ETHOS

A Journal of research articles in management science and allied areas (refereed)

Volume : 2 No. : 2 July - December 2009 ISSN: 0974 - 6706

Contents

Research Articles

Case Study

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From the Desk of Editor …..

It has been an immense pleasure in placing before you the second issue of second volume of Ethos, a refereed biannual Journal of research articles in management science and allied areas. Indeed it is my pleasure to convey you, that Ethos has received overwhelming response from authors.

The journal is an effort to provide a platform for exploration and articulation of knowledge of academicians, researchers, students, entrepreneurs, executives and consultants. At ETHOS, we publish original papers in the form of research articles, case studies and book reviews, in areas of management and allied subjects.

The present issue of ETHOS carries seven papers, a blend of facets of empirical and conceptual explorations in the functional areas of management like General Management, Financial Management, Computer Management and Human Resource Management along with an independent section of a Case Study.

The voyage of education systems in India has its own story. The saga of change in this system has been unfolded leading to many unending discussions and debates. Dr. V.A. Patil revealed through his paper, a dire need for restructuring of education especially focusing on management education. Time and again ethics in business has found significant importance and has been a fascinating subject of discussion among management scholars and practitioners. Dr. M.M.Ali and M.N.Paliwal talk about ethical practices in medical profession through an outstanding empirical research and have concluded with eye-opening findings. The discussion on 'Inclusive Finance' is taking its root since Government officials and scholars in economics and finance are raising the issue. Really, fortune lies at the bottom of pyramid as it is reflected in descriptive article by Mr. Khan M.A. Imran which talks about microfinance for rural people in poverty alleviation. Agricultural Ministry of Government of India is vibrant as it has come to forefront these days in the wake of rocketing & soaring prices of essential commodities. Sugar is one of them. Sugarcane has played a dominant role in socio economic transformation in rural Maharashtra. Dr. P. S. Kamble and others have focused on statutory minimum prices' and its relation with productivity and production. Sheeba Kapil scholarly focuses on energy derivatives. The paper attempts to analyze the development in energy derivatives and its future scope. The theme 'Work Life Balance' has gained attention of scholars. Stress has become integral part of profession. Mrs. M.A.Sabadra in her article has highlighted the impact of stress on the health of working women in the view of their multi–dimensional roles. Ms. S.S Gulavani. and Dr. R.V. Kulkarni have detailed the applications of data mining in healthcare. This paper provides information on data mining and its role in knowledge discovery in the healthcare sector. The last section of ETHOS has been dedicated to Case Study, 'Build a Great Company!' contributed by Dr. Girish Jakhotia.

I believe that the articles and case study contributed by esteemed academicians and scholars for this issue would be immensely readable and beneficial to academicians, research scholars and industrialists.

I look forward to your valuable feedback to enable us enthrall readers and ensure kaizen.

I also take this opportunity to wish you though belatedly, a Happy New Year to all our subscribers, contributors, readers, scholars and authors and continue to seek your wholehearted support.

Dr. B.S. Sawant
Editor-in-Chief

Management Education : Need For Restructuring

V. A. Patil

Abstract

Management education in India started with Indian Institute of Social Welfare and Business Management, offering postgraduate diploma in 1954. In India the All India Council of Technical Education (AICTE) certifies all technical institutes, including those who are providing management education. There has been tremendous growth in management education, particularly during late 80's and 90's. An interesting aspect of the Management Education scene is that about 75% of these schools are in the private sector.

Corporate houses prefer the business schools which offer good quality education. So, it becomes important for management colleges to impart good quality management education as this is the only aim with which a student takes admission into the management school. This has created the need to restructure management education so that the Indian industry can be made highly professionalized if it has to compete at the International Level.

Since management education is known for generalized approach rather than specialized approach the schools have to follow some instructions for providing value education. The government must give apt opportunities to MBA candidates in governance. Management education programme is not only for ensuring jobs in the industry but is also a great career path for self-employment as entrepreneur. Various measures should be adopted which will not only enhance the efficiency of the management institutes but also help them to combat the Post WTO economic challenges successfully. Now urgent and immediate need for restructuring the management education is felt as the future of India depends on it to a large extent.

The present paper attempts to analyze some of the major problems plaguing the management education system. Article deals with the necessity to restructuring the management education as it is the need of time.

Keywords: Management Education, Restructuring Management Education, AICTE, Quality Management Education.

Introduction

One of the recent and marked features in the educational pattern of the developing economies in particular and advanced countries in general, is growing attention towards business education at the school, university and professional level. In the twofold task of meeting the growing need of managerial personnel in projecting realistic, flexible and acceptable solutions to the business problems, the role of colleges and universities imparting management education is obviously crucial and demanding one.

In India, universities are established by State and Central legislature and are autonomous or independent entities with their own programmes and functions. Over the years, there has been

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noteworthy increase in the number of universities which lead to needless duplication of educational services. Universities offered programmes and there were instances where academic programmes of one university were adopted verbatim though the courses were totally irrelevant and inappropriate to the local requirements. Similarly, the number of colleges augmented and in many cases they were created to satisfy the ambitions of the politicians with little regard to costs or educational needs and requirements of the state.

India is witnessing a changing growth of corporate culture since the last decade and is today one of the fastest developing countries of the world with the annual growth rate of 9%. India has emerged as one of the most potential engines of global economy and a vast scope of employment has been generated therein. In order to sustain the growth rate, there is a need to increase the number of standard institutes and also the quality of higher education in India. Viewed in the perspective of higher business expectations and the tremendous opportunities open to the students of management courses, the present state of art of management education is far from satisfactory in our country.

Present Scenario

Management education in India started with Indian Institute of Social Welfare and Business Management, offering postgraduate diploma in 1954. In India the All India Council of Technical Education (AICTE) certifies all technical institutes including those which are providing management education. AICTE was set up in 1945 as an advisory body and was given statutory status through an Act of Parliament in 1987. The major characteristics of management education are being monitored by AICTE in terms of quality, standard, reputation and identification. It lays emphasis on analytical and decisional part of the curriculum and upgradation of the course structure from time to time.

There are nearly 850 Management Schools in the country today, with an intake of nearly 60,000 students at the post graduate level- both the full time and part-time evening programmes taken together. To this, one should add another 2,500 students coming through the distance education mode. There has been tremendous growth in management education, particularly during late 80's and 90's. Nearly 75 percent of the management schools in the country are less than 12 years old. An interesting aspect of the Management Education scene is that about 75 percent of these schools are in the private sector.

Growth of management education in India is depicted in the following Table No. 1 & Table No. 2.

Table No. 1 : Growth of Management Education in India

Sr.	Years upto	1950	1960	1970	1980	1995	1999	2000	2001
1	No. of Institutions	2	21	56	118	422	682	744	789

Table No. 2

Sr.	Years upto	1959	1996	1997	1998	1999	20002001
1.	Total no. of Prgrammes	563	704	793	863	939	959 1035
2.	Programmes by Private College Institutions (PCI)	423	539	611	673	737	753 808
3.	Total Intake Capacity	37287	46916	52396	56546	60381	6137165000
4.	Intake Capacity in PCIs	29198	36493	40778	44038	47373	4818350953

Source: (AICTE Year Book 2006/07)

The recent London Times Higher Education Supplement ranking of the world's top 200 universities included three in China, three in Hong Kong, three in South Korea, one in Taiwan, and one in India (i.e. an Indian Institute of Technology at number 41— the specific campus was not specified). These countries are positioning themselves for leadership in the knowledge-based economies of the coming era.

The Government expenditure on Education has sizably increased since the first five year plan with highly subsidized higher education. However, nearly 97% of the Central Government expenditure on elementary education goes towards the payment of teachers' salaries. The UPA Government has allocated Rs. 84,943 crore for the education sector over the 11th plan period, and cleared the proposal of setting up of seven new Indian Institutes of Managements (IIMs), eight new Indian Institute of Technology (IITs), 20 new Indian Institute of Information Technology (IIITs), 14 new central universities, 14 new world-class/ national varsities, 1,000 new polytechnics and 373 new degree colleges. But the need to overhaul the standards of varsities has gone ignored hitherto.

Need of Management Education

In the context of expansion and rapid modernization of the industrial-cum-social structure, the complexities of modern business resulting in the growing size of investment units, increasing automation and a more sophisticated accounting system have inevitably led to multiplicity of problems in business and; therefore; to the need of highly trained professionals at all levels. In this context, the study of management has become immensely essential. Management education is a broad term and may be subject to multiple interpretations. It is the branch of education which offers all techniques required for the successful handling of various business-management related issues.

Management education is one of the most integrated and civilized education systems. It deals with organizing and its developing all its facets. Management education had been preferred for more than four decades in India.

Statement of the Problem

Management education is in great demand especially after Liberalization, Privatization and Globalization (LPG). When management education started, there were very few management institutes. But when management education was opened up for the private sector, a lot of institutes streamlined and simplified the process of getting admission. India being the part of global linkage in the aftermath of WTO agreement is becoming a technology driven society.

Nearly one lakh management graduates pass out every year in India, providing a tremendous potential to contribute to the creation of a 'knowledge society'. There are several challenges in management education which require change in the character and structure of management education, integration of management education with corporate sector, curriculum revision, reformed assessment and examination systems, course credits, distinctiveness of institutes, designing of different programmes for executives and emphasis on research. An MBA from a non-reputed B-school doesn't get a good job opportunity with the requisite pay package. The institute from where the candidate gets an MBA degree becomes very important. Corporate world prefers such business schools which offer good quality education. The quality of education at most of the universities leaves much to be desired. The gap between our universities and those in the western world has widened.

A recent survey shows that the market prefers those management graduates who have practical application of knowledge, willingness to learn the amount of information they are exposed to, the urge to outshine others in the job, ability to lead and accept individual responsibilities, efficiency to learn new tasks and have finally a wider

perspective of life. In such a scenario of competitive world, the basic consideration will be the quality of management education. As such it becomes very important for management schools to impart good quality management education, as this is the only aim with which a student takes admission into B-school. This has created the need to restructure management education so that the Indian industry can be made highly professionalized if it has to compete at the International level.

Management education needs to be value based rather than money based. India is facing a crisis of quality management education. The State is in need of Entrepreneurial Managers. The setting up of quality Business Management Institutions would certainly be helpful in meeting the ever-increasing demand for competent managers.

The task of education can be performed and quality education achieved only when the basic principle of education is understood, appreciated and upheld by both the teacher and the taught. Quality provides a business ethos which encompasses customer satisfaction, profitability, efficiency and spans the requirements of a wide variety of professions and occupations.

The present paper attempts to analyze some of the major problems plaguing the management education system. In the above context, this article deals with the necessity to restructuring the management education as it is the need of time.

Determinants of Quality Management Education

Quality management education includes the following

1. Academic environment i.e. library facilities, audio-visual aids, computer facilities, seminars, workshops etc.
2. Infrastructure facilities provided by the Institutes i.e. classroom, hostel, canteen facilities etc.
3. Industrial exposure i.e. Interaction with businessmen, consultancies, visits to industrial area etc.
4. Placement facilities provided by the Institute i.e. Recruitments of the students through campus interview and their average salary etc.
5. Knowledge of faculty members i.e. Career advancement of the faculty members.
6. Modification of course structure
7. Teacher and students relations
8. Teaching methodology
9. Examination patterns and scheme of evaluation
10. Quality intake of students etc.

Objectives of the Study

1. To study the present scenario of management education
2. To identify existing and desirable characteristics of Teachers, students, course aims and process.
3. To study the flaws in the present Management Education imparted by Management Colleges/ Institutes in Kolhapur city.
4. To suggest remedies to improve the quality of Management Education

Research Methodology

Survey method was used to collect the data. A structured questionnaire was given to 50 students selected randomly from 5 Management Institutes in the Kolhapur city. There are ten management institutes in the city of which three have MBA Programme under Distance Mode. These Institutes have not been covered in the present study. It is necessary to state that the Management institutes/ Colleges have been selected on the basis of conveniences and easy availability of material rather than as an off shoot of any scientific methodological criterion. The ability to undertake field study, interact with faculty as well as closely observe the functional dynamics of the institutions have played significant role in choosing the sample colleges and institutes. The research design for the present study adopted is of exploratory and descriptive nature and the data collected is of primary and secondary type.

Major Findings

Perception of the management students regarding the present management education in the management institutes/colleges based on structured questionnaire indicates that:

1. In all the Management institutions the students have limited exposure to real industrial situation which is a general weakness of the management education.
2. AICTE/UGC has recommended better standards for infrastructure facilities to be provided to the students, but most of the students (i.e. 90%) are unaware of these.
3. Management education is one of the most integrated and civilized education systems. It deals with organizing and its development in all facets. But it is sad to say that the management institutes do not focus on producing globally competitive managers who can run the business effectively and efficiently.
4. Most of the management institutions (i.e. 60%) are following the traditional concepts and method compared to western countries following modern methodologies and sophisticated technologies in teaching. Quite inadequate efforts have been made to develop teaching materials with direct relevance to contemporary Indian business world.
5. The syllabi of all subjects are not in accordance with the aims and objectives of the subjects. The present examination system is more of a test of rote memory than of understanding and analytical thinking.
6. Knowledge of soft skills plays a vital role in professional success. But during the course of investigation it was found that majority of the management Institutions (i.e. 80%) have not paid proper attention towards this.
7. There is a lack of faculty with industrial background.
8. Fellowships and other grants are not available for the students.
9. Salary packages for Academics not high enough to attract excellent brains.
10. It was observed that in spite of high fee structure, students are getting attracted towards the foreign educational institutions because of their perfect professional approach and aggressive marketing strategies.
11. Most of the Management institutes have not thought of the need of 'soft skill'.
12. In most of the management institutions the project work assigned to the students are not handled with due care.
13. Some of the colleges have no separate 'management council' and the work is carried either by 'principal' or the 'Management Board of the College'.
14. Many teachers of the Management Institutes are MBAs from sub-standard institutes and did not have proper management education.

Suggestions

On the basis of the findings of the study, following measures are recommended in the present management education system.

1. While appointing faculty for the course the faculty with industrial background and academics should be preferred. Management education being practice-oriented, management schools may be encouraged to have a good proportion of professionals with relevant industry experience. Salary package to the faculty should be good enough to attract the good talent. It is recommended that highly qualified and experienced faculty should be recruited to provide quality education.
2. With a view to developing the all-round personality of management students, the educators must adopt the latest teaching methods and techniques of presentation prevalent in advanced countries like USA and UK. This implies a more effective and meaningful tutorial system, use of cases as illustrations of actual business situations, heavy reliance on library assignments, seminars, discussions and group meetings and group sessions supplemented by projects, work

visits, film shows, access to computer system, and lesser reliance on the prosaic lecture method.

3. Soft skill is a sociological term that refers to a cluster of personality traits such as social grace, communication skills, personal habits, friendliness and optimism, all of which are qualities that play a crucial role towards molding and enhancing an individual's overall personality. Knowledge of soft skills plays a vital role in professional success. Hence, every high quality management institute must ensure that the course includes some sort of soft skills.
4. We do not need more managers; we need creative leaders for the future. Hence, it is suggested that all management students to take up at least two or three live projects in areas that are completely uncharted or unexplored. These could be at any level, even something that the institution faces.
5. The regulatory bodies should have to introduce an effective productivity linked system. The percentage of students passing examinations is not only criterion to judge the success. Management schools should focus on producing globally competitive managers to face the business challenges and run Indian business and industry effectively.
6. The course curriculum relevant to the Indian context should be designed. Teaching methods and materials with direct relevance to present-day Indian business world should be developed. There should be an inclusion of business ethics values and stress management in the syllabus. Many schools have prescribed at length value oriented management programmes and importance of life oriented values in management education. For effective implementation of the programme, there is a need to establish a dialogue with businesses and industries. The courses have to be designed and redesigned according to the expectations of the society and industries and it is necessary that curriculum should be modified after every two years. The Board of Studies should consist of senior faculty members, members of industries and management professionals. More and more real life case studies should be included in the curriculum.
7. There should be real industrial exposure in the form of industrial visits. It is also recommended that there should be periodic visits by industry executives to share experiences, review various trends in management theory and practice.
8. It is recommended that the faculty development programmes and exchange of faculty and executive between institution and industry on specific projects and assignments should be introduced and implemented. Performance appraisal and reward systems for faculty should be linked to case studies development, research work and industry interaction.
9. At the time of admissions for the course, the management schools should have to encourage the candidates with work experience. The fellowships and other grants should be offered to bright students. The distinction should be made between the fresh graduates and candidates having work experience while admitting them for the course. There should be reduction in course period for the candidates having work experience.
10. There should be fair periodic evaluation of the management schools so that it can inculcate quality in education.

Conclusion

The ultimate strategy is to upgrade the standards of education in three fold forms. First, moving from survival to stability, second, from stability to success and the third, from success to sustainability. There is a need to radically transform the nature of the management education system. Now as India strives to compete with globalised economy in areas that require highly trained professionals, the quality of management

education becomes increasingly important. The entire system of faculty, workload, office administration, teaching methodology etc. in the university system needs a careful look. Several foreign universities are actually looking for land, the surest indication that they are setting up base and it is a matter of time that the sleepy, old Indian varsities to face competition to world renowned schools.

Management education enhances the managerial skills by sharing ideas and encouraging healthy discussions. Management education should be able to evaluate solutions, situation specific decision making abilities and orienting individuals towards providing action plans for decision making.

The management education system should be changed in accordance with the changing times and it is high time that the teachers, students, government and intellectuals realize their responsibilities to ensure a bright future. The aim of quality institution is intended upon producing an individual who is socially responsible, globally aware and useful to the nation. Management education programme is not only for ensuring jobs in the industry but is also a great career path for self-employment as entrepreneur.

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Annexure

Table No. 1 : Satisfaction in Regard to Academic Environment

Sr.	Attribute	Yes (%)	No (%)	To Some Extent (%)
1	Satisfaction in regard to Academic environment in the Institute	70	20	10

Table No. 2 : Absence of Indian Context

Sr.	Attribute	No (%)	To Some Extent (%)
1	Examples in the curriculum from Indian context	90	10

Table No. 3 : Industrial Exposure

Sr.	Attribute	Yes (%)
1	Limited industrial Exposure	100

Table No. 4 : Lack of Practical Orientation

Sr.	Attribute	Yes (%)	No (%)	To Some Extent (%)
1	Whether the course syllabi and examinations are practically oriented?	50	40	10

Table No. 5 : Teaching Methods and Teaching Materials

Sr.	Attribute	Yes (%)	No (%)	To Some Extent (%)
1	Teaching methods and material is irrelevant to Indian context	20	20	60

Table No. 6 : Infrastructure Facilities

Sr.	Attribute	Yes (%)	To Some Extent (%)
1	Better provisions of infrastructure facilities	40	60

Table No. 7 : Lack of Industrial Experience for the Faculties

Sr.	Attribute	Yes (%)	To Some Extent (%)
1	Faculties having no industrial experience	80	20

Table No. 8 : Social Work During the Course

Sr.	Attribute	Yes (%)	No (%)	To Some Extent (%)
1	Did any social work during the course period	50	10	40

Table No. 9 : Separate Council for Management Education

Sr.	Attribute	Yes (%)	To Some Extent (%)
1	Is there separate council for management education?	30	70

Table No. 10 : Handling the Project Work Assigned to the Students

Sr.	Attribute	Yes (%)	No (%)	To Some Extent (%)
1	Whether Faculties handle Project work seriously?	40	10	50

Table No. 11 : Emphasis on Soft Skill

Sr.	Attribute	No (%)	To Some Extent (%)
1	Provision made for soft skill training	80	20

Table No. 12 : Focus of the Students on Course Books and Syllabus Completion

Sr.	Attribute	Yes (%)	No (%)	To Some Extent (%)
1	Students limited to syllabus and course books	30	60	10

Table No. 13 : Fellowships and Other Grants Provided

Sr.	Attribute	No (%)
1	Provision of fellowships and grants	100

Table No. 14 : Awareness in Regard to Infrastructure Facilities Recommended by AICTE / UGC

Sr.	Attribute	Yes (%)	To Some Extent (%)
1	Awareness of the students regarding infrastructure facilities	90	10

Table No. 15 : Compensation/ Pay Scales for Faculty Members

Sr.	Attribute	Yes (%)	To Some Extent (%)
1	Faculties paid inadequately	80	20

Ethical Practices in Medical Profession - Kolhapur - A Study

M.M. Ali, M.N. Paliwal

Abstract

Ethics are the discipline that examines one's moral standards or moral standards of society. It also questions how these standards apply to our lives and whether these standards are reasonable or unreasonable. Ethics and professional values are vital today as there is an all round deterioration of these and there are series of scam and corrupt, unethical practices in every sphere of life. Medical ethics are concerned with morality of medical practices. Medical ethics is primarily a field of applied ethics, the study of moral values and judgments as they apply to medicine.

This paper deals with the research endevour to identify the various ethical/ unethical practices of Doctors in Kolhapur city. The present study explores rampant unethical practices being followed in the Medical Profession.The authors have suggested measures which would help resolving ethical dilemmas and which ultimately would help in minimizing the unethical practices in the Medical Profession.

Keywords : Ethics, Moaral Standards, Professional Values, Medical Etihcs, Ethical Dilemmas.

Introduction

Ethics can be described as the conscious appeal to norms and values to which on reasonable grounds, we hold ourselves obliged, as reciprocally we hold others obliged to the same norms and values. Ethics are the methodical and systematic elaboration of the norms and values we appeal to in our daily activities. Ethics are the discipline that examines one's moral standards or moral standards of society. It also questions how these standards apply to our lives and whether these standards apply to our lives and whether these standards are reasonable or unreasonable.

Ethics is two things. First, ethics refers to well based standards of right and wrong that prescribe what humans ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues. Ethics, for example, refers to those standards that impose the reasonable obligations to refrain from rape, stealing, murder, assault, slander, and fraud. Ethical standards also include those that enjoin virtues of honesty, compassion, and loyalty. And, ethical standards include standards relating to rights, such as the right to life, the right to freedom from injury, and the right to privacy. Such standards are adequate standards of ethics because they are supported by consistent and well founded reasons.

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Secondly, ethics refers to the study and development of one's ethical standards. As mentioned above, feelings, laws, and social norms can deviate from what is ethical. So it is necessary to constantly examine one's standards to ensure that they are reasonable and well-founded. Ethics also means, then, the continuous effort of studying our own moral beliefs and our moral conduct, and striving to ensure that we, and the institutions we help to shape, live up to standards that are reasonable and solidly-based. Ethics are the discipline that examines one's moral standards or moral standards of society. It also questions how these standards apply to our lives and whether these standards are reasonable or unreasonable. Organizations commonly have a written Code of Ethics under which they presume their members will operate. Professions such as Accounting, Medicine and Project Management certainly have Codes of Ethics under which they expect their members to operate. These codes direct and define the accepted and acceptable behaviors of organizations and their members in day to day business decisions and presumably set the benchmark for evaluation, including self-evaluation. When reviewing organizations Code of Ethics it is vital that a number of questions are asked, to determine how well it is written and whether it truly addresses those principles and standards that can be globally accepted and applied by a diverse population. Ethics and professional values are vital today as there is an all round deterioration of these and there are series of scam and corrupt, unethical practices in every sphere of life.

Medical ethics are concerned with morality of medical practices. Medical ethics is primarily a field of applied ethics, the study of moral values and judgments as they apply to medicine. As a scholarly discipline, medical ethics encompasses its practical application in clinical settings as well as work on its history, philosophy, theology, and sociology. Medical ethics tends to be understood narrowly as an applied professional ethics, whereas bioethics appears to have worked more expansive concerns, touching upon the philosophy of science and the critique of biotechnology. Six of the values that commonly apply to medical ethics discussions are:

1. Autonomy- the patient has the right to refuse or choose their treatment.
2. Beneficence - a practitioner should act in the best interest of the patient.
3. Non-maleficence - "first, do no harm"
4. Justice - concerns the distribution of scarce health resources, and the decision of who gets what treatment (fairness and equality)
5. Dignity - the patient (and the person treating the patient) have the right to dignity.
6. Truthfulness and honesty - the concept of informed consent has increased in importance.

Review of Literature

Ravindran G D (2008) said that Medicine is one of the few professions that sets a code of behaviour for its practitioners. In the past the relationship between the doctor and patient was paternalistic. Today this has changed. Advancement of medical science and technology has made a tremendous impact on medical practice. Rising costs of medical care and scarce resources pose dilemmas to the practitioner of medicine.

Pandya Sunil K (1994), in his study, made it very clear that Moral principles are not unlike the sky marks used in celestial navigation: a position is determined and a course marked by reference to fixed points, suns, stars and planets. At the same time, the navigator must look, not only to the sky marks, but to visible landmarks and to the wind and waves... Principles alone do not lead to ethical decisions; decisions without principles are ethically empty." He emphasizes the need to ensure that no action puts a patient at a disadvantage because of personal prejudice. Punishing the

patient with alcoholic cirrhosis or the smoker with chronic bronchitis by refusing treatment is unjust, hence unethical. Likewise, prescribing a more expensive drug or procedure when a cheaper alternative would be equally effective is a waste of scarce resources and violates the principle of distributive justice.

Chinoy R. F. (1997) has discussed about the ethics of relationships between doctors.

Over the four- and- a- half- year span of medical training, students are extensively grilled on how to diagnose diseases and treat patients. The author further explored that the rules of conduct, which should guide his behaviour when interacting with his own professional colleagues, is hardly ever touched upon in the medical curriculum. These rules and laws actually offer a framework within which the future doctor can act. Many students and practitioners are genuinely surprised to know that rules actually exist. Some know that some sort of ethical conduct is expected of them, but are not very clear on the subject.

A research study by Menon N R Madhava (2008) found that. It was towards the end of the last century that medical ethics assumed the character of a distinct discipline in India, attracting the attention of professionals from both law and medicine. What came out during the last two decades largely under the supervision of the Indian Council of Medical Research is a complex set of norms, standards and procedures, largely self-imposed and self-executed, which may conveniently be called the bioethics jurisprudence of India. Matthews J. Rosser (2006) has carried out a survey related to two of the most widely discussed models for dealing with issues of distributive justice in health care: market based approaches or social justice. A central question that all democratic societies currently face is how do we allocate our finite health care resources in ways that are socially just? It is important to remember that, in a democratic society, we face the constant potential tension between two prima facie goods-namely, the right of the individual to self-determination (usually referred to as the principle of autonomy) and the central role of the state in preserving the health of its citizens (sometimes referred to as the principle of beneficence). In the sphere of the market, personal wealth is the criteria that is used to allocate finite resources (which is the reason that Bill Gates can own a yacht and most of the rest of humanity can't); ability to pay is the primary "rationing" criteria. According to Bernald Night, People in need, in today's world, are the people we punish. Think about it for a minute, Doctors, when they finish their training, swear the Hippocratic oath, to protect human life above all else. Yet, when it comes to getting a job, employers use Doctors to determine the health, of a person, applying for the job, no job, no money to improve your health, no job, no life. What is the point of investing millions, billions of dollars, on machines, medications, research and health, if in the end, people can't afford it, money is the route of all evil, the care of human health, should not, rely on money.

Murthy K K (2007) has focusded the area of legal decisions related to medical negligance .An attempt to invoke religious in ethical dilemmas of our secular society has been made by Heifg Milton d.(1996) and four factors are identified which must be consideed in the evalation of every ethical situation – non maleficence, freedom, common good and beneficence.

Methodology

The present study has been completed using Field Survey method.

In the field survey method the researchers had approached directly to the doctors, nursing staff, patients and chemists from time to time and relevant data had been solicited from such respondents. Prior to this field survey a pilot survey was carried out. On the basis of the feedback of the pilot test, the questionnaire was

suitably amended and administered. The typology of research according to the intent here is an exploratory research

In order to comply with present research endeavor entitled above, the following objectives have been considered-

1. To explore various ethical practices followed by Medical Profession.
2. To examine the medical services provided by the doctors from ethical point of view.
3. To suggest ethical measures in order to minimize the unethical practices in Medical field.

Hypotheses

Considering the nature of the study the authors have laid down following statement of hypotheses to start with research inquiry.

1. Fees charged by the Doctors and ethical practices are independent.
2. Prescriptions of drugs by the Doctors and ethical practices are independent.
3. Doctor's recommendation to the particular laboratory and ethical practices are independent

The study is based on Primary data collected from various stakeholders of medical services. The primary data constituted of information gathered through formal and informal discussions, structured and unstructured interviews, and administration of questionnaire, which had been amended and modified after a pilot test.

The questionnaire consisted of ten, Likert-type items. Each of the ten items consisted of a declarative statement and a seven- category "strongly agree to "strongly disagree" rating scale; only the end points of the rating scale were labeled. Scale categories were labeled numerically from 1 to 7. Broadly four stakeholders of medical sector have been considered such as – doctors, patients, nursing staff and chemists. A cross-examining method was followed. For example to assess & identify the ethical/unethical practices carried out by doctor's opinion of patients, nursing staff and chemists was elicited.

Sample

The stratified convenience sampling technique was used to select the doctors appropriate for the study. Highly specialist doctors from various fields such as Gynecologist, Orthopedic, Pediatric, ENT specialists, Physician, Dermatologists, Dentists, and Opthomalists were selected from all the areas of Kolhapur city. The total sample representing doctors from all different fields is 50.As mentioned above each respondent was given three different questionnaire to cross examine the ethical/ unethical practices of the doctors , therefore the total sample size for the study was 150(50*3).

Table No. 1 : Sample Description and Size

Sr.	Type of the Respondent	Number of the Respondents
1.	Patients	50
2.	Nursing staff	50
3.	Chemists	50
	Total sample	150

The present study was confined to the ethical/ unethical practices in the Medical profession. The geographical scope of the study was the Kolhapur city. The periodical scope extends to the existing situation when the empirical data was collected.

The data has been processed with SPSS software and Kolmogorov- Smirnov test has been applied to test the hypotheses.

Results and Discussions

To examine the various ethical/ unethical practices of doctors; the respondents were: patients, nursing staff and chemists' .The following table explains the percentile value of the mean score of the individual's opinion.

Table No. 2 : Opinion about Ethical/Unethical Practices of Doctors

Sr.	Likert-type items	Percentile value of the mean score		
	Criteria	Patients (%)	Chemists (%)	Nursing Staff (%)
1.	Prescribe laboratory tests before diagnosis	85.71	57.14	65.43
2.	Doctors reference for a particular laboratory	89.42	73.14	58.29
3.	High charges of treatment	86	66.28	57.14
4.	Undue advantage of the ignorance of the customers	70	62.86	48.57
5.	Sex determination of the unborn child	68.29	62.86	48.57
6.	Doctors remain ignorant about the services of the nursing staff	57.71	49.99	38.56
7.	Govt. doctors make money unethically	74.29	68.29	45.71
8.	Doctors prescription of drugs	71.42	65.14	70.57

Source: (Primary Data)

From the above table it is noted that doctors prescribes many tests before the diagnosis. Here the percentile value of the mean score 86% of the patient's shows that unnecessary doctors recommend the patients to undergo for various laboratory tests. The other two respondents – chemists & nursing staff are also agreeing with the same. This reality has been cross examined by consulting some senior doctors about the doctor's prescription related to the laboratory tests and concluded that number of the tests could be easily avoided.

Now a day it is observed that doctors recommend, advise and pressure the patients to refer the particular laboratories. The empirical data is supporting the common belief. Here the 60%of the patients found strongly agree that doctors mention the particular laboratory. The very high value of the mean score 89.52 is much alarming. This is a clear indication about the linkage between doctors and laboratories. For their own economic gain the create inconvenience to the patients and exploit them.

68% of the patients are of the opinion that doctor's charge unreasonably high for their treatment. Similar opinion of nursing staff and chemists support that really the doctor's charges are unjustified.

Sex determination of the unborn child is legally prohibited by the government but still it is found that doctors practice it at their private clinics. The empirical data is supporting that more than 50% of the patient agreed about doctor's this unethical conduct.

Survey was carried out to find what is the awareness level of doctors as far as the status of the services extended by the nursing staff to the patients. Around 40% of the patients strongly admit that doctors are ignorant about the services of their own nursing staff, whereas the nursing staffs do not agree with this situation.

An investigation was made to find the reason for approaching the private clinics much more than government one by the patients. The above table shows almost half of the patients are of the opinion

that government doctors call the patients at their private clinic for the treatment, motive to make money unethically.

The above table highlights that on an average 65% respondents agree that doctors prescribe many drugs than required. The doctors want quick effects of their treatment & therefore they experiment all variety of drugs without any botheration about the side effects of the medicines. However, the percentile value of the mean scores 71% is also pointing towards the long and large prescription of the doctors.

The researchers have cross checked it by showing the prescriptions to some of the senior retired doctors and found that the actual prescription recommended by doctors were having more drugs than required.

Hypothesis testing using KS test

Table No. 3 : Fees charged by the Doctors and ethical practices

H_{o1}: Fees charged by the Doctors and ethical practices are independent.

Opinion		Observed Number	Observed Proportion	Observed Cumulative Proportion	Null Proportion	Null Cumulative Proportion	Absolute Difference observed and nulls
Strongly Agree	7	47	0.31	0.31	0.143	0.143	0.167
	6	23	0.15	0.46	0.143	0.286	***0.174***
	5	21	0.14	0.60	0.143	0.429	0.171
	4	16	0.11	0.71	0.143	0.572	0.138
	3	19	0.13	0.84	0.143	0.715	0.125
	2	18	0.12	0.96	0.143	0.858	0.102
Strongly Disagree	1	06	0.04	1.00	0.143	1.001	0.000

From the table it is found that the largest absolute different is 0.174 which is the value of Kolmogorov-Smirnov D value. Here the critical value for a sample of 150 at an alpha of 0.05 is $1.36/\sqrt{n}$ that is, D= $1.36/\sqrt{150}$ =0.111.As the calculated D exceeds the critical value of 0..111, the null hypothesis that Fees charged by the Doctors and ethical practices are independent is rejected and hence we establish an alternative hypothesis such as Fees charged by the Doctors and ethical practices are dependent.

Table No. 4 : Prescriptions of drugs by the Doctors and ethical practices

H_{o2} Prescriptions of drugs by the Doctors and ethical practices are independent.

Opinion		Observed Number	Observed Proportion	Observed Cumulative Proportion	Null Proportion	Null Cumulative Proportion	Absolute Difference observed and nulls
Strongly Agree	7	25	0.166	0.166	0.143	0.143	0.023
	6	31	0.210	0.376	0.143	0.286	0.090
	5	33	0.220	0.596	0.143	0.429	0.067
	4	26	0.173	0.769	0.143	0.572	0.197
	3	25	0.166	0.935	0.143	0.715	0.22
	2	10	0.066	1.001	0.143	0.858	0.143
Strongly Disagree	1	0	0	1.001	0.143	1.001	0.00

From the table it is found that the largest absolute different is 0.197, which is the value of Kolmogorov-Smirnov D value. Here the critical value for a sample of 150 at an alpha of 0.05 is $1.36/\sqrt{n}$ that is, D= $1.36/\sqrt{150}$ =0.111.As the calculated D exceeds the critical value of D, the null hypothesis that Prescriptions of drugs by the Doctors and ethical practices are independent is rejected and hence we establish an alternative hypothesis such as: Prescriptions of drugs by the Doctors and ethical practices are dependent.

Table No. 5 : Doctor's recommendation to the particular laboratory and ethical practices

$H_{o3:}$ Doctor's recommendation to the particular laboratory and ethical practices are independent

Opinion		Observed Number	Observed Proportion	Observed Cumulative Proportion	Null Proportion	Null Cumulative Proportion	Absolute Difference observed and nulls
Strongly Agree	7	28	0.19	0.19	0.143	0.143	0.047
	6	28	0.19	0.38	0.143	0.286	0.094
	5	29	0.19	0.57	0.143	0.429	0.141
	4	23	0.15	0.72	0.143	0.572	0.148
	3	16	0.11	0.83	0.143	0.715	0.115
	2	18	0.12	0.95	0.143	0.858	0.092
Strongly Disagree	1	08	0.05	1.00	0.143	1.00	0.00

From the table it is found that the largest absolute different is 0.148, which is the value of Kolmogorov- Smirnov D value. Here the critical value for a sample of 150 at an alpha of 0.05 is 1.36/vn that is, D= 1.36/v150 =0.111.As the calculated D exceeds the critical value of D, the null hypothesis that Doctor's recommendation to the particular laboratory and ethical practices are independent is rejected and hence we establish an alternative hypothesis such as: Doctor's recommendation to the particular laboratory and ethical practices are dependent.

Conclusion

The principal objective of the medical profession is to render services to humanity with full respect for the dignity of profession and mankind**.** Doctors should merit the confidence of patients entrusted to their care, rendering to each a full measure of service and devotion. Doctors should try continuously to improve medical knowledge and skills and should make available to their patients and colleagues the benefits of their professional attainments. The Doctors should practice methods of healing founded on scientific basis and should not associate professionally with anyone who violates this principle. The honored ideals of the medical profession imply that the responsibilities of the Doctors extend not only to individuals but also to society.

The authors are recommending the following suggestions:

1. The attitude of the doctors towards the community should be changed. They should keep the main objective of the medical profession to render services to humanity with full respect for dignity of human being.
2. Doctors should be encouraged to practice rational prescribing. The Medical Council of India should introduce some award system like Best Ethical Doctor to motivate the doctors to be more ethical.
3. In the practice of medicine the doctor's charges should commensurate with the services rendered and the patient's ability to pay. The Medical Council of India should set some standards as guidelines for charging the fees to avoid discriminatory pricing.
4. Doctors should observe all laws, uphold the dignity and honor of the profession and blow the whistle about illegal/ unethical conduct of the fellow members of the profession. A word of caution is that the practitioner who blows the whistle should follow the proverb, "Practice what you preach."
5. Regulatory authorities at the state level should be properly empowered to ensure the standards of medicines and series offered at diagnostic laboratories.
6. With the due help of government of India (local, state, national) and social servers, medical profession should safeguard the public against those practitioners deficient in moral character of professional competency.
7. Government should organize society awareness camps in which the public should be educated regarding the symptoms of the various common diseases and provide the laboratory tests for the particular diseases.
8. The working of the Government hospitals should be monitored by the external agencies (e.g. Rotary club, Lions club etc.)Periodically to ensure smooth and efficient working.
9. The Medical Council of India should not work as a merely registering body but should use all of its power to regulate, monitor, control and guide against moral or ethical misconduct.
10. The physician, engaged in the practice of medicine should give priority to the interests of patients. The personal financial interests of a physician should not conflict with the medical interests of patients. A physician should announce his fees before rendering service and not after the operation or treatment is under way.

11. The physician should neither exaggerate nor minimize the gravity of a patient's condition. He should ensure himself that the patient, his relatives or his responsible friends have such knowledge of the patient's condition as will serve the best interests of the patient and the family.
12. Physicians, as good citizens, possessed of special training should disseminate advice on public health issues. They should play their part in enforcing the laws of the community and in sustaining the institutions that advance the interests of humanity. They should particularly co-operate with the authorities in the administration of sanitary/public health laws and regulations.
13. On no account sex determination test shall be undertaken with the intent to terminate the life of a female fetus developing in her mother's womb, unless there are other absolute indications for termination of pregnancy as specified in the Medical Termination of Pregnancy Act, 1971.
14. Encourage medical universities to establish chairs and departments of medical ethics to develop the subject in the country
15. Start Master's degrees in medical ethics. Encourage more clinicians to become ethics teachers. This will, hopefully, improve the standard of ethics practice and there will be better role models for students to follow.
16. Provide additional incentives for faculty who are involved in teaching ethics either in monetary terms or in terms of career advancement
17. There is a dearth of articles on medical ethics from the point of view of Indian philosophy. Research has to be undertaken to identify and interpret Indian philosophy as it relates to medical ethics.
18. "Self help is the best help", keeping this in mind, society should educate itself against exploitation and stand up for their rights.

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Microfinance : A Vision for the Future

Khan M.A. Imran

Abstract

The importance of rural finance in poverty alleviation and achievement of the Millennium Development Goals means that it will remain a high priority for Governments, donors and, of course, rural households in future. Based on current trends, one can expect major changes in provision of products and services over the next few decades. The move towards inclusive financing is a big challenge for the financial system. At the all India level, less than 5% of poor rural households have access to microfinance as compared to 60% in Bangladesh. The southern states account for almost 75% of funds flowing under microfinance programmes. By far the most successful model of microfinance in India in terms of outreach is SHG Bank Linkage.

Financial inclusion is bereft of all praxis, every ideological or judgmental response to a shameful neglect of the most vulnerable sections of society. The term formalizes a human problem into an abstract and vaguely organic process of movement, the welcoming of the outsider into the fold. Efforts are needed to make Microfinance Institutions (MFIs) an integral part of mainstream banking and to bring down the rates of interest on micro credit to ensure that the microfinance movement gathers further momentum. This paper looks at the various future aspects of Micro finance and its role in inclusive growth.

Keywords : Financial Inclusion, Microfinance Institutions, Poverty Alleviation, Rural Finance, Self Help Group (SHG).

Introduction

'The poor themselves can crate a poverty free world---- credit can create self employment instantaneously-why wait for other to create a job for you?' (Yunus 2005). Microcredit is perceived as a development tool which enables the Micro Finance Institution (MFI) to fully recover all costs and make profits, even while addressing concerns of poverty alleviation for the low income communities who constitute the bulk of its clientele. Consequently a dramatic change has been effected in the perception of the poor by the powerful commercial players. By addressing some of the more intractable issues in lending to a large number of small dispersed borrowers, rural poor communities are increasingly perceived not just as 'bankable and credit worthy' but also as a vast yet largely untapped market of savers and borrowers with immense potential. A K.V. Kamath the CEO of the MFIS is a strategy for the ICICI towards leveraging the 'rural economy' in order to 'break into the top league of global banks. The discovery by corporate that' people at the bottom of the pyramid can be brought into their business model and the concomitant urge to upscale and expand outreach of such programmes draws an attention to the critical issues of the interfaces between micro finance projects and the poor communities they serve, the structures of credit delivery and the actual poverty impacts of Micro loans. The experience of the Grameen Bank provides us an entry point to briefly reflect on some of these issues.

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Big financial institutions of all sorts are in dire straits across the globe. But one category remains unaffected - micro-finance. Even as the global financial system freezes and giants like Lehman Brothers collapse, micro-finance institutions (MFIs) are expanding unfazed. Famous financiers (Lehman Brothers) face defaults big enough to wipe them out, but MFIs report virtually zero default. This is extraordinary. Big financiers lend against collateral, a back-up if their borrower defaults. But MFIs lend with no collateral at all. Big financiers lend to the most creditworthy corporations. MFIs lend to poor women whom nobody in history considered creditworthy before. Yet, the secured loans to big corporations are bombing, while unsecured loans to poor women are being repaid in full.

According to the Invest India Incomes and Savings Survey of 2007 by research firm IIMS Data works, just 44.9% of Indian earners had bank accounts, with coverage rates varying widely in individual States. Just 38% of paid workers in villages had accounts compared to 62% of their counterparts in urban areas.

As for the disbursal of institutional credit, the situation is quite grim. About 75% of the bottom half of Indian households still depend on informal sources, such as moneylenders, and less than 15 per cent have access to bank credit. The so-called bottom of the pyramid still remains largely deprived of institutional credit despite the growth of a fairly robust banking system over the decades. It has been observed all over that nearly three-quarters of farm households in the country have no access to formal sources of credit. The reason is they are not bankable. Apart from declining public investment, the denial of timely and adequate institutional credit to farmers is one of the important reasons for the poor performance of agriculture in the post-reform period.

The importance of rural finance in poverty alleviation and achievement of the Millennium Development Goals means that it will remain a high priority for governments, donors and, of course, rural households. Based on current trends, one can expect major changes in provision of products and services over the next decade.

Poor people often have just hand to mouth existence and have few reserves for major expenses such as illness, weddings, house repairs or education. They are unable to build their savings and are forced to borrow at exorbitant rates. This further adds to their burden and worsens their economic situation.

Micro finance is the supply of loans, savings, and other basic financial services to the poor. The idea of micro finance was developed as a survival strategy for the poor. In India, Ela Bhatt established the Self-Employed Women's Association (SEWA) in 1974. Mohammed Yunus founded the Grameen Bank project in Bangladesh in 1976. (The New York Bestseller book on autobiography of Mohammed Yunus)

Micro credit provides poor people with access to small loans at more manageable interest rates, and can lead to self-sufficiency and poverty alleviation. There are many models of micro credit. Poor people have been able to reduce debt burdens and break the cycle of poverty, when the interest is low. Studies of the impact of micro finance in more than 24 countries have found dramatic improvements in household income levels.

Present Experience

In the past few years, savings-led microfinance has gained recognition as an effective way to bring very poor families, low-cost financial services. For example, in India the National Bank for Agriculture and Rural Development (NABARD) finances more than 500 banks that on-lend funds to self-help groups (SHGs). It has been observed in surveys conducted in Bangladesh and India (NABARD) that the Self Help Groups (SHGs) comprises twenty or fewer members, of whom the majority is women from the poorest castes and tribes. Members save small amounts of money, as

little as a few rupees a month in a group fund. Members may borrow from the group fund for a variety of purposes ranging from household emergencies to school fees. As SHGs prove capable of managing their funds well, they may borrow from a local bank to invest in small business or farm activities. Banks typically lend up to four rupees for every rupee in the group fund. Groups pay an annual interest rate of 11% to 12%. Nearly 1.4 million SHGs comprising approximately 20 million women now borrow from banks, which make the Indian SHG-Bank Linkage model the largest microfinance program in the world. Similar programs are evolving in Africa and Southeast Asia with the assistance of organizations like Opportunity International, Catholic Relief Services, CARE, APMAS and Oxfam. Micro financing also helps in the development of an economy by giving everyday people the chance to establish a sustainable means of income. Eventual increases in disposable income will lead to economic development and growth.

The experience so far has shown that the microfinance movement in the country holds out a great promise of reaching out to the poor. It is seen that self-help groups (SHGs) are a good institutional structure in Indian conditions. Currently, 10 million SHGs are working across the country with a credit base of Rs 1,00,000 crore. Even so, SHGs and microfinance institutions (MFIs) have a long way to go. Out of some 400 million poor workers in the country, less than 20 per cent have been linked with financial services provided by MFIs.

Efforts are needed to make MFIs an integral part of mainstream banking and to bring down the rates of interest on micro credit to ensure that the microfinance movement gathers further momentum.

Need of the Hour

A large majority of the Asian population still lives under $2 a day and in extremely poor conditions. Sustenance of this inequality could trigger tensions among different groups and may result in armed conflicts. This section of the society urgently needs to be brought into the economic main stream to achieve inclusive growth. The role of the financial sector in achieving this inclusive growth comprises of providing financial services to this segment and this is where micro finance plays a crucial part.

Using the $2-a-day poverty line, the level of poverty has only declined from 86.5% to 79.8% between 1990 and 2005, suggesting that more than half of developing India still lives in very poor conditions, is vulnerable to shocks, and may easily slip into extreme poverty.

Studies of the impact of micro finance in more than 24 countries have found dramatic improvements in household income levels. Micro finance programs may enable poor people to improve their situation, but they do not eliminate the need for other basic social and infrastructure services. The United Nations has declared the year 2005 to be the Year of Micro credit.

Micro financing has been revolutionizing the rural economy through the self-help groups. The success of the concept of micro credit through self-help groups has encouraged the government to use as an instrument to address the issues of poverty and unemployment.

The Grameen Bank of Bangladesh has loans currently in the hands of borrowers totaling over US$300 million, with deposits of a similar amount. Over 95% of the Grameen Bank's 3.8 million members are women. It has reversed conventional banking practice by removing the need for collateral and created a banking system based on mutual trust, accountability, participation and creativity.

To address such risks, India's development agenda will need to be expanded to include not only the eradication of extreme poverty, but an inclusive growth strategy to address the legitimate concerns of this large segment of the population. The

ultimate outcomes of inclusive growth are sustainable and equitable growth, social inclusion, empowerment and security.

Although the banking sector has made significant developments in many areas of their performance, there still exists large portions of the population which are yet to be brought under the umbrella of banking services. Financial inclusion efforts are essential to bring those portions of the population into the mainstream. This would enable banks to expand their market share but expand the overall market, in the process of tapping the Bottom of Pyramid (BoP).

Problems of Microfinance

Issues pertaining to repayment tensions, rigidity of repayment schedules and participation of borrowers in the design of credit packages of Grameen II design that Grameen II attempts to resolve- with mixed results-resonate in the Indian experience of microfinance as well. In the year 2005, the media reported suicides of close to 60 borrowers of Grameen-replicated MFIs in Andhra Pradesh allegedly attributed to harassment by the MFIs. The media also reported loan collection strategies such as forcing women to stand in the hot sun until co-member pay up, verbal abuse and humiliation of poor women by the MFI staff, even demanding physical collateral such as house title deeds of borrowers and charging 'non transparent' interest rates the stated 31% diminishing rate reportedly inflated through hidden costs. While political tension resulting from competition between MFIs and state sponsored SHGs in Andhra Pradesh are understood to have played a part in vitiating relations between the state and MFIs there, the Sector Report on Microfinance in India for 2006 acknowledges that MFI practice of full repayment and nil tolerance of default carried a high cost in terms of client dissatisfaction. The latter calls for a greater flexibility to accommodate cases of extreme distress and wider use of emergency loans and cautions MFIs to not overlook issues of client protection and the dangers of over-financing households in the "rush to grow" (Ghate 2006). As an outcome of the crisis, sa-dhan, the national association of MFIs, adopted a code of conduct that emphasis reasonable and transparent interest rates, avoidance of competition with the SHG network and eschewal of intimidation by MFI staff. It remains to be seen, however, whether the sites MFI projects, in India, Bangladesh or elsewhere, remain contentious and witnesses further conflict born of demand for poor-friendly programme design.

Successful International Micro Finance Models

To set up successful models for microfinance in India, experience can be drawn from the various microfinance models set up internationally.

Multiple international experiences of successful inclusive banking indicate that it is useful for banks to deal with groups of customers organized in the form of Self-Help Groups rather than trying to approach and attract customers individually. In Bangladesh, Grameen Bank offers small-sized loans to groups of customers. This helps in better recovery as the group ensures that its members maintain the credit discipline. Many other countries have adopted innovative models to achieve the same.

Credibanco, the Visa franchise holder in Colombia, has adapted its technology and service infrastructure to help the country's banks reach low-income customers and equip small merchants like grocery stores, pharmacies and gas stations with point-of-sale devices.

Tameer Micro finance Bank Limited of Pakistan, since its inception, has aimed to be a pioneer and trendsetter in terms of deploying innovative, economical and user-friendly technologies in order to provide easy access of financial services to its customer base across the country. It has installed Pakistan's first biometric ATMs.

Microfinance Models for the Indian Context

Any robust banking model for financial inclusion in India must take into account the perceived issues

in doing business with the target group. These include:

1. Small-sized transactions
2. Geographical spread of customers
3. Absence of well-defined propriety rights
4. Absence of well-defined property rights
5. Risks faced by small producers to be factored into product pricing.

The models described below can resolve the major issue of Geographical Spread of customers. The possible solutions for the same can be:

1. Taking the bank to the customers
2. Setting up proxy branches at customer locations

Taking the bank to the customers: Mobile Banking

This model proposes a commercial banking service to rural communities to enable rural people to better manage their money and to make informed choices on the best use of the new banking service.

As the name suggests, the model will comprise of a fleet of mobile banks that travel on a regular schedule to a designated set of villages within a defined geographical area. Mobile banks will essentially be large vans modified for the purpose and connected to the main bank by a satellite network. The size of the fleet should vary with the number of villages and rural population under each district.

A similar model has been very successful in penetrating the rural markets of countries like Fiji in the South Pacific. However, since India is a large country with higher degree of diversity, a more complex hierarchical system of mobile banks will emerge.

Setting up proxy branches at customer locations: Branchless Banking

This model focuses on the use of technology to set up bank terminals close to the customers. Technology infrastructure like ATMs and biometric finger print scanners are high costs solutions. However, if network infrastructure is already available at customer locations, then terminals such as bankcard readers can be set up at very low costs.

A tie-up with an organization like the ITC to leverage the strength of its rural supply chain network e-Choupal can be a viable solution for the same. Bankcard readers can be installed at e-Choupals and the choupals can work as an intermediary between the bank and the customer. The bank can pay a fee to ITC on a per transaction basis in order to utilize its network.

Financial Inclusion : The Road Ahead

The world's income distribution gives a very telling story. Ninety-four percent of the world income goes to 40% of the population while 60% of people live on only 6% of world income. Half of the world population lives on two dollars a day. This is no formula for peace.

India has been ranked poorly in the first-ever Index of Financial Inclusion (IFI) prepared by a New Delhi-based think-tank need not come as a surprise to the observers of the country's banking and financial scenario. Even so, the extent of financial exclusion is depressing for a trillion dollar economy that boasts of the highest number of billionaires in Asia.

The Index prepared by the Indian Council for Research on International Economic Relations (ICRIER), to find out the reach of banking services in 100 countries worldwide, ranks India at 50th position below countries such as Kenya and Morocco. The study underlines the need for expansion of banking services to ensure that they reach the weaker sections.

Financial inclusion is a key priority for India not only for sustaining the country's high growth trajectory but also for poverty alleviation at a much faster pace and for bridging the growing rural-urban divide. This cannot happen unless special efforts are made for deepening the market penetration of banking services to move from 'class banking' towards 'mass banking'.

Efforts are also needed to lower the cost of credit for millions engaged in the farm sector, small-scale and rural enterprises, non-farm labourers and workers employed in the unorganized sector. Looking at this in another way, it needs to be emphasized that the growth of banking in hitherto unbanked areas holds the key to larger resources mobilization.

The spread of bank branches in rural areas is quite inadequate. In fact, the number of such branches has declined in the post-liberalization era. The number of rural bank branches in the country has come down from 35,000 in early 1990s to as low as 30,572 by March 2006 through mergers and swapping of rural branches. At one time, rural India accounted for 57% of total bank branches in the country. This share has now come down to 47%. What is more disappointing, they generate only 14% of deposits and 12% of advances.

The big challenge in promoting rural banking is to keep the costs low in view of the fact that while the number of transactions in such areas may be high, they are mostly small-value transactions. However, technology can play an important role in keeping the costs of such transactions low. Unfortunately, public sector banks (PSBs), which account for 70% of assets, have been slow in making use of modern technology to bring down transaction costs.

On February 29, 2006, the Finance Minister, Mr P. Chidambaram, introduced a new term into the economic lexicon of policymaking. Noting the findings of the NSS 59th Round (2003) that of the total number of cultivator households only 27% receive credit from formal sources and 22% from informal sources, the Finance Minister informed the House that the remaining households, mainly small and marginal farmers, have virtually no access to credit. "With a view to bringing more cultivator households within the banking fold, I propose to appoint a Committee on Financial Inclusion. The Committee will be asked to identify the reasons for exclusion, and suggest a plan for designing and delivering credit to every household that seeks credit from lending institutions."

Subsequent to the Budget announcement, the Reserve Bank of India appointed a committee with Dr C. Rangarajan to flesh out this term. NABARD naturally was roped in and, in that same year, the central bank voiced a similar sentiment about financial inclusion and lack thereof in its Credit Policy.

Micro Finance : A Vision for the Future

The importance of rural finance in poverty alleviation and achievement of the Millennium Development Goals means that it will remain a high priority for governments, donors and, of course, rural households. Based on current trends, one can expect major changes in provision of products and services over the next decade.

In countries where microfinance and retail finance institutions have been operating for a long time, there will be increasing consolidation in the sector, and a marked tendency toward full service provision: single loan products and the credit-only services of agricultural banks will be replaced by savings options, remittances and insurance. Since very few providers can offer efficiently a full set of services, institutions will need to link up with specialized companies (for insurance, leasing, venture capital, etc.) and with 'niche' organizations such as NGOs and self-help groups that facilitate their outreach in rural areas. Effective use of financial services will also require stronger ties to training, technology, marketing and business services.

Conclusion

The move towards inclusive financing is a big challenge for the financial system. At the all India level, less than 5% of poor rural households have access to microfinance as compared to 60% in Bangladesh. The southern states account for almost 75% of funds flowing under microfinance programmes. By far the most successful model of microfinance in India in terms of outreach is SHG

Bank Linkage. However, a lot needs to be done to achieve the benchmark levels in terms of Banks' outreach and deposit ratios. Banks would need to adopt an innovative, customer-friendly approach to increase their effective reach so that share of organized finance increases. Banks have a critical role to play in inclusive growth and thus reaching the BoP customers.

Financial inclusion/exclusion is bereft of all praxis, every ideological or judgmental response to a shameful neglect of the most vulnerable sections of society. The term formalises a human problem into an abstract and vaguely organic process of movement, the welcoming of the outsider into the fold. The Committee on Financial Inclusion headed by Dr C. Rangarajan has recommended a number of measures including a larger role for rural banks. It has suggested that commercial and regional rural banks should open 250 new accounts per branch every year with a focus on financing marginal farmers and poor non-cultivator households.

Also, the experience so far has shown that the microfinance movement in the country holds out a great promise of reaching out to the poor. It is seen that self-help groups (SHGs) are a good institutional structure in Indian conditions. Currently, 10 million SHGs are working across the country with a credit base of Rs 1,00,000 crore. Even so, SHGs and microfinance institutions (MFIs) have a long way to go. Out of some 400 million poor workers in the country, less than 20 per cent have been linked with financial services provided by MFIs.

Efforts are needed to make MFIs an integral part of mainstream banking and to bring down the rates of interest on micro credit to ensure that the microfinance movement gathers further momentum.

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Problem of Sugarcane Pricing in Maharashtra : Issues and Policy Guidelines

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Abstract

Maharashtra is one of the developed states in India. It is a fastest growing economy in our economy. But it is a service sector growth oriented economy, which cannot sustain for the long period. This demands to assign increased role to primary and secondary sectors in the economy of the state into consideration. Comparatively, performance of primary sector was not satisfactory, which requires increased attention towards its development. Primary sector of the state is dominated by Agriculture, but its growth was not worthy of appreciation. Sugarcane is an important cash crop that has potentiality to speed up development of primary sector and thereby economy as a whole. But it is facing a crucial problem of pricing, which is of greater importance for cane growers. The present study concludes that it is urgent need of the hour to pay due attention towards appropriate sugarcane pricing, that will facilitate development of Agriculture, primary sector and thereby economy as a whole. Our study concludes that the statutory minimum prices (SMPs) of sugarcane have shown a marginal growth (3%) during the period under study, which does not provide incentives and encouragements to increase sugarcane production and productivity that can play an important role in the development of primary sector as well as economy as a whole. The under estimation of cost of production of sugarcane and thereby it is under pricing by the CACP (SMPs) have resulted in under pricing by sugar factories also and thereby economic losses and mild growth in sugarcane production in the state. This demands due attention towards appropriate pricing of sugarcane.

Keywords : Sugarcane, Pricing, Guidelines, Agriculture, Maharashtra.

Introduction

Economic growth has a special importance in improving standard of living of the people, with due precaution of distribution in the society. This also facilitates social welfare of the society as a whole. India is one of the fastest growing economies in the world. Likewise, Maharashtra is also one of the developed states in India. Economic growth is determined by development of the productive sectors, such as primary, secondary and tertiary. The examination of growth and composition of economic growth of Indian economy as well as economy of Maharashtra reveals that they both are tertiary/service sector growth oriented. But service sector oriented growth cannot be sustainable and long-term growth. India is an agricultural economy. Hence, its agricultural development coupled with industrial development will enable sustainable and long-term growth. This is true in the case of

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economy of Maharashtra also. Secondary or industry sector is doing well comparatively. But the performance of primary sector in general, and Agriculture in particular is dismal in Indian economy as well as economy of the Maharashtra. Hence, it is essential to undertake special efforts for primary sector development in general and agriculture in particular.

Sugarcane is a major cash crop produced in Maharashtra. It is useful in development of Agriculture as well as agro based industries like Sugar Factories. But sugarcane as an important cash crop has been facing various problems. Pricing of sugarcane has become an important intensive and burning problem in the recent days, especially in the state of Maharashtra. This demands to study the issues relating to the problem of sugarcane pricing in Maharashtra. An appropriate sugarcane pricing will provide incentives to farmers, as well as significantly contribute to the development of Agriculture, primary sector and thereby sustainable and long term development of Maharashtra. It is against this overall background the present paper endeavors to study the issues relating to sugarcane pricing in Maharashtra in the context of latest period from 2001-02 to 2006-07. This study also attempts to examine economic growth and its pattern during the same period.

Hypothesis of the Study

A hypothesis of the present study is as follows:

"Sugarcane pricing based on statutory minimum price (SMP) suggested by a Commission for Agricultural Costs and Prices (CACP) is not conducive for promoting sugarcane production and productivity."

Objectives of the Study

Major and important objectives of the present study are as enlisted below.

1. To study trends in growth and pattern of economic development of Maharashtra;
2. To examine changing scenario of primary sector development in Maharashtra, with emphasis on Agriculture;
3. To assess trends in Area, Production, Yield and Price of Sugarcane in Maharashtra;
4. To study the issues relating to the problem of sugarcane pricing in the state;
5. To suggest policy guidelines about appropriate pricing of sugarcane.

Data Base and Research Methodology

The present research study is solely dependent on the secondary data. This study covers the latest period of six years from 2001-02 to 2006-07. The necessary secondary data relating to Gross State Domestic Product of Maharashtra, its sectoral distribution, Trends in area, Production, Yield, Prices, Sugar Production, Recovery Rate, Prices actually paid have been collected from the secondary sources like publications of Central Statistical Organisation (CSO), Commissionerate of Agriculture, Government of Maharashtra, Economic Survey of Maharashtra, Government of Maharashtra, Annual Reports of Kumbhi-Kasari Sugar Factory, Kuditre, Kolhapur. The collected data was classified and tabulated in the light of hypothesis and objectives of the present study. Then tabulated data was processed by using necessary statistical tools like Mean, Range, Standard Deviation, Correlation, Regression, Compound Growth Rate (CGR), Simple Growth Rate (SGR) and Ratio Analysis. The study also makes use of computer software packages namely Excel and SPSS for processing of data as per necessity.

Growth and Composition of Economic Development of Maharashtra

Maharashtra is one of the fastest growing states in India. This demands to examine growth and composition of economic development of Maharashtra. It is useful in finding out dependence of economy of Maharashtra for its development and sustainability or unsustainability of development of the economy. The necessary data is presented in Table 1 below.

Table 1 : Growth and Composition of Gross State Domestic Product (GSDP) of Maharashtra (At Current Prices)

(Rs. In crore)

Sr.	Year	Primary Sector	Secondary Sector	Tertiary Sector	GSDP
1.	2001-02	44842 (16)	40164 (26)	159107 (58)	274113 (100)
2.	2002-03	45719 (15)	78382 (26)	176375 (59)	300476 (100)
3.	2003-04	52519 (15)	91722 (27)	197183 (58)	341424 (100)
4.	2004-05	52811 (14)	105092 (27)	229487 (59)	387390 (100)
5.	2005-06	59654 (14)	120861 (28)	257543 (58)	438058 (100)
6.	2006-07	69791 (14)	143064 (28)	296501 (58)	509356 (100)
7.	CGR	8.99	15.34	13.39	13.25

Source :- Central Statistical Organization (CSO), New Delhi
Note :- Figures into brackets indicate percentage to GSDP

It is clear that Maharashtra has achieved a faster economic growth during the period 2001-02 to 2006-07. It grew at a significant growth rate of more than 13% per annum during the same period. It is an adequate indicator of faster growth of Maharashtra.

The study of composition of economic development of Maharashtra reveals that it was prominently service sector growth oriented economy, because it contributed an average share of 58% in GSDP of Maharashtra during the period under study. But its growth was lower than the secondary sector i. e. 13% per annum. After tertiary sector, the contribution of secondary industry sector was considerable, which stood at 27%. The growth of industry sector was higher (15%) than all other productive sectors in the state. primary sector has shown lower rate (9%) as well as contribution (15%) in the development of the state under study. But it is significant compared to its role in economic development of Indian economy (2% per annum). There is a need for special attempts for the development of primary sector of Maharashtra.

The GSDP of Maharashtra had a greater range (Rs. 274113 crore to Rs. 509356 crore), which was followed by Tertiary sector (Rs. 159107 crore to Rs. 296501 crore), Secondary sector and primary sector with mean of Rs. 375136 crore, Rs. 219366 crore, Rs. 101547 crore and Rs. 54223 crore respectively during the period under study. A tool of standard deviation revealed greater variations from mean for GSDP (Rs. 375136 crore) then followed by Tertiary Sector (Rs. 2193566 crore). The correlation analysis showed that all the productive sectors had a positive and high degree

association with GSDP of Maharashtra. But Tertiary sector had comparatively greater degree (r.99) association with the GSDP. A technique of regression revealed that Tertiary sector was a prominent determinant (Std. Beta .58) of GSDP, which was followed by secondary sector (.30) and primary sector (.10).

Mishra, Srijit (2006) concluded that in Maharashtra, during 1993-94 to 2003-04 the linear trends growth rate of GSDP at 4.8% per annum was lower than that of India's GDP at 5.8% per annum and agriculture's contribution to net state domestic product in current prices has reduced from 40% in 1960-61 to 14% in 2002-03.

Growth and Pattern of Primary Sector Development in Maharashtra

Primary sector is a broader concept. Agriculture is one of the important economic activities of development of primary sector. Hence, so as to assess its place in primary sector development of the state, its growth and pattern is necessary to study. Table 2 below presents the necessary data about that.

Table 2 : Growth and Pattern of Primary Sector Development in Maharashtra

(Rs. In crore)

Sr.	Year	Agriculture	Forestry & Logging	Fishing	Mining & Quarrying	Primary Sector
1.	2001-02	39149 (87)	2269 (5)	979 (2)	2445 (6)	44842 (100)
2.	2002-03	39649 (87)	2262 (5)	1080 (2)	2528 (6)	45719 (100)
3.	2003-04	46092 (88)	2293 (4)	1255 (2)	2879 (6)	52519 (100)
4.	2004-05	45604 (86)	2243 (4)	1374 (3)	3490 (7)	52811 (100)
5.	2005-06	51747 (88)	26613 (4)	1536 (3)	3758 (5)	59654 (100)
6.	2006-07	60867 (87)	3529 (5)	1642 (2)	3753 (6)	69791 (100)
7.	CGR	8.8	7.9	11.25	10.59	13.25

Source: Same as of Table 1.

Note: Figures into brackets indicate percentage to GSDP

It is revealed form the data in Table 2 that Agriculture was the main component of primary sector development of Maharashtra, when its relative share (87%) is considered. But its growth rate was lower than the activities of Fishing and Mining & Quarrying, which indicates the scope for promoting its growth rate. All other activities have shown significant growth, but their relative contributions were lower, and very difficult to improve due to natural restrictions. Hence, development of Agriculture can play a vital role in speeding up process of development of primary

sector and thereby economic development of Maharashtra, which will be sustainable and long term. But at the same time, it is necessary to pay due attention towards development of industry sector.

The processing of data by employing some statistical tools showed that, primary sector income and Agricultural income had greater variations during the period under study as indicated by a tool of standard deviation (Rs. 9349.61 crore and Rs. 8125.15 crore). According to correlation analysis, all economic activities in primary sector had a positive and high degree correlation with primary sector income. But Agriculture, Fishery and Forestry (r.99, .95, .92) had greater degree and positive association with primary sector. Regression analysis revealed that Agriculture (Std. Beta .86) was a major determinant of development of primary sector, which was followed by mining, forestry and fishery with meagre contributions (.06, .05, .02) during the period into consideration.

Trends in Area, Production, Yield and Prices of Sugarcane in Maharashtra: A Critical Analysis

As the present study gives emphasis on problem of sugarcane pricing, it is but natural to examine the trends in area, production, yield and prices of sugarcane in Maharashtra. The necessary information about that is shown in Table 3.

Table 3 : Trends in Area, Production, Yield of Sugarcane in Maharashtra

(Rs. In crore)

Sr.	Year	Harvested Area	Area	Production	Yield per hectare
1.	2001-02	595	687	49569	83267
2.	2003-04	526	442	26982	51315
3.	2004-05	327	NA	23914	73000
4.	2005-06	501	NA	38814	78000
5.	2006-07	849	NA	66277	78000
6.	CGR	9.0%	- 40.0%	7.0%	- 1.26%

Source : Commissionerate of Agriculture, Maharashtra State, Pune

Note : i) Area in thousand hectares

ii) Production in thousand tonnes

iii) Yield per hectare in kilograms

It is observed that harvested sugarcane has increased considerably at 9% per annum during the period 2000-01 to 2006-07. But area under cultivation of sugarcane has decreased rapidly. It is good that sugarcane production has increased during the period into consideration, but it was considerable and not a significant growth. This poses a need for increasing sugarcane production in the state. More importantly, sugarcane yield per hectare has declined which requires due attention to be paid.

World Bank (2003) states that rapid economic development has contributed to the continuing decline in the contribution of the agricultural sector in the economy. It further states that sustaining rapid productivity growth of the agricultural sector during this millennium, however, is jeopardized by uncoordinated, and at times inconsistent, sub-sectoral policies.

Price is an important issue relating to sugarcane in Maharashtra. It is a major and important problem concerning sugarcane production. It has become an important and burning problem on the backdrop of farmer's consciousness about sugarcane prices and economic losses they have to suffer. This demands to study trends in sugarcane prices in the state. The pricing of sugarcane in Maharashtra is determined as per guidelines of Statutory Minimum Prices (SMP) suggested by a Commission for Agricultural Costs and Prices in India. Table 4 indicates the trends in SMP of sugarcane in the state.

Table 4 : Trends in Statutory Minimum Prices of Sugarcane

(in Rs. Per quintal)

Sr.	Year	SMP of Sugarcane
1.	2003-04	73
2.	2004-05	74.50
3.	2005-06	79.50
4.	2006-07	80.25
5.	2007-08	81.18
6.	CGR	2.9

Source: Economic Survey of Maharashtra, 2008-09.

Note: Upto 2004-05 Statutory Minimum Price (SMP linked to a basic recovery of 8.5% with proportionate premium for every 0.1% increase in recovery above that level. The SMP for 2002-03 includes the one time drought relief of Rs. 5 per quintal recommended by CACP, from 2005-06 onwards SMP is linked to basic recovery of 9%.

It is observed that there is a meager growth of about 3% in SMP of sugarcane during the period 2003-04 to 2007-08. The SMP was Rs. 730 per tonne in 2003-04, which rose to Rs. 810 in 2007-08. The growth was insignificant, which demands due attention to be paid towards that because that cannot much encourage the farmers to increase sugarcane production. Likewise, that can create social unrest among cane growers.

Sugar factories in Maharashtra pay sugarcane prices based on the prices of sugarcane (SMP) suggested by a CACP. It is necessary to study the actual prices of sugarcane given to the farmers. The necessary data about that is given in Table 5.

The Commission for Agricultural Costs and Prices (CACP) Report (2006-07) Government of India states the Statutory Minimum Price (SMP) of sugarcane payable by sugar factories for 2006-07 sugar season be fixed at Rs. 79.80 per quintal for a basic recovery rate of 9% subject to a premium of Rs. 0.90 for every 0.1% increase in recovery rate above that level and the government should invariably declare the SMP of sugarcane before start of the sowing season rather than at the beginning of crushing season.

Table 5 : Trends in Sugarcane Prices Given (Kumbhi Kasari Sugar Factory, Kuditre, Kolhapur)

Sr.	Year	Total Days	Total Cane Crushing (lakh MT)	Per Day Cane Crushing (MT)	Sugar Production (Bags) (lakh)	Recovery Rate (%)	Sugarcane Price (Rs.)
1.	2000-01	191	6.74	3844	8.59	12.75	906
2.	2001-02	165	6.01	3978	7.86	13.10	860
3.	2002-03	170	6.11	3917	7.67	12.54	649
4.	2003-04	94	3.13	3607	3.46	11.06	920
5.	2004-05	120	4.32	3918	5.37	12.45	1275
6.	SGR	- 7.43	- 7.18	0.38	- 7.49	- 0.47	8.14

Source: Annual Reports of KKSF, Kuditre, Kolhapur

It is revealed from data in Table 5 that all the indicators of performance of a sugar factory into consideration have shown negative growth except per day crushing and prices actually given. It is a fact that there was a considerable increase in prices given during the period 2000-01 to 2004-05. But it is inadequate. More importantly, a significant hike in sugarcane price was in only 2004-05. The striking feature is that prices given by the factory were higher than SMPs during the corresponding years. But those were also not incentives providing compared to cost of production.

The SMPs of sugarcane are fixed by the CACP of India on the basis of cost of production of sugarcane. But we find a significant difference in cost of production of sugarcane computed by the CACP and the research study in the state. This results in under pricing of sugarcane, which does not provide incentives and encouragements to farmers, that can affect production, productivity of sugarcane, is a thing of serious concern. The necessary data about that is displayed in Table 6 below.

Table 6 : Cost of Production of Sugarcane (2006-07)

Sr.	Item of Expenditure	Actual Expenditure (Rs.)	Expenditure of CACP (Rs.)
1.	Temporary Labours	5775	3792
2.	Domestic Labours	8728	1858
3.	Bullock Services	1000	954
4.	Mechanical Services	3600	846
5.	Seeds	3960	788
6.	Chemical Fertilizers	4795	1986
7.	Insecticides	1220	66

8.	Irrigation Charges	4350	2279
9.	Education Surcharge	110	77
10.	Depreciation of Tools	282	368
11.	**Total Cost/Acre**	**Rs. 62042**	**Rs. 24641**

Source: Daily Sakal dated 4th August, 2008

The agricultural sector is highly volatile due to fluctuating monsoon conditions in the state Government of Maharashtra and majority of the work force (55%) resides in rural areas and is dependent on agriculture as a primary source of livelihood where the gap in domestic production of food grains and requirements of the state is widening day by day. From the data in Table 6, it is observed that there was a significant difference in cost of production estimated by the CACP and a research study i. e. Rs. 37, 401 per acre. By assuming 40 tonnes per acre production of sugarcane the cost of production stood at Rs. 1551 per tonne as per the study and Rs. 616 per tonne as per the CACP. By considering 12% average recovery rate, the SMP price of sugarcane per tonne stood at Rs. 840. But actually price paid was stood at Rs. 1000 per tonne and cost of production stood at Rs. 1551 per tonne. There was a significant gap and loss discouraging sugarcane production of greater worry for cane growers, which is a thing of serious concern.

Major Conclusions

The major and noteworthy conclusions of the present research study are as follows:

1. Maharashtra is a fastest growing state in India. It grew at the annual rate of 13% during the period under study i. e. 2001-02 to 2006-07.
2. But economic growth of Maharashtra is not sustainable and for long period. It was because of its heavy dependence on development of the service sector. Service sector growth cannot be sustained for a long period.
3. Hence, it is necessary to increase role of primary sector and secondary sector in the development of the state. Comparatively industry sector has played considerable role in its development, (29%) which shows due attempts for the development of primary sector (15%).
4. Agriculture in Maharashtra has played an important role in achieving economic development of primary sector of Maharashtra by providing a major contribution (87%). But its growth rate is necessary to increase even though it was higher than national level.
5. Even though, sugarcane production in the state is increasing. It was a considerable and not significant growth. It is of vital importance to pay due attention towards area, yield per hectare for the development of Agriculture, as well as primary sector of the state.
6. The statutory minimum prices (SMPs) of sugarcane have shown a marginal growth (3%) during the period under study, which does not provide incentives and encouragements to increase sugarcane production and productivity that can play an important role in the development of primary sector as well as economy as a whole.
7. The actual prices given by Kumbhi-Kasari Sugar Factory, Kuditre, Kolhapur even were higher than the SMPs, those were not incentives and encouragements providing to the farmers.
8. The under estimation of cost of production of sugarcane and thereby it is under pricing by the CACP (SMPs) have resulted in under pricing by sugar factories also and thereby

economic losses and mild growth in sugarcane production in the state. This demands due attention towards appropriate pricing of sugarcane.

Policy Guidelines

The foregoing analysis about issues relating to economic growth, sugarcane pricing reveals following important policy guidelines.

1. Agricultural development and development of industry sector should be given priority in economic policy of Maharashtra.
2. The Government of Maharashtra should prepare and implement a special Agricultural Policy that will speed up agricultural development with joint efforts of Government and private sector.
3. Due attempts are necessary to undertake for promotion of sugarcane production and more importantly its productivity, which are not satisfactory in the state.
4. The CACP should increase the SMPs, frequently and adequately taking into consideration rise in inputs of the sugarcane.
5. The CACP should undertake correct estimation of cost of production of sugarcane that will enable its appropriate pricing. For this, the CACP should take due assistance of universities, institutes engaged in research relating to the various issues of sugarcane.
6. The Government of Maharashtra should play an important role in determining the SMPs of agricultural commodities in general, and sugarcane in particular by providing necessary information to the CACP.
7. Sugar factories should fix such prices of sugarcane that will abolish economic losses of farmers for their as well as development of the economy a whole.
8. The Government of Maharashtra also can set up agency or institution that will give necessary guidance about fixing prices of agricultural commodities.

Concluding Remarks

Sugarcane is an important cash crop useful for development of Agriculture as well as agro based industries necessary for rapid, overall and sustained growth of Maharashtra. But pricing is a major and important problem relating to sugarcane production, especially for the farmers. Hence, sugarcane pricing should be given due priority and importance in the economy. The present study is a little bit attempts in that direction, which examines various issues relating to the problem of sugarcane pricing. It is a fact that, there is under pricing of sugarcane by the CACP as well as sugar factories. This is discouraging which do not provide incentives to the cane growers. It is adequately indicated by a fall in area under cultivation and a marginal growth in sugarcane production in the state. Thus, a hypothesis of the present study is tested by the foregoing analysis in this study. But there is a plenty of scope in undertaking research studies concerning sugarcane pricing and various issues and aspects of sugarcane.

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Creating Value from Resources : Energy Derivatives in India

Sheeba Kapil

Abstract

Energy derivative is a derivative instrument in which the underlying asset is based on energy products including oil, natural gas and electricity, which trade either on an exchange or over-the-counter. Indian Energy Derivative Market has a long road ahead that needs to be smoothened by government support and infrastructure facilitation. Unlike the Energy derivative exchange of the developed economies, the Indian energy exchange needs to focus more on market participation, development of market makers and the channel distribution of the energy. This paper attempts to analyze the development in energy derivatives and its future scope. The discussion focuses on the risk mitigation benefit, an energy derivatives market offers and efficient discovery of the energy prices. The paper also focuses on the use of Energy derivative instruments to reduce price volatility in the spot markets and hedge their risk exposure.

Keywords : Energy Derivative, Hedging, Volatility, Price Discovery, Risk Mitigation, Spot Price, Energy Commodities.

Introduction

Energy derivative is a derivative instrument in which the underlying asset is based on energy products including oil, natural gas and electricity, which trade either on an exchange or over-the-counter. Energy derivatives are financial contracts whose value is linked to changes in the price of some energy product.

Energy commodities are bought and sold on both the physical and financial markets. The physical market includes the spot market where products such as crude oil or gasoline are bought and sold for immediate or near-term delivery by producers, wholesalers, and retailers. Spot transactions take place between commercial participants for a particular energy product for immediate delivery at a specific location. The prices set in the specific spot markets provide a reference point that buyers and sellers use to set the price for other types of the commodity traded at other locations.

In addition to the spot markets, derivatives based on energy commodities are traded in financial markets. Derivatives include futures, options, and swaps. Energy futures include standardized exchange-traded contracts for future delivery of a specific crude oil, heating oil, natural gas, or gasoline product at a particular spot market location.

The value of the derivative contract depends on the performance of the underlying asset-for example, crude oil or natural gas. The value of a derivative will vary based on the changes of the price of the underlying energy product. The energy derivatives market was valued in the year 2000 at $40-bil to $60-bil a year. The total exposure of US banks in energy swaps was conservatively estimated at $20-bil to $40-bil for long term deals. Energy derivatives include instruments like forwards, futures, options and swaps.) There are 3 principal applications for the

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energy derivative markets namely Risk Management ("Hedging"), Speculation ("Trading"), Investment Portfolio Diversification .

Energy futures include standardized exchange-traded contracts for future delivery of a specific crude oil, heating oil, natural gas, or gasoline product at a particular spot market location. The owner of an energy futures contract is obligated to buy or sell the commodity at a specified price and future date. However, the contractual obligation may be removed at any time before the contract expiration date if the owner sells or purchases other contracts with terms that offset the original contract. In practice, most futures contracts on exchanges are liquidated via offset, so that physical delivery of the underlying commodity is relatively rare.

Understanding Energy Derivatives

Over the past decade global economic community has witnessed rising energy prices. The increase has been attributed to a variety of factors. Specifically like Inflation-adjusted energy prices in both the futures and physical markets increased considerable. Secondly volatility (a measurement of the degree to which prices fluctuate over time) in energy futures prices has remained above historic averages. Third the number of noncommercial participants in the futures markets including hedge funds has grown; along with the volume of energy futures contracts traded; and the volume of energy derivatives traded outside traditional futures exchanges.

At the same time these changes were occurring in the futures markets for energy commodities, tight supply and rising demand in the physical markets pushed prices higher. To add to the above reasons the increased political instability in some of the major oil-producing countries has threatened the supply of oil. Refining capacity also has not expanded at the same pace as the demand for gasoline. The individual effect of these collective changes on energy prices is unclear, as many factors have combined to affect energy prices. Monitoring these changes will be important to protect the public and ensure market integrity.

Derivatives and physical markets for crude oil, unleaded gasoline, heating oil, and natural gas have experienced substantial changes in recent years. Some observers believe that higher energy prices were solely the result of supply and demand fundamentals while others believe that increased futures trading activity may also have contributed to higher prices. But the effect on energy prices of individual changes in these markets is unclear, as many factors have combined to affect energy prices.

Accounting for Energy Derivatives

'IAS 39 Financial Instruments: Recognition and Measurement' deals with recognition, derecognition, measurement of financial instruments and hedge accounting. It applies to all firms and to all types of financial instruments. Financial instruments are defined as any contract that gives rise to both a financial asset of one firm and a financial liability or equity instruments of another firm. Moreover, financial assets are any assets that are cash, contractual rights to receive cash or another financial asset, contractual rights to exchange financial instruments under conditions potentially favourable or an equity instrument of another firm (eg stocks). Financial liabilities are contractual obligations to deliver cash or another financial asset or contractual obligation to exchange financial instruments under potentially unfavourable conditions. A fundamental rethinking of all commodity contracts, in which electricity derivatives are included, is now required to determine whether they fall within the scope of IAS 39. This may require a thorough assessment of contracts on a case-by-case basis. The following analysis is specifically directed towards electricity futures.

Paragraph 5 of IAS 39 emphasizes that IAS 39 applies to those 'contracts to buy or sell a non-financial item' if that contract can be net settled. Thus, whether or not the contract falls within the scope of IAS 39 is determined by business practices, control objectives

and management's intent about physical delivery, in addition to proving dissimilarity with other contracts that fall within (b) or (c) above. If the physical delivery on the contract is not certain to occur from the inception, the contract falls within the scope of IAS 39. Note that electricity is a commodity actively quoted in both spot and futures markets, meaning that electricity always meets the 'readily convertible to cash' criterion. The underlying premise behind this IASB's position is that most commodity contracts involve interchangeable (standardised) units that place the firm in the same economic position if the contract physically delivers or if the contract settles for cash. When a firm uses contracts to manage supply on an economic basis (ie securing prices rather than volumes), those contracts should be considered financial instruments and treated under the scope of IAS 39.

In addition, an analysis of the definition of derivative in IAS 39 is useful. IAS 39 defines derivative as a contract: (a) whose value changes in response to an underlying variable (ie a specified interest rate, security price, commodity price, foreign exchange rate, index of prices or rates, a credit rating or credit index or other variable) (b) that requires little or no initial net investment and (c) that is settled at a future date.

All these three criteria are met by electricity futures Derivatives Market. All contracts are settled at a future date and, as initial investment, only require a margin (which represents an initial net investment much smaller than would be required for other types of contracts that have a similar response to changes in market factors), which, according to IAS 39, is not considered an initial investment (IAS 39 Implementation Guidance, para. B.10). Besides, as an underlying may be any variable, including commodities, electricity futures clearly meet the definition of derivative and meet the intention of IASB regarding the scope of IAS 39 (IAS 39 Basis for conclusions, para. 221).

Mark to market accounting: IAS 39 requires all derivatives, including futures contracts, to be carried at fair value. The gains or losses on the contract should be recognized in the Income Statement as they occur. Since all derivatives must be measured at fair value, it is very important to understand what fair value is and how the fair value of electricity futures traded at OMIP is measured. Fair value is defined in IAS 39 as the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction. IAS 39 sets out clearly that the best evidence of fair value is quoted prices in an active market. Thus, when they exist they are used to measure the financial asset or financial liability.

Hedge Accounting: As stated above, the basic principle in IAS 39 is that all derivatives are carried at fair value with gains and losses in the Income Statement. Derivatives are, however, commonly used to hedge recognized assets and liabilities that are measured at cost, amortized cost or at fair value with gains and losses in equity, as well as items such as forecasted transactions or firm commitments that are not recognized in the balance sheet. This creates a mismatch in the timing of gain and loss recognition, creating accounting volatility in the Income Statement that does not reflect economic volatility. Hedge accounting seeks to overcome this problem by matching the timing of recognition of gains and losses on both the hedged item and the hedging instruments. Hedge accounting can be defined as a method of reflecting a commercially hedged position in the accounts, so that the revaluation of the derivative does not pass through Income Statement until the transaction concerned occurs. Thus, hedge accounting can mitigate volatility when there are balanced positions-so that only real exposures give rise to income volatility.

Hedging and Price Discovery in Energy Derivative
Assuming that energy derivatives have 'zero' systematic risk- hence discount them at risk free rate. The model proposed for this is

$$d \ln S = [\theta (t) - a \ln S] dt + \sigma dz$$

Where S is the spot price, σ the standard deviation, 'a' is a constant and θ (t) represents the seasonality trends in the model.

As a general trend for oil a is about 0.5 and s is about 20%; for natural gas these parameters are about 1.0 and 40%; for electricity they are about 15 and 150% respectively.

Hedging allows a market participant to lock in prices and margins in advance and reduces the potential for unanticipated loss. Hedging reduces exposure to price risk by shifting that risk to those with opposite risk profiles or to investors who are willing to accept the risk in exchange for profit opportunity. Hedging with futures eliminates the risk of fluctuating prices, but also means limiting the opportunity for future profits should prices move favourably.

A hedge involves establishing a position in the futures or options market that is equal and opposite to a position at risk in the physical market. For instance, a crude oil producer who holds (is "long") 1,000 barrels of crude can hedge by selling (going "short") one crude oil futures contract. The principle behind establishing equal and opposite positions in the cash and futures or options markets is that a loss in one market should be offset by a gain in the other market.

Hedges work because cash prices and futures prices tend to move in tandem, converging as each delivery month contract reaches expiration. Even though the difference between the cash and futures prices may widen or narrow as cash and futures prices fluctuate independently, the risk of an adverse change in this relationship (known as basis risk) is generally much less than the risk of going unhedged and the larger a group of participants in the market, the greater the likelihood that the futures price will reflect widely held industry consensus on the value of the commodity.

Because futures are traded on exchanges that are anonymous public auctions with prices displayed for all to see, the markets perform the important function of price discovery. The prices displayed on the trading floor of the Exchange, and disseminated to information vendors and news services worldwide, reflect the marketplace's collective valuation of how much buyers are willing to pay and how much sellers are willing to accept.

The purpose of a hedge is to avoid the risk of adverse market moves resulting in major losses. Because the cash and futures markets do not have a perfect relationship, there is no such thing as a perfect hedge so there will almost always be some profit or loss. However, an imperfect hedge can be a much better alternative than no hedge at all in a potentially volatile market.

Energy Derivatives in India

The energy sector is vital for the economic reliability and growth of the country. India's energy needs are likely to increase six times over the next 20 years and there is an urgent need for energy derivatives, renewable and nuclear energy as well as a mitigating process. Though the government is taking steps to secure the aggregate supply of energy from various sources, individual businesses are more concerned with price fluctuations and securing assured supplies of their fuel of choice. As is the case in several developed countries, institutionalisation of an energy derivatives market through instruments like futures, options or contracts in various energy products would reduce the price and supply risk of energy commodities. Along with the risk mitigation benefit, an energy derivatives market will offer other advantages. It would increase market efficiency in the sector, better match the price with the value of underlying assets, reduce price volatility in the spot markets and serve as a signal to participants to enable them to switch between fuels.

Background Energy Derivative Exchange in India

The enactment of Electricity Act 2003 was done on the objective of creating competitive environment

in Indian power sector. Based on this objective, the first initiative was taken in the form of Open Access Regulations issued by CERC in 2004.

The next most needed step towards creating competitive environment in Indian power sector, after Open access, was Power Exchange. Since Power Exchanges around the globe are performing in a very effective manner and are successful in creating an efficient power pricing market. Power exchanges in Europe are most known for their auctions that run one day ahead of delivery for every hour of the next day. These exchanges also organize intra-day trade and even continuous financial markets for monthly, quarterly and annual futures contracts. Power next in France, APX in Netherlands, and EEX in Germany & Nordpool in Scandinavia are few examples of successful Power Exchange across the globe. The volume in major European power exchange has grown from 3832 BUs in 2000 to 8244 BUs in 2005, which is roughly 40% of their total power consumption. In year 2007, NORDPOOL traded 290 BUs, EEX, Germany 124 BUs and Power next; France traded 44 BUs on their spot exchanges.

Introduction of IEX in India ensures that it aids true national level price discovery for the Indian users and producers and it also motivate much needed investment in this capital intensive sector and consequent capacity addition, as it provides a common marketplace with a nationwide reach and market driven prices with payment security. Creation of market enables environment in which merchant power plants are added and greater capacities are created to sell some quantity in short term market.

The Confederation of Indian Industry (CII) recently announced an initiative called `Development of Energy Derivatives Market in India' with the support of the U.K.'s Global Opportunities Fund Climate Change and Energy Programme. Under the initiative, the CII would study various aspects of the energy derivatives market and suggest a suitable regulatory, policy and financial framework. The CII is forming an "Energy Derivative Consultative Group" representing experts from major related fields to deliberate on these issues. "Development of Energy Derivative Market in India" prepared by the CII with the support of the British High Commission, is very timely and will go a long way towards creating awareness about these issues.

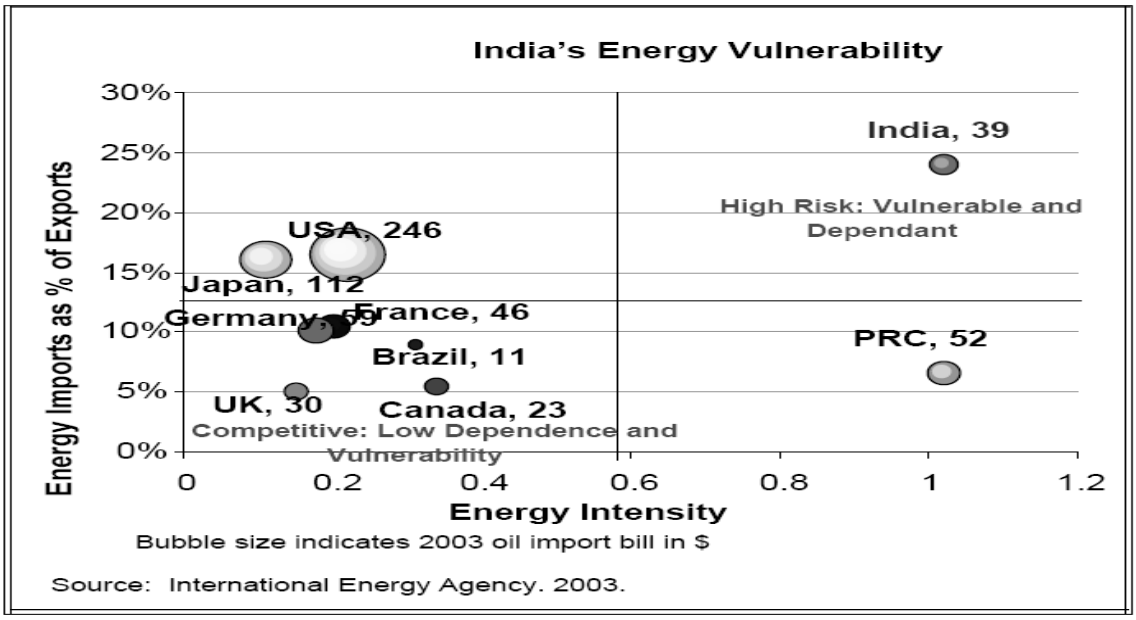
Any future planning in the energy and emission sector must balance the environmental aspects with the issues of development, the long term impacts and short term targets, local issues and global aspects and even some 'light-handed regulation' in an increasingly privatizing energy market.

Globally, the United Kingdom's commitment is to work towards broader, deeper carbon markets where India can make best use of the opportunities. The deeper engagement between the UK and India is towards providing cheaper, low-Carbon energy alternatives.

Analyses of the Indian Power Sector

India is one of the fastest growing developing economies, having expanded by about 6% per annum in the 1990s and by some 8% in recent years. The share of agriculture has declined substantially in the past decade while that of manufacturing increased with an average growth rate of 6.3% per annum in the sector during the same period. India's fast-paced economic growth and its rapid rate of industrialization and urbanization have fuelled energy demand so that in 2003 it ranked sixth worldwide in primary energy consumption. The overall energy intensity of the economy has declined over the years (See figure 1). This has been made possible by the gradual substitution of primary non commercial energy sources by the more efficient commercial energy sources.

Figure 1: India's energy Vulnerability



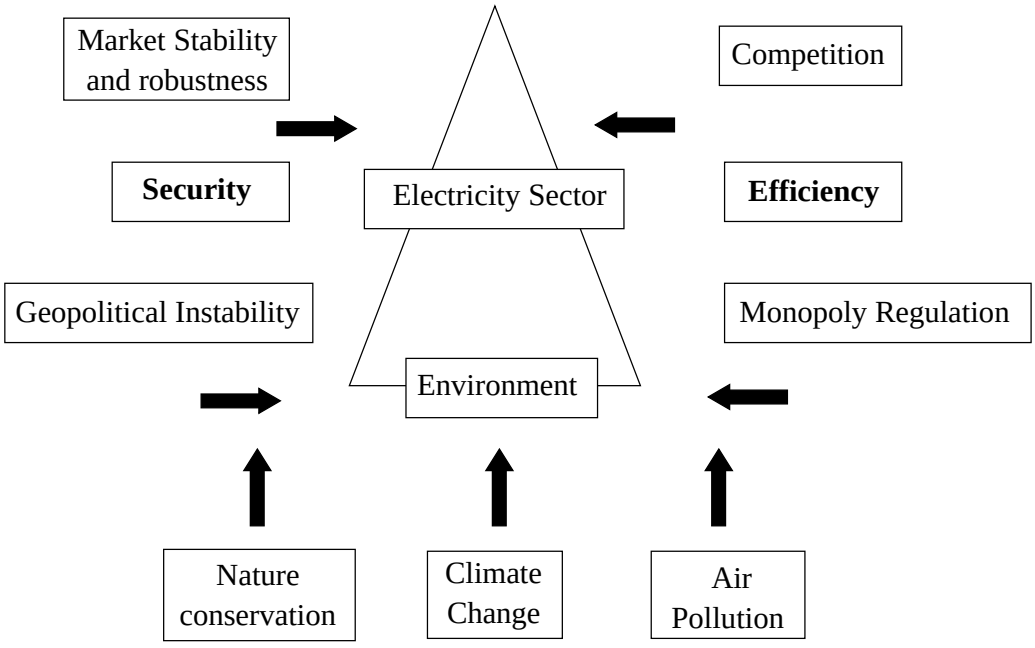
Power Sector Issues

The growth of the electricity sector has been largely supported by the central and state governments' capital resources (up to 25% of annual budgets). The centralized electricity supply policy and a regional and national transmission grid policy have resulted in large electricity plants and five regional grids. India is largely self-reliant on Government-owned fuel

Figure 2:

Conflicts in the Indian Energy Sector

The Energy Sector : Trade offs between three important but potentially conflicting goals



supplies, making use of the available hydropower and coal resources. Some years ago, India began a major energy policy reform effort to make electricity more affordable to the less affluent sectors of the population, particularly farmers, through very large cross-subsidy schemes. These schemes, however, have not been financially sustainable. State electricity boards were unable to increase supplies, and they defaulted on payments as revenues failed to meet operating costs. Subsequently, the central government initiated a series of reforms culminating in the 2003 Electricity Act which sought to restructure the entire electricity industry to eliminate the basic conflicts in the different goals aspiration of the Indian energy sector (see figure 2).

The impacts of the electricity reforms to date have increased competitiveness and led to a demonstration effect among the states' electricity sectors and their regulators, adding momentum to the central government's impetus for reform. The positive outcomes have isolated national anti-reform movements. The effects of reforms are incremental, rather than "big bang," and follow an Indian development model rather than one imposed by outside assistance agencies. The reforms are gradually shifting the financial risks from the consumer to the management of the electricity sector. The least effective changes have been in the areas of human resource development and in attaining the desired quality of governance in the distribution sector (particularly with regard to management and accounting practices).

Reform initiatives, however, have been insufficient to keep pace with the country's economic growth and energy needs. India's current power sector has insufficient generation capacity, lacks optimal utilization of generation resources, transmission between regions is iv limited, distribution facilities are aging and increasingly unreliable, losses in transmission and distribution and the effects of theft cause large financial losses for the system, the pace of rural electrification is slow, and there is widespread inefficient use of electricity. India's need for power is growing rapidly, with consumption having increased by about 64% over the last 10 years. Nevertheless, electricity is still inaccessible to the majority of households. While over 80% of villages are already electrified, only 56% of total households have access to electricity and in rural areas only 33% of households have access.

Regulation of the Power Sector

There are two levels of regulation, at the central and state levels.

(i) The CERC regulates tariffs for central government-owned generators and other generators not owned by the Government and supplying the states and interregional transmission. It also coordinates with other regulatory commissions, such as that for the environment, to develop complementary regulations for the power sector.

(ii) State regulators oversee compliance with the 2003 Electricity Act as it affects the operations of the power utilities in each state. The study observations note that the level of regulation varies from light-handed in Assam to heavy-handed in Madhya Pradesh. This difference may be attributable to the level of perceived compliance by the regulators to the 2003 Act by the different states and, to some extent, by the perceived authority and knowledge of the regulator.

The central and state regulators exchange information on a regular basis and formal meetings provide venues for the interchange of ideas. This exchange also adds to the demonstration effect of the changes made by regulators and the links between their regulations and state responses to their regulations.

Figure 3: the Logo for India's First Energy Exchange IEX

Indian energy exchange (IEX) is India's first-ever, nationwide, automated, and online electricity trading platform (see figure 3). It has been conceived to catalyse the modernization of electricity trade in the country by ushering in a transparent and neutral market through a technology-enabled electronic trading platform.

IEX is a demutualised exchange that will enable efficient price discovery and price risk management in the electricity market.

Chronology: 6th February 2007

1. The CERC issued guidelines for grant of permission to set up power exchanges in India. Financial Technologies (India) Ltd applied for permission to set it up and operate it within the parameters defined by CERC and other relevant authorities. 10th July 2007
2. The CERC accorded its approval vide its order dated 31st August, 2007. 9th June 2008
3. CERC accorded approval to IEX to commence its operations. 27th June 2008
4. Marked its presence in the history of Indian Power Sector as Indian Energy Exchange Ltd (IEX), India's first-ever power exchange goes LIVE.

Significance of an Energy Exchange Market in India

An exchange is essential to a market-driven economy where prices are decided by the forces of demand and supply. In economies that are not market driven, interventionist forces (such as political forces or business lobbies) determine prices. It is common knowledge today that non-market principles have failed to bring about efficient markets, hence efficient economies. That's why almost all country that followed non-market principles in the past have implicitly acknowledged their mistakes and have lately opted for economic reforms designed to bring in a market-driven economy.

Market forces are contradictory : e.g., the seller wants high prices while the buyer wants low prices. These conflicting forces determine the correct price of a commodity at a given time in a market-driven economy. But the problem is that the market has its potential influencers. For example, big buyers and big sellers can manipulate the market in their own favour and to the detriment of the larger social and economic interests. They can drive small players out of the market. They can come together to form a cartel. All these possibilities of unfair trade will curtail market-forces and prevent the emergence of a true market - driven economy.

It is therefore important that while market-forces are encouraged to slug it out in the market, they must remain faceless and anonymous. Only when the market is a level field for all participants can a true market-driven economy come into being.

On an electronic power exchange, trades from a large geographical spread converge without their identities being revealed. In the case of IEX, this large geographical spread comprises the all India electricity market. Therefore, anonymity of traders is maintained, hence market manipulation is thwarted and in effect, a true-market driven power economy is enabled. Thus India needs a nationwide, electronic power exchange to enable the market to be driven by the genuine market forces of demand and supply, and not by any vested interest (see table 1 for the benefits of IEX). Indian Energy Exchange (IEX) is India's first-ever Power Exchange. It serves as an optional, electronic, nationwide platform for trading electricity

Table 1 : Benefits of IEX to the Indian Electricity Market

Enables the market to discover a uniform market clearing price and market clearing volume
Evenly distributes transmission losses
Brings about cost-effectiveness through lower cost of transactions than possible by any other mode
Enables participants to hedge against UI(unscheduled interchange) risks

Guarantees timely payment to sellers

Generally improves the market environment to encourage investment in new generation capacity and helping make India a power -surplus country.

The true spirit of the Electricity Act 2003, of creating "Competitive Power Market" is initiated today through IEX platform. The electricity price discovery on the IEX physical market provides a transparent, credible and secure reference price for other physical market trades, of the entire power sector.

Financial Technologies (India) Ltd (FTIL) and PTC India Ltd are the promoters of IEX. Many other leading names in the power market-such as TPC, REL Adani, Lanco, Infratech, IDFC, and REC- have taken key stakes. The Multi Commodity exchange of India Ltd (MCX) is sharing its Exchange operations and management with IEX. The Central Electricity Regulatory Commission (CERC) is the regulator of IEX.

A day-ahead market hourly contract is being currently offered. IEX also proposes to offer other products like week-ahead, month-ahead, quarter-ahead, year-ahead, 3-year-ahead and seasonal contracts along with OTC clearing. IEX also proposes to cover the entire gamut of power trading in India.

To trade on IEX there is no need to be a member; one can trade through a member i.e by becoming a client of a member. Members, however, can trade and clear directly on their own behalf as well offering membership in the Trading-cum-Clearing Member (TCM) category.

Eligibility and the Minimum Payment Requirement

1. Entities such as generators, distribution licensees, independent Power Producers (IPPS's) , Captive Power Producers(CPPs) , Merchant Power Plants(MPPs) , traders and others are eligible to be a member.
2. The minimum net worth for the purpose of membership eligibility is Rs 150 lakhs.

Contract for Trading

1. In a day-ahead market, the hourly electricity contracts (in MW) are traded.
2. Members may place their orders during the bid-call period (10:00 a.m. to 12:00 noon) of the auction day.
3. IEX, apart from providing payment security, also is the counter-party for all traders. Participants need not be concerned about the risk-profile of the other party.
4. Members need not be connected to any transmission system. A member can trade on behalf of his clients connected to the grid..

Operational and Working Details of the IEX Exchange

Congestion is handled through methods such as market splitting ,wherein grid bottlenecks are relieved by comparison of the calculated contractual flow with the transmission capacity available for spot trading; if the flow exceeds the capacity, the prices are adjusted on both the sides of the bottleneck so that the flow equals the capacity. If the flow does not exceed the capacity, a common price is established for the whole area

If the flow exceeds the capacity at the common price or the whole market area, it is split into a surplus part and a deficit part. The price is reduced I the surplus area(sale> purchase) and increased in the deficit area (purchase> sale) . This will reduce the sale and increase the purchase in the surplus area. In the same way, it will reduce the purchase and increase the sale in the deficit area. Thus, the needed flow is reduced to match the available transmission capacity. The utilities which have started taking benefit as member or client of members are listed in table 2.

Table 2: Client Members of Energy Exchnage in India.

PTC India Limited, Delhi	North Delhi Power Limited, Delhi
Reliance Energy Trading Limited, Delhi	Grid Co. Limited, Orissa
Tata Power Trading Company Limited	Tata Power Company Limited
Jaipur Vidyut Vyapar Nigam Limited, Rajasthan	Central Power Distribution Company of Andhra Pradesh Limited, A.P.
West Bengal State Electricity Distribution Corporation Limited, West Bengal	Punjab State Electricity Board, Punjab
Kerela State Electricity Board, Kerela	HPPC, Haryana
Karnataka Electricity Board, KEB	BEST
MSEDCL	Tripura
HPSEB	Mizoram
Jindal Power Limited	JSW Power Trading

Future of energy derivatives market in India

National Commodity and Derivatives Exchange (NCDEX), India's second largest commodity bourse, is partnering with NTPC to float the second power exchange. Both the exchanges will have almost all the power companies in India participating either as co-owners or as trading partners. GVK Power & Infrastructure Ltd (GVKPIL) is another entity that plans to enter into power trading. Hence it can be easily seen that the future is very bright for the energy derivative market in India. The power pricing distribution of energy in India can be seen in table 4.

Figure 4: Region -wise power pricing distribution

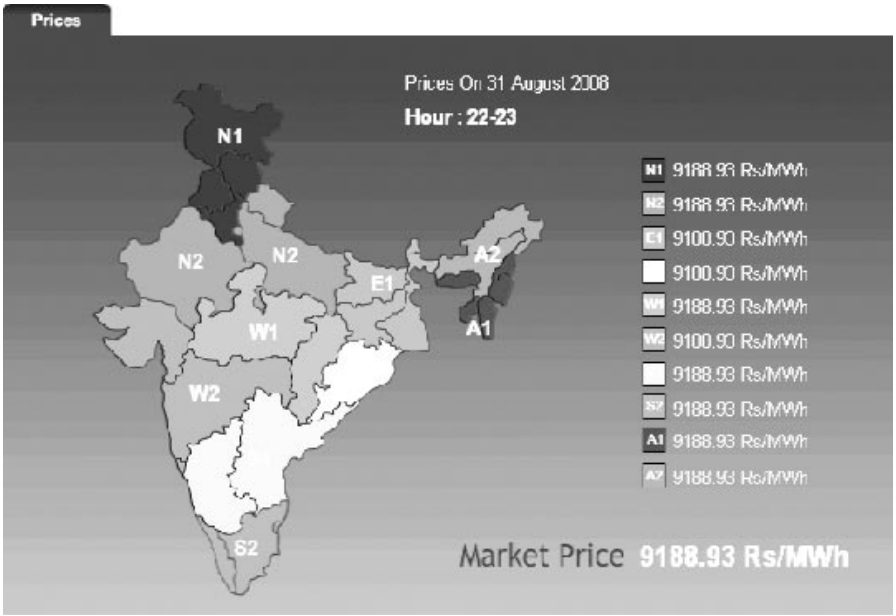


Table 3: Summary Statistics for Hourly Day-ahead Forward Prices
This table presents summary statistics for the hourly day-ahead electricity forward prices reported by PJM. Prices are reported in dollars per megawatt hour. The expression AR1 denotes the first order serial correlation coefficient. The sample consists of daily 4 p.m. observations for each of the 24 hourly day-ahead contract prices during the June 1, 2004 to November 30, 2008 period. The overall serial correlation coefficient is the average of the hourly serial correlations coefficients.

Hour	Mean	Std. Deviation	Minimum	Median	Maximum	AR1
1	19.32	6.96	5.00	17.29	50.01	0.76
2	16.85	5.91	0.00	15.48	45.20	0.79
3	15.57	5.76	0.00	14.69	43.98	0.79
4	15.17	5.94	0.00	14.34	43.22	0.83
5	15.78	6.33	0.00	14.94	46.39	0.80
6	19.02	7.99	0.10	17.39	50.01	0.73
7	27.70	16.10	1.00	22.50	150.00	0.68
8	32.03	17.25	1.15	27.37	140.01	0.68
9	33.53	15.06	11.01	30.00	130.01	0.66
10	36.46	15.19	13.45	33.46	125.00	0.63
11	39.49	18.04	14.95	35.71	198.10	0.65
12	40.59	24.49	14.47	36.00	390.93	0.71
13	40.77	31.42	14.68	35.31	545.46	0.70
14	42.91	39.16	13.75	35.21	646.81	0.73
15	43.76	48.57	13.30	34.00	818.54	0.75
16	44.53	50.66	13.87	33.28	859.05	0.75
17	47.35	49.81	15.03	36.19	779.38	0.68
18	51.82	42.25	15.02	44.04	599.22	0.65
19	47.63	30.25	14.91	40.94	450.01	0.75
20	44.80	26.16	15.06	39.86	416.27	0.73
21	43.24	26.76	15.10	38.56	498.01	0.46
22	35.94	16.98	15.00	32.07	185.90	0.69
23	27.69	11.90	12.68	23.99	112.86	0.67
24	22.01	8.92	0.00	18.82	74.96	0.75
Overall	33.50	28.86	0.00	27.36	859.05	0.71

Discussion

Indian Energy Derivative Market has a long road ahead that needs to be smoothened by government support and infrastructure facilitation. Unlike the Energy derivative exchange of the developed economies, the Indian energy exchange needs to focus more on market participation, development of market makers and the channel distribution of the energy. Table 3 results show the forward price co-movement of the forward market. High volatility and risk is the characteristic feature of forwards in energy instruments. The setting of Indian energy exchange is the first step towards the efficient product and risk management in the energy sector. As is the case in several developed countries, institutionalisation of an energy derivatives market through instruments like futures, options or contracts in various energy products would reduce the price and supply risk of energy commodities. Along with the risk mitigation benefit, an energy derivatives market will offer other advantages. It would increase market efficiency in the sector, better match the price with the value of underlying assets, reduce price volatility in the spot markets and serve as a signal to participants to enable them to switch between fuels.

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Effects of Stress on the Health of Career Women

M.A.Sabadra

Abstract

Now-a-days, the word Stress itself, is dreadful. The new life style has its roots to this dreadful disease common to all. It has become all pervading. It's there, everywhere. At home, at school, at the work place everywhere. Everyone is under stress. It isn't bad, though; neither does it always hamper your performance. Look at the people like truck drivers, divers in the sea, the coal miners, mountaineers, who live with stress all the time. The notable difference is that they can handle the stress, so that their health remains unaffected, because of their capacity to take control over the factors that cause stress.

This paper looks into the modern age stress women face at the work place and its effect on her health. It brings out the factors causing stress at the work place, what they should to reduce it, avoid it and suggestions that may improve their performance levels at the same time. It is vital that the effect of stress on the Health of career women in the work place is addressed. The paper includes outcome of a sample survey done on women from different professions like judiciary, medical, administration, education and service sector.

Keywords : Stress, Women, Health, Working Women, Career Women, Work Place.

Introduction

Stress has increasingly become associated with greater susceptibility to various illnesses. The condition is also costly from an economic and financial perspective, but such costs hardly reflect the human costs of emotional trauma and physical suffering that result from the illness. Women today are in a situation where both the monetary and human effects of stress take their toll as women face unprecedented pressures in accommodating the demands of home and career and personal family stresses that often result. In addition to this, while women are prone to the same stressors as men, they are confronted with potentially unique physical and psychological stressors of their own. They may also become stress "career" as in the abusive husband and unfair boss relationship and male colleagues. Ironically, despite these differences women live longer than men, although collectively they are reported to have more symptoms, illnesses, intake of drugs and doctor-hospital visits.

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A stressor is the object or event that the individual perceives to be disruptive. Stress results from the perception that the demands exceed one's capacity to cope. The interpretation or appraisal of stress is considered an intermediate step in the relationship between a given stressor and the individual's response to it.

Newspaper headlines worldwide have heralded an unprecedented concern about the detrimental effects of work stress. The United Nations World Labor Report attributes the source of stress to work places that are unstable, impersonal, and hostile. Since the early 1960s, researchers have been examining the psychosocial and physical demands

of the work environment that trigger stress. Research has identified many organizational factors contributing to increased stress levels: (a) job insecurity; (b) shift work; (c) long work hours; (d) role conflict; (e) physical hazard exposures; and (f) interpersonal conflicts with coworkers or supervisors.

Reciprocally, elevated stress levels in an organization are associated with increased turnover, absenteeism; sickness, reduced productivity, and low morale.

At a personal level, work stressors are related to depression, anxiety, general mental distress symptoms, heart disease, ulcers, and chronic pain. In addition, many people are distressed by efforts to juggle work and family demands, such as caring for sick or aging parents or children .Therefore, any exploration of the relationship between work conditions and mental distress must take into account individual factors such as sex, age, race, income, education, marital and parental status, personality, and ways of coping.

To have a balanced approach to understanding work stress, it is necessary to recognize that employment provides rewards that are both internal (intrinsic) and external (extrinsic), (e.g., skill development, self-esteem, money, variety from domestic surroundings, social contacts, and personal identity). Although increasing the rewards of work can offset its stressful aspects, the physical environment and the psychosocial conditions of employment can have deleterious effects on workers' mental and physical well-being.

How well a person will cope with occupational stress will depend on

The extent to which they fell threatened by the stressor

The actions they know they can take to reduce the impact of the stressor

Their expectations as to how they will be able to cope with the stressor.

Irrespective of what you do, you have and will experience stress at some time in your life. In a recent survey 75% of working women respondents described experiencing "high levels of stress".

No one could imagine how dangerous the STRESS is. The body runs out of the immunity to fight diseases. So, very often, these persons die of disease such as cancer, pneumonia, etc. The stress will never be identified as the cause of the death. Experts say that the stress is the proxy killer. Some other disease always takes the blame for it.

Doctors call the body's reaction to stress as General Adaptation Syndrome (GAS). There are three stages to GAS.

If the cause for the stress is not removed, GAS goes to its second stage called resistance or adaptation. This is the body's response to long term protection. It secretes further hormones that increase blood sugar levels to sustain energy and raise blood pressure. The adrenal cortex (outer covering) produces hormones called corticosteroids for this resistance reaction. Overuse by the body's defense mechanism in this phase eventually leads to disease. If this adaptation phase continues for a prolonged period of time without periods of relaxation and rest to counterbalance the stress response, sufferers become prone to fatigue, concentration lapses, irritability and lethargy as the effort to sustain arousal slides into negative stress.

The third stage of GAS is called exhaustion. In this stage, the body has run out of its reserve of body energy and immunity. Mental, physical and emotional resources suffer heavily. The body experiences "adrenal exhaustion". The blood sugar levels decrease as the adrenals become depleted, leading to decreased stress tolerance, progressive mental and physical exhaustion, illness and collapse.

At every stage 'productivity' of the patient decreases.

Stress is very expensive. Let's look at the statistics: Every week, 95 million Americans suffer some

kind of stress related symptom for which they take medication. American businesses lose an estimated $200-$300 billion dollars per year to stress related productivity loss and other cost. To put this in perspective, this amount is higher than the total cost related to all strikes and the net profit from all Fortune 500 companies! And one can just imagine the total cost/productivity loss of all the economies put together in the world!

Even then STRESS is the most understated health issue in women. From a woman's perspective, stress is perhaps one of the most unrecognized conditions affecting women's health today. If you're a stay at home mum, a career driven woman, a part-timer or you can put your hand up to all three of these life circumstances, then it's time to become more curious about how stress affects health - your health! Stress doesn't just arise out of the more obvious and well recognized traumatic life events such as separation, divorce, retirement, accidents/personal injury, a stressful job, marriage, buying/moving house, or even the death of a partner. Stress can often originate from sources we hardly ever associate with it.

Stress is increasingly becoming a real health issue in women, especially those performing a daily juggling act of fulfilling their many roles and responsibilities of career woman, mother, wife/ partner, career, cook, housekeeper, chauffer etc., it can be extremely difficult to maintain calm and relaxed state with such hectic lifestyles.

Concept

Let us understand how the STRESS, the dreaded demon, encompasses humans.

In the prehistoric times a person used to react to any signs of danger in two ways: he fought or he fled, "fight-or-flight" response - a term coined by W.B.Canon in 1914.(in an article in American Psychological Association, authors say that "female responses are more marked by a pattern of 'tend-and-befriend'. During this, the body reacts with alarm to the threat: there is a rapid increase in metabolism, with hormonal, physiological and biochemical changes taking place instantly. The body muscles become tense and the hypothalamus activates the pituitary gland, which secrets hormones that then activate other hormone-producing centers like the adrenal glands. The release of adrenaline and other hormones sustain the alarm reaction and physiological changes occur in response to the stress stimulus. The body now needs glucose for muscles to function properly. The liver responds by releasing some glycogen into the bloodstream, for the glucose to be transformed into energy, extra oxygen is required. The heart begins pumping blood faster to carry this extra supply, leading to a rise in blood pressure.

The amount of blood available in the body is, however, limited. In order to deliver extra blood to select areas- the muscles, heart, lungs, kidneys and the brain-there is a temporary cutoff in blood supply to non-priority areas. Consequently, the digestive system slows or stops altogether, the salivary glands stop secreting, blood vessels in the kidneys and the abdomen constrict and the immune system slows down.

These physiological changes are categorized as 'arousal'. Concomitant emotional manifestations like fear, apprehension and worry are termed anxiety'.

Once the prehistoric man dealt with the threat, usually, an animal, which he fought off or fled from-the body's reactions quickly returned to normal.

"UNFORTUNATELY", says consultant Santhosh Babu, this wonderful survival tool hasn't adapted to modern forms of stress. Today we react the same way with the BOSS as our ancestors reacted to tiger, despite the fact that we have choice other than fighting or fleeing!"

If this stressful situation is not resolved (the prehistoric man could be up a tree with the danger-tiger below all day long!), the body goes into a second stage, the adaptation stage. This also

happens when you aren't able to resolve the conflict with your boss. The changes that have occurred become chronic, that is, they take place all the time. This is the stage when the body is most prone to illness.

The third stage, according to Haynes (1956), was the "stage of exhaustion which came about if the stress was constant and prolonged. Here the body's resistance finally crumbles and death is usually the consequence.

Review of Literature

As early as the 2nd century AD, the deleterious effects of stress were recognized. In his treatise on tumors, De Tumoribus, the Greek physician Galen noted a greater tendency for development of breast cancer among melancholic women than those with sanguine traits. Over the past two decades interest in work stress and health has grown considerably. Much of this work has been conducted under stress-strain

Framework (Cooper and Payne, 1988) and the research findings have increased our understanding of this complex phenomenon (Schabracq et al , 1996: Cooper,1996).Most of the published literature on work stress and health is based on experiences of men (Offerman and Armitage, 1993). Although this situation is changing gradually, womens health has received relatively little research attention (Nelson and Burke,2000). Messing(1997) suggests two reasons for the historical neglect of womens occupational health issues:womens' jobs are safer than men's and health problems identified among women workers result from their being unfit for the job or unnecessary complaining. With increasing in numbers of women workers in Labour force, it is critical that more attention be given to understanding the effects of work stress and women's health.

Davidson and Cooper (1983, 1992), in two books on managerial women and stress found that managerial women felt isolated at work, exhibited Type A behavior, and experienced greater strain than did men. Extra pressures on managerial women included lack of self-confidence and subtle forms of discrimination. The study confirmed the impression that working women still carry the burden of home and family problems (Hochsschild, 1997). Hochschild (1997) estimates, based on major time-use studies, those women in dual career families work an extra month of 24-hour days each year compared to men. This extra time is spent on what she terms "second shift" work, work outside paid employment such as housework, home management, and child care. Together, these studies suggests that managerial women may experience more stress than men and that the sources of stress are gender-related: that is related to the expected and actual roles of women in society, and to the fact that, despite progress, executive women still occupy minority status in organizations. These are some stressors, however, that may be particularly important for women. These include organizational politics, tokenism, barriers to achievement, overload etc.

Women may also have different stress and health issues than men(langan-Fox. 1998).For example, Collins et al (1997)suggest that women may be uniquely affected by work conditions(e.g. exposure to chemicals and reproductive health),disproportionately affected(work and family roles) or differently affected(women's experience of workplace stress). This research examines the relationship of work stress and women's health, utilizing a diverse sample of women respondents. This is important as previous work has emphasized the work experiences of managerial and professional women (see Burke and McKeen, 1994); Burke(1996).This sample also permitted a preliminary examination of occupational status effects, linking more traditional work stress research with the fields of medical sociology and epidemiology.

The study is undertaken with following objectives :

1. To study the relation between stress and health of career women

2. To identify the effect stress on the health of career women among medical, judiciary, administration, education and service sector women
3. To decide the strategy- stress management technique among medical, judiciary, administration, education and service sector women.

This research tested the following hypotheses

1. There is no difference between career women from medical, judiciary, administrative, education and service sector for stress management
2. There is no difference between career women from medical, judiciary, administrative, education and service sector for job stress with reference to health
3. There is no difference between career women from medical, judiciary, administrative, education and service sector job stress with reference to anxiety, pressure, frustration and conflict

Research Methodology

A Random sample survey was done on a sample of 100 women professionals from various sectors like Judiciary, Medical, Administration, Education and Service sector. The sample was selected from Dhule and Jalgaon city. The tools used for research was a structured interview and a questionnaire.

The questionnaire covered various aspects of the health of career women. The questionnaire tries to extract the social, family, economic, and personal problems they face due to work outside home. There are basically questions which are framed in the manner to get an overall idea of the level of stress prevalent among the working women at their workplace.

The data thus collected is used to correlate the health of carrier women and stress at work place.

Out of the total sample of 100 career women, 20 from Medical, 20 are from Judiciary, 20 from the Administration and 20 from Education and 20 from the Service sector working women respectively.

Interpretation and Conclusion

When samples were asked of the reason for the stress or the factors causing stress, majority of women stated that balancing duties at home and work pressurized them more than other tensions, like lack of neatness on the part of male colleagues, at the workplace. There are other reasons for stress too.

Commenting on recent report of Associated Chamber of Commerce and industries (ASSOCHAM), on prevention health care and corporate female workforce, India Today writes in its 25 Mar 2009 issue:

"Women! Don't mix career and marriage…

that is likely to give urban India's 27 per cent nine-to-five women more sleepless nights: 68 per cent between age 21-52 have lifestyle disorders; long hours and tight deadlines push 75 per cent into depression and general anxiety disorder, compared to women with less hectic lives; work pressure leads 53 per cent to skip meals and gorge on junk food; 77 per cent avoid routine check-ups, although 22 per cent end up spending between Rs 500 and Rs 5,000 on lifestyle disorders, from obesity to spondylosis".

Regarding the effects of stress, there was a unanimous result that we observed; out of the total sample, 79% women replied stating that stress affects them mentally and hence impairing the quality work that they can do at their workplace. While there were very few people who replied that it affects them physically, quite a few numbers of women (especially those in service sector) agreed that stress does not affect them mentally as well as physically.

Regarding the symptoms of stress, the answers were spread evenly as no significant solution came out. This point to the fact that the evil of stress has no common recognizable label. It can result

in bad behavior or losing out the energy or person, becoming argumentative and becoming over-reactive and frustrated resulting in losing the control over them. Nearly 35% of the sample indicated that they feel lack of energy than usual when they are under stress.

Some startling facts were observed when a straight question was asked to them regarding their decision making capability. As good as 33% (1/3rd) of the total people surveyed replied negatively, confessing their inefficiency in taking the most simplest of decisions. 27% people replied positively when they were asked whether they are over-reactive to the mild things and 23% people were having the stress of overburden of work.

Short bursts of stress are part and parcel of daily life, which everyone experiences. For instance, being late for that important appointment, missing your train, getting lost during a journey, or even contemplating how you're going to fit the equivalent of five days into one.

These common every day events can make you feel worried or anxious in the short-term but the effects can be cumulative over time, taking its toll on your body and health.

Longer-term stresses brought about by dis-empowering life events such as experiencing racial discrimination, divorce, bereavement, serious illness etc., can profoundly affect your health on many levels, thus increasing your risk of serious health issues such as depression.

While some degree of short-term day to day stress is a normal part of daily life, an unremitting amount of stress, whether it be short-term or longer-term, can trigger changes in your body thus worsening health conditions and/or leading to more serious illnesses and diseases.

The number of workers compensation claims being made is increasing and the cost of them to the organization, not just in compensation, but also in lost productivity, is considerable. Many employers are now also taking positive action to prevent occupational stress and the high costs it can occur. According to one survey made by ASSOCHAM 22 % women spend Rs.500/- to Rs 5000/- every year on diseases due to stress. And 29% women spend Rs.5000/- to Rs.50,000/- every year on medical expenses due to blood pressure,diabetics,heart abnormalities and arthritis all of these diseases are nothing but the outcome of stress. It is also found in the survey that 77 % women do not do the medical checkup on a regular basis.

Individuals vary greatly in their capacity to endure stressful situations, and there is, undoubtedly, self-selection in the kinds of jobs and stressors that individuals choose. Because sources of stress may vary from worker to worker, providing a solution for one worker may create stress for another worker. For example, if the organization provides more opportunity for influence over the work process, the change in control may be experienced positively by some but negatively by others. A partial solution to this problem (Lazarus, 1991) may involve intervening with groups of workers that are formed based on person-environment relationships, and which contribute to the generation or reduction of stress. Exposure to stress on a long-term basis can be debilitating both physically and mentally and economically too. It is found that women belonging to high status and high education group experience significantly less role stress than their counterparts from the low status and the low education group women. The explanation is that women from high status group have access to a large number of facilities which help them lessen some of the overload and role conflict.

The words of SWAMI VIVEKANANDA may sooth the stress problems,

"Whosoever you are and whatsoever be your condition YOU are the ONLY person responsible for it. "

Therefore 'change yourself and then you would observe that the world around you is changed'!

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Application of Data Mining Techniques in Healthcare with Special Reference to Diabetes

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Abstract

Healthcare is an information rich industry, warehousing large amount of medical data. The proliferation of databases in every quarter of healthcare practice and research is evident in the large number of claims databases, registries, electronic medical record data warehouse, disease surveillance systems, and ad hoc research database systems. The exponential growth of databanks in healthcare creates opportunities for knowledge generation using data mining. Hidden and valuable knowledge can be discovered from application of data mining techniques in healthcare system. In this paper, classification techniques such as decision tree classifiers and rule based classification techniques are used for prediction of complications in diabetes patients. This paper provides the state-of-art information on data mining and its role in knowledge discovery in the healthcare sector.

Keywords : Knowledge, healthcare, data mining, knowledge discovery in database, decision tree, rule base classification.

Introduction

Knowledge is the human understanding of a specialized field of interest that has been acquired through study and experience. Massive healthcare data needs to be converted into information and knowledge which can help to control cost and maintains high quality of patient care. Healthcare data includes patient centric data and aggregate data. Knowledge discovery in database and data mining helps for decision support system in healthcare. Knowledge discovery in database (KDD) is the process of identifying a valid, potentially useful and ultimately understandable structure in data. Data mining is the core step of KDD, which discover meaningful, new correlation patterns in large amount of data to discover patterns and correlations between attributes.

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Healthcare organizations collect health related data from different sources such as online transaction processing systems, day-to-day medical records, disease surveillance systems and medical researches.

The different healthcare categories are :

- Patient related data storing patient information.
- Transformed –based data planning medical decisions.
- Aggregate data storing performance of past medical decisions and practices.

Knowledge Discovery in Healthcare

Knowledge discovery in database or KDD is concerned with the development of methods and techniques for making sense of data. KDD is the nontrivial process of identifying valid, novel, potentially useful, and ultimately understandable patterns in data (Fayyad, Piatetsky-Shapiro, and Smyth 1996). The important steps in the KDD process are data cleaning, data integration, data selection, data transformation, data mining, pattern evaluation and knowledge presentation. These

steps are essential to ensure that useful knowledge is derived from the data. The unifying goal is extracting high-level knowledge from low-level data in the context of large data sets. The healthcare organization may implement KDD with the help of skilled employee who has good understanding of healthcare environment. KDD aims to provide tools to automate (to the degree possible) the entire process of data analysis.

Data Mining in Healthcare

Data mining is one of the important step in the KDD process that consists of applying data analysis and application of specific algorithms that produce a particular enumeration of patterns (or models) over the data. Data mining technology provides a user oriented approach to novel and hidden patterns in the data and plays an important role in the knowledge discovery process in medical databases. The discovered knowledge can be used by the healthcare administrators to perform diagnosis and prognosis on different patient health care condition, to improve the quality of service, to reduce the number of adverse drug effect and to suggest less expensive therapeutically equivalent alternatives.

Data mining involves fitting models to, or determining patterns from observed data. Data mining techniques build model to display healthcare data characteristics and perform analysis by clustering, association analysis , prediction and sequence analysis of the stored data. Techniques and applications associated with data mining has supported different data understanding and decision support task in healthcare data processing such as the classification, visualization and identification of complex relationships.

The primary aim of healthcare data mining are :

- To increase the safety of patient
- To make the healthcare practices more efficient
- To lower delay in treatment
- To keep patient-centered information and automated health audit.

Fig.1 shows the general KDD process followed to mine a healthcare data.

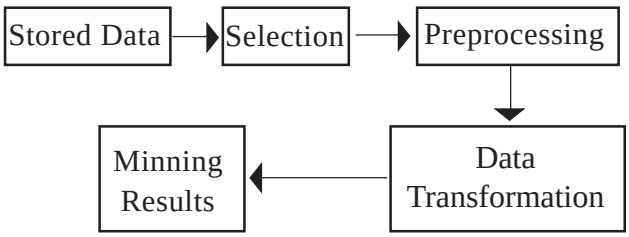

Fig.1 : Healthcare KDD Process

Data mining consists of five major elements:

- Extract, transform, and load transaction data into the data warehouse system.
- Store and manage the data in a multidimensional database system.
- Provide data access to analysts and information technology professionals.
- Analyze the data by application software.
- Present the data in a useful format, such as a graph or table.

Data mining can be used in different healthcare fields such as patients and in hospital administration. The complexity of healthcare mining techniques depend upon the type of information to be mined. The various health related issues that are handled by data mining are :

- Data modeling by healthcare applications.
- Identifying frequent patients and their recurring health problems
- Relationship between diseases and symptoms
- Forecasting treatment cost and demand of resources
- Public health informatics
- Health insurance

Database of Diabetes Patient

Researcher has selected one of the category in the healthcare i.e. diabetes and collected the database of diabetes patients. Diabetes mellitus is a metabolic disorder characterized by the body's inability to maintain blood sugar levels within the

normal range. Lack of insulin affects the metabolism of carbohydrate , protein and fat. Basically there are two main types of diabetes mellitus : Type 1 diabetes and Type 2 diabetes. Type 1 diabetes is called as insulin dependent diabetes. It occurs in children or young adults having age less than 30 years. Type 2 diabetes occurs after age 30 which is called as non-insulin dependent diabetes mellitus or adult onset diabetes. If diabetes is not controlled properly, it may further lead to different complications such as Macro vascular complication i.e. Hypoglycemia, Diabetic ketoacidosis, Nonketotic hyposmolar coma and Micro vascular complications such as Retinopathy, Neuropathy, Nephropathy, Diabetic Foot and Cardiomaypathy.

Researcher has collected 268 instances of type 2 diabetes.

The dataset in **table 1** shows 7 attributes of personal history, important attributes of family history.

Table 1 : Personal History

Name : ——— Height————-

Age : ——— Weight ———-

Sex :——— BMI ————

Address :——

Table 1 : Family History

Bowel—— Retinopathy——DM—-

Bladder—— IHD —— Nephropathy—-

Sleep ——— Stroke —— GDM ——

Table 2 shows attributes for clinical evaluation.

Table 2 : Clinical Evaluation (General and CNS)

General		**CNS**	
Obesity	.....	Sensory	.....
B/P	.....	Motor	.....
Pallor	.....	DTR	.....
P/R	.....	Fundus	.....
STAND	.....	CVS	.....
Oedema	.....	RS	.....
R:DP	..... PT.....	POP	.....
L:DP	..... PT.....	POP	.....

Table 3 shows Routine Investigation tests . .

Table 3 : Investigation Tests

F	.....	Urine	.....
PP	.....	Micral	.....
HbA1C	.....	**Lipid :**	**.....**
HB	.....	TC	.....
CBC	.....	TG	.....
FBS	.....	HDL	.....
PPBS	.....	LDL	.....
Sr. Creat	.....	SGOT /SGPT-	

Table 4 shows the Diabetes Case Evaluation Sheet to check type of diabetes and its complications i.e. (microvascular /macrovascular) .

Table 4 : DIABETES CASE EVALUATION SHEET

IHD	POVD	Stroke	CRF	GI	Osmotic	Family History	Obesity	Oedma	Burning Foot	Gen Weakness	Gidd iness
Y	Y	Y	Y	N	N	Y	N	Y	N	Y	N
N	N	N	N	N	N	N	N	N	Y	Y	N
N	N	N	N	N	N	Y	N	N	N	Y	N
Y	N	N	N	N	Y	Y	N	Y	N	Y	N
N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	N
N	N	N	N	Y	N	Y	N	Y	N	Y	Y

IHD	POVD	Stroke	CRF	GI	Osmotic	Family History	Obesity	Oedma	Burning Foot	Gen Weakness	Gidd iness
Y	N	N	N	N	Y	Y	Y	N	N	Y	N
N	N	N	N	N	Y	Y	N	N	N	Y	N
Y	N	N	N	N	Y	Y	Y	N	Y	Y	Y
N	N	N	N	N	N	N	Y	N	N	N	N
N	Y	N	N	Y	N	N	N	N	Y	Y	N
N	Y	N	Y	Y	N	N	Y	Y	Y	Y	N
N	N	N	N	Y	N	Y	N	N	N	Y	N
N	Y	N	N	N	Y	N	Y	N	Y	Y	N
N	N	N	N	N	Y	Y	Y	N	N	Y	N
N	N	N	N	Y	Y	N	N	N	N	N	N
N	N	N	N	N	N	Y	N	N	N	N	N
N	Y	N	N	N	N	Y	Y	Y	Y	Y	N
N	Y	N	N	Y	Y	Y	Y	N	Y	Y	N

Classification Techniques in Data Mining

Classification is learning a function that maps (classifies) a data item into one of several predefined classes (Weiss and Kulikowski). Classification technique is a systematic approach to build classification model from an input data set.. Commonly used classification techniques are decision tree classifiers, rule-based classifiers, neural networks, support vector machines and naive bayes classifiers. Each technique employs a learning algorithm to identify a model that best fits the relationship between the attribute set and the class label of the input data. A key objective of the learning algorithm is to build models that accurately predict the class labels of previously unknown records. To solve a classification problem, a training set is used consisting of records whose class labels are known. A training set is used to build a classification model which is subsequently applied to the test set , which consists of records with unknown class labels. Here classification technique used is Decision tree classifiers and Rule based classifiers for the prediction of complications of diabetes patients.

I. Decision Tree Classifier : It is a decision support tool that uses a tree-like graph or model of decisions. Decision trees are best suited for data mining which acts as a predictive model. A decision tree is a tree in which each branch node represents a choice between a number of alternatives and each leaf node represents a classification or *decision*. The tree has three types of nodes Root node, Internal nodes and Leaf node.

In decision tree, start from the root node , apply a test condition to the record and follow the appropriate branch based on the outcome of the test. The class label associated with the leaf node is then assigned to the record. There are many decision tree algorithms such as HUNT, CART, ID3, C4.5, SLIQ etc.

A decision tree is shown in fig.2 is built from the training set. Here each row represents a patient record which is called as data instance. The data set contains 3 attributes and one goal attribute to indicate the class label i.e. microalbuminurea or macroalbuminurea which depends on the protein content.

In decision tree instance is pushed down the tree, following the branches whose attribute values match the instances attribute values, until the instance reaches a leaf node, whose class label is then assigned to the instance. Here tree tests the protein test and according to the content of protein, it displays the appropriate leaf label i.e. microalbuminurea or macroalbuminurea.

Name	Diabetes	Protein content	F	PP	
Sujay	Y	320	140	22	?
				0	

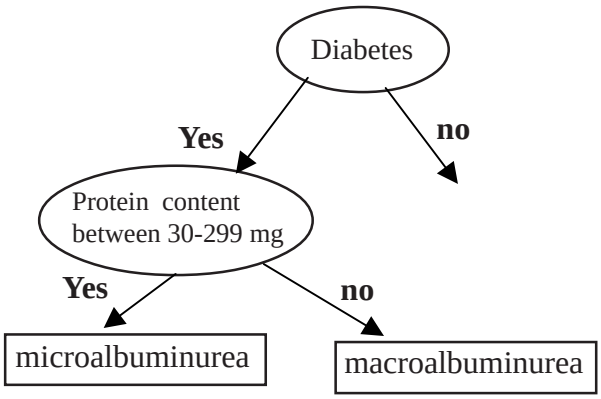

Fig. 2 : Decision Tree classifier to detect microalbuminurea

II. Rule Based Classification : A rule based classifier uses a set of IF-THEN rules for classification. IF-THEN rules is an expression of the form :

IF condition THEN conclusion

"IF" part of the rule is known as the rule antecedent or precondition. "THEN" part is the rule consequent. In the rule antecedent , the condition consists of one or more attribute tests that are logically ANDed or ORed. The action part of the rule is separated by the keyword THEN. The action part is executed if the premise is true. IF-THEN rules represent discovered knowledge at a high level of abstraction in the data mining. Rules are independent on one another and are based on heuristic reasoning. Each rule provides a clear and convenient way of expressing modular chunks of knowledge and follows a straightforward inferencing mechanism. In the health care system , it can be applied as follows :

(Symptoms) (Family history) (Clinical Evaluation) (Investigation) -> Diagnosis.

Rule based classification method has the potential to use retrieved cases for predictions. The table 5 shows 5 attributes for the prediction of diabetic Cardiomypathy.

Table 5 : Attributes for prediction of diabetic Cardiomypathy

Diabetes(Y/N)	LDL(mg/dl)
Sex(M/F)	Triglycerides(mg%)
HDL(mg%)	

Rule 1 :

If patient is diabetic

AND sex is Male

AND HDL>65 mg%

AND LDL>180mg/dl

AND Triglycerides>160mg%

THEN diagnosis is Diabetic Cardiomypathy

Rule 2 :

If patient is diabetic

AND sex is Female

AND HDL>80 mg%

AND LDL>180mg/dl

AND Triglycerides>160mg%

THEN diagnosis is Diabetic Cardiomypathy

Result and Conclusion: Decision tree classifiers classify the patient having microalbuminurea or macroalbuminurea depending on the protein content. The rule based classifier can predict the possibility of diabetic Cardiomypathy depending on the sex and cholesterol level. This can be used for decision making in healthcare.

From the above discussion , it is clear that classification techniques help the healthcare providers at a more informed point by enabling predictions and enhancing generation of new knowledge. Classification techniques are used to increase understanding of the domain. Decision tree classifier and rule based classification techniques can be used for prediction purpose such as complications arise in diabetic patients i.e. microalbuminurea or macroalbuminurea and Diabetic Cardiomypathy.

Authors are grateful to Dr. Hiremath -Mahalaxmi Diabetic Center , Kolhapur and Dr. Kumbhar - Shreyas Hospital for providing an access to medical data on diabetes and for his cooperation for research work.

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Build a Great Company !

Case Study

G.P. Jakhotiya

Mr. Sudesh, Mr. Pradeep and Ms. Geeta decided to promote 'Supra G' as a public limited company to manufacture and sell various types of pens. These three promoters belong to a well-known family, which runs Khandekar & Sons Limited (KSL), a company dealing in stationery items including ordinary school and college pens. Supra G was decided after a heavy brainstorm among the executive directors and these three youngsters. The chairman of KSL, Mr. Srikrishna Khandekar was of an opinion that a separate company for the pen business was not required. The present pen business could be revised, restructured and done as a Strategic Business Unit (SBU) under the umbrella of KSL. But later on, he got convinced that a separate company would offer better focus on pen business.

The competitor of KSL, Shah & Co. Ltd. (SCL) too decided to expand its pen business. It planned this overall expansion through a strategic business unit and not a separate company. SCL thought that an SBU would serve the purpose of expansion better, as it would be a part of SCL for all the reasons. The younger brother of Mr. Shah i.e. Mr. Pramukh was asked to head this SBU as its COO. Although Mr. Pramukh was given reasonable freedom to run this SBU, its major decisions were to be approved by the board of SCL and Mr. Pramukh was expected to observe same conservatism, which SCL has been observing for many years.

Following are the financial and operational details of both the proposals

Particulars	Supra G	Pen SBU of SCL
Initial Investment (Rs. Cr.)		
- Fixed Assets	20	8 (book Value)
- Working Capital (Net)	7	4
Financial Approach (i.e. Debt / Equity)	2:1	1:1
Cost of Borrowing	12 %	10 %
Product Range	A, B, & C	A, B, & C
Product Outsourcing		
- A	Nil	50 %
- B	40 %	50 %
- C	40 %	60 %
Annual Capacity Installed (Units)		
- A	5 lakhs	4 lakhs
- B	8 lakhs	6 lakhs
- C	8 lakhs	8 lakhs

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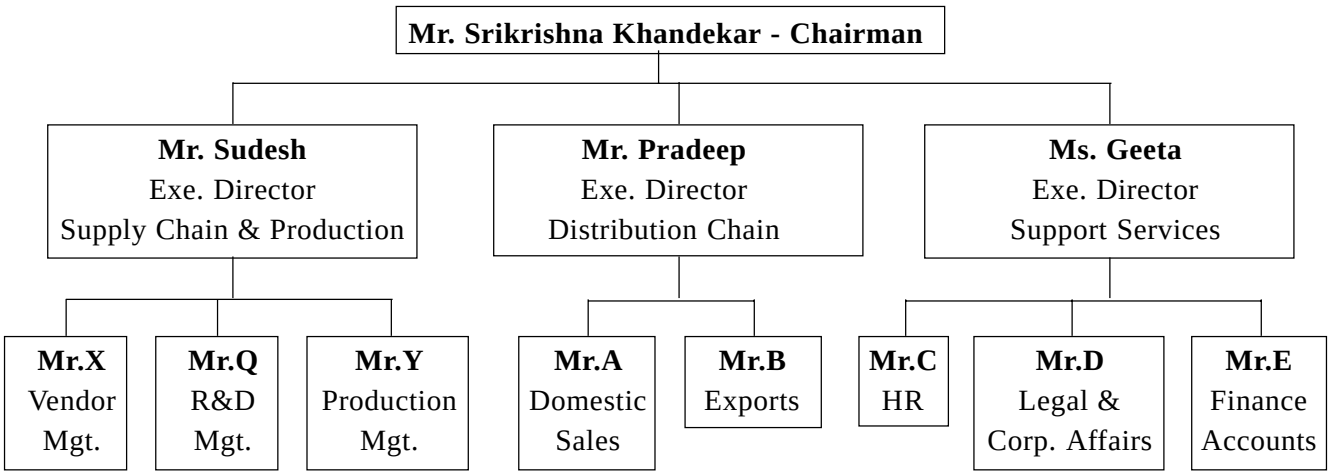
Particulars	Supra G	Pen SBU of SCL
Sale Price Per Unit (Rs.)		
- A	300	280
- B	150	140
- C	60	50
Variable Cost per insourced unit / Sale Price		
- A	60 %	50 %
- B	50 %	45 %
- C	50 %	45 %
Expected Quality Index		
- A	100	90
- B	90	90
- C	100	75
Annual Operating Fixed Cost (excluding depreciation) (Rs. Cr.)	2	1.6
Credit to customers (days)	30	45
Average Inventory (days)	10	15
Expected Solvency	1.5	2
Effective Tax Rate	35 %	30 %
Depreciation p.a.	10 %	10 %

Important Notes

1. Reasonable Market Value of the fixed assets of SBU of SCL is Rs.16 crore
2. Debt / Equity given in the table is based on only long-term debt. Shortterm debt is at 10 % interest p.a. It mainly consists of suppliers credit and bank credit, in a ration of 1:1

The broad organizational structure of Supra G has been decided as follows



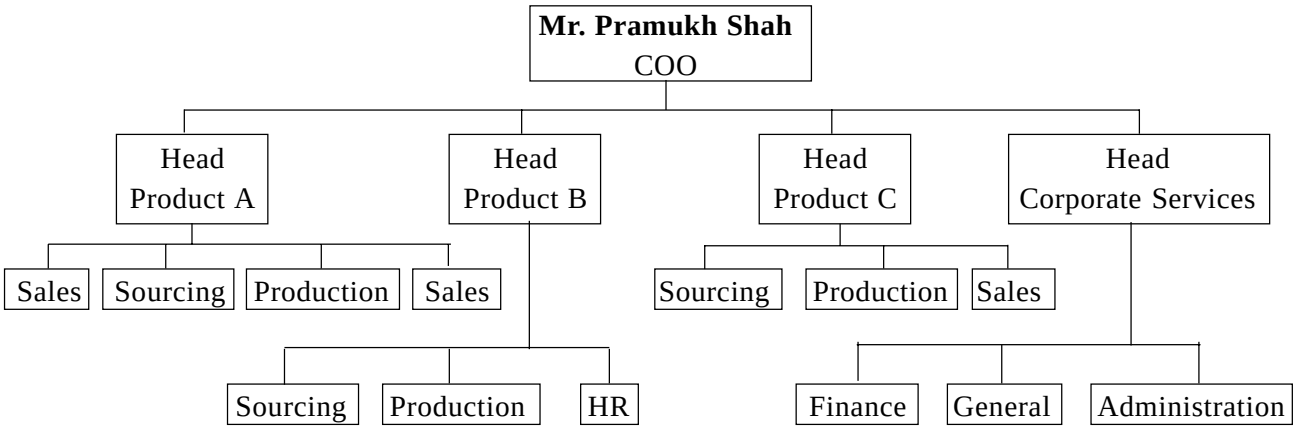
For all practical reasons, Supra G shall not have a full-time managing director for two years. Instead, Mr. Chairman will function as chief executive. One of the three executive directors shall be promoted as managing director, after two years.

The equity structure of Supra G was decided and implemented as follows

Mr. Chairman - 10 %
Each executive director - 20 %
Public Holding - 30 %

It was also decided that Mr. Chairman and the executive directors shall get 'sweat shares' after one year of functioning, in a ratio of 1:10 and at a price equal to the book value.

The organization structure of the Pen SBU of SCL is as follows



Mr. Pramukh Shah is also an executive director, on the board of SCL. Therefore, he has a dual responsibility of the Pen SBU in particular and SCL in general. Major decisions of the Pen SBU are to be approved by the monthly board meeting. The product-wise structure of the Pen SBU is similar to the productwise structure of the parent company SCL.

The capital structure of the Pen SBU is simple. Entire equity of this SBU is the own fund of SCL.

The first year commercial results of these two competitors are as follow

Particulars	**Supra G**			**Pen SBU of SCL**		
	A	B	C	A	B	C
Capacity Usage	90%	90%	80%	80%	90%	85%
Outsourcing (% of total volume)	20%	30%	20%	20%	20%	20%
Sale Price Per Unit	As per budget			As per budget		
Variable Cost / Sale Price	62 %	55 %	58 %	60 %	50 %	50 %
Quality Index	As per budget			As per budget		
Annual Operating Fixed Cost	Total Rs.2.2 Cr.			Total Rs.1.75 Cr		
Interest Cost	As per budget			As per budget		
Credit to customers	45 days for all products			45 days for all products		
Liquidity through securitization of receivables	20 % of receivables @ 8 % discount p.a.			Nil		

Both the competitors reinvested their profits into business, to finance the working capital requirement. To that extent, the borrowings used for working capital were repaid. The working capital required for the second year was projected, based on the actual volume of first year + 10 %.

It was decided that the computation of Economic Value Added (EVA) would be done at 12 % rate of cost of capital, for Supra G. (The same has been done at 10 % for KSL.) The EVA would be done at 12 % rate of cost of capital, for Supra G. (The same has been done at 10 % for KSL.) The EVA of the Pen SBU of SCL has to be done at 11 %, which is the rate of weighted average cost of capital of SCL.

With the experience of first year, both the competitors decide the following strategies for second year

Particulars	Supra G	Pen SBU of SCL
Sale Price Per Unit	No change i.e. retain the price of first year	Increase the price by 5 %
Variable Cost Per	Unit 5 % average increase to be absorbed by the company	The increase in sale price should compensate the increase in variable cost of 5 %
Export Sell	10 % of the volume in South Asian countries @ 10% higher price and 20% whole sale discount to local agents	No export, instead, increase the domestic volume by 10%; giving 5% average discount on incremental volume
Outsourcing	Continue with present arrangement (i.e. outsourcing price at 70% of sale price)	Make funds available to be ancillaries, from the market and ask for 1% discount on purchase price.(Present purchase price is 65 % of sale price.)

Supra G decided to use Activity Based Costing (ABC) during the second year to measure the accurate earning power of each product. Pen SBU too wanted to develop a suitable 'management accounting system' to measure its earning accurately. It has been using many common facilities of SCL, like general administration, security, storage, transportation, canteen, market research & promotion, government liasoning etc. What is also very important is, Pen SBU is using SCL's corporate guarantee and security to raise fund at competitive rate of interest. Pen SBU, therefore is not directly and rightly comparable with Supra G. Both the competitors carry similar value-chains, with different organizational structures, quantum of empowerment and slightly different business models.

Methodology of the Case Analysis

Stage (days)	Particulars	Time required
1.	The participants are to be educated about the preparation of Income Statement and Balance Sheet, using a simple group exercise	1/2
2	They shall be given inputs about major financial parameters like Operating ROI,Operating Profitability, Investment Turnover, Solvency, Debt/Equity, Owners ROI and Economic Value Added. An exercise on interfirm comparison shall be done, using these parameters	1/2

Stage (days)	Particulars	Time required
3 .	The participants are to be exposed to the concepts of Strategic Management like Vision & Mission, Strategy-Tactic-Policy Comparison, Business Model, Sustained Competitive Advantage, Value Chain, Value Appropriation,Organizational Structure, Strategic Remuneration, Profit Centre and Transfer Pricing, Strategic Share Valuation etc	
4.	In this stage, the participants shall be divided into two groups. Group1 members shall be the promoters- directors- key employees of Supra G. Group 2 members shall be the promoters - key employees of Pen SBU. They shall prepare –	
	1. Balance Sheet on the first day of business opening – Case Reading, Preliminary Queries and preparation of Balance Sheet of the first day, followed by the same Balance Sheet to be prepared by Mentor as model answer	1/2
	2. Income Statement for the first year and Balance Sheet at the end of 1st year	1/2
	3. Computation of key financial parameters Nos. 2 & 3 shall be answered by Mentor as model answer.	1/2
5.	Looking at the results of first year, both the groups shall discuss among themselves, the following — 1. Vision & Mission 2. Business Model 3. Organizational Structure & Scope of Empowerment 4. Inter-firm Benchmarking 5. Value Chain Alterations 6. Strategies for growth & development (A broad road map)	1/2
6.	Presentations by the groups	1/2
	Total	**4**

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