67050) this null hypothesis can be rejected because P value (1.44-9) is very low. In our study suggest that all explanatory variables have an impact on dependent variable. So, first hypothesis is accepted according to the statistic calculation.

The table-4 also list several statistics, such as Akaike criteria, Schwarz criterion and Hannan-Quinn (405.2496, 415.4648 and409.2196)which are choose among the competing models, Durbin-Watson statistic (0.813369) which is measure of the correlation in the error terms, and the Log-likelihood statistic (−197.6248), which is useful if we used Maximum Likelihood method.

The table -4, shows that the variables log of Dividend payout on net profit, l_DPONP its coefficient value about(-10.62), the stander error of the coefficients value (13.30), the t statistic of each coefficient value (-0.7990), which is simply the ratio of the estimated coefficient divided by the stander error and the p value (0.4279) or exact the level of significant of t statistic. For the coefficient, the null hypothesis is that the population value of the coefficient is less than the zero. That is, the particular regressor has influence on the regressand, after holding the other regressor value constant.

On the other hand, The table -4, shows that the variables log of Dividend payout on cash profit, l_DPONP its coefficient value about(9.67), the stander error of the coefficients value (13.55), the t statistic of each coefficient value (.71), which is simply the ratio of the estimated coefficient divided by the stander error and the p value (0.48) or exact the level of significant of t statistic. For the coefficient, the null hypothesis is that the population value of the coefficient is bigger than the zero. That is, the particular regressor has influence on the regressand, after holding the other regressor value constant.

7.4.1 Diagnostic test of pool model-2:

	Coefficient	Std. error	t-ratio	p-value
Const	43.6422	6.19572	7.044	6.30e-09 ***
l_DPONP	-40.4282	13.8802	−2.913	0.0054 ***

ld_DPONP	4.25109	14.5753	0.2917	0.7718
l_DPOCP	31.8989	14.1117	2.260	0.0284 **
ld_DPOCP	−10.7859	15.5690	−0.6928	0.4918

using n = 5 cross-sectional units, Fixed effects estimator allows for differing intercepts by cross-sectional unit, Residual variance: 1874.14/(57 - 9) = 39.0445, Joint significance of differing group means F(4, 48) = 9.9415 with p-value 6.08925e-006 (A low p-value counts against the null hypothesis that the pooled OLS model is adequate, in favor of the fixed effects alternative.) Omitting group means regression: insufficient degrees of freedom.

7.4.2. Test of overall significance of the regression model-2

	Sum of squares	df	Mean square
Model	4921.52	4	1230.38
Residual	3426.78	52	65.8997
Total	8348.3	56	149.077

R^2 = 4921.52 / 8348.3 = 0.589523

F (4, 52) = 1230.38 / 65.8997 = 18.6705 [p-value 1.44-009]

8. Conclusion

The study on financial reforms of the pharmaceutical sector, but in this paper discussed only the dividend related issue and reforms, on Impact of Dividend Payout on Firm's Financial Performance, on pharmaceutical Sector in India. And the objectives of this study are investigate the relationship between dividend pay-out (net profit) and investigate the relationship between dividend pay-out (cash profit) and company's performance. To examine which one is more effective between cash and net profit dividend for company's performance. In the model-1, represent the first objective of the study;

$ROA_{it}= (125.923)+(64.0223)x_1+(-95.8616)x_2+(-388.111)x3+(231.219)x_4+\varepsilon_i$ ---------- (1)

In this model the predicted or depend variable is return on assets and predictor or in depend and variable. Constant part is 125.923 in the whole model and x_1 represent the dividend pay-out on the net profit is positively influence to the ROA. On the other hand, x_2 means the dividend pay-out on cash profit is not influence to the ROA.

$NPM_{it}= (18.82)+(-10.6289)x_1+(9.67610)x_2+(-10.7293)x3+(0.8364)x_4+\varepsilon_i$ ---------- (2)

above the model the predicted or depend variable is net profit margin and predictor or in depend and variable. Constant part is 18.82 in the whole model and x_1 represent the dividend pay-out on the net profit is not influence to the NPM. On the other hand, x_2 means the dividend pay-out cash profit is positively influence to the NPM.

Finally, we conclude that in our study we took two financial measurement tools are; ROA and ROE and predictor variable are; dividend pay-out on the net profit and dividend pay-out on cash profit. Showed that one is positive and another is negative impact on company's performance. According to the study, the statistic statement that the dividend pay- out have a significant impact on firm *financial* performance.

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Impact of Financial Leverage on Profitability-An Empirical Analysis on FMCG Companies in India

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Abstract

Financial leverage is the degree to which a company uses fixed-income securities such as debt and preferred equity. A high degree of financial leverage means high interest payments, which negatively affect the company's bottom-line earnings per share. However, if the company can purchase assets that are expected to earn more than the interest on the debt, earnings in excess of the interest expense on the new debt will increase the earnings of the corporation's common stockholders. In essence, corporate management utilizes financial leverage primarily to enhance the company's earnings. Thus, an endeavour has been made in this article to analyze the impact of leverage on profitability of Indian Companies so as to show the relationship between leverage and profitability. The study encompasses 4 FMCG companies that are listed in NSE and are constituents of NSE FMCG. Thereafter, linear regression is run taking two parameters into consideration viz. Total Debt/Total Assets and Return on Assets. The regression analysis results show that there exists a significant positive relationship between leverage and profitability. As indicated in the theory that increase in the debt increases the earning capacity of the business holds good as far as the sample of the study is concerned. Thus, accordingly it can be stated that highly leveraged firms tend to have higher profitability and vice versa.

Keywords: Leverage, Profitability, FMCG, Return on Assets, Total Debt to Total Assets
JEL Classification Code: M41

1. Introduction

Financial leverage is the degree to which a company uses fixed-income securities such as debt and preferred equity. If the company uses more debt financing then the financial leverage of such a company is higher. A high degree of financial leverage means high interest payments, which negatively affect the company's bottom-line earnings per share. However, if the company can purchase assets that are expected to earn more than the interest on the debt, earnings in excess of the interest expense on the new debt will increase the earnings of the corporation's common stockholders. It is the balance between the cost of

financing operations with equity or debt and the income earned from the operations. The increase in earnings indicates that the corporation was successful in trading on equity. Accordingly, a company should keep its optimal capital structure in mind when making financing decisions to ensure that an increase in debt and preferred equity, in turn, increases the value of the company.

When companies use debt to provide additional capital for their business operations, equity owners get to keep any extra profits generated by the debt capital, after any interest payments. Given the same amount of equity investments, equity investors have a higher return on equity because of the additional profits provided by the debt capital. As long as using debt does not threaten the financial soundness of a company in times of difficulties, equity owners welcome certain debt uses to help enhance their investment returns. Using debt helps lower a company's taxes because of allowable interest deductions. Tax rules permit interest payments as expense deductions against revenues to arrive at taxable income. The lower the taxable income, the less will be the tax to be paid by the company. On the other hand, dividends paid to equity shareholders are not tax-deductible and considered after-tax income computation. Therefore, tax savings help to further reduce a company's debt financing cost, which is an advantage that equity financing lacks. In other words, funding a company through debt, rather than selling company stock to attract capital, avoids diluting the stockholders' ownership percentage in the company.

In essence, corporate management utilizes financial leverage primarily to increase the company's earnings capacity. However, these advantages are also coupled with the possibility of increased earnings variability and the potential for an increase in the risk of financial distress, perhaps even bankruptcy. With this in mind, the management of a company should take into account the business risk of the company, the company's tax position, the financial flexibility of the company's capital structure, and the company's degree of managerial aggressiveness when determining the optimal capital structure.

2. Literature Review

Muzzammil Hussain, Hassan Shahid and Muhammad Akmal (2016) in their study concentrated on the effect of profitability and financial leverage on capital structure in Pakistan textile firms. This study is based on selected 10 listed KSE textile firms relating to the period 2009 to 2014. A regression model was fitted to the data and correlation between the financial leverage and profitability on capital structure was determined. According to their findings, there is a negative relationship between the capital structure and profitability and positive relationship between capital structure and financial leverage.

Ishuza Witness Edson (2015) investigated the relationship between the financial leverage and commercial bank's profitability in Tanzania. Secondary data from audited financial statements of listed commercial banks at Dar es Salaam Stock Exchange (DSE) since 2007 to 2013 was used. Descriptive statistics was

used as a tool to determine the bank's profitability and debt statuses while the relationship between dependent variables measured by Return on Average Asset (ROA) and Return on Average Equity (ROE) with independent variable measured by Debt Ratio (DR) was determined by regression analysis. The findings are that the public commercial banks in Tanzania is an emerging sector in the economy which is making good profit for their stockholders but with poor performance in utilization of available resources. It also has been found that the profit made to stockholder is not in effect with the level of debt of the bank but the level of the debt decreases the performance measured by ROA and ROE. In other words, according to the study, financial leverage measured by debt ratio (DR) has no impact on the profitability measured by ROE and ROA.

Lydiah Kabare Kunga (2015) in his study sought to establish the relationship between financial leverage and profitability of firms listed at the Nairobi Securities Exchange. To achieve this objective a descriptive research design was used. The study considered firms that have been listed on the Nairobi Securities Exchange for the past five years and utilized secondary data obtained from the period 2010-2015. Data was collected from 47 listed firms which represented a response rate of 73 percent. From the results obtained he concluded that financial leverage does not contribute to profitability of the firm. This is because when a firm borrows more from its creditors then the firm has to pay more amount of cost of debt to the creditor which is the interest rate. This leads to reduced net income for the firm and hence lower profitability.

Nawaz Ahmed, Atif Salman and Aamir Firoz Shamsi (2015) attempted to establish a stochastic relationship between financial leverage and profitability of cement sector operating in Pakistan. For this purpose 18 cement manufacturers out of 21 are incorporated in the study and six years annual data from 2005 to 2010 regarding financial leverage and profitability of the said firms were taken into consideration. The study finds that financial leverage has a statistically significant inverse impact on profitability at 99% confidence interval.

Joshua Abor (2005) investigated the relationship between capital structure and profitability of listed firms on the Ghana Stock Exchange (GSE) during a five□year period. The author used regression analysis in the estimation of functions relating to the return on equity (ROE) with measures of capital structure. The results reveal a significantly positive relation between the ratio of short□term debt to total assets and ROE. However, a negative relationship between the ratio of long□term debt to total assets and ROE was found. With regard to the relationship between total debt and return rates, the results show a significantly positive association between the ratio of total debt to total assets and return on equity.

Eunju Yoon and SooCheong Jang (2005) in his study presented an empirical insight into the relationship between return on equity (ROE), financial leverage and size of firms in the restaurant industry for the period 1998 to 2003 using OLS regressions. Research results suggest that at least during the test period, firm size had a more dominant effect on ROE of restaurant firms than debt usage. In other words, larger firms are earning significantly higher equity returns. Results also suggest that regardless of having lower financial leverage, smaller restaurant firms were significantly more risky than larger firms. As such, the dominance of size effect in the ROE-financial leverage relationship within the restaurant industry is better understood.

When the above articles are deeply studied and observed, it is apparent that there is a contradictory viewpoint in respect to the results of different researchers as far as the relationship of leverage and profitability is concerned. Theory suggests that use of debt, in turn, increases the profit available to the equity shareholders by way of the mechanism of trading on equity. The financial leverage/trading on equity increases the debt cost of the firm which ultimately reduces the tax expenses and thereby increases the profit. This, in turn, increases the profit available to the equity shareholders. Being highly leveraged means that there is a significant amount of debt in use. Theory suggests that while debts, used to generate revenue, can boost revenue and profit over time, however, unproductive or excessive debt can inhibit profitability. Thus, the burden of fixed amount of interest sometimes reduces the profitability. Thus, in case of some researches the data has shown negative relationship between leverage and profitability. In some studies again the data has shown no relationship between leverage and profitability. Thus, optimum usage of debt is important to keep a balance between profitability and interest cost. As per theory the ideal debt-equity ratio should be 2:1. This paper tries to analyse the leverage of certain selected Indian companies and ascertain their effect on the profitability of those companies. The basic motive behind this paper is to examine the theoretical approach towards leverage and thereafter determining how far the theory is being followed in practice on the basis of data available on some selected Indian companies. Thereby, understanding the optimum usage of leverage is very essential in enhancing the profit earning capacity of the company. Thus, this paper aims to fill the gap between theory and practice and conclude on the actual impact of leverage on the profit of a few Indian companies. Thus, an endeavour has been made in this article to analyze the impact of leverage on profitability of Indian Companies so as to show the relationship between leverage and profitability. The remainder of the paper is organized as follows. *Section 3* narrates the objectives of the present study. *Section 4* deals with sample selection and research methodology. The findings of the case study are discussed in *Section 5*. Finally, summary and conclusion is given in *Section 6*.

3. Objectives

Each organisation will have its own level of leverage or, in other words, debt-equity composition. The percentage of debt in the total capital raised in case of any company is one of the determinants which influence profit. It has been claimed by many finance researchers that financial leverage is the top most factor among the other factors that can affect the firm's profitability. It comprises the capital structure management concepts. The choice of making the capital structure of a company debt intensive or equity intensive that aids in the financing of the company assets, leads to the concept of capital structure formulation. It has been observed that most of the time managers of the company use some extent of debt and some extent of equity to finance their assets. Therefore right choice of the combination of debt and equity is very important for the capital structure of company. Theory has certain suggestions relating to such combination however, effort has been made to discern the debt-equity mix followed by the Indian companies and their impact on profit.

Thus, an attempt has been made in this paper to form an idea on the leverage of the sample companies. Accordingly, the trend of leverage ratios and profitability ratios of the sample companies would be considered and thereafter, the level of impact of leverage on profitability would be analyzed. For this purpose, this particular research primarily focussed on testing the following hypothesis:

H_0: There is no significant influence of leverage on profitability

H_1: There is significant influence of leverage on profitability

4. Sample Selection and Research Methodology

For the purpose of testing the above-mentioned hypothesis two variables have been taken to measure the parameters. For measuring profitability, Return on Assets (ROA) has been selected and for measuring leverage, Total Debt/Total Assets has been considered. The null hypothesis has been examined with the help of the following linear regression equation-

$$\mathbf{Y=\beta_0 + \beta_1 X + \epsilon}$$

where,

Y=Return on Assets (Dependent Variable)

X=Total Debt/Total Assets (Explanatory Variable)

β_0=Intercept (the value of Y when the value of X is zero)

β_1=Slope of the regression line (measures the rate of change of Y as X changes)

ϵ=Random Error Component

Simple linear regression analysis technique has been used to test the developed hypothesis. The data required for testing the above hypothesis has been collected from secondary sources (*CMIE Prowess*

database as has been mentioned in the bibliography). The case analysis has been conducted taking into consideration a ten year period commencing from 1st April 2007 to 31st March 2017. The study encompasses 4 FMCG companies that are listed in NSE and are constituents of NSE FMCG. The first 4 companies are selected on the basis of top constituents by weightage as indicated by NSE in its official website as on 28th March, 2018 [*Source: http://www.nseindia.com/content/indices/ind_nifty_FMCG.pdf*]. The reason behind considering weightage is that those are the companies which are the top performers. Accordingly, such companies report high profit and profit is a key factor that is often tracked by market experts to find out in which direction a company is moving. Rise in profit has been captured by computing the ratio of Return on Assets (ROA) of a company. This ratio is considered to be an indicator of how effectively a company is using its assets to generate earnings before contractual obligations must be paid. The total debt to assets ratio of the sample companies has been analyzed to find out the level of impact that leverage has on such profitability (ROA). Accordingly, the leverage position of all the companies are studied and related with their profit position so that the association between leverage and profitability can be evaluated. The 4 companies of the sample include *ITC Ltd., Hindustan Unilever Ltd., Godrej Consumer Products Ltd. and Dabur India Ltd.* This would enable a proper analysis to be made on the influence of leverage on the profit of the sample companies within the above-stated time period.

5. Findings

The objectives and the research methodology ultimately lead us to the summarized information that is indispensable in order to deduce the ultimate conclusion. The data of the sample companies have been processed through *SPSS (Version 16)*. The following table lists the summary observation of the results of the regression equation.

Table-1 Model Summary

R	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
.810	.656	.647	.0313911

Source: Author's Calculation

From the above table it is apparent that R Square is 0.656 which signifies that 65.6% of the variability of ROA (dependent variable) has been explained by the total debt to total assets ratio (explanatory variable). In other words, 65.6% of the data points fall within the line of regression equation. Standard Error is 3.14% which is another statistic of goodness-of-fit of the regression model. It measures the degree of deviation of sample mean from the actual mean of the population. The lower it is, the better is the fitness of the regression model. Thus, the estimate of standard error in the above table indicates lower variability of prediction in the regression.

Table-2 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.071	1	.071	72.522	.000[a]
	Residual	.037	38	.001		
	Total	.109	39			

Source: Author's Calculation

ANOVA tests whether the regression model is valid or not. The F Value or F ratio is the test statistic used to decide whether the model as a whole has statistically significant predictive capability. As can be seen from the *table-2* the F-value is 72.522 and the $p < .05$. In simple terms, there is a significant relationship between profitability and leverage and that the regression model is statistically significant.

Table-3 Coefficients

Model	Un-standardized		Standardized	t	Sig.
	B	Std. Error	Beta		
(Constant)	.108	.014		7.905	.000
Total Debt/	.233	.027	.810	8.516	.000

Source: Author's Calculation

The above table apparently indicates the regression coefficients which represent the mean change in the response variable for one unit of change in the predictor variable while holding other predictors in the model constant. The un-standardized beta values (i.e. the beta values computed on the basis of the original data points) are taken into consideration. As the response and explanatory variables are expressed in similar units (ratio) so un-standardized beta coefficient is considered and the regression equation is re-written as-

$$Y=.108+.233X$$

The above equation indicates that if 'X' increases by one unit then 'Y' would increase by 0.233. Thus, there is a positive relationship between X and Y i.e. profitability and leverage. Standard error depicts the distance between estimated and actual values. The standard error of the estimate is a measure of the accuracy of predictions and as per the calculated figures standard error is much lower. The t-test statistics measures the statistical significance of the regression coefficient. As laid down in the table $p < .05$ which implies that the coefficient value is statistically significant and the predictor variable is making significant contribution in the model. Thus, from the above-mentioned tabular information it can be stated that the null hypothesis is rejected.

6. Summary and Conclusion

The regression analysis results show that there exists a significant positive relationship between leverage and profitability. As indicated in the theory that increase in the debt increases the earning capacity of the business holds good as far as the sample of the study is concerned. Thus, accordingly it can be stated that highly leveraged firms tend to have higher profitability and vice versa. The findings are consistent with the previous study conducted by *Joshua Abor (2005)* where he conducted his study on listed firms on the Ghana Stock Exchange during a 5 year period. In most of the remaining studies in the literature review a negative relationship has emerged between leverage and profitability. The probable reason behind it can be the cost of debt. Thus, if the cost of debt is greater than the cost of equity then the leverage effect will not be felt on the profit position. Thus, the businesses should take into account the cost of both debt and equity and thereafter, consider the impact of leverage on the business as a whole.

The study encompassed 4 FMCG companies for a period of 10 years. The study would have been more comprehensive if the sample size could have been increased. Furthermore, in this respect it may be mentioned that the study period also could have been expanded. A sample comprising of different companies from different sectors would make the analysis more wide-ranging. Only Return on Assets and Total Debt to Total Assets ratios were taken as parameters. Other ratios relating to leverage and profitability can increase the impact of the study.

Thus, it may be specified that debt has a positive impact on the bottom line of the firm. However, the businesses should maintain a balance in application of debt component in the capital structure so that the beneficial effect of leverage can be perceived in the profit figures.

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E-Accounting of Finances of the Gram Panchayats in West Bengal - A Case Study Based on Gram Panchayats in Burdwan District

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Abstract

The accounting system of the Gram Panchayats of West Bengal has been change substantially from traditional system to electronic platform. The Gram Panchayats in West Bengal are practicing uniform and harmonised accounting system through Gram Panchayats Management System (GPMS) software. Most of the Gram Panchayats have converted their accounting system from manual to computer based accounting system. All the Gram Panchayats are using PGMS software for recording their day to day transactions. It is compulsory to record all the transactions and upload result in the respective webpage so as to it available to the general public.

GPMS (Gram Panchayat Management System) is a part of the e-Governance initiatives of the Panchayats & Rural Development Department of the Government of West Bengal. It is a program designed in-house by the Computerization Cell of the Department. The prime focus of this software is to standardize the accounting system of the PRIs and to make account keeping easy, transparent and comfortable to the users. Double Entry Cash Basis accounting system is followed in the software.

All the Districts in West Bengal now have considerable numbers of Gram Panchayats using the software on a regular basis. As a direct consequence, improvements, both qualitative and quantitative, in Gram Panchayat Accounting are now clearly visible. It is also open for public in general, especially for people who are interested in electronic Governance.

In this study an attempt has been made to assess to practical aspect of Gram Panchayat Management System software in the Burdwan District in West Bengal.

Keywords: GPMS, Panchayat, Burdwan, E-Accounting

I. Introduction

India is a village based federal country with the central, state and local governments. Gram panchayats are the basic units of Panchayati Raj Institutions and local governments in India. Generally, the village administration in India runs by gram panchayats to the some extend in addition to other administrative

mechanisms. In addition to that, gram panchayats perform different types of public welfare activities in villages. They implement different welfare schemes of the Central government and state government in addition to their own projects and functions.

A huge amount of public money is spent through the local governments like municipalities and gram panchayats. The expenditure budget of panchayats is noticeable and increasing day by day. Major social service schemes of the Central government and state government are implemented through the panchayat administrations. The nature of socio-economic development depends upon the successful functioning of gram panchayats in India.

A good accounting and controlling system strengthens the base and objectives of every institution. The same is true for the gram panchayats also. Without proper utilisation fund of the gram panchayats, it is not possible to develop the local economy in India. A good accounting system not only ensures the true application of public money, but also ensures social justice in village level.

1.1 Objectives of the Project: Gram panchayats are the basic units of public administration and wings of socio economic development of India. The main objectives of this project are reviewing the system of accounting and controlling of finance of gram panchayats of West Bengal and making recommendations to improve the system. The major objectives of this study are as follows:-

(1) Assessing the present system of accounting of gram panchayats of the Burdwan district;
(2) Assessing the present system of management of finance of the gram panchayats of Burdwan district;
(3) Assessing the nature of controlling of finance of the gram panchayates of the Burdwan district; and
(4) Assessing the financial audit system of the gram panchayats of Burdwan district and finding the strength and weakness of the audit system.

II. Review of Literature:

Ministry of Panchayati Raj, GOI, (2012) prescribed the Model Panchayat Accounting Manual for successful implementation of accounting system in gram panchayats in India.

Mishra A.K, Akhtar Naved & Tarika Sakshi (2011) in their paper entitled "Role of the Panchayati Raj Institution in Rural Development (An analytical Study of Uttar Pradesh) analysed the role of the Panchayati Raj Institution in Rural Development and the importance of financial management of Panchayati Raj Institutions for better functioning of Panchayati Raj Institutions.

Ministry of Panchayat Raj, GOI (2010) conducted a case study on Leepuram Gram panchayat for assessing the overall functioning of the gram panchayat. Dutta Jayanta (2013) in his paper entitled "Financial Management of Panchayats-An Overview of West Bengal" analysed the functioning of

panchayats in West Bengal and concluded with the statement that the panchayats should properly utilise their funds for pursuing ultimate objectives of PRIs.

III. Data Collection and Methodology:

Primary and secondary data have been collected for the purpose of the study. Primary data have been collected from the 24 gram panchayats of the Burdwan district. Similarly secondary data have been collected from the websites of the department of gram panchayats of West Bengal and other related websites.

From collecting primary data from the gram panchayats a questionnaire is set where 10 questions are relating to system of accounting of the gram

Panchayats and another 10 questions were set which were relating to controlling of finances.

After data collection and data compilation, the system of accounting and controlling finance is summarised. Finally, a comparative study of accounting and controlling system of finance of gram panchayats of the West Bengal and double entry accounting system is made.

IV. Overview of Gram Panchayats in West Bengal

West Bengal is on the eastern state of India, stretching from the Himalayas in the north, to the Bay of Bengal in the south. The state has a total area of 88,752 square kilometres (34,267 sq mi). The Darjeeling Himalayan hill region in the northern extreme of the state belongs to the eastern Himalaya. This region contains Sandakfu (3,636 m or 11,929 ft)—the highest peak of the state. The narrow Terai region separates this region from the North Bengal plains, which in turn transitions into the Ganges delta towards the south. The Rarh region intervenes between the Ganges delta in the east and the western plateau and high lands. A small coastal region is on the extreme south, while the Sundarbans mangrove forests form a geographical landmark at the Ganges delta.

V. Overview of Burdwan District

Bardhaman district is a district in West Bengal. It is located in the middle-west part of West Bengal. It is also known as Burdwan or Barddhaman. On 7 April 2017, the district was bifurcated into Purba Bardhaman district and Paschim Bardhaman district. Total area of this district before bifurcation was 7,024 km^2 (2,712 sq mi). Total population of this district as per last census (2011) is 7,723,663. The district is well connected by NH19, Grand Trunk Road, Panagarh highways, Morgram Highway and NH 14. It is also connected by Burdwan and Asansol rail stations. It was bounded on the north by Birbhun and Murshidabad districts, on the east by Nadia District, on the southeast by Hooghly District, on the southwest by Bankura and Purulia districts, and on the northwest by Dhanbad district of Jharkhand. The district had six sub-divisions: Asansol, Sadar (North), Sadar (South), Durgapur, Kalna, and Katwa.

VI. Gram Panchayat Management System (GPMS)

Gram Panchayat Management system (GPMS) is a software for recording financial transactions and other reports and information of the gram panchayats in the websites of the Department of Gram Panchayat of West Bengal. In 2008, an e-governance initiative has been taken with the objectives of

(1) It based solutions for all major functions of GP;

(2) Capacity building of GP;

(3) Developing GP monitoring system

(4) Developing integrated fund management system;

(5) Developing social audit system and improved system for information dissemination;

(6) Extensive use of GIS for planning and monitoring of GPs.

The other objectives of this initiative are

(a) A tool for good governance

(b) Better accounting and expenditure control

(c) improving internal management and efficiency of panchayats

(d) Better documentation and retrieval of records for improved transparency and disclosure of information to the citizen

(e) Faster and objective planning and decision making

(f) GIS based output /outcome monitoring better and convergent delivery of services to citizens.

The main components of DRISTI are

(a) Gram Panchayat Monitoring System (GPMS) for accounting, financial management and citizen services

(b) Fund management system for upper two tiers of Panchayat

(c) DIMI- Use of GIS for decentralized planning and monitoring

(d) Integration of above three components and making them available for citizens, CSO and other organizations for promoting transparency and social audit.

Use of ICT for better Financial Management of Gram Panchayats

For successful use of ICT, two software have been developed: Saral IFMS for accounts keeping of ZP and PS, and GPMS for gram panchayats with the following features;

(a) Single point entry

(b) Standardized head of accounts ;

(c) Standardized final accounts

(d) Rules have been revised for acceptance of computer generated outputs to be legally accepted

(e) Monthly output to track expenditure and budgetary control

Outputs Generated from GPMS

The outputs generated features from GPMS are

(a) Double column cash book

(b) General ledger with sub ledgers

(c) Debit and credit vouchers

(d) Subsidiary cash book

(e) Cheque issue and receipt registers

(f) Receipts and payments accounts

(g) Issue of birth and death certificate

(h) Trade certificate

(i) Managing revenue mobilisation of PRI particularly taxation

Institutionalization Efforts

For successfully application of the projects following steps have been taken;

(a) All the GPs and PS have been provided with at least one computer and peripherals.

(b) Posts of Block Informatics Officer & Data Entry Operator in 341 Block/PS.

(c) Post of District Information Analyst and Computer Assistant in 18 ZP/ SMP.

(d) New recruits in the post of Executive Assistants at GPs are having working knowledge in computer.

(e) SIPRD and 5 ETCs have been strengthened for capacity building. Each ETC have computer Lab with 15 PCs

Process re-engineering has taken place including framing of rules, common agreement with Account General regarding audit procedure in ICT environment.

VII. Data Analysis

Data have been collected from secondary sources of the department of gram panchayat of West Bengal and primary data have been collected from 24 gram panchayats of the Burdwan district out of 277 GPs under purposive sampling method. The collected date have been tabulated in Excel and report generated.

Out of total selected above 24 gram panchayats, 24 uses computer in their accounting system. So, we can conclude that the gram panchayats of west Bengal successfully use computer in the accounting system. From the secondary data we can see that out of total 277 GPs of the Burdwan district, all the GPs have computerised their accounting system.

Table -2

DISTRICTWISE STATUS OF GRAM PANCHAYAT OF WEST BENGAL

District	Total GP	Grade				Paperless	Not Installed
		A	B	C	D		
Bankura	190	14	2	0	174	133	0
Birbhum	167	50	2	1	114	167	0
Burdwan	277	156	7	4	110	277	0
Coochbehar	128	0	0	0	128	66	0
Dakshin Dinajpur	65	52	6	6	1	55	0
Darjeeling	134	0	0	0	134	11	0
Hooghly	207	60	0	3	144	207	0
Howrah	157	59	0	8	90	157	0
Jalpaiguri	146	11	1	1	133	124	0
Malda	146	91	32	21	2	79	0
Murshidabad	254	172	30	36	16	23	0
Nadia	187	8	0	0	179	110	0
North 24-Parganas	200	0	0	0	200	120	0
Paschim Midnapore	290	0	0	0	290	225	0
Purba Midnapore	223	0	0	0	223	223	0
Purulia	170	75	31	47	17	62	0
South 24-Parganas	312	24	11	13	264	79	0
Uttar Dinajpur	98	0	0	0	98	19	0
Total :-	3351	772	122	140	2317	2137	0

Entry Lag Behind Up to 15 Days || Excellent

Entry Lag Behind 16 To 30 Days || Good

Entry Lag Behind 31 To 60 Days || Poor

Entry Lag Behind More Than 60 Days || Not Working

As on 31-3-2017, out of total 3351 gram panchayats in West Bengal 2137 gram panchayats ranked as paperless gram panchayats which indicates 63.77% of gram panchayats ranked paperless. In case of Burdwan district, out of total 277 gram Panchayates, 277 gram Panchayates ranked as paperless gram panchayates which means 100% of gram Panchayates of the Burdwan district ranked and marked as paperless gram panchayates.

The gram panchayats are ranked as “A”, “B”, “C” and “D” based on data update in the GPMS. The panchayats updated entries behind15 days lag ranked as “A” , 30 days lag ranked as “B” and so on. From the table 2 it is seen that out of total 3351 gram panchayates in West Bengal 772 gram panchayats ranked

as "A" gram panchayat which indicates 23.03% of gram panchayat ranked as "A". Similarly, Out of total 3351 gram panchayats in West Bengal 122 gram panchayats ranked as "B" gram panchayat which indicates 3.06% of gram panchayat ranked as "B". On the other hand out of total 3351 gram panchayats in West Bengal 140 gram panchayats ranked as "C" gram panchayat which indicates 4.17% of gram panchayates ranked as "C". And finally, out of total 3351 gram panchayates in West Bengal 2317 gram panchayats ranked as "D" gram panchayat which indicates 69.14% of gram panchayates ranked as "C"

In Case of Burdwan District, out of 277 gram panchayats, 156 ranked as "A", 7 gram panchayats ranked as "B",4 gram panchayats ranked as "C" and 110 ranked as "D" which indicates, 56.31% gram panchayates, ranked as "A", 2.5% of gram panchayates ranked as "B", 1.44% of gram panchayates ranked as "C" and 39.71% of gram panchayates ranked as ranked as "D"

Table 3 depicts the comparative rank of the total gram panchayats of West Bengal and total gram panchayats of the Burdwan district. Out of total 277 GPs of the Burdwan district, 277 ranked as paperless which indicates 100% paperless GPs of the Burdwan district where as out of total 3351 GPs of the West Bengal, just 2137 GPs ranked as paperless GPs which indicates 62.77% of total GPs of the West Bengal ranked as paperless GPs. Similarly, we can see the percentage of "A" grade GP of the Burdwan district is higher as compared to the percentage of "A" grade GPs of the West Bengal.

Percentage of Qualification of Accountant

QUALIFICATION	NO.	Percentage
Degree	15	63%
Matriculation	3	13%
HS	2	8%
PG	4	17%
Total	24	100%

Source: Own computation from primary data

From the above table and chart it is seen 63% of the accountants' have degree (BA/BSC/B.COM), 13% of the accountants passed matriculation examination, 8% of the accountant passed Higher Secondary examination and 17% of the accountant passed post graduate degree. Most of them have no technical education of computer but most of them have a little knowledge on the basic functioning of computer. A great support is available from GPMS team.

Percentage of Tenders in Different Option

Tender Type	No.s	Percentage
Hard Copy	16	67%
hard Copy+ Processing for E-tender	3	13%
Hard copy up to Rs. 50,000.00	1	4%
Hard copy up to Rs. 50,0000.00	2	8%
E-tender	2	8%
Total	24	100%

From the above two tables it is seen out of twenty four gram Panchayates, 16 gram panchayats follow traditional method while issuing tender for purchase or works order, two gram Panchayates issue e-tender for purchase or issuing works order, one gram panchayat reported that the use paper form up to the value of work or purchase up to Rs 50,000.00 and two gram Panchayates reported that they issue e-tender beyond purchasing or works order worth of Rs 500,000.00. So, from the above calculation it is seen that only eight percent of gram Panchayates of the Burdwan district successfully issue e-tender, thirteen percent of gram Panchayates under process for converting their tender method from physically to e-tender.

Uploading of 26 in the GPMS (Online)

GPMS is an online portal where the required information is uploaded for e-governance and public interest. The data of the above table is collected on 31-3-2017 from the websites of the department of gram panchayat of West Bengal. Regarding uploading of from 26 the position of the Burdwan district is very good as compare to other district of the state.

Tabel-15

Upload 26 as on 31-3-2017 of February 2017

SL. NO.	DISTRICT	Ratio of FEB
1	BANKURA	98%
2	BIRBHUM	88%
3	BURDWAN	97%
4	COOCHBEHAR	71%
5	DAKSHIN DINAJPUR	92%
6	DARJEELING	**16%**
7	HOOGHLY	**98%**
8	HOWRAH	**99%**
9	JALPAIGURI	79%
10	MALDA	90%

11	MURSHIDABAD	81%
12	NADIA	91%
13	N. 24-PARGANAS	74%
14	w. IDNAPORE	96%
15	PURBA MIDNAPORE	**97%**
16	PURULIA	**67%**
17	S. 24-PARGANAS	62%
18	UTTAR DINAJPUR	88%
TOTAL UPLOADED :		83%

Table 15 represents the ratio of 26 uploaded of the February as on 31-3-2017. Out of total 3351 gram panchayats, 2790 gram panchayats have uploaded their form 26 as on 31-3-0217 which represents 83% total gram panchayats have uploaded their form 26 of February as on 31-3-2017. In case of Burdwan district, out of total 277 gram panchayats 268 gram panchayats have uploaded their form 27 as on 31-3-2017 which represents 97% of the gram panchayats of Burdwan District have uploaded their form 26 as on 31-3-2017. So, from this analysis it is clear that the performance of the Burdwan district in respect to uploading form 26 is much better as compare to the average ratio of all the districts of West Bengal.

VIII. Summarized Findings of the Study

particulars	Findings
(1) Accounting System	Computerised single Entry System
(2) Journal	Not systematically followed
(3) Ledger	Partially Mentioned
(4) Trial Balance	Not Prepared
(5) Cash book	Double Column Cash book Regularly Prepared
(6) Bank Reconciliation Statement	Prepared
(7) Income Expenditure	Not Prepared in all gram panchayats
(8) Balance Sheet	Not Regularly prepared
(9) Cash Flow Statement	Not Prepared
(10) Accounting Basis	Cash Basis
(11) Internal Control	Absent
(12) Internal Check	Present
(13) Internal Audit	Provision is there PAO
(14) Statutory Audit	External Auditor CAG
(15) Audit Report	Format Oriented

(16) Accountant	Not Specialised
(17) Reporting	Not Regularised
(18) Accounting Standard	Absent
(19) Budgeting	Format Oriented
(20) Stock/Stores Leger	Not maintained

IX. Limitations of Accounting and Audit System of Gram Panchayats

From the above findings we can summarized the limitations of gram panchayat accounting system of West Bengal

(1) Single Entry System: The single entry accounting system is followed in gram panchayats accounting. As per single entry system all aspects of accounts are not recorded. Rather, very important part of accounts is recorded in this system.

(2) Absence of Internal Check: No trial balance is prepared at the end of the working day, week, month or year. As a result, the chance of checking arithmetical accuracy within the accounting system is nil.

(3) Accountant: The accounts are prepared by secretary of gram panchayats and qualified accountant is not recruited for the accounting purposes. Professional qualification and technical knowledge of the accountants are poor.

(4) Cash Basis: The accounts are prepared following the principles of cash basis. But to exhibit a true and fair position of the financial position of the gram panchayat, the credit transactions need to be considered.

(5) Auditing: The audit report is format oriented and the chances of expressing actual audit report is limited. The audit report is not accessible to the general public of the gram panchayat.

(6) Balance Sheet: No systematic balance sheet is prepared by the most of the gram panchayats in West Bengal. As a result there is no true and fair position of the assets of the gram panchayat is available. In addition to that there is a chance of inoccupation of public property by selfish public. But if balance sheet is prepared and list of all the social assets are recorded then the chances of misuses and inoccupation of public property will be reduced.

(7) Cash book: Double cash book is prepared by the gram panchayats in West Bengal. No general journal is prepared in the case of gram panchayat accounting. As a result there is a chance of not recording all transactions and financial event of the gram panchayat.

(8). Accounting Standard: There is no accounting standard so far as like corporate accounting standard but there is some guidelines regarding book keeping.

(9) Budgeting: Format oriented budget is prepared traditionally.

(11) Store Leger: Stores ledgers are temporarily maintained.

(12) Bank Reconciliation Statement: Bank reconciliation statement is regularly prepared to check the cash balance and bank balance in the attached format with the cash book. No separate bank reconciliation statement is prepared.

(13) Reporting: The reporting of accounting information is not standardized

(14) Use of Computer: Computer is used partially for book keeping but GPMS is not successfully implemented.

X. Recommendations

From the above analysis, discussion we have some recommendations regarding system of accounting and control of finance of the gram panchayats of West Bengal which are as follows

(1) Introduction of Double Entry Rules of Accounting: Double entry rules of accounting ensure recording of all transaction of the organisation. If accounting system is based on these principles, better accounting may be possible.

(2) Introduction of Standard Costing: Standard costing helps in control the cost of every project. If it is implemented, better cost control can be done.

(3) Introduction of Public Audit: In public audit system, full utilisation of public money is possible. If it is implemented, better performances can be expected.

XI. Conclusion

The gram panchayats are the local government in Indian villages. They play a vital role for the socio-economic development of the rural economy. In addition to that they implement the different development projects for poverty alleviation, developments and maintenance of village roads, local employments etc as and when undertaken by the central and states governments in India.

A huge amount of public money is expended through the gram panchayats in India. For proper utilisation of public money a sound accounting and control system is essential. Without a sound accounting system it is hardly possible to cater the purpose of Panchayati Raj Institution.

The Gram Panchayats in West Bengal are practicing uniform and harmonised accounting system through Gram Panchayates Management System (GPMS) software. Most of the Gram Panchayats have converted their accounting system from manual to computer based accounting system. All the Gram Panchayats are using PGMS software for recording their day to day transactions. It is compulsory to record all the transactions and upload result in the respective webpage so as to it available to the general public.

GPMS (Gram Panchayat Management System) is a part of the e-Governance initiatives of the Panchayats & Rural Development Department of the Government of West Bengal. It is a program designed in-house

by the Computerization Cell of the Department. The prime focus of this software is to standardize the accounting system of the PRIs and to make account keeping easy, transparent and comfortable to the users. Double Entry Cash Basis accounting system is followed in the software.

All the Districts in West Bengal now have considerable numbers of Gram Panchayats using the software on a regular basis. As a direct consequence, improvements, both qualitative and quantitative, in Gram Panchayat Accounting are now clearly visible. It is also open for public in general, especially for people who are interested in electronic Governance.

To make the accounting in Gram Panchayats even more transparent, monthly statements of accounts have also been made available at the website in the form number 26. The concerned Gram Panchayats themselves upload these reports directly to the website. Efforts are on to make the audit reports also available for public viewing.

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Conditions of and Distressing Factors of Lac Agriculture in Purulia District of West Bengal

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Abstract

Lac cultivation is eminently suited to the farmers in the Purulia District for their livelihood as lac is regarded as an important source of cash flow to the marginal, small and medium farmers. This type of classification made on the basis of land size holding. Using three stage stratified sampling 50 sample farms consisting of 21 marginal farms, 18 small farms and 11 medium farms, are chosen from three prominent lac cultivating blocks Baghmundi, Jhalda-1, Balarampur. The present chapter is endeavour to through light on cost, return, net return (profit) of different group of farmers. There are two strains of lac production; one is *Kusumi* which is obtained from Kusum host tree. Other is *Rangeeni*, which is produced from hosts other than Kusum like Ber, Palas etc. The cost of production, return and net return from each crop has been determined for marginal, small and medium size of farms. The comparative study shown us total cost of production was higher on medium size group compared to marginal and small size groups of the farms for each crop. Return as well as net return also higher for medium size group of farms. 't' test was performed at 5 percent level of significance the result was found to be significant, meaning thereby the average net income per grower from *Rangeeni* crop was actually higher than that of *Kusumi* crop which was higher in each group. It was found during the survey that lac cultivators are lying in distressed condition. A lot of distressing factors is there, few are being discussed such as **i**nsufficient and partial govt. supply of brood lac, **i**nsufficient and partial govt. supply of instruments, monopsonistic nature of the market, old method of lac cultivation etc.

I. Introduction

The forest and sub-forest dwellers of the Purulia district having only limited areas for cultivation, meager irrigated land and limited scope of irrigation systems mainly depend on rainfed agriculture and forest for their livelihood. But forest of the district is blessed with the plenty of lac host trees such as *Kusum*, *Palas*, *Ber* and *Babul*. Lac cultivation is simple with no involvement of high technology and very low investment. It is eminently suited to the farmers living in the vicinity of the forests including women as it

demands only their part time attention. In the district its cultivation provides an important additional income next only to the agriculture. Farmers are also dependent on lac cultivation for their livelihood and Lac is regarded as an important source of cash flow to the marginal, small and large farmers in the district. In fact the district produces highest quality of *Rangeeni* lac, whose trade name is Manbhum Baisakhi. The present study deals with the condition of lac production and is concerned with the collection of the primary data from the selected farmers for the year 2016-17. Over the year a comparative analysis of cost, return in lac cultivation with other activities is attempted in this segment.

The study adopts the multi-stage stratified purposive sampling method to select lac growers in Purulia district. In stage I the major lac producing blocks are chosen while in stage II major lac producing villages from previously selected blocks are chosen. In stage III specific number of sample growers has been selected with an aim to make study over 50 lac growers.

II. Selection of the Areas:

We found from the survey that the major lac producing areas in Purulia district are: Ayodhya Pahar, Baghmundi, Jhalda-1, Arsha-I, Balrampur, Barabazar, Purulia-I, Manbazar-I & II, Kashipur, Bandwan and Hura. Baghmundi, Jhalda and Kalimati markets in Purulia district are the lac markets with annual arrival of over 500 tons during 2016-17. Again the surrounding areas of the markets are covered with forests having natural lac host trees which provide essential food plant for lac and are largely inhabited by scheduled castes and scheduled tribe population whose one major subsidiary occupation is lac cultivation. Baghmundi, Balarampur and Jhalda-1 blocks of Purulia District, West Bengal were therefore purposively selected for the present study. In the hills north of Jhalda and in lesser degree in Baghmundi hills large number of Palas trees exist. Lac cultivation is an ideal avenue of sizeable subsidiary employment. On the other hand Ber trees are chiefly found in these areas and lac is cultivated on the host trees in orchards and homestead lands. Kusum is plentiful in most parts of the Jargo panchayet samity in Jhalda-I Block.

III. Selection of the Villages:

In Jhalda-I block we selected 13 villages surrounding Jhalda town namely Het-jargo, Karamadi, Udaysiru, Telidih, Putidih, Jargo, Pardih, Bandhadih, Kula-janga, Darpa, Chandai, Sarenghutu, Birudih. Five villages viz. Kurupahar, Saldih, Chirubera, Kuchrirakha and Vitpani under Baghmundi block were selected. The only village of Balarampur block, Jasudih was taken for conducting our study. In all villages lac is cultured mainly on traditional host trees: Palas, Ber and Kusum. Besides several trees of regional importance also have little bit contribution in lac production in those villages.

IV. Selection of the Cultivators:

For the selection of ultimate units (the farms), the households had been classified on the basis of land holding sizes such as marginal (<2.5 acres land), small (2.5-5 acres land), medium (> 5 acres). Since only a few farms belonged to large category (10-25 acres) we did not include this category in our analysis. In the final stage, a sample of 50 farms was selected for this study on the basis of stratified random sampling. The selected sample farms according to their respective size groups are given in Table-1.

Table-1: Size Group-wise Distribution of Selected Sample Farms

Size Group	No. of Available Farms	No. of Selected Sample farms	From Jhalda-1 Block	From Baghmundi Block	From Balarampur Block
Marginal Farms (<2.5 acres)	456	21	15	5	1
Small Farms (2.5-5 acres)	294	18	12	4	2
Medium Farm (> 5 acres)	118	11	8	2	1
Total	868	50	35	11	4

Source: From the Researcher's Survey

V. Method of Enquiry:

Survey method was followed for the detailed enquiry of individual farmers to arrive at the exact problems and prospects of lac cultivation in this area. The survey method or personal interview with head of the farms on the basis of specially designed schedule was used to collect primary data. The primary data were collected for the commercial 'Rangeeni' crop and 'Kusumi' crop for the year 2016-17. These are the stages when survey was made: a) At the time of pruning, b) During and after brood lac inoculation and c) Prior to harvesting. The database of this discussion will include both published sources and primary data collected in course of sample survey.

VI. Cultivation Procedure of Lac

a) **Lac Insect:** Indian lac insect, *Kerria lacca* (Kerr) is the most commonly used insect in our country. Two strains of this lac insect namely- Rangeeni and Kusumi complete two life cycles each in a year, producing two crops annually.

b) **Pruning:** Removing (cutting) of unsuitable shoots of host plant to facilitate growth of new shoots.

c) **Inoculation:** Putting the bundles of broodlac (lac sticks with mature gravid female insects) on host twigs for allowing young lac larve crawlers to come out of their mother cells and settle on host plants.

d) **Removal of *Phunki*:** Used up broodlac after complete emergence of lac larve from female cells is called *phunki*.

e) **Spray of Pesticides:** Insectisides Endosulfan 35 EC (e.g. Thiodan) for control of *Eublemma amabilis* and *Pseudohypatopa pulverea*; Dichlorvos 76 EC (e.g. Nuvan) for control of *Chrysopa spp*. Fungicide Carbendazim 50% W P (e.g. Bengard/Bavistin) for control of fungi.

f) **Harvesting:** Cutting of mature or immature (*ari*) lac crop from the tree. Harvest ari lac of Baisakhi crop in April or May and prune the trees simultaneously. Harvested lac should be sold at the earliest or dried for storage.

VII. Cost of Production, Gross Income and Net Income from Lac Activities

In this analysis we have taken into consideration costs of various items entering in the cost structure. The expenditure incurred on broodlac and human labour constituted the major share of cost of cultivation. The human labour is required at the time of pruning of the trees, at the time of inoculation followed by the time of harvesting. For constant watching of the mature crop also human labour is needed. While adoption of coupe system*, pruning of host, and selection of good quality broodlac, broodlac bundling and tagging on plant, Phunki removal and spraying of insecticide more labour is required by the lac growers. Other elements that go into the cost of production are the nylon nets, pesticide and implements. Cost of cultivation and returns in lac cultivation obtained from survey data, are presented in Table-2. This table also provides information on net profit, profit per tree, net profit per acre output-input ratio etc.

Table-2: Economics of Lac Cultivation and Returns (per 10 Host Trees)

Particulars	Palas		Ber		Kusum	
	Quantity	Value (Rs.)	Quantity	Value (Rs.)	Quantity	Value (Rs.)
Cost						
Labour	106 MD	16,000	100MD	15,000	151MD	22,650
Broodlac	30 Kg	3,600	50 Kg.	6,000	100 Kg.	22,000
Other input		1,200		1,000		2,400
Depreciation on fixed		1,040		1,720		1,870
Interest on Total		960		774		1326
Total Cost		**22,800**		**24,494**		**50,246**
Return						
Broodlac	350 Kg	42,000			300 Kg	72,000
Phunki	6 Kg	900	10 Kg	1,500	20 Kg	3,800
Ari-sticklac	40 Kg	5,200	350 Kg	52,500	80 Kg	14,400
Gross Return		**48,100**		**54,000**		**90,200**

* Coupe System: Under this system the area to be used for cultivation is divided into four equiproductive coupes (A,B,C and D), which will be worked in rotation, the various operations in different stages of lac cultivation .

Net Profit		25,300		29,506		39,954
Profit per tree		2,530		2,950.6		3,995.4
Output Input Ratio		**2.11**		**2.20**		**1.78**
Number of Trees per Acre.	310		200		110	
Number of Operated Tree per Acre.	155		200		45	
Net Profit per Acre	Rs3,92,150.00		Rs. 5,92,120.00		Rs. 179,793	
Cost of Production of Broodlac	Rs. 62.58/Kg		-		Rs. 176.10/Kg	
Cost of Production of Sticklac	Rs. 122.58/Kg		Rs. 127.30/Kg		Rs. 253.20/Kg	

MD- Man Days valued @ Rs. 150 per day; Rangeeni broodlac cost @ Rs. 120 per Kg; Kusumi broodlac cost @ Rs. 220 per Kg; Rangeeni Phunki rate Rs. 150 per Kg.; Kusumi Phunki rate Rs. 250 per Kg.; Rangeeni (Palas) Ari-sticklac rate Rs. 130 per Kg.; Rangeeni (Ber) Ari-sticklac rate Rs.150 per Kg.; Kusumi Ari-sticklac rate Rs. 240 per Kg.

In estimating cost of production and income generation we consider input and output during two complete cycles such as Baisakhi & Katki for Palas and Ber trees while Jethwi and Aghani for Kusum tree. The main component of cost, requirement of broodlac per tree, is 3kg, 5kg and 10kg for Palas, Ber and Kusum respectively. For every 20 host trees (Rangeeni) for sticklac cultivation, 8 to 9 trees will be utilized for broodlac production, average production of broodlac per host tree being 40 kg. Estimated production of sticklac is 40 Kg. @ 4kg. /tree for Palas tree, for Ber tree it is350 kg. (yield @35kg. /tree). In the case of Kusum tree it is 8 kg. per tree. Estimated income from selling broodlac @ Rs120/Kg and sticklac @ Rs. 130(Rs. 150 for Ber trees) is shown in Table 2 as Rs. 48,100 for Palas tree (Rs. 54,000 for Ber Tree). As price of Kusumi broodlac and sticklac both are higher compared to Rangeeni crops the estimated income from Kusumi trees is also much higher compared to Rangeeni host trees. If production of broodlac is considered, estimated production of broodlac in Rangeeni crop is 35 kg per tree, while in case of Kusum trees it was 30kg per tree. Output to input ratio is significantly higher in lac cultivation on Palas and Ber trees (i.e. 2.11 and 2.20 respectively), whereas this ratio is 1.78 for lac cultivation on Kusum tree. Ultimately net profit earned per tree is Rs.2,530 for Palas tree, Rs.2,950.60 for Ber tree and for Kusum tree it is Rs 3,995 (with captive use of broodlac produced by trees under the study). The pooled results showed that percentages of operated trees per acre are 50% for Palas, 100% for Ber and 32% for Kusum tree. Low percentage of utilization of Kusum tree is due to its large size and higher input in the form of broodlac which the farmers are generally unable to procure because of high price at the time of scarcity.

(a) Per Kg. Cost of Production of Lac:

Table-3: Per Kg. Cost of Production of Rangeeni and Kusumi Crop

Farm Size Group	Cost of Production Per Kg. of Rangeeni (in Rs.)	Cost of Production Per Kg. of Kusumi (in Rs.)
Marginal	130.6	211.8
Small	131.8	211.6
Medium	130.4	211.2
All Farm Average	131.4	211.6

Source: Compilation of primary data gathered through survey

It was found that the cost of production per kilogram was almost the same in each size group for both the crops. Overall picture revealed that, the average cost of production of Kusumi crop was higher as compared to Rangeeni crop which were Rs.211.6 and Rs. 131.4 respectively. This was mainly due to the higher brood cost of Kusumi crop as compared to Rangeeni crop.

(b) Total and Per tree Cost of Production of Lac:

Rangeeni Crop: It was found that the total cost of production was higher on the medium size group as compared to other size groups because this size group possessed larger number of trees. It was found that per tree cost of production was higher on medium size group as compared to the marginal and small size group of the farms. The possible reason might be that the utilisation of labour was more on medium size group as compared to other size group of the farms.

Table 4: Total and Per tree Cost of Production of Rangeeni and Kusumi Crop

Crop		Farm Size group			Total/ Average
		Marginal	Small	Medium	
Rangeeni	Number of Trees	525	526	752	1803
	Cost of Production (in Rs.)	11,68,145 (28.46%)	11,71,928 (28.56%)	17,62,927 (42.98%)	41,03,000
	Cost of Production Per Tree (in Rs.)	2,225	2,228	2345.60	Avg-2,276
Kusumi	Number of Trees	147	145	196	488
	Cost of Production (in Rs.)	6,66,327 (29.90%)	6,61,677 (29.69%)	9,00,658 (40.41%)	22,28,662
	Cost of Production Per Tree (in Rs.)	4,532.80	4,563.20	4,595.20	Avg-4,566

(Figures within the parentheses indicate percentage to total. Avg- Average)
Source: Compilation of primary data gathered through survey

Kusumi Crop: It is also evident from the table that the shares of marginal, small and medium size groups of the farms constituted about 29.90, 29.69 and 40.41 percent of the total cost of production. It was found that total cost of production was higher on medium size group compared to marginal and small size groups of farms. Average cost of production per tree incurred by all farm size groups depicted that, per

tree cost of production was higher on medium size group as compared to marginal and small size groups of farms. The possible reason might be that the labour utilization on medium size group of the farms was higher as compared to other size group of farms.

Overall picture revealed that the cost of production for Rangeeni and Kusumi crops incurred by medium size group was higher as compared to the other size groups. This may be because of the fact that the medium size group of the farms possessed larger number of trees as compared to marginal and small size group of the farms.

(c) Total and Per Tree Gross Return of Lac

Rangeeni Crop: Per tree average gross return was directly related with the average yield per tree and the rate of sale per kilogram. It can be seen from Table 5 that the total gross return from Rangeeni crop earned by all size groups was Rs.86,54,400 and the share of marginal, small and medium size group of the farms were constituting about 29.12, 29.18 and 41.70 percent of the total gross return. It was observed that gross return earned by medium size group was higher as compared to marginal and small size group of the farms. This was because of the fact that larger numbers of trees were found on medium size group as compared to other size groups of farms. Gross return earned per tree by each size group was the same that is Rs.4800. This may be because of the fact production per tree was same in each size group and market price was also same in the study area.

Table 5: Total and Per Tree Gross Return of Lac

Farm Size Group	Rangeeni		Kusumi	
	Gross Income (in Rs.)	Gross Income Per Tree (in Rs.)	Gross Income (in Rs.)	Gross Income Per Tree (in Rs.)
Marginal	25,20,000 (29.12%)	4,800	12,34,800 (30.12%)	8,400
Small	25,24,800 (29.18%)	4,800	12,18,000 (29.71%)	8,400
Medium	36,05,600 (41.70%)	4,800	16,46,400 (40.17%)	8,400
Total/Average	86,50,400	Avg.-4,800	40,99,200	Avg.-8,400

(Figures within the parentheses indicate percentage to total and Avg.- means Average.)
Source: Compilation of primary data gathered through survey.

Kusumi Crop: It may be observed from table that the shares of marginal, small and medium size group of the farms were Rs.6,17,400.00, Rs.6,09,000.00 and Rs. 8,23,200.00 respectively which constituted about 30.12, 29.71 and 40.17 percent of the total gross return. It was found that gross return earned by medium size group was higher as compared to other size groups of farms because this size group possessed larger number of trees as compared to marginal and small size group of the farms. Gross return

per tree earned by marginal, small and medium size groups of the farms was the same that is Rs. 8,400. This may be because of the fact that production per tree was same in each size group of the farms and market price was also same.

Overall picture revealed that gross return per tree from Kusumi crop was nearly double that of Rangeeni crop. This was because of the fact that the market price of the product of the Kusumi crop was higher than that of Rangeeni crop. It was also found that the various size groups of farms had no effect on the gross income per tree for both the Rangeeni as well as Kusumi crops. It was observed that there was no effect of more investment in different size group of the farms Table 5 shows that gross income remained same in all the cases.

(d) Total and Per Tree Net Return of Lac

The net returns represent the difference between the value of total return and total cost incurred in the production process. In other words, it is the difference between receipt and total expenses. It measures the combined return of the cultivator's resources for his labour, capital and management. The net profit reflects upon the returns to the cultivators over cost incurred.

Rangeeni Crop: From Table 6, It is observed that net return was higher on the medium size group of the farms as compared to marginal and small size group of the farms. It was also found that the number of trees was higher on the medium size group of the farms as compared to small and marginal size group of farms. Average net return per tree earned by all farm size groups was Rs. 2,523.80. It was found that although total net return was higher on the medium size group of the farms but net return per tree was slightly higher on the marginal size group as compared to other size groups of farms because this size group incurred lower cost of production as compared to small and medium size group of farms and also because gross return per tree was same in each size group of farms.

Table 6: Total and Per Tree Net Return of Lac

Farm Size Group	Rangeeni		Kusumi	
	Net Income (in Rs.)	Net Income Per Tree (in Rs.)	Net Income (in Rs.)	Net Income Per Tree (in Rs.)
Marginal	13,51,844 (29.71%)	2,575.00	5,68,472 (30.39%)	3,867.20
Small	13,52,872 (29.73%)	2,572.00	5,56,322 (29.74%)	3836.80
Medium	18,45,672 (40.56%)	2,454.40	7,45,741 (39.87%)	3804.80
Total/Average	45,50,388	Avg.-2,523.80	18,70,535	Avg.-3833.06

(Figures within the parentheses indicate percentage to total and Avg.- means Average)
Source: Compilation of primary data gathered through survey.

Kusumi Crop: The table further revealed that the marginal, small and medium size groups of farms shared about 30.39, 29.74 and 39.87 percent of the total net return. It was found that net return was higher on the medium size group as compared to other size group of the farms. This was due to the fact that higher gross return was found on medium size group of the farms as compared to marginal and small group of the farms. It was due to the fact that number of trees was higher on the medium size group of the farms as compared to other size groups. It was observed that net return per tree was slightly higher on the marginal size group although total net return was more on medium size group as compared to the other size groups. This was mainly due to the fact that the cost of production incurred by marginal group of the farms was lower as compared to small and medium size groups of the farms.

Thus, overall picture revealed that per tree net return of two crops (Rangeeni and Kusumi) differed slightly whereas per tree gross return of two crops was same in case of all size groups. The reason for the marginal differences was due to cost of production which made slight variation in net return. Thus Table 6 revealed that the net return per tree from Rangeeni crop was lower than that from Kusumi crop. The result indicated that the marginal groups of the farmers were getting more remuneration from each crop as compared to that of small and medium size group of the farms. This may be because of the fact that resources were better utilised on the marginal size group as compared to other size groups. This finding confirms as expected because marginal farms own only limited land resources and they don't have other alternative for income generation and thus such category of farmers give more emphasis on lac cultivation These farmers may be called regular lac growers.

(e) 't' Value

It was found from Table 7 that net return from Rangeeni crop was higher in all the farm size groups than that in the Kusumi crop. To find out whether the average net income per grower derived from Rangeeni crop ($\bar{R}$) was higher than the average net income derived from Kusumi crop ($\bar{K}$), 't' test was performed for two independent variables. At 5 percent level of significance the result was found to be significant, meaning thereby the average net income per grower from Rangeeni crop was actually higher than that of Kusumi crop which was higher in each group.

Thus the average net income from Rangeeni crop was two and half times more than average net income derived from Kusumi crop. It was found during the survey that the larger number of trees was put under production of Rangeeni crop by all size groups of the farms as compared to Kusumi crop.

Table-7: Mean Net Income per grower in the Three Holding Sizes

Farm Size Group	Crops Rangeeni	Crops Kusumi
	Mean Net Income (in Rs.)	Mean Net Income (in Rs.)

Marginal	64,373.52	27,070.10
Small	75,159.54	30,906.78
Medium	1,67,788.36	67,794.54

Source: Table 6, Table 1

(For example Mean net income from Rangeeni crop of marginal farm 13,51,844/21= 64373.52). Here we have to test null hypothesis H $H_0 : \overline{R} = \overline{K}$ Against, the alternative $\overline{R} \neq \overline{K}$

Table-8: Calculation of 't' Value for Differences of Mean Net Income Derived from Rangeeni Crop and Kusumi Crop.

Marginal	**Rangeeni**	**R*R=R^2**	**Kusumi(K)**	**K*K=K^2**
1	57022	3251508484	21604	466732816
2	65302	4264351204	29842	890544964
3	58912	3470623744	22442	503643364
4	64666	4181691556	28822	830707684
5	58224	3390034176	23808	566820864
6	64604	4173676816	28892	834747664
7	60892	3707835664	25044	627201936
8	65816	4331745856	29810	888636100
9	61804	3819734416	25624	656589376
10	69092	4773704464	29292	858021264
11	60666	3680363556	24422	596434084
12	69822	4875111684	26892	723179664
13	63608	4045977664	29504	870486016
Marginal	Rangeeni	R*R=R^2	Kusumi(K)	K*K=K^2
14	69022	4764036484	26804	718454416
15	63070	3977824900	29692	881614864
16	69804	4872598416	27666	765407556
17	63866	4078865956	29422	865654084
18	68606	4706783236	27822	774063684
19	63090	3980348100	29004	841232016
20	64682	4183761124	23060	531763600
21	69274	4798887076	29004	841232016
	1351844	87329464576	568472	15533168032
Mean of R ($\overline{R}$) =	64373.52		Mean of K ($\overline{K}$) = 27070.10	

Variance of R (S^2_r) = 15325132.76

Variance of R (S^2_k) =7228843

source: Compilation of primary data *gathered through* survey

As we know $t_{cal} = \left(\overline{R} - \overline{K}\right) / \sqrt{\left(S_R^2 / 21 + S_K^2 / 21\right)}$

Here $t_{cal} > t$ with (n_R+n_K-2) degrees of freedom at 5% level of significance=1.96

Since calculated 't' is much greater than tabulated 't', it is highly significant at 5% level of significance. So there is a significant difference between the net profit earned from Rangeeni crop and from Kusumi crop for marginal group of farms. If we calculate't' values for finding out differences of mean income derived from each crops for small farm and medium farm, the same result will be obtained. Over all we can conclude that the analysis of 't' value was found to be significant at 5% level of significance which indicated that the net income derived from Rangeeni crop was actually higher than that of Kusumi crop (t value=35.99539).

It has been seen that the production of medium farm size group is large. Again maintenance, overseeing and overhead charges are kept low by this farm size group. Most of all farms retained a portion of his previous crop for use as brood for the next crop. Since brood is not purchased and crops are successful it would be possible to make large profit even at the prevailing lower price of sticklac. As previous three years 2013-14, 2014-15 and 2015-16 had been very adverse; the purchase of brood is very much expensive in the year under study, and may even be unobtainable for the small and marginal farmers. The necessity of purchasing brood for the group of farmers at high rate swallowed any profits they might have made. The sale of broodlac on the other hand is remunerative and thereby medium farm size gets comparatively high return. Loss of weights by sticklac on storage as much as 30% or more goes against the interest of small and marginal cultivators. The group of cultivators either cannot afford, or is not prepared to risk, the amount of brood necessary to infect fully all the trees under their possession. Therefore optimum infection to obtain the maximum return is not of great importance to them.

VIII. Distressing Factors Faced by Lac Cultivators in Purulia District

Lac in India as well as Purulia district is generally cultivated by the people of so-called poor communities who carry on their livelihood with much distress. There are many problems in lac cultivation and it becomes too much because of the poverty of the lac growers. Based on the survey analysis we categorized the problems into following fifteen heads:-

1. *Insufficient and partial Govt. supply of broodlac:* There is no sufficient and free govt. supply of quality broodlac and as the lac growers are poor, they cannot purchase quality broodlac from the market in time, specially for Kusumi broodlac which is highly costly compared to Rangeeni broodlac. Sometimes partiality is seen in the course of distribution. Broodlac obtained from harvest of one lac crop is the seed for lac cultivation in the successive crop. The practice commonly prevalent among lac cultivators is cutting lac immature either due to their adverse economic condition or inability to protect the lac to maturity from thieves. The severe summer heat also causes heavy

mortality in the lac crop. The over-all result naturally is that the supply of broodlac becomes irregular and the production of lac is unsteady.

2. *Insufficient and partial Govt. supply of instruments:* Poor lac growers sometimes cannot purchase instruments from the market. Sometimes Govt. supplies free instruments, but the supply is insufficient to meet the needs of farmers and partiality is seen at the time of distribution. On the other hand there is a problem of non-availability of improved cultivars to lac farmers who has ability to purchase it. Mostly traditional cultivars are being used.
3. *Damage of lac cultivation by fog and rain:* Adverse weather sometimes causes damage of lac cultivation and it occurs by extreme fog and rain. Even, there may be total destruction of lac cultivation in some specific areas.
4. *Damage of lac insects by parasites and predators:* Sometimes lac insects as well as lac pests are affected by parasites. Predators also can affect the lac insects. In such cases, lack of careful watch and careful timely measures may cause serious damage of lac insects and damage of lac insects means damage of lac cultivation. High insect mortality after settlement still exists. Apart from the theft of lac, there are insect enemies and non-insect ones such as squirrels, rats, birds and monkeys which cause loss of lac. Forests fire also often destroys lac crops raised in the forest area.
5. *Illiteracy and ignorance of lac growers:* Most of the lac growers are illiterate and it is needless to say that the illiteracy begets ignorance. Due to ignorance, they sometimes neglect to take care in proper time in the whole course of lac cultivation. They have also lack of knowledge on scientific method of cultivation. Actually the primary producers do not receive the full benefit of their labour due to ignorance.
6. *Storage problem:* Poor cultivators of lac somehow live in huts. So they do not have sufficient room to store the sticklac after harvest. And in the absence of resources to hold stock they have to sell their goods at cheap rates immediately after harvesting. Again the major problem faced during storage is the tendency to form lumps, forming hard blocks of lac.
7. *Monopsonistic nature of the market:* The farmers do not get due sale price of lac sticks because there is no regulated market. Generally a group of middlemen purchase sticklac from the growers who control the whole market and the growers are often deceived in rate as well as weight. There are no cooperative societies which can break the monopoly of middlemen. Again lack of effective Govt. or other machinery for procurement and lack of effective minimum support price for the growers makes the growers dependent highly on middlemen for marketing their produce.
8. *Fluctuation in price of lac:* Due to seasonal and unpredictable nature of the lac crop, this trade is strongly influenced by speculative operators and prices fluctuate violently, from season to season,

year to year, province to province and so on. The lac growers become puzzled specially when there is too much fall. They cannot determine their coming footsteps and are compelled to float themselves in the wave. Whatever the situation traders artificially keep the significant difference between market price and grower's price of sticklac. The exploitation by traders is also responsible for the decline of lac production. In the face of price fluctuation lac growers' co-operative society would be very beneficial to the cultivators but no steps have yet been taken for setting up such a society in our study area.

9. *Old method of lac cultivation:* Improved cultural practices for raising crops have not percolated to grass root levels in our remote study area. Traditional cultivation practices have not been sustainable due to high pest infestation and over exploitation of host plants. Therefore the old method does not give sustained supply of broodlac which is required twice in a year. The cultivator does not adopt any new scientific method which can enhance the intensity of lac cultivation. In this method production of lac is small quantity and there is absence of constant impetus for lac growers to produce more.
10. *No loan facilities from the Govt.:* There is no government provision to distribute subsidized agricultural loan to the needy cultivators. Growers have to depend on loan facilities from rural Mahajans for lac cultivation.
11. *No training programme arranged by the Govt.:* There is no provision of training programme for the lac cultivators arranged by the Govt. or any other non govt. organizations (NGOs) and so the cultivators are in darkness and do not get trace of new light about new processes of lac cultivation. As such they are deprived of scientific training facilities on lac cultivation.
12. *Miserable financial condition of the lac growers:* The lac cultivators are normally financially constrained and lack purchasing power for sufficient quantity of expensive and critical inputs like broodlac and improved implements for raising crops, fertilizers and pesticides. Growers are the marginal farmers who have small and fragmented holdings and cannot afford to adopt high cost technology. Dearth of cash to meet cultivation cost stands greatly in every steps of lac cultivation and marketing of sticklac also. These poor cultivators harvest immature lac and sell it in the market due to urgency in getting returns. This type of distress sale is a common feature among the lac growers. Financial constraints encompass lack of credit availability and crop insurance facility.
13. *Theft of lac crops:* Another very serious menace which is causing great anxiety is the problem of theft of the lac crops. The lac cultivator cannot afford to wait till the crop matures and the next life cycle of the lac insect starts, because he feels and knows by experience that he would be outwitted by the lac thief and thereby lose the whole crop.

14. *Climatic extremes:* In the year 2013-14 rainfall was delayed and draught condition prevailed, in our survey area. It happens that the cultivator is driven to the necessity of cutting the lac while still immature for selling for cash or for obtaining food and necessities to maintain their livelihood. The situations like these naturally lead to *ari* cutting of lac and thus another very serious type of problem crops up, causing frequent shortage of broodlac for the rainy season crops in wide areas of Baghmundi and Jhalda. The consequence is rising price level of broodlac and sticklac, which may produce in the coming year fatal result.
15. *Others:* Besides above problems lac growers face lack of dissemination of the correct knowledge with regard to systematic cultivation of lac, and lack of improved and easy methods of controlling insect pests by means of demonstration on farmer's field. Scarcity of the host plant at suitable places is one of the major constraints in lac cultivation.
16. A few problems are widespread over a large area whereas others are localized to specific areas only. But all the same, brood scarcity problem outweighs all the other problems combined. Climatic change and violent price fluctuation have come into next in the rating of the problem. Damage of lac crop by fog especially on Kusum and Ber also possesses important place in the rating.

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