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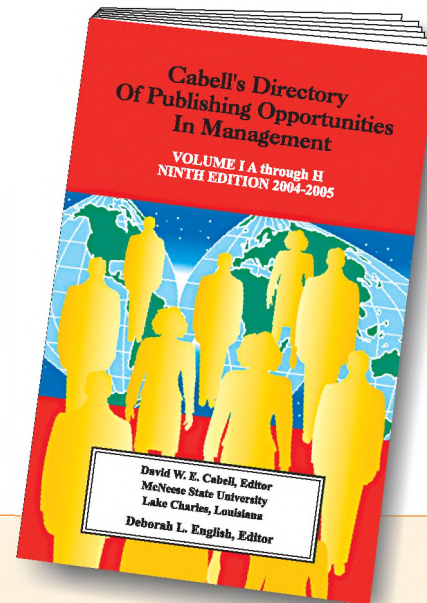
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16 Predicting Consumers' Ethical Behaviors through Attitudes toward Behavior and Prior Behavior

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38 Strategy and Competitor Cognition: An Exploratory Study of Cognitive Maps of Competition held by 'Inside' and 'Outside' Industry Actors

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The study highlights the perceived similarities/dissimilarities between mental models of competition of industry 'insiders' (managers of competing organizations) and industry 'outsiders' (e.g. consultants and analysts). The results

indicate the existence of homogenous mental models of competitive space between 'industry outsiders' and industry insiders'.

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The objective of this article is to provide a review of XBRL concepts that are important for professional accountants. The article explains the need for its origin in the US and its global acceptance, applications, advantages, risks, and implementation issues.

60 Performance of Indian Exports During the Post WTO Period: A Critical Evaluation

Rajwant Kaur, Amarjit Singh Sidhu

The present study is an attempt to examine the commodity composition and direction of Indian merchandise exports. An attempt has also been made to measure its impact on Gross Domestic Product and Balance of Trade during the post WTO regime. The study found that there is an increase in Indian merchandise exports during the past WTO period from 1995-96 to 2009-10 but it could not reduce the trade deficit.

76 MODELING AGGREGATE PRODUCTION PLANNING PROBLEMS AS LINEAR PROGRAMS

The present study explains how to model different aggregate production planning (APP) environment using mathematical modeling technique of linear programming. Relevant examples of each environment are also included by the authors. A later section of the study presents and solves a multiperiod-multiproduct APP model.

From The Editor's Desk

'Profit, Planet, People' is the new mantra of success for the modern organizations. Endowed and empowered human capital is the prime ingredient to organizational success. An enormous shift has been observed towards realizing the power of value driven, ethical, self empowered and conscientious workforce. Today organizations are providing an orientation towards spirituality to increase the holistic view of the employees. Spirituality builds unreserved minds which aids to success. As truly said by Adlin Sinclair, "Success is the welcome gift for uninhibited minds." In the first paper titled, "Spirituality Training for Achieving Self Empowerment: A Study at DMRC" the authors have articulated the effect of spiritual training intervention at DMRC. The study showed positive impact in the overall coping skills, adjustment levels, reduced role conflict; reduced stress and enhanced stress busters of the test group.

The organizational culture has its potential impact on ethical behavior of the employees and consumers. A congenial organizational culture should encourage ethical behavior and discourage unethical behavior. Therefore, organizations are focusing on the ethical behavior of the employees as well as that of the consumers. In the next study, "Predicting Consumers' Ethical Behaviors through Attitudes toward Behavior and Prior Behavior", the authors have shown their major concern in the ethical issues enhancing the organizational growth. The paper addresses the attitudinal, personal and cultural factors that predict major unethical practices followed by the consumers.

As the first two papers rightly emphasize the need to focus on people; the next article accentuates on the profits-another area of concern for any business. The article titled, "Credit Risk Analysis of Micro Enterprises-A Case Study of Delhi Financial Corporation", examines the behavior of loan seekers with specific explanation on the behavioral parameters of loan defaulters. The article provides a framework that is useful in designing parameters in predicting the default outcomes. Repayment of loan is largely dependent on the intention of the payer which is affected by the values and ethics of the individuals.

The business managers in today's dynamic era are constantly exposed to competitive pressures. To face these competitive pressures, the business managers need to develop innovative mental models and strategies for achieving success. In the next paper, "Strategy and Competitor Cognition: An Exploratory Study of Cognitive Maps of Competition held by 'Inside' and 'Outside' Industry Actors", authors have examined perceived similarities and dissimilarities between mental models of competition of industry 'insiders' (managers of competing organizations) and industry 'outsiders' (consultants and analysts).

In the highly competitive environment management of information is crucial for both short and long term decision making in the corporate. Organizations are continuously developing new means to manage the information for easy and effective communication to the stakeholders. XBRL (Extensible Business Reporting Language) is innovative tool to manage the data. The next article, "XBRL-A Major Step in Globalization of Integrated Financial Reporting System", comprehensively explains the need for its origin in the US and its global acceptance, applications, advantages, risks, and implementation issues. Opportunities and challenges created by XBRL implementation are also discussed by the authors.

The next paper of this issue, "Performance of Indian Exports during the Post WTO Period: A Critical Evaluation", highlights the performance of exports of India by examining the commodity composition and direction of Indian merchandise exports. An attempt has also been made to measure its impact on Gross Domestic Product and Balance of Trade during the post WTO regime.

The last paper of this issue, "Modeling Aggregate Production Planning Problems as Linear Programs", explains how to model different aggregate production planning (APP) environment using mathematical modeling technique of linear programming. Relevant examples of each environment are also included by the authors. A later section of the study presents and solves a multiperiod-multiproduct APP model.



In all this issue offers a variety of articles which will assist and add value to academic endeavors of the readers. Suggestions regarding the content of the journal from our esteemed readers are precious for us since they help us in upgrading the quality of the journal. May we therefore request you to spare some of your precious time and let us have your feedback in the form given at the end of the journal.

Regards,

Vibha

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**SPIRITUALITY TRAINING FOR
ACHIEVING
SELF EMPOWERMENT:
A STUDY AT DMRC**

Shalini Garg, Shilpa Jain, Ashima

ABSTRACT

In the new knowledge economy, independent entrepreneurship and initiative is needed throughout the ranks of the organization. Talented and empowered human capital is becoming the prime ingredient of organizational success. This self empowerment can be achieved through spirituality training as is highlighted by the present study. An experimental study was conducted on the employees of DMRC to see the effect of spirituality training intervention. A test group and a control group were taken to nullify the effect of the rest of the variables. The test group was given Raj Yoga Meditation training for a period one month. A semi structured questionnaire on likert scale was administered to measure overall coping skills, adjustment levels, locus of control, role conflict and ambiguity, perception about job, superiors and subordinates, stress and stress busters on both the groups before and after the training was given to the test group. The results show significant improvement in the overall coping skills, adjustment levels, reduction in role conflict; reduction in stress and enhancement in stress busters of the test group. There was no significant change in the control group on all these parameters.

Keywords: *Spirituality Training, Empowerment, Coping Skills, Stress, Stress Busters, Adjustment*

INTRODUCTION

“One machine can do the work of fifty ordinary men. No machine can do the work of one extraordinary man.” – Elber Hubbard

The world is going through consummate times of rapid and evolutionary changes. At the same time, the workplace has become an unstable, insecure environment, making many workplaces unfriendly. This rapid change is creating the perception of powerlessness in the lives of many people, causing them to search for purpose, meaning, community and connectedness in the workplace where they spend a significant proportion of their time and energy. This lack of spiritual cohesion and a concomitant sense of shared and unified morality can be seen through fraud and corruption in business, Bosch (2009). For example, Grant (2003) stated that fraud in big corporations such as Enron, WorldCom, Global Crossing, and Adelphia caused the stock market crash in October 2002 and led to an elimination of employee retirement accounts. Conner and Douglas (2005) showed that stress can negatively affect the effectiveness of organizations by increasing the number of absentees, turnover, and unpredictable behaviors. There is strong evidence from surveys and research that most individuals in society are now in search of spiritual certainties (Howard 2002).

In fact, what companies need are people who care for and are involved in their work with their hearts and souls. That level of involvement and caring is therefore the core issue and determiner of corporate sustainable success in today's world. People engaged with heart and souls are the most valuable asset any company can have. Individuals who self report spirit at work share a distinctive personality (Kinjerski, 2004). Research indicates that persons with spirit at work are well adjusted and exhibit a sense of inner harmony. They have positive energy, are conscientious, and tend to be open to possibilities. Compassionate and altruistic, persons with spirit at work are self-transcendent and spiritually inclined. These spiritually inclined individuals seek deeper meaning and a purpose beyond self and, as such, see work as an act of service. They are filled with gratitude and humility (Kinjerski, 2004). Research indicates that persons with spirit at work report four actions which they perceive as contributing to their experience of spirit at work: (1) consciously living a life that is purposeful and meaningful; (2) working at cultivating and living a spiritual, value-based life; (3) recognizing one's own worth and the value of others and expressing appreciation for self and others; and (4) taking time to refill one's cup by pursuing that which is intrinsically rewarding and by engaging in self-care (Kinjerski, 2004). In this regard Cavanagh (1999) elaborated, “[Spirituality] helps the business person to become more centered on the important things in life: God, family, and a physical world that can be passed on to our children” (p. 193). Garcia-Zamor (2003) has observed the awakening of realizing the needs of spirituality in the workplace. There have also been instances of larger companies and corporations realizing the significance of these studies. For instance Boeing, AT & T, and Ford have

developed spiritual training for their executives.

Spirituality training leads to the empowerment which is a core concept of the new management model in which delegation is replaced by empowerment and responsibility by ownership. In the new knowledge economy, independent entrepreneurship and initiative is needed throughout the ranks of the organization. Empowerment is the oil that lubricates the exercise of learning. Talented and empowered human capital is becoming the prime ingredient of organizational success. Relative significance of intangible assets- knowledge, know-how, business models, processes, people, etc. compared to their tangible peers in business has risen from 5% in 1978 to 90% in 2004. There is no dearth of literature highlighting the importance of self empowered associates in the organizations. Empowerment in the workplace involves empowering workers with the skills and self-confidence they need to achieve their personal and professional best.

Spirituality Training through Raj Yoga Meditation (as taught by the Brahma Kumaris Raja Yoga meditation organization)

The basis for attaining an experience in raja yoga meditation in to understand the self and the mind. The human mind is the most creative, powerful and wonderful "instrument" we possess. Using this energy called mind we have been able to search the deepest oceans, send humans to the moon and scan the molecular fabric of the building blocks of nature. But have we found our true self? Our state of mind at any given moment is determined by the thoughts in our consciousness, and also with the feelings that we associate with those thoughts. Since our sub consciousness contains all our previous thoughts and experiences, it is necessary to selectively control the flow of thoughts that emerges from the sub conscious mind. The intellect is the controller which is used to discriminate so that only positive and benevolent thoughts flow into our mind. With meditation or deep contemplation, the individual is able to strengthen and sharpen the intellect. The end result is a constant state of well being.

Self-empowerment through Spirituality Training (Raj yoga meditation) comes as attainment of eight special abilities and powers.

Power to	Ability to	Qualities
Withdraw	Listen	Patience
Pack up	be Available	Humility
Tolerate	Tolerate	Love
Adjust	Adapt	Maturity
Discriminate	Discern	Knowledge
Decide	Judge	Clarity of mind
Face	Respond	Courage
Cooperate	Team Spirit	Cooperation

There is a very deep productivity and interactivity between all these abilities. To listen we need to be available which comes from tolerance and ability to adapt. But in order to adapt in an accurate manner we need the discerning ability so as to know what to adapt, when to adapt and when to be firm. The more we analyze and discriminate the better decisions we take. Taking decisions implies that we shall be responsible for the results of the decisions. Team spirit is based on shared responsibility and to function in a team we need the ability to listen to all. It is only then we get the cooperation of all.

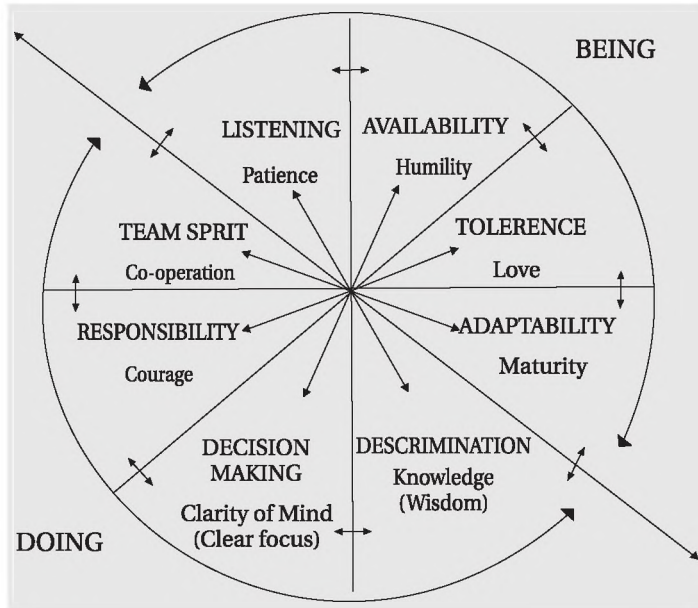
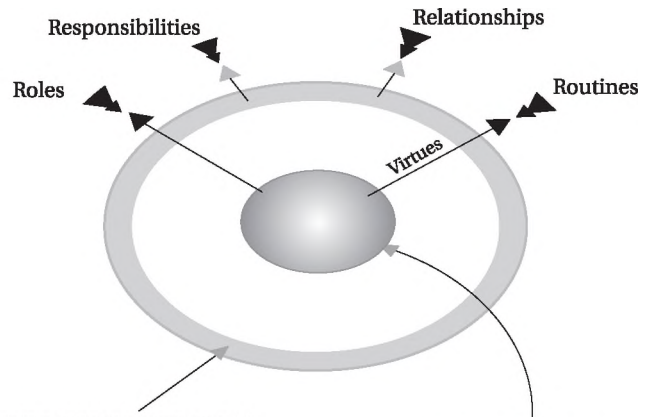


Figure 1

There are five undercurrents moving very silently in everybody's life and controlling 90% of our personality. The first and powerful undercurrent is the various forms of ego generated from one's social status, qualifications, post etc. The second undercurrent is the records carried forward from the past life which keeps on interfering with the present actions and becomes the driving force. The third undercurrent is the ancestral, which we inherit in our nature from the parents and grandparents. The fourth powerful undercurrent is the company in this life. Sometimes, there is lot of inner conflict experienced because of these undercurrents trying to pull us in various directions. Hence, people are at the mercy of these undercurrents. However these have shaped our personality but still we can initiate a change using the fifth undercurrent i.e. very powerful but quite dormant in majority's life. It is the undercurrent of will-power. This will power can be activated through the practice of spirituality. When we activate the will-power it becomes the driving force and awakens the innate qualities of self and forces them to come out in the 4R's of our life that is the various roles, the different routines, the responsibilities we have to shoulder, and the various relationships. The innate qualities required, are essenceful and full of potential. They are permanent in our nature, and they take us beyond ego enabling us to be more efficient and effective in adverse times. Just like a volcano eruption these



ACQUIRED QUALITIES (AQ's)
 - experiences
 - abilities
 - memories
 - learning
 - habits
 - belief

INNATE (BASIC) QUALITIES (IQ's)
 - Peace
 - Love
 - Power
 - Happiness
 - Purity
 - Joy
 - Knowledgeful

Figure 2

innate qualities brings great transformation. When we realize that we have these core values, we are totally open to the new learning, listening, adapting, and accepting and in nutshell self-empowered.

Raja Yoga Meditation Technique

Meditation What Am I?

The essential first step on the path of Raja Yoga Meditation is to realize this, "what am I"?

I see through my eyes. I hear through my ears ... I direct my body to move, and it moves ...

I have awareness, my body does not

Meditation I AM NOT A BODY!

My body is "mine" ... I am not this face, these features, or this bodily name ... I can think and know this body is not "me" ... I feel detached from this body ... and a feeling of stillness and silence comes over me ..

Meditation : I Am Soul

I now withdraw my attention, away from my physical organs ...

I focus my thought energy on myself, I-self ... I am this eternal point of life energy. This life energy that powers the body eternal soul ... thinking, deciding, thinking, deciding ... Acting Observing ... Remembering ... I the soul do action through the body I the soul observe the results of my actions I am the rider, my body is the chariot...

I concentrate my thoughts now on this one aspect ... that I am a concentrated spark of life-energy radiating light

As my thoughts concentrate I fill with power I become light ... floating

And I find deep peace within

Meditation: Diving Deep into the Self

I, the tiny spark of light energy, become introvert ... Looking deep within, I find my original qualities Far below the surface waves of the mind, I find the impressions of perfect peace and silence So still I become !... I fill with peace as I become the very essence of peace I become the embodiment of purity and silence.

Meditation: Diving Deep into the Ocean with raja Yoga meditation

In that one tinyspark of conscient light that is God,

With the gentle hum of peace I find that this sweet friend of mine, God the Supreme, is providing me with this ecstasy of unlimited warmth gentle waves of light from this sweet ocean are now passing over me ...

I become so still I feel I have gone to the very bottom of this Ocean of Peace ... I taste the very essence of peace Peace becomes my true nature once again... With this peace there comes the Supreme love of the Supreme Being... the mother showering love on her child Such tender love that my silent tears of thought gently unfold into ecstasy ... God, the giver of joy, is blessing the child with vibrations of peace, love, happiness ... This is the purity that I had lost.

I have come to the depths of the unlimited Ocean of Purity, Power and Peace.

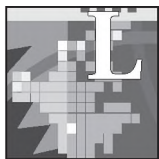
Meditation: Spreading Fragrance

I fly to my home now, - the world of pure light... The world of peace....

Here in this peaceful land I sit next to the source of this peace, the unlimited Ocean of Peace God the Supreme...

Also in from of me now I can visualise every other soul I ... So many star-like points of awareness ... to these souls,

(These meditations are drawn from the meditation as taught at the Brahma Kumairs Raja Yoga www.bkwsu.com)



LITERATURE REVIEW

One of the pioneer studies of the effect of raj yoga meditation technique was carried out at J. Watumull Global Hospital & Research Centre, Mount Abu in collaboration with Defense Institute of Physiology and Allied sciences, Delhi and Morarji Desai National Institute of Yoga, New Delhi. The healthy lifestyle study was carried on 217 angiographically documented coronary artery disease patients who were randomly divided into healthy lifestyle group (112) and control group (105). The healthy lifestyle intervention group received low fat high fiber vegetarian diet, moderate aerobic exercise and stress management through Raj yoga meditation and usual medical care. This study showed that the unique user friendly healthy lifestyle program is feasible, safe and compatible with other treatments in the setting of advanced coronary atherosclerosis with a high degree of compliance.

The average lesion change scores in healthy lifestyle group were in the direction of regression of coronary atherosclerosis in 66 out of 71 patients (92.96%). 44.09 % lesions in this group showed more than 10% absolute reduction in % diameter stenosis. The reduction in coronary arthrosclerosis and coronary events observed in this study is highest recorded till date.

A training intervention-based field study with a control group was undertaken Neck and Manz (1996) to empirically examine the applicability of thought self-leadership in an organizational setting (of bankruptcy financial status), and the potential for cognitions to be self-controlled. Employees suffered from job insecurity and low morale. Results suggested that individuals who received the thought self-leadership training experienced increased mental performance, positive affect (enthusiasm), job satisfaction, and decreased negative affect (nervousness) relative to those not receiving the training. Additionally, the trainees reported a strong and positive reaction to the training. Finally, those who received the training experienced enhanced perceptions of self-efficacy and more optimistic perceptions of the organization's bankruptcy condition than those not receiving the training.

Some individual level benefits of workplace spirituality include "increased physical and mental health of employees, advanced personal growth, and enhanced sense of self worth" (Krahnke et al, 2003). Mohamed et al (2004) propose, "the stronger the spiritual factor of personality the more tolerant the person is of work failure and less susceptible to stress. Mitroff and Denton (1999), assert that workplace spirituality benefits individuals by allowing them to realize their full potentials and "develop their complete self at work. Therefore, workplace spirituality is a pervasive force that affects individuals and organizations at multiple levels.

Moore and Casper (2005) found evidence of a significant negative relationship between factors of spirituality and turnover intentions. According to Jurkiewicz and Giacalone (2004), organizations that welcomed workplace spirituality grew at faster rates, had higher rates of return, and increased their efficiencies more than comparative organizations who did not welcome workplace spirituality. Krahnke et al (2003) found individual level outcomes such as "increased physical and mental health of employees, advanced personal growth, and enhanced sense of self worth" associated with workplace spirituality. Bell and Taylor (2001) assert that today's organizations must begin to care for the whole employee in order to increase commitment levels, production rates, and efficiencies. According to Zinnbauer, et al. (1997), people who considered themselves spiritual and religious were more likely to feel interconnected with others (group cohesion) and exhibit self-sacrificing behavior (altruism). Neck and Milliman (1994) found evidence that organizations benefit from workplace spirituality through the generation of increased creativity and intuition. Enhanced leadership was also found to be positively related to spirituality (Conger, 1994; Moore & Casper, 2006). Another well researched positive organizational

change that has been found to be positively related to workplace spirituality is empowerment (Lee, 1991). If high levels of workplace spirituality are significantly related to positive work outcomes, then logically organizations could potentially benefit from developing spirituality in their employees.

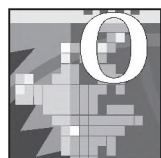


RATIONALE OF THE STUDY

Delhi Metro Rail Corporation Ltd. is a joint venture of Government of India and Government of Delhi. The name is associated with time bound service, discipline, and dignity in the minds of commuters. It has brought about blend of government and corporate culture. Though the organization is still in formative years, through their learning attitude they have now become experts and consultants in their own field. The organization has set a model for other Public sector undertaking. Despite all constraints they have been successful in changing the image of the capital. Smooth functioning of metro has been possible only with the coordination among different departments. Employees are in direct contact with the customers. Employees at DMRC everyday face new and challenging situations, varying work load, working in different shifts 24 hours, which puts them under constant pressure.

Furthermore they are required to remain alert and proactive on their jobs, they have to act instantly and take time bound decisions. Hence they require constant self-motivation and empowerment. Since DMRC is a high-end technology enabled organization every individual employee irrespective of his rank is crucial in its operation. Sometimes they have to rely on self-finding to take important decisions and require working with a sense of ownership.

Although DMRC is engaged in plenty of welfare activities a need was found to assess the stress level of employees and to empower them by educating them about their inherent capabilities through spirituality training. The Raj yoga Meditation taught by Brahma Kumaris World Spiritual University an international NGO was chosen for this purpose.



OBJECTIVES

To study the effectiveness and appropriateness of empowerment of an employee through spirituality training and its effect on overall coping skills and on

- Adjustment at work place
- Creating right Perception about organisation, job and senior
- Shifting Locus of control inwards
- Reducing role ambiguity and role conflict
- Enhancing coping skills to combat stress
- Stress busters in the life of employees

Where other factors like the job itself (Compensation, Shift Timings), Work Relationships, Organizational Structure and Policies and so on are kept constant.

Hypotheses

To study the effectiveness and appropriateness of empowerment of an employee through spirituality training following hypotheses has been formulated for the test group.

- H1. Post Spirituality (Raj yoga Meditation) training program overall coping skills will be significantly improved than pre training.
- H2. Post Spirituality (Raj yoga Meditation) training program Adjustment of the test group at work place will be significantly better than pre training.
- H3. Post Spirituality (Raj yoga Meditation) training program Locus of control of the test group will significantly shift inwards compared to that of pre training.
- H4. Post Spirituality (Raj yoga Meditation) training program Perception about organization, the job and senior of the test group will become significantly positive than pre training.
- H5. Post Spirituality (Raj yoga Meditation) training program Role ambiguity and Role conflict of the test group will be significantly less than pre training.
- H6. Post Spirituality (Raj yoga Meditation) training program Current Stress of the test group will be significantly reduced than pre training.
- H7. Post Spirituality (Raj yoga Meditation) training program Stress busters in the life of employees of the test group will be significantly greater than pre training.



RESEARCH METHODOLOGY

This research was made possible with the joint efforts of Delhi Metro Rail Corporation Ltd. and Brahma Kumaris World Spiritual University. Raj yoga Meditation is one of the training courses of Raj yoga Education and Research foundation of Brahma Kumaris World Spiritual University (NGO body on consultative status with UNO, UNICEF and WHO).

Experimental research design was used for this study where by (an intervention) a one month Raj yoga Meditation training program was given to the Test group. The study was conducted among employees of DMRC Shastri park depot, Delhi. The size of sample is 15 in Test group which includes one Assistant Manager, one Senior Engineer, twelve Junior Engineers and one technician. The Control group was taken to nullify the effect of other variables like job itself (Compensation, shift timings), work relationships, organisational structure and policies and so on. The control group consisted of one Assistant Manager, two Senior Engineer, ten Junior Engineers and two technicians.

A semi structured questionnaire which had thirty six items to measure the coping skills which includes level of adjustment at work place, Locus of control, perception about organization the job and senior, role ambiguity, current stress, Stress busters in the life of employees was used. The responses were taken on a five point Likert scale. Scoring was done in such way that lower score depicted better coping skills.



DATA ANALYSIS AND INTERPRETATION

The pre and post coping skills score of every respondent was tabulated. The same procedure was followed for individual attributes. This was done for both test group and control group. To analyze whether the training program was useful and whether the change in scores is significant Paired sample t-test has been used. The scores of Test group are lower after attending the program i.e. they have enhanced coping skills.

Table I shows the p values calculated by applying Paired Samples t Test on the scores obtained through pre and post training program from each group separately. The Control group showed no significant change in their overall coping

cooperation of all and develops a team spirits which results into better understanding and coordination among employees and departments that is crucial for the organization.

For the hypothesis H₃ results shows that there is no significant change in the Locus of control of the test group after the training program. Locus of control is latent part of personality developed over long period by experience and learning in various situations, to shift it requires consistent efforts and time.

For the hypothesis H₄ results shows a non significant change in the Perception about organization, the job and senior after the training program. This may be so because to change the employee perception about his job, seniors and organisation along with the training efforts are required from seniors and organisation side as well.

For the hypothesis H₅ results shows a significant reduction the Role ambiguity and Role conflict of the test group after the training program. Insight of the innate abilities of the self got translated into better match between employee and his role.

For the hypothesis H₆ results shows a significant reduction in the Current Stress of the test group after the training program.

Table 1: Showing the Pre Training and Post Training Mean Scores and the t-Values of the Test Group and Control Group on Various Dimensions.

Dimensions	Test Group				Control Group			
	Pre Training Scores	Post Training Scores	t-values	p- values	Pre Training Scores	Post Training Scores	t-values	p-values
Overall Coping Skills	78.00	63.46	3.78	.002	51.8	68.4	1.82	NS
Adjustment	11.86	9.20	5.50	.000	12.86	13.53	.796	NS
Locus of Control	12.46	11.06	1.10	NS	15.80	14.73	.909	NS
Preception	13.07	11.67	1.61	NS	15.53	16.53	1.02	NS
Role Conflict	8.53	6.66	3.28	.005	10.33	10.20	.153	NS
Stress	20.80	16.40	3.05	.009	23.13	22.06	1.054	NS
Stress Buster	11.23	8.47	3.47	.004	11.60	10.53	2.01	NS

skills as well as Ability to adjust at work, Locus of control, Perception about organization, the job and senior, Role ambiguity and Role conflict, Current Stress and Stress busters in the life of employees.

For the hypothesis H₁ results shows a significant change in the overall coping skills of the test group after the training program. Thus the training program has been effective in empowering the employees by enhancing their coping skills to face day to day challenging situations. This can be attributed to eight special powers developed through practice of Raj yoga Meditation.

For the hypothesis H₂ results shows a significant change in the test group in ability to adjust at work place after the training program. This comes from maturity to give way to others, to bend and to tolerate. This special ability helps one to get

The employees got benefited by relaxation which is the by product of meditation exercise and it had been proved as autogenic relaxation therapy in medical studies as well.

For the hypothesis H₇ results shows a significant improvement in the Stress busters in the life of employees of the test group after the training program.

Participants were asked as to the effectiveness of this intervention and they felt the training program was appropriate to their needs and work setting. They could apply the principles of Raj yoga to gain better understanding of their innate abilities which brought positive change in their life. All of them recommended that such training programs should be arranged for other employees also. They were relieved of stress and found that practise of Raj yoga meditation helped them to bring desired change in their outlook and behaviour towards

themselves as well as their job, colleagues and the organisation. This program also created a sense of responsibility towards one's behaviour as the participant realised that he has to change himself.



CONCLUSION

In the new knowledge economy, independent entrepreneurship and initiative is needed throughout the ranks of the organization. Talented and empowered human capital is becoming the prime ingredient of organizational success. This self empowerment can be achieved through spirituality training as is highlighted by the present study. The study shows that a one month spirituality training intervention through Raj yoga meditation brought significant changes in the overall

coping skills, adjustment, stress, stress busters and role conflict of the individuals in the test group. Thus the training program has been effective in empowering the employees by enhancing their coping skills to face day to day challenging situations. This can be attributed to eight special powers developed through practice of Raj yoga Meditation. The intervention helped them to develop maturity to give way to others, to bend and to tolerate. This special ability helps one to get cooperation of all and develops a team spirits which results into better understanding and coordination among employees and departments that is crucial for the organization. Insight of the innate abilities of the self got translated into better match between employee and his role. The employees got benefited by relaxation which is the by product of meditation exercise and it had been proved as autogenic relaxation therapy in medical studies as well.

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**PREDICTING CONSUMERS' ETHICAL
BEHAVIORS THROUGH ATTITUDES
TOWARD BEHAVIOR AND
PRIOR BEHAVIOR**

Rajendar K. Garg, Uday Tate, Suneel Maheshwari

ABSTRACT

While the concerns for ethical issues relating to consumers have dramatically increased over the last decade, research investigating predictors of these behaviors has been sparse. This paper addresses the attitudinal, personal and cultural factors that predict a large majority of unethical behavioral practices of consumers. An empirical survey was conducted of consumers. The results show that consumer beliefs/values concerning the specific behaviors and their own past behaviors large predict the future behaviors. Consumers' personal factors such as age, sex, nationality, individualism, etc. did not influence their ethical judgments and behaviors at all in this study of working adults.

Keywords: *Ethical Issues, Consumer Ethics, Cultural Differences in Ethical Attitudes and Behaviors, Nationality and Ethics*

INTRODUCTION

Since the beginning of 1980s the concern for the social responsibility and ethics in business has received considerable attention by practitioners and scholars alike. As a result, several business journals have devoted special issues to this topic. In addition, Business & Professional Ethics Journal and the Journal of Business Ethics came into existence in the early 1980s. Much of the debate has been focused on marketing and its related activities (Ferrell et al., 1989). Very few studies actually examined consumer ethics (for example, Murphy and Laczniak, 1981; Vitell and Muncy, 1992; Vitell, Nwachukwu and Barnes, 1993). And, these too have had a very narrow focus in that they relate to a specific behavior such as shoplifting. According to Bernstein (1985), due to the laxity in attitudes toward consumers, they are “out-doing big business and government at unethical behavior” (p.24). Most of the studies relating to business ethics have concentrated on the seller side (business side) of the exchange relationship. Using Hofstede's typology (Hofstede, 1979,1980,1983, 1984), Vitell and his associates (1993) propose a variety of factors that may influence unethical decision making. The main focus of the large majority of these factors appears to cultural in nature.

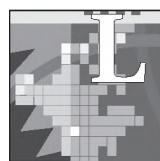
Several researchers have examined consumers' ethical decision making within diverse cross-cultural contexts. For example, Al-Wugayan and Rao (2004) examined the consumer-marketer dyadic interaction's impact on the ethical behaviors and intentions of consumers in Kuwait. The study concluded that the level of consumer-marketer dyadic interaction impacts customers' ethical behavior. Seshadri and Broekemier (2009) showed that significant differences exist between Panamanians and U. S. nationals in how they intend to behave in various consumption- and marketing-related ethical scenarios. Seshadri and Broekemier (2009) make a significant contribution to marketing ethics knowledge by adding to the extant cross-country literature, while incorporating the effect sizes to complement the significant values, in the area of ethical decision making by consumers. However, Seshadri and Broekemier's (2009) study had two significant differences compared to this study: one, they used undergraduate students as subjects, and two, the total sample size was more than 1500 students. Therefore, in order to account for the significance in results for the sample size effects, they quite accurately reported effect sizes to complement the significant values. In addition, some of the vignettes they used were not directly related to consumption based situations even though they relate to ethically questionable behaviors. Uddin and Agacer (2010) compared the responses of undergraduate students from the US and Phillipines, to 13 vignettes describing questionable ethical actions in business situations. The study suggests that cultural differences exist and the implications of these differences should be considered in today's global economy.

Al-Wugayan and Rao (2004) investigated ethics of Arab consumers within the context of individualism-collectivism.

Al-Wugayan and Rao have followed the typology by Hofstede (1979, 1980, 1983, 1984). Hofstede proposed that that culture can be studied with four dimensions: power distance, individualism/collectivism, femininity/masculinity, and uncertainty avoidance. It would be interesting to see the relationship between Hofstede's dimensions and ethics in consumer decision making especially with regard to Hofstede's individualism/collectivism dimension as it relates to the cultural background of consumers.

This study looks at factors that may predict unethical/ethical behaviors of consumers. Behavioral intentions were used as the dependent variable to measure unethical/ethical decision-making by consumers. A variety of independent factors were used to investigate if they significantly influence intentions to behavior in an unethical manner. These factors can be classified into three distinct categories: (1) personal characteristics such as age, gender, education, nationality, length of stay in the U.S., (2) beliefs and attitudes toward unethical behaviors, and (3) prior behavior. This study investigates consumers' ethical beliefs and attitudes, prior behavior and personal characteristics across a wide cross-section of population and more specifically, the cultural dimension as captured using a variable identified as “Nationality” and ethical situations in order to determine if these factors influence or have the potential to influence ethical judgments/ behaviors.

The organization of the remaining paper is as follows. The next section presents the literature on consumer ethics and a theoretical model depicting relations among attitude toward the behavior, prior behavior, consumer's background and how it will impact their intentions to behave in the future. Literature on the consumer ethics is divided into four broad categories as outlined in the next section. Literature review is followed by details of methodology used in the paper. Questionnaire with 33 ethical content items used for the research is also provided for reference. Finally, analysis of the data was done using composite scores and ANOVA. Finally, results and limitations are presented.



LITERATURE ON CONSUMER ETHICS

Past research on consumer ethics has been quite extant. In general, research on consumer ethics can be placed into four categories: (1) empirical investigation of specific behavior, (2) prescription of normative guidelines, (3) understanding of ethical decision making, and (4) ethical judgment of final consumers. Some highlights of the past research follows.

One, some authors have empirically investigated very specific behaviors that have ethical implications such as shoplifting (for example, Kallis et. al., 1986; Moschis and Powell, 1986) and green products (Antil, 1984; Halderman et.al. 1987).

Two, some authors have engaged in prescribing normative guidelines for consumers and businesses to follow on ethically

related issues. For example, Shubert (1979) developed norms and strategies to combat consumer abuse, now classified as “deviant consumer behavior”. On the other hand, Stampfl (1979) proposed a code of ethical conduct for consumers which businesses ought to promote and follow.

Three, some authors have focused on understanding ethical decision making by consumers and have tried to develop both conceptual and empirical models in their quest to specify normative basis for those decisions. For example, Grove et al. (1989) proposed a conceptual model that helps explain how some people may justify their non-normative consumer behavior. According to their model, consumers may justify their unethical behavior through denial of responsibility, denial of injury, denial of victim, appeal to higher loyalties and condemning the condemners. All of these techniques tend to neutralize the impact of unethical behavior or decision making by consumers.

Lastly, some authors have investigated the ethical judgments of the final consumer. These studies have either focused on consumer rights and responsibilities (for example, Davis, 1979) or have tried to identify factors that may influence consumer decision making relating to ethical issues (Hunt and Vitell, 1986; Vitell and Hunt, 1990; Vitell and Muncy, 1992; and Vitell et al. 1993). The stream of research done by Vitell and his colleagues primarily tends to look for cultural norms and factors that may explain why consumers behave in ethical/unethical ways. However, much of their work has been conceptual. No empirical study testing and confirming their models has been undertaken. As noted by Vitell and Muncy (1992), there is very little information on the attitudinal factors that may contribute to the ethical judgments made by consumers. Although their research did focus on the attitudinal factors, they measure largely global attitudes toward business and government. To the best of knowledge, no other researcher in the past has specifically looked at the attitude toward the specific behavior construct and past behavior as predictors of the target behavior. According to Fishbein and Ajzen's (1975) attitude toward the behavior model, both past behavior and attitude toward the specific behavior are major influencing factors that may explain consumer decision making. In the Fishbein and Ajzen model, consumer characteristics do play a role but only as antecedent factors shaping consumer attitudes.

Therefore, this study aims to bridge the gap between theory and empirical testing by specifically addressing the issue of consumer attitudes toward the specific ethical considerations in predicting their behavior. Since Vitell et al (1993) suggest a strong cultural element that may moderate consumer behavior in ethical judgments; this study addressed the cultural factor by looking at the nationality of the consumer and the length of time these consumers have stayed in the United States. In addition, for the purpose of the empirical testing, consumer's personal characteristics were specified as separate independent factors that may influence consumers'

intentions to behave in an ethical or unethical manner.

Specifically, the current research extends the work of Vitell and Muncy (1992), Vitell et al. (1993), DePaulo (1987), and Davis (1979) in several ways. First, the research looks at the consumer attitude toward the specific behavior in question and their prior behavior as predictors of their intentions to behave. Second, the sample used in the current study comes from a cross-section of broad population including foreign-born nationals. The nationality issue is used as an indication of their varying culture. Third, this study combines the situations investigated by these previous studies, such as Vitell and Muncy (1992), Vitell et al. (1993), DePaulo (1987), and Davis (1979), as well as add a few more, in order to assess consumer judgments and behaviors across a wider cross-section of situations having ethical content. Fourth, this research utilizes the Fishbein and Ajzen's (1975) attitude toward the object model to specify attitudinal relationships and measure the attitude construct.

Figure 1 shows the causal relationships between attitude toward the target behavior (ATTB) of engaging in unethical consumer behaviors, past unethical behaviors (PBEH), cultural background of the consumers as measured by a variable identified as nationality (Nationality) and future intentions to engage in unethical behaviors (FINT).

The Model Depicting Relations between Attitude toward the Behavior, Prior Behavior, Consumer's Background (Nationality) and Future Intentions to Behave

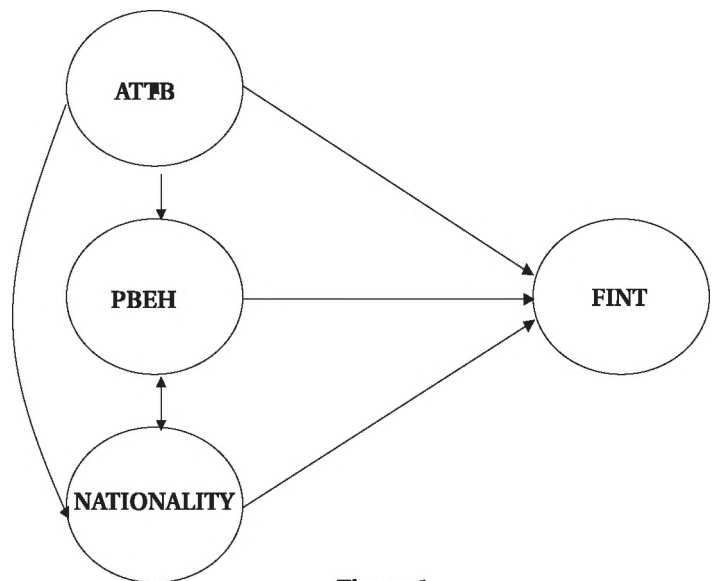


Figure 1



METHODOLOGY

This study employed the following methodology to accomplish its goals. Methodology is explained systematically using

the categories to which it belongs.

The Questionnaire

A majority, but not all, of the situations involving ethical judgments examined in this study were used by Vitell and Muncy (1992). A total of 33 situations (including 27 used by Vitell and Muncy) were used as items concerning ethical

content where consumers are likely to show the propensity to behave in an unethical manner. The survey questionnaire was divided into four parts. The first part asked respondents personal characteristics/classification oriented questions about their age, gender, nationality, etc. Cross-cultural differences were being assessed without specifically targeting a specific foreign-born group. Comparison was limited to US versus foreign-born adults since ethical values are largely

Table 1: Showing the Sample and the Research Procedure

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. To change price-tages on merchandise in a retail store. 2. To drink a can of soda in a supermarket without paying for it. 3. To use a long distance telephone card that does not to belong to you. 4. To report "lost" items as "stolen" to an insurance company in order to collect money. 5. To give misleading price information to a clerk for an unpriced item. 6. To return damaged merchandise when the damage is your own fault. 7. To return merchandise to the store and get the money back after using it for a while. 8. Getting too much change and not saying anything. 9. Observing someone shoplifting and ignoring it. 10. Lying about a child's age in order to get a lower price. 11. Not saying anything when the waitress miscalculates the bill in your favor. 12. Removing the pollution control device from and automobile in order to get better mileage. 13. Breaking a bottle of salad dressing in a supermarket and doing nothing about it. 14. Stretching the truth on and income tax return. 15. Returning merchandise to a store by claiming that it was a gift when it was not. 16. Taking an astray or other 'souvenir' from a hotel or | <p>restaurant.</p> <ol style="list-style-type: none"> 17. Using a coupon for merchandise you did not buy. 18. Using an expired coupon for merchandise. 19. Joining a music club (like Colombia House) Just to get some free CDs or videos without any intention to fulfill obligatory agreement. 20. Joining a music club using several different names in order to get just free CDs or videos. 21. Not telling the truth when negotiating the price of new automobile. 22. Moving into a new residence, finding that the cable TV is still hooked up and using it. 23. Split the cable connection into several TV inside the home. 24. Sharing the cable connection with different apartments by using splitters. 25. Copying text books instead of buying one. 26. Using computer software or games that you did not buy. 27. Recording an album/movie instead of buying it. 28. Returning merchandise after trying it and not liking it. 29. Spending over and hour trying on different dresses and not purchasing any. 30. Taping a movie off the television. 31. Using unlicensed computer software in your home PC. 32. Tasting grapes in a supermarket and not buying any. 33. Using Canadian quarters in the parking meter. |
|--|---|

associated with upbringing of people in a cultural context, that is, US versus foreign. Subjects were not asked to identify their specific nationality if they selected US versus foreign born and raised.

The second part of the questionnaire asked subjects on a 5-point Likert-type scale whether or not they believed it is wrong to engage in behaviors identified in each of the 33 potentially ethically questionable situations. The third part asked respondents whether or not they have engaged in ethically questionable behaviors in the past. And, finally, the fourth part of the questionnaire solicited their intentions to behave in the future in an ethical or unethical manner on a five-point Likert-type scale for each of the 33 ethical content situations. A Cronbach alpha was computed for the 33 items in the second (attitudes), third (past behavior) and fourth part (intended behavior) of the survey separately. The Cronbach alpha for second part was 0.79; third part was 0.82 and third part was 0.81. Table 1 shows the list of the 33 ethical content situations used in this study. All of these 33 ethical content situations have been used in prior studies and have been considered to have sufficient external validity.

The Sample and research Procedure

The actual sample consisted of 78 adults living and working in the surrounding area of a large eastern university in the United States. The subjects were approached and were asked to participate in the common area of the university cafeteria as well as malls near the university. An effort was made to assure that a sufficiently large section of foreign-born individuals are selected as subjects so that potential cultural differences could be addressed in assessing ethical judgments made by them. The subjects in the sample were working adults in and around the university area. The survey questionnaire was administered in the three-week period at the beginning of fall semester.

One of the important considerations of this research was to obtain a sample that included the diversity reflecting the U.S. population. A demographic summary of the subjects is as follows: on gender, the sample was 43% female, 57% male; on age, the sample was 44% between the age 20-35 group, and 49% 36-55 group, and the remaining 7% above 55 years; as for nationality, the sample was 61% Americans versus 39% foreign born. Thus, the goal of sample diversity seems to have been reasonably achieved. Even though the sample size of 78 doesn't appear to be large, it was considered appropriate for this study since the sample consisted of working adults.



ANALYSIS AND RESULTS

To address the objectives of this research, a composite score index of attitude toward the ethical behaviors (ATTB) was computed by getting an average on the 33 ethical questions each representing an ethical dilemma for the consumer. The question asked if they believe it is wrong (or not) to engage in

those behaviors. A second composite of prior behavior (PBEH) was computed by averaging the scaled ratings. Finally, a third composite score index was computed by averaging the behavior intentions for the future behavior (FINT). Thus, each of these composite indices represents an attitudinal construct (Fishbein and Ajzen, 1975).

A series of ANOVA models were specified and tested. The first ANOVA model tested to see if age, gender, nationality and the length of stay in the U.S. had any impact on the attitude toward ethical behaviors, prior behavior or future behavioral intentions. The overall ANOVA model was not significant and a further analysis of the results showed that none of these variables, except for nationality, were significant and accounted for only negligible variance. Therefore, the results of this ANOVA were largely as expected. The nationality factor was significant only at 0.06 level. Attitudes of foreign born individuals were found to be more pro-ethical behaviors compared to their U.S. born counterparts.

To determine the effect of past behavior, attitude toward the ethical behavior and nationality on future intentions to engage in those behaviors, a simple factorial ANOVA model was used. Table 2 shows the results of the ANOVA model. The overall ANOVA model was found to be significant at 0.0 level. The simple main effects for past behavior, attitude toward the ethical behavior, and nationality were all significant at less than 0.02 level.

A further analysis of the results revealed that the past behavior and the attitude toward the ethical behaviors had significant correlation of 0.57, thus, indicating the presence of a multi-collinearity problem in testing of the model. Therefore, partial correlations were computed to assess the individual effects of prior behavior and attitudes on future intentions to behave. Partial correlations between prior behavior and future intentions were 0.698 and attitudes and intentions was 0.436 both of which were significant at 0.05 level. Partial correlation between nationality and future intentions was significant at 0.06 level. Therefore, the above results clearly indicate a strong possibility that prior behavior, attitude toward the ethical behaviors and nationality or consumer's cultural orientation are significant predictors of whether consumers would likely engage in an unethical or ethical behavior.

Table 2: Showing the Results of ANOVA Model

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance levels of F Value
Main Effects	22.536	5	4.507	12.372	0.000
ATTB	18.047	3	6.016	16.513	0.000
PBEH	1.356	1	1.356	3.722	0.058
NATIONALITY	1.933	1	1.933	5.307	0.024
Explained	22.536	5	4.507	12.372	0.000
Residual	24.408	67	.364		
Total	46.944	72	.652		



CONCLUSIONS AND IMPLICATIONS

The present study did show that consumer's prior behavior, their attitude toward the ethical behavior and their nationality does play an important role in whether or not they form the intentions to behave in an ethical or unethical manner. Personal characteristics of the consumers did not have any significant impact on the future intentions to behave. While Seshadri and Broekemier (2009) found significant differences, both practical and statistical, between Panamanians and Americans in a variety of consumption related ethical situations, our study dispels the notion that there are any differences as far as consumer ethics are concerned based on cultural background of consumers. While the U.S. and foreign-born subjects did differ in their belief patterns, prior behaviors and intentions, a careful look of the means suggested that foreign born subjects were more likely to behave in an ethical rather than unethical manner. Perhaps they were not exposed to many of the common behaviors which are considered acceptable in the U.S. but are considered objectionable elsewhere. This study unfortunately found no differences in cultural background

factors of consumers intending to engage in unethical consumer behaviors and provided no support to the Hofstede typology that differentiates consumers from different countries based on individualism vs. collectivism dimension. The differences could be due to differences in sample participants, sample size, measurement scales, or even the context of ethical behavior. This study only differentiated whether the participant was a US citizen or foreign national.

The results have considerable implications for marketing practitioners in that the marketers would have to focus on consumer education and a sustained campaign in order to bring about change in consumer beliefs about common unethical situations that are considered acceptable by consumers. In doing so, however, marketers would have to be extremely careful not to offend the sensitivities of the consumers. Marketers would have to be utterly careful not to alienate and target consumers directly because otherwise they will lose those consumers forever. There is a fine line between what is unethical and illegal and marketers must focus on illegal behaviors first and then, try to bring about change in unethical behaviors through consumer education.

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CREDIT RISK ANALYSIS OF MICRO ENTERPRISES – A CASE STUDY OF DELHI FINANCIAL CORPORATION

Sanjeev Mittal, P. K. Gupta, K. K. Jain

ABSTRACT

Lack of availability of funds is one of the critical factors, which restricts the formation and growth of Small & Medium Enterprises (SMEs). In spite of many good and laudable programmes of the Central and state governments and also RBI's diktat to lend money as part of the priority sector to SMEs, still at the ground level SMEs face a huge challenge in terms of approaching financial institutions including banks for availing credit facilities.

We argue that apart from the conventional ability to assess pay basis of analysing default risk, there may be a group of other set of factors, which need careful attention specifically for micro enterprises that do not maintain balance sheets and are unable to disclose properly the financial details. We find it relevant to examine the behaviour of relevant measures of default risk to explore the most significant variables relating to financing (loans). We provide a framework that is useful in designing parameters in predicting the default outcomes. The study is likely to be useful in developing credit score for a micro enterprise to facilitate the loan from financial institutions.

Keywords: *Credit Risk, Default Prediction Models, Micro Enterprises, Financial Variables* **JEL Classification:** *G32, ESI, N2, M13*

INTRODUCTION

A viable small scale industrial project (SSI) normally receives financial support from the institutions and commercial banks. The institutions and banks have been advised by the Government and RBI to ensure that the development of SSI projects does not suffer for want of adequate and timely assistance. Finance is the most critical input not only in setting up new industries but also for expansion and modernization of existing industries.

A number of agencies have been set up for extending financial assistance. There is a central institution, namely Small Industries Development Bank of India (SIDBI) providing finance to small units on concessional terms i.e. at low rate of interest, longer moratorium, easy installment and longer repayment period. But their help is generally indirect. It reaches the small units through State Level Agencies (State Financial Corporation) and Commercial Banks (which are directly involved in the promotion of small units) through 'Refinance Scheme and Bill Rediscounting Scheme'.

Institutional Arrangement

The SIDBI is the principal financial institution for promotion, financing and development of the Medium & Small Enterprise (MSE) sector. Apart from extending financial assistance to the sector, it coordinates the functions of institutions engaged in similar activities. SIDBI's major operations are in the areas of (i) refinance assistance to state level agencies (ii) direct lending and (iii) development and support services. Commercial banks are important channels of credit dispensation to the sector and play a pivotal role in financing the working capital requirements, besides providing term loans (in the form of composite loans). At the state level, State Financial Corporations (SFCs) and twin-function State Industrial Development Corporations (SIDCs) are the main sources of long-term finance for the MSE sector.

Recognising the importance of easy and adequate availability of credit in sustainable growth of the MSE sector, the government has announced a policy package for stepping up credit to small and medium enterprises, with the objective of doubling the flow of credit to this sector within a period of five years.



SMALL INDUSTRIES DEVELOPMENT BANK OF INDIA (SIDBI)

It is the premier development bank in the country set up in the year 1989 under SIDBI Act, 1989 and serves as the Principal Financial Institution for promotion and development of SSI sector. It also co-ordinates the functions of the institutions engaged in promotion, financing or developing small scale sector.

SIDBI offers wide range of financial assistance through its direct finance, refinance, bills finance and other schemes of assistance besides support services. They are:

Line of Credit to

- i) Small industries development corporations for supplying raw-material and extending marketing support to SSI units.
- ii) Factoring companies to factor SSI debts.

Refinance

- i) Of loans granted by banks and State Level Institutions for new SSI projects and for expansion, modernization, quality promotion, diversification and rehabilitation.
- ii) Of loans to small road transport operators, small hospitals and nursing homes and to promote hotel and tourism related projects.



TATE FINANCIAL CORPORATIONS (SFCs)

In each of the States of Indian Union, a State Financial Corporation has been set up under SFC Act 1951 and these Corporations advance medium and long term loans for acquisition of fixed assets such as factory land, building and plant and machinery. SFCs also finance for working capital along with term loan under single window scheme in respect of new SSI and tiny industries where aggregate cost of the project (excluding working capital margin) and total working capital requirement is within Rs. 50 lakh. In such cases, SFCs grant term loans up to a maximum of 75% of the cost of the fixed assets and working capital finance up to 75% of the requirements.

The State Financial Corporations (SFCs) set up under the State Financial Corporations (SFCs) Act, 1951 have made significant contribution in developing industrial sector including the Small Scale Industry (SSI) Sector in India during the past five decades, 1960-2010. The SFCs mainly Andhra Pradesh State Financial Corporation (APSFC), Gujarat State Financial Corporation (GSFC), Maharashtra State Financial Corporation (MSFC), Kerala Financial Corporation (KFC), Rajasthan State Financial Corporation (RFC) and Delhi Financial Corporation (DFC). The SFCs have played pivotal role in the overall development of SSIs in the country. They, among others, have contributed in bringing about decentralized economic development, dispersal of industrial activities, employment generation, reducing regional imbalances, promoting first generation entrepreneurs, and helped in strengthening the economy of their respective States.

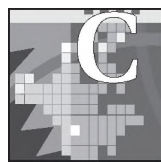
Over the years their activities have expanded considerably. However, with the passage of time, several problems connected with the structure, management and resources have confronted the SFCs. As such, their overall financial health has reached a critical stage, with most of the SFCs having eroded their net worth. With the introduction of financial sector reforms, the business environment for SFCs as also other players in the financial system, is becoming increasingly competitive. To enable SFCs to adapt themselves to the emerging environment and promote the growth of the small scale and tiny sector in the desired manner, Government of India (GoI) enacted, in September 2000, amendments to the SFCs Act. These amendments facilitated SFCs in enlarging their shareholders base, providing them with greater functional autonomy and operational flexibility and enabling them to respond to the needs of the changing financial system.

SFCs have largely remained a "Single Product" provider extending term loan assistance to SSIs. With the onset of process of liberalization and competition pushing the process of disintermediation aggressively across various players in the

financial system, SFCs would need to provide diversified products/services. Overall, the provision of diversified bouquet of products/services should ward off any untoward and adverse impact of a particular activity on the health the SFCs. The amendments to the SFCs Act in September 2000, have expanded the business areas of the SFCs and now they can do almost all business that are being carried out by the all India financial institutions. Flexibility has also been provided under the Act for inclusion for such other business areas which are incidental to or consequential upon the other business areas of the Corporation.

SFCs have been granting working capital term loan under SIDBI's single window scheme. They have also been granting such loans outside the single window scheme particularly to the existing industrial units starved of working capital.

The SFCs play a vital role in the economy for the State and their continued strength and stability is a matter of interest and concern to the State Governments and other stakeholders. SFCs as statutory corporations possess certain unique characteristics. They are highly leveraged organizations and the Act itself provided or their borrowings up to 10 times the amount of their paid-up capital and reserve fund which can be increased to 30 times with the approval of SIDBI. The brief profile of few SFCs are given below to provide information about their nature of operations and existing infrastructure.



CREDIT RISK ASSESSMENT

Financing of Micro, Small & Medium Enterprises (MSME) Sector is altogether different from conventional methods of financing top large corporations. Credit risk assessment management in retail portfolios places a premium on a bank's ability to accurately differentiate the credit quality to assess credit risk and to allocate their economic capital to different segments of their portfolios.

The assessment of risk provided by banks' internal systems essentially require banks and financial institutions to apply quantitative techniques and modeling the risk. Basel II permits banks a choice between two broad methodologies for measuring credit risk. One alternative, the standardized approach will be to measure credit risk in a standardized manner, supported by external credit assessments. The other alternative, the Internal Ratings – based Approach (IRB) which is subject to the explicit approval of the bank's supervisor would allow to use internal rating system for credit risk. Basel II report provides that loans extended to small businesses and managed as retail exposure are eligible for retail treatment provided the total exposure of banking group to a small business borrower is less than €1 million. For relying on internal estimate of risk components, a qualifying IRB rating system needs to be designed by bank or financial institution.

Credit scoring models and other mechanical process are permissible as the primary or partial basis of rating assignments and may play a role in the estimation of loss characteristics. For retails exposures, a bank must review the loss characteristics and delinquency status of each identified risk pool at least on an annual basis. RBI has already issued detailed directive to banks and financial institution to adhere to time schedule to implement standard as well as IRB

approach in their respective bank and financial institution.

Accordingly, the studies on internal exposures of banks and financial institution shall facilitate smooth implementation of IRB approach in Indian banks and financial institutions. In a survey carried out by Jayadev (2006), it is reported that banks and financial institutions in India so far do not utilize statistical based risk tools for credit granting decisions.

Considering the need for internal credit scoring model in Indian context, the study uses the comprehensive information on parameters of the financial package delivered by Indian Financial Institutions to micro enterprises to design credit risk model instead of categorizing borrowers in terms of their 'ability to pay'. The study verifies the association property of the parameters with credit risk and establishes the relationship between new credit appraisal parameters with the default events of such firms. In the absence of any such in Indian context as on the date, the motivation is for the study to attempt a solution to the unresolved problem of the credit decision process to micro enterprises having no past track record of performance.



DELHI FINANCIAL CORPORATION

Delhi Financial Corporation (DFC), a state owned financial institution, established in April, 1967 under the State Financial Corporations' Act 1951, is engaged in promoting, financing and developing small and medium scale industries and service enterprises in NCT of Delhi and UT of Chandigarh. Over the years, DFC has played a critical role in promoting first generation entrepreneurs besides fulfilling socio-economic obligations like relocation of industries from non-conforming to conforming areas, replacement of old commercial vehicles with new CNG driven vehicles, employment generation etc.

Scope of Activities

Financing of loans for establishing and running micro, small and medium scale industries, service sector industries and commercial transport sector in National Capital Territory of Delhi and Union Territories of Chandigarh. Focus of the Corporation is social development via poverty alleviation, employment generation, creating opportunity for self-employment, relocation of industries, cleaning environment and encouraging first generation entrepreneurs. Corporation makes available finance for all activities, which are permitted under SFC Act or approved by the SIDBI.

Unique Value Propositions (UVPs)

The peculiar features of DFC include-

- Unique financial institution of Delhi & Chandigarh, which always intends to promote and finance First Generation Entrepreneurs.
- Being a dedicated Financial Institution for funding industrial and service sector only, quick, personal & hassle free financial assistance is made available in a time bound manner.
- Longer period of repayment schedule ranging between 5 to 10 years with 6 months to 24 months moratorium period

- (d) Tie up with PNB for creation of second charge for Working capital assistance
- (e) Adequate delegation of powers at lower level of management for smooth and fast business operation
- (f) Lower interest rate computed on reducing balance basis
- (g) Provide Micro Finance facility for self employment & alleviation of poverty
- (h) No collateral security / third party guarantee for loans up to Rs. 50.00 lakh under CGTMSE Scheme for permissible & viable project.

Exhibit 1: Financial Performance of DFC for the financial year 2009-10

Particulars	Amount (Rupees in Lakhs)
Paid-up Capital	2605.75
Reserves	4510.09
Borrowings	3967.07
Gross Sanction (Cumulative)	120371.91
Effective Sanction (Cumulative)	80314.39
Disbursement (Cumulative)	69395.64
Loans Outstanding	8654.20
Gross Income	1415.12
Net Profit	26.50

Industrial Scenario of National Capital Territory (NCT) Delhi

The issue of industries in Delhi has been a subject of extensive debate, controversy and concern over the past decade. This has centred mainly on the aspects of pollution and negative environmental impact of industries, the existence and continued growth of industries in non-conforming areas and the issues of classification and permissibility with reference to household industries. Delhi has close to 1 lakh manufacturing units employing nearly 6 lakh people, with majority of units operating in the unorganised sector. The 62nd round of NSSO survey for 2005 estimated 97,636 manufacturing units in the unorganised sector employing 4.5 lakh workers. The manufacturing units in organised sector in 2005, as per the Annual Survey of Industries add up to just 3,312, employing ~1.2 lakh people.

Delhi has a large presence of garment and furniture manufacturers followed by electrical machinery production and repair services. Manufacturing in Delhi is small scale and low-skilled which has made it attractive to the migrants from neighbouring areas, putting strain on the state's resources and infrastructure. On the other hand, skilled people residing in Delhi are travelling everyday to work in other cities like Gurgaon and Noida. Further, being small scale in nature, the units in Delhi are not investing enough in upgrading technology and installing pollution control equipment.

Delhi has 28 planned industrial estates spread over an area of 4,647 acres. In addition, it has four flatted complexes, which are developed and maintained by the Industries Department and DSIIDC. Of the 32 industrial estates and flatted complexes, nearly 21 industrial estates under DDA, and consequently a major chunk of existing industrial assets in Delhi, are

maintained by Municipal Corporation Delhi (MCD). Rest are under DSIIDC and Industries Department, variously maintained by DSIIDC, MCD and PWD. It can be seen that Delhi suffers from the problem of multiplicity of organisation. The planned industrial areas, however, house only a fraction of units (about 25,000) operating in the state. Delhi has been grappling with the problems of manufacturing units functioning in non-conforming areas and pollution caused by industrial units.

In 1996, it was Supreme Court which gave directions for resolving both the problems. It ordered shutting down of hazardous, noxious, heavy and large industries operating in Delhi. It also directed closing down of Hot-Mix plants and Brick Kilns in Delhi. The Court asked Delhi to relocate manufacturing units in residential areas not conforming to Master Plan of Delhi 2001 (MPD-2021).

Consequently, Delhi government framed an industrial relocation scheme in October 2006, where 27,905 units were declared eligible for allotment of industrial plots or flats in Bawana, Jhilmil, Narela, Badli, Patparganj and various flatted factories. By July 2009, nearly 17,801 units made full payment and completed all the legal formalities, and 16,667 have taken physical possession. However, only about 5,000 of the units have started actual construction work on the site.

Delhi Relocation Schemes Status

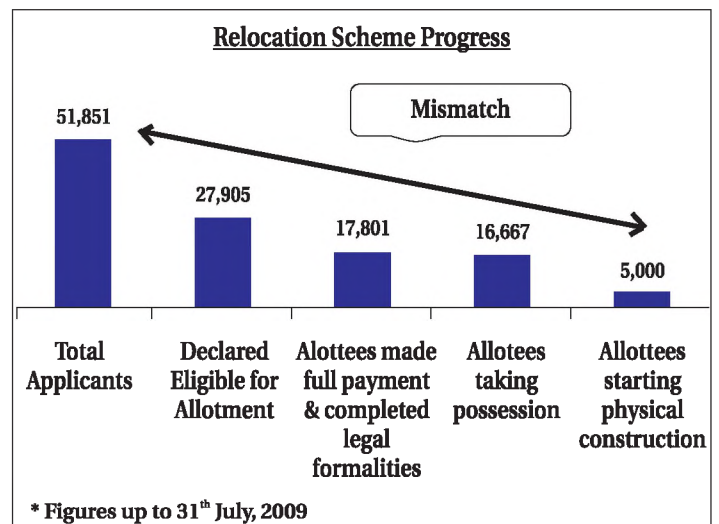


Exhibit 2



ORGANISATION OF THE DATA

Data has been obtained from the files of a prominent financial institution in Delhi involved in financing majority of units under relocation scheme. The data set in this study consists of 2864 observations covering two years of quarterly data on all 2864 micro enterprises that had one or several loans outstanding at the financial institution on the last day of at least one quarter between 31st January 2007 to 31st January 2009.

The data consists of all the information available in a financial

institution on each applicant for retail business loans, including the credit package details and banking behaviour data. There are 97 discrete and categorical variables, one of which is the observed credit reliability, measured through good credit risk, bad credit risk and foreclose credit risk as supervisor target variables to build up a credit scoring rule able to discriminate good credit from bad credit. A credit

scoring rule has been able to tell which are the discriminant variables and give their weight in the final score.

As many as 27 questions are asked from the executives of financial organization and based on their statements, the study has divided independent variables into four major categories, Demographical Information, Loan Indicators, Collateral Position, and Industry Classification.

Exhibit 3 : Predictive Variables of the Model

Demographic Indicators	Loan Indicators	Collateral Position	Industry
District	margin	Prime Security	Type of Industry
Category	tsanction_TILEN=1-20	installments	Constitution
	lsanc/tsanc1=1-10	Payment	Scale
	bsanc/tsanc1=1-10	Mode	plot size
	Rateinterest		Existing Function/Closed
	Additionalinterest		Shifted/Not shifted/Likely to be shifted
	Disbursement		
	Scheme		

The explanation of predictive variables is provided in Exhibit 4

Exhibit 4 : Definition of Predictive Variables

Indicators	Description
Demographic	
District	Demographic location divided in nine districts of Delhi for example North-East District.
Category	Category of Borrower based on caste. However, category-H refers to handicapped borrower.
Loan	
Margin	Borrower's share of money
tsanction_TILEN=1-20:	Total amount of loan sanctioned to a project. It is divided into 20 different classes called as TILE N-1 to N-20 based on vintile algorithm for example tsanction_TILE N5 is the class of loans sanctioned between INR. 3,00,000/-
Isanc/tsanc1 = 1-10	Ratio of amount of sanction of loan for land to total amount of sanction for project. It is also divided into 10 different parts ranging from <.1 to >.9 for example loans having a ratio between .4 to .5 are termed as isanc/tsanc1=5.
bsanc/tsanc1=1-10	Ratio of amount of sanction of loan for building to total amount of sanction for project. It is also divided into 10 different parts ranging from <.1 to >.9 for example loans having a ratio between .3 to .4 are termed as bsanc/tsanc1=4.
rateinterest	Rate of Interest at which the loan sanctioned.
addionalinterest	Rate of penal interest to be charged for late payment.
disbursement	Amount of loan disbursed against sanctioned amount.
Scheme	Description of scheme under which the loan sanctioned for example Relocation Scheme.
Collateral Position	
Prime Security	Value of the security created against amount of loan.
installments	Number of installments in which loan is to be repaid.
Payment Mode	Mode of repayment whether through post dated cheque or through demand notice or through bank

<i>Industry</i>	
type Of Industry constitution scale plot size existing function/ closed shifted/ not shifted/ likely to be shifted	Type of Industry based on RBI classification for example Basic Metal Industries. Constitution of borrower whether individual, partner, company. Whether micro, small or medium unit based on MSME Act 2006. Size of the plot allotted like 100 Sq. Mtr. Whether existing unit is functioning or closed. Whether unit is shifted to new site, not shifted or likely to be shifted.

Default Logic

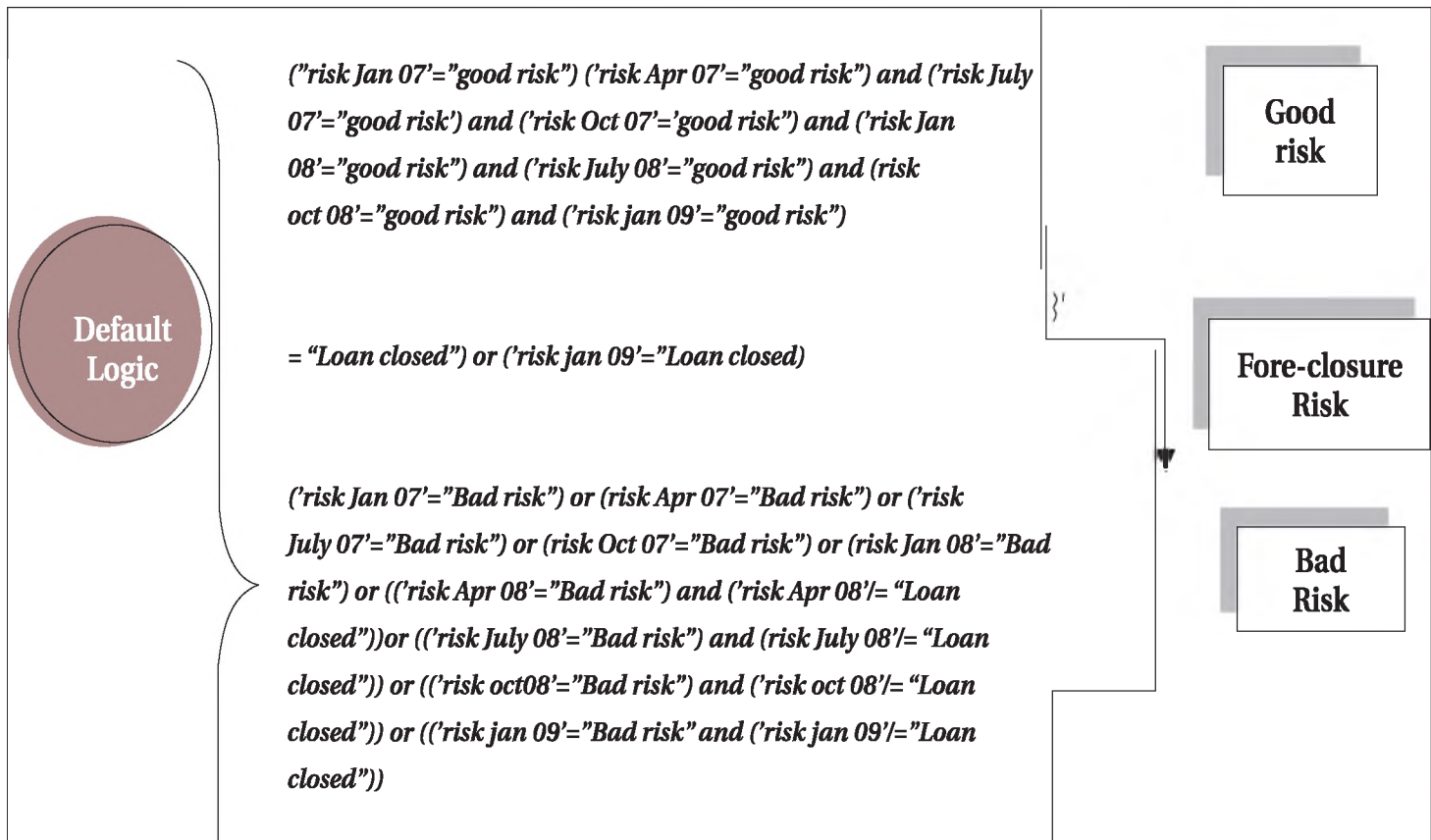
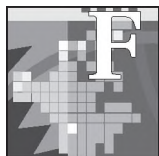


Exhibit 5

Exhibit 6 : Definition of Dependent Variables

Good Risk Credit (Non NPA)	The loan accounts which are not categorized as non-performing assets even once between January 2007 are categorized as good risk credit.
Loan Closed Risk Credit	The borrowers started loan closing their accounts since April 2008. All loan cases which were loan closed between April 2008 to January 2009 were classified as loan closed risk credit.
Bad Risk Credit (NPA)	The loan accounts which are categorized as non-performing assets even once between January 2007 to January 2009 and are not categorized in the loan closed risk credit are categorized as bad risk credit.



INDINGS

NPA Ratio Variation

The movement of the NPA ratio over a period of nine quarters from January 2007 till January 2009. The Exhibit-8 (depicting graph) shows that there is quite a movement over time in the average default rate of the portfolio. The default rate increases from 3.25% to

3.88% in first three quarters of 2007 and decreased to 3.25% in the last quarter of 2007. The maximum rate of default at a level of 3.88% within the stipulated period is reached in third quarter of 2007. During first two quarters of 2008, default rate declines, and again reaches a smaller peak at a level of 3.32% in the fourth quarter of 2008 and then tumbles down in the first quarter of 2009 to 2.09%.

Variation in NPA during Q1 2007 to Q1 2009

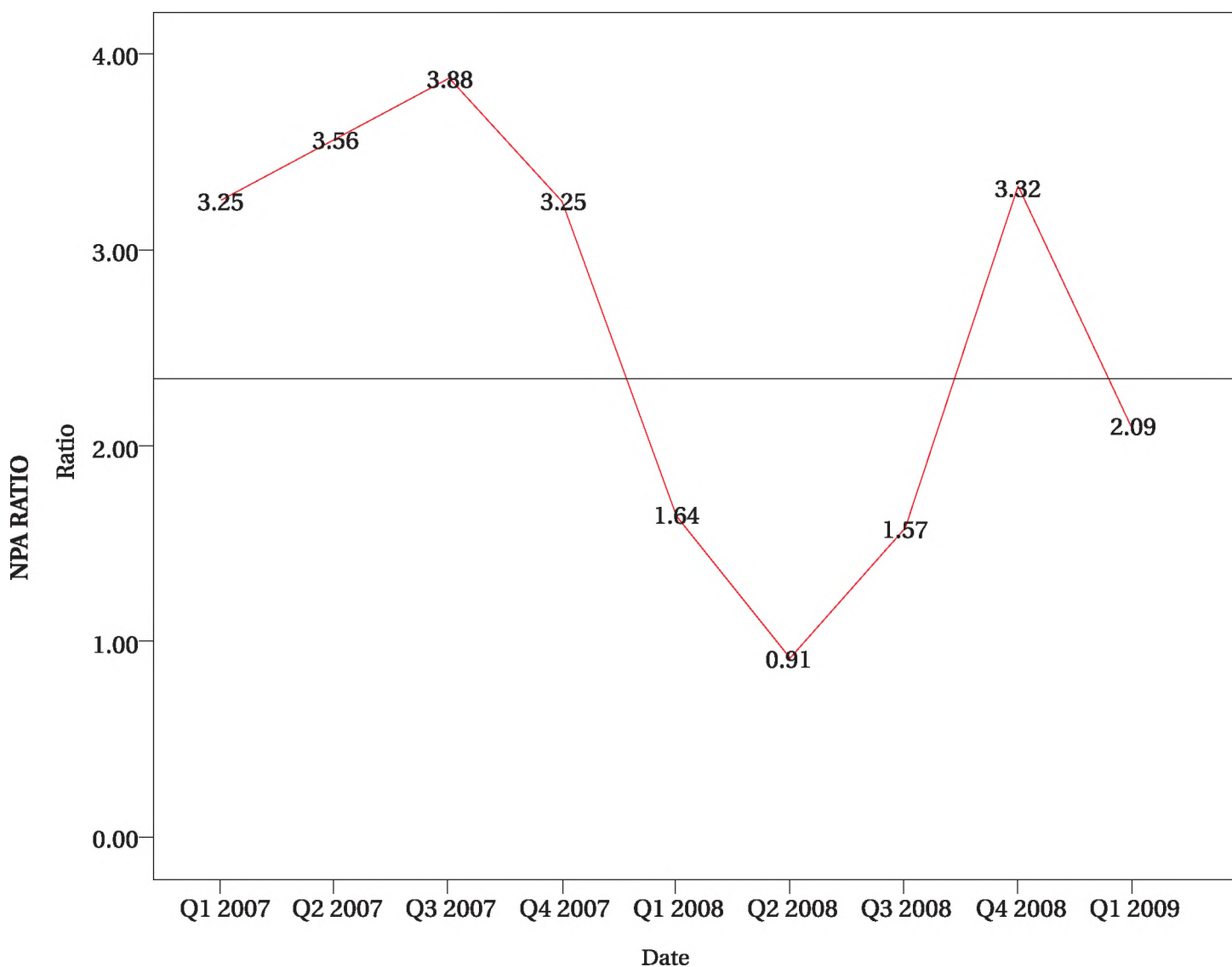


Exhibit 7

Period

Type of Industry vs Credit Risk

Industry-wise analysis has been carried out for Bad Risk Credit, Good Risk Credit and Foreclosed Risk Credit.

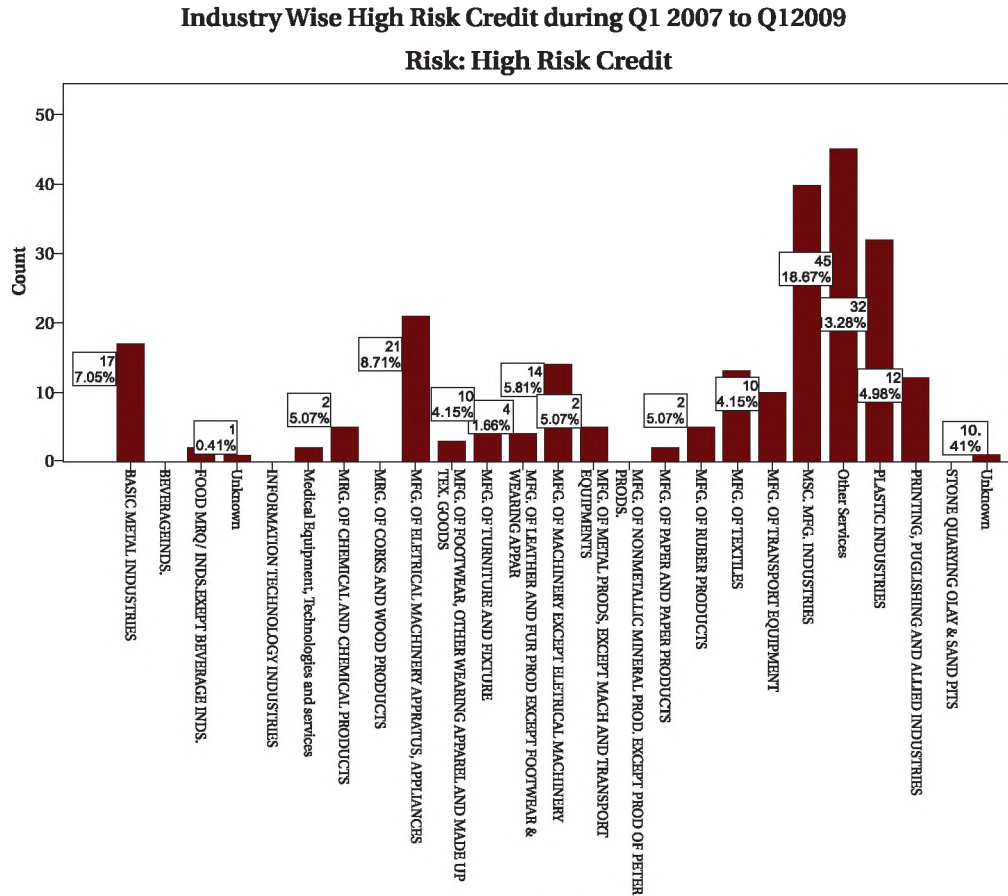


Exhibit 8

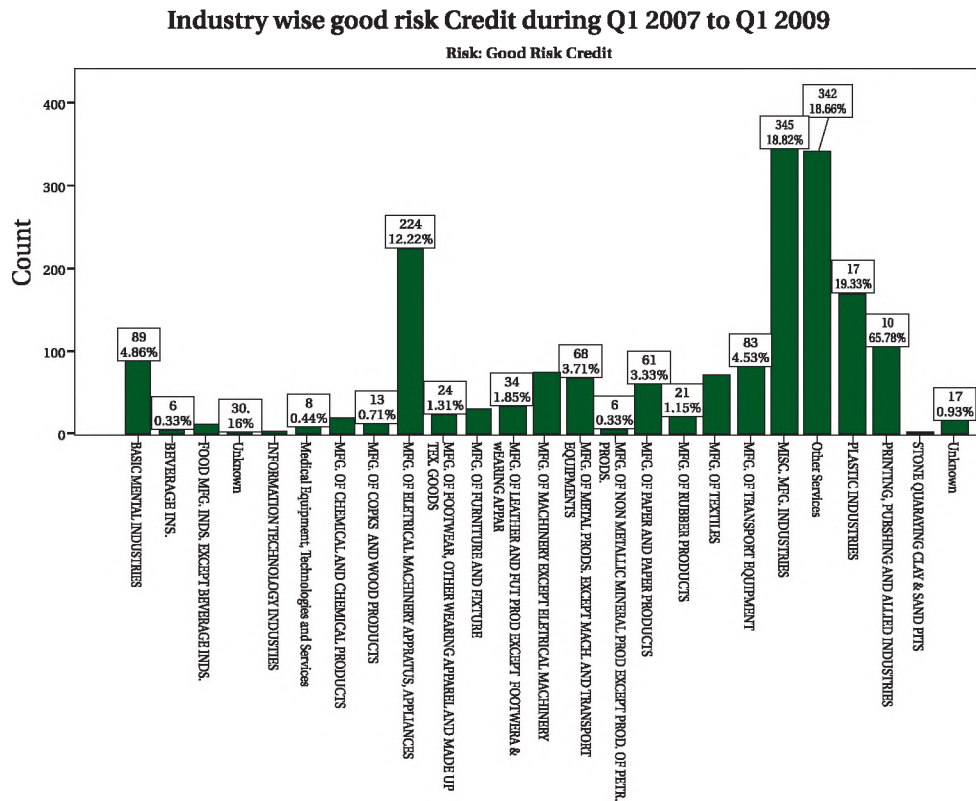


Exhibit 9

Industry Wise Foreclosure Risk Credit during Q1 2007 to Q1 2009

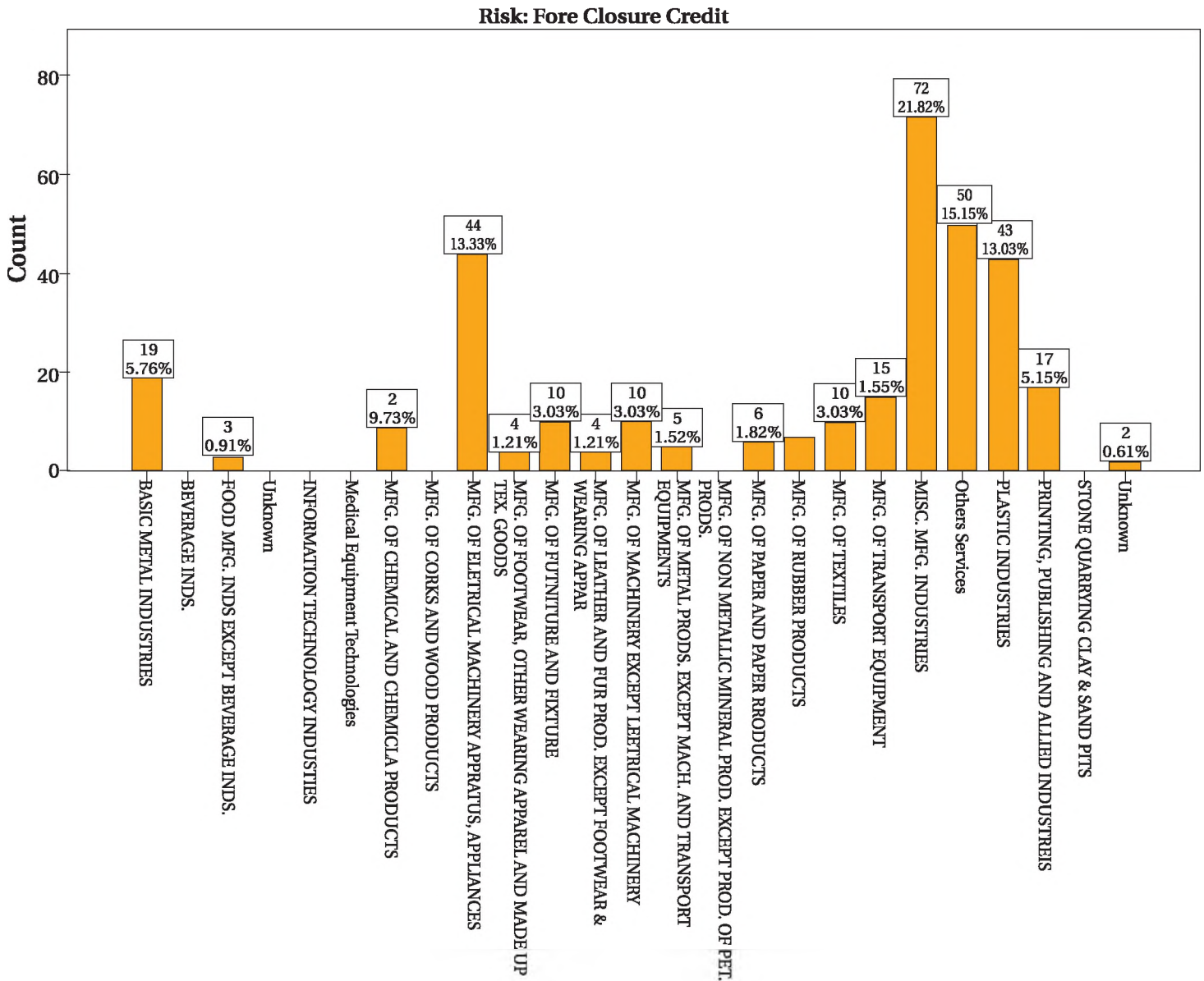


Exhibit 10

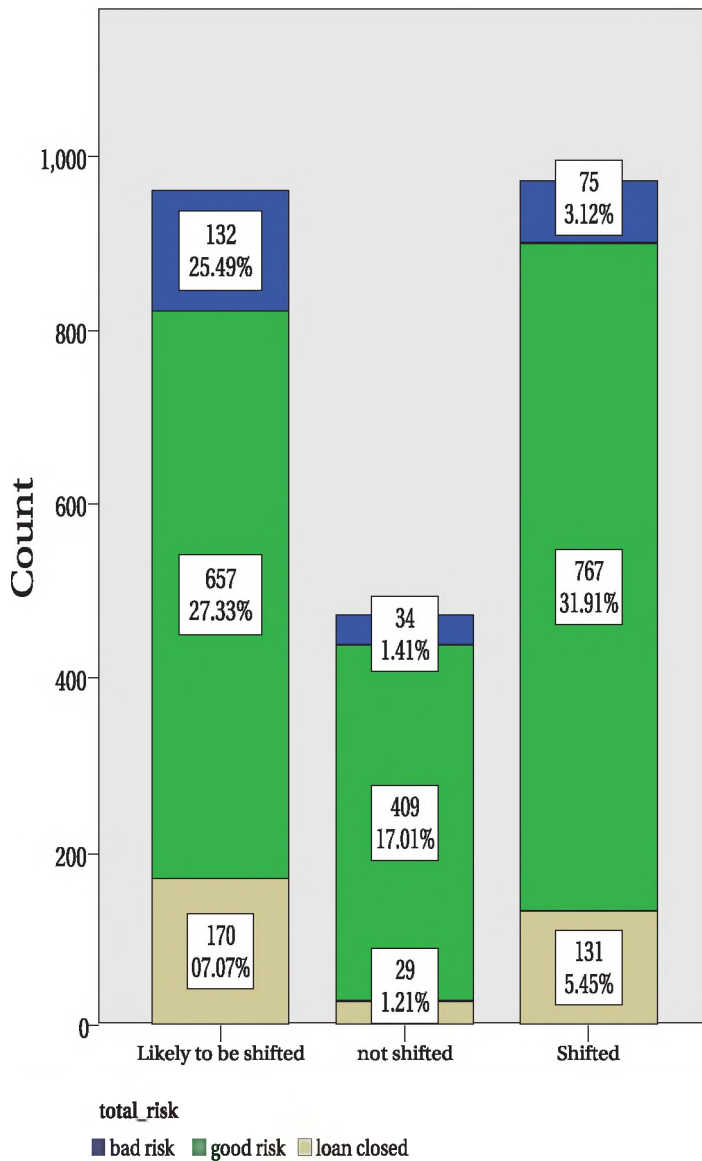
From Exhibits 8 to 10 (Graphs), the type of industries like beverage, IT, manufacturing of corks and wood products, manufacturing of non-metallic mineral production except production of metallic product and manufacturing of paper and paper products, stone quarrying clay and sandpits do not belong to bad risk credit category but basic metal industries, manufacturing of electrical machinery apparatus and appliances, manufacturing of leather and fur products except footwear and bearing apparels, manufacturing of textiles, miscellaneous manufacturing industries, other services, plastic industries, printing publishing and other allied industries belong to bad risk category. Further basic metal industries, manufacturing of electrical machinery and apparatus appliances, miscellaneous manufacturing

industries, other services, plastic industries, printing publishing and other allied industries have substantial foreclosure credit risk. This analysis facilitates to design the industry index for high risk, good risk and foreclosure credit risk.

Shifted / Non Shifted Vs Credit Risk:

During the period of study it has been noticed that some of the industrial units have been shifted, others are likely to be shifted and the remaining category is not yet shifted. The proportion of the units in three categories are shown in Exhibit 11 based on exploratory analysis:

Shifted/Non Shifted Vs Credit Risk



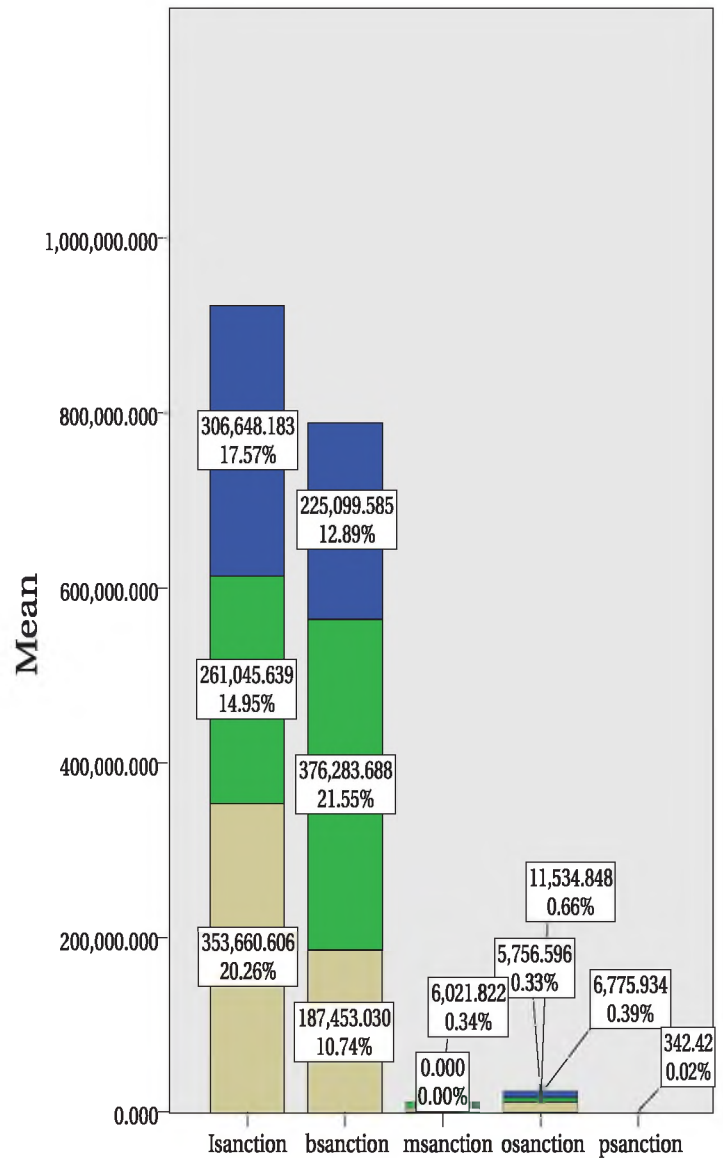
Shifted/Not Shifted

Exhibit 11

Loan Scale Vs Credit Risk:

In order to determine the influence of amount of loan sanctioned on risk, loan bucketing has been done. The range of loan sanctioned for this study has been bucketed in 20 bins. From the exploratory analysis it is observed the risk distribution across different type of sanction, majority of the credit (52.78%) was for purchase of land and the ratio of NPA credit was approximately 15:17:20 as Good Risk : Bad Risk : Foreclosed Risk in the group. Next the second majority of the customer i.e. 45.18% belong to the group who were sanctioned credit for building. It was observed that the ratio of good risk, bad risk and foreclosed credit was 12.89%, 29.55% and 10.74% respectively. The rest of the 2.04% for credit for machinery, pre-operative expenses and other expenses.

Loan Scale Vs Credit Risk



Total Risk

bad risk good risk loan closed

Exhibit 12

Location Vs Credit Risk:

The exploratory analysis was carried out based on the location of the existing industrial units. All industries in this study were divided into nine districts of Delhi in order to explore whether separate districts are homogeneous or not. The district-wise as well as the risk-wise report is presented in the Exhibit 13 (graph).

Location Vs Credit Risk

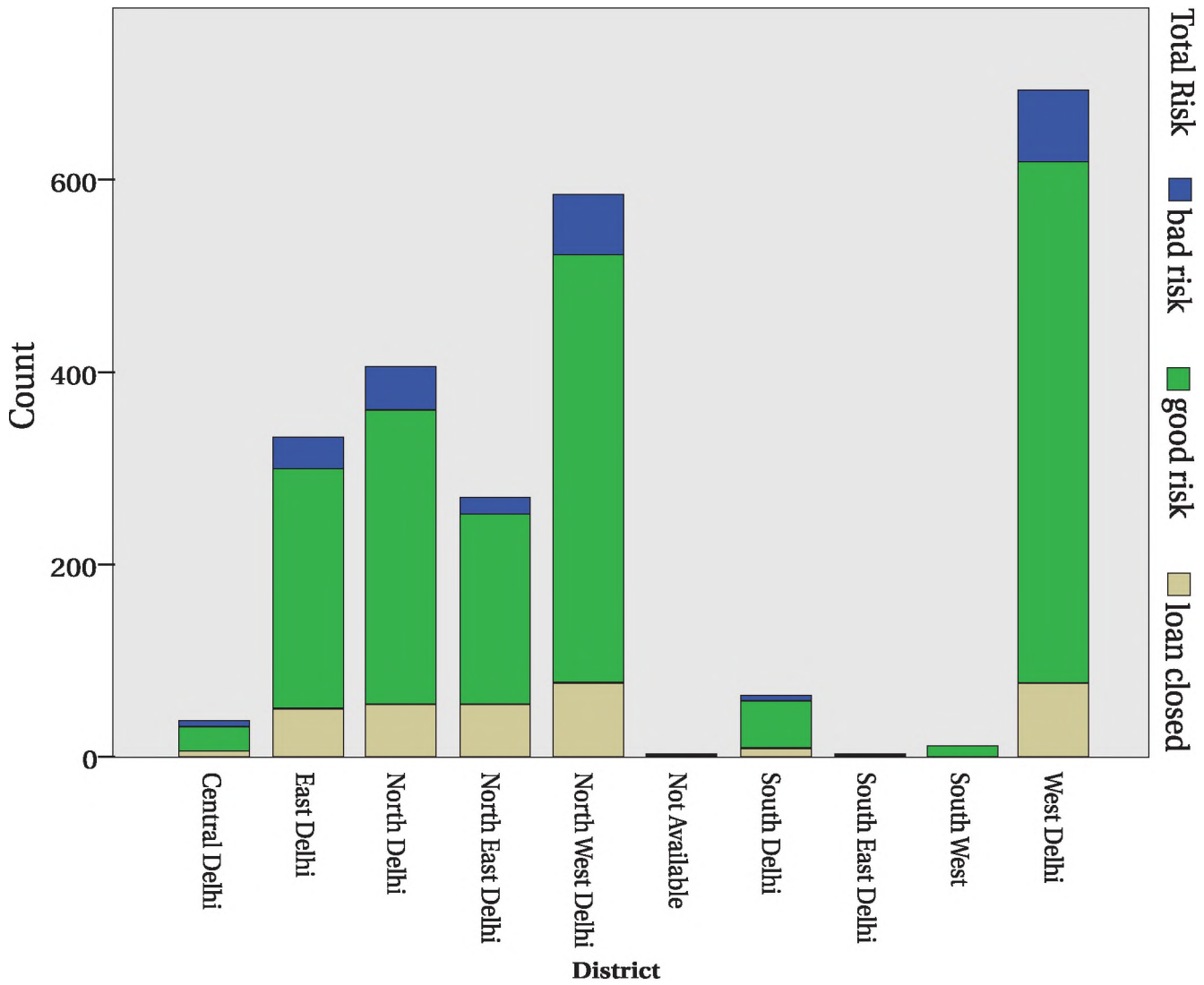
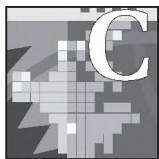


Exhibit13



CONCLUSION

It is recommended that enterprises having some homogeneity in business in an area may be identified as clusters. The model cost of project for different size of industrial activity and overall viability of the activity based on empirical studies

through data mining techniques may be assessed by institutions so as to obviate the need of the any expert/professional to prepare the viability study in individual cases. This practice is recommended for projects for small and medium enterprises. In the context of Delhi, homogeneity of industries is observed as mentioned below:

North West Delhi
 South & West Delhi
 West & South
 North Delhi
 South Delhi
 South West Delhi

Wazirpur, Badli
 Okhla, Mayapuri
 Naraina & Okhla
 Lawrence Road
 Okhla, Wazirpur
 Okhla, Mayapuri
 Anand Parbat

Stainless Steel Utensils & Cutlery
 Chemicals
 Electrical Engineering Equipment
 Food products
 Leather Products Flatted Factories Complex
 Mechanical Engineering Equipment

West, South	Naraina, Okhla	Packaging material
East Delhi	Patparganj	Export-oriented products
West & South	Naraina & Okhla	Paper products
West & South	Naraiana Udyog Nagar & Okhla	Plastic Products
West, South	Naraina, Okhla,	Rubber Products
North West	Shivaji Marg, Najafgarh Road	Godown, cold- storage, lighting and consumer products
North East Delhi	Shahadara & Vishwasnagar	Wire Drawing
West & North West	Mayapuri & Wazirpur	Metal Fabrication
West & North East	Kirti Nagar & Tilak Nagar	Furniture
North West Delhi	Wazirpur	Electroplating
South, West, North	Okhla, Mayapuri	Auto components
West & North west	Naraina, Wazirpur, Badli& G.T. Karnal Road	Foundries, Iron and steel rolling activities
North East Delhi	Shahdara, Gandhi Nagar, Okhla	Hosiery
South & North East	Okhla & Shahdara	Readymade garments
South Delhi	Okhla	Sanitary fittings.

It is recommended that cluster based approach be adopted for collecting data from banks and financial institutions to build scoring model for financing small & medium enterprises in an automatic way. Since the cluster based approach for financing SME sector offers possibilities of reduction in transaction costs, mitigation of risk and also provide an appropriate scale for improvement in infrastructure, banks may treat it as a thrust area and increasingly adopt the same for SME financing.

SIDBI in association with Indian Banks' Association may initiate necessary steps to collect and pool common data on risks in each identified clusters and develop an IT-enabled application, appraisal and monitoring system for small (including tiny) enterprises. It is expected that this measure will help in reducing transaction costs as well as improve credit flow to the small and tiny enterprises in the clusters. To broaden the financing options for infrastructure development in clusters through public private partnership, SIDBI can formulate a scheme in consultation with the stakeholders.

We anticipate that banks and other lending agencies will be catching up in the coming years for adopting quantitative methodologies like scoring models with integration of non-parametric techniques and machine learning methods for granting loans. In other words it is expected that data mining techniques shall benefit immensely the lending agencies in India in time to come specially in evolving risk assessment model for small size enterprises in unorganised sector as well as MSMEs in India.

The above study will help to develop credit score of the micro enterprises by determining various risk parameters. High score can help an SME negotiate better borrowing rates with lenders, mobilize larger loans, and seek relaxation in stipulation of security requirements. If the score is moderate or low, it gives a clear message to the enterprise to take steps for improvement. The scoring report, which lists out the strengths and weakness of an enterprise, helps it decide which areas to focus on for improvement. SMEs can use ratings to enhance their credibility with other counter parties, such as technology providers, suppliers, and customers.

Government of India (GOI) suggested constitution of a small working group under the Chairmanship of Dr.K.C.Chakraborty, now Dy. Governor of RBI with State Bank of India (SBI) and Small Industries Development Bank of India (SIDBI) as members to look into the issues relating to the small and medium enterprises. The Committee observed that lack of transparency in financial data and inherent weakness of small enterprises makes the process of credit rating difficult in MSMEs. As per the report, it has been recommended that lending in case of all credit upto Rs.2.00 crore (though no rational has been given in the report but it appears that Rs.2.00 crore has been taken to cover only small scale units and not medium scale units) should be done on the basis of scoring model. Information required for scoring model should be incorporated in the application form itself. No individual credit rating is required in such cases.

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**STRATEGY AND COMPETITOR COGNITION:
AN EXPLORATORY STUDY OF COGNITIVE MAPS
OF COMPETITION HELD BY 'INSIDE' AND
'OUTSIDE' INDUSTRY ACTORS**

Shivasharan S. Nadavulakere, Anushri Rawat

ABSTRACT

The study examines perceived similarities/dissimilarities between mental models of competition of industry 'insiders' (managers of competing organizations) and industry 'outsiders' (e.g. consultants and analysts). The mental models of competition of industry actors' of retail banking were elicited using the full context form of the repertory grid. Results indicate the existence of homogeneous mental models of competitive space between 'industry outsiders' and 'industry insiders'. These findings support 'social constructionist' explanations of competitive structures in markets and industries. Interpreting the results, we argue (a) that managers can rely on 'industry outsiders' assessments of competitive space and (b) managers can actively interact with 'industry outsiders' to ensure that beliefs of all industry participants cohere on a similar platform, thus creating less ambiguous market fields.

Keywords: *Cognitive Strategy, Managerial Cognition, Competitor Dynamics, Mental Models*

INTRODUCTION

Identifying, articulating, and anticipating its competitors' moves are very critical for a firm in gaining and maintaining competitive advantage. The traditional model of strategy making treats competitor analysis as a linear, sequential process (Porter, 1980). It assumes that the decision maker will conduct an exhaustive analysis of his or her external and internal environment before adopting an appropriate generic strategy. It disregards managers' limited cognitive capabilities to undertake such an analysis (Schwenk, 1988). To circumvent their limited processing capability, managers often resort to simplification of their environment in the form of heuristics, 'thumb rules' and mental model categorisation (Stubbart, 1989). In contrast, the emerging cognitive perspective of strategy making places the manager and his or her mental models of firms' competitive environment and resources at the centre of the entire process of strategy formulation (Narayanan, Zane, & Kemmerer, 2011). Managers perceive their environment selectively and variedly and these perceptions or mental models of competitive space determine the effectiveness of firm strategies (Tyler & Gyanwali, 2009). Managerial and firm level mental models interact overtime to produce homogeneous industry frameworks or "industry recipes" (Spender 1989; Porac, Thomas, Wilson, Paton, & Kanfer, 1995).

Industry recipes evolve from sense-making processes of various industry participants like managers of competing organizations, customers, consultants, academics, business publications, stock analysts and shareholders. However, studies on competitor cognition have mainly focused on two groups of market participants: Managers (Gripsrud & Gronhaug, 1985; Porac & Thomas, 1990; Clark & Montgomery, 1999) and customers (De Chernatony, 1989; De Chernatony, Daniels, & Johnson 1993a, 1993b; Hodgkinson, Tones, & Padmore, 1996; Hodgkinson, 1997). This study seeks to bridge the gap by studying competitor cognitions of a wider group of market participants. Towards that end, we examine the perceived similarities and dissimilarities between mental models of competitive environment of industry 'insiders' (managers of competing organizations) and industry 'outsiders' (e.g. consultants, academics, analysts and shareholders).

The study of perceived similarities/dissimilarities between mental models of competitive structures of industry actors has important implications for the theory and practice of strategic management as the corporate strategies are marshaled through the perceptual filters of strategists' mental model. Perceived similarities leading to strong convergence of mental models amongst all industry actors could create inertial tendencies (Reger & Palmer, 1996) and dissimilarities of the same could increase chances of market failure. Our paper has three specific objectives. First, we provide a brief overview of managers' knowledge structures of competitive environment. Second, we articulate the research question about perceived similarities/dissimilarities between mental models of competitive environment of industry 'insiders' and 'outsiders' and propose the hypotheses. Third, we present the research design, data analysis, and discuss the results. Finally, we conclude through a discussion of the managerial implications and limitations of our research findings.



MANAGERS' KNOWLEDGE STRUCTURES OF COMPETITIVE ENVIRONMENT

The extant literature has addressed three broad issues: simplification of the process of identifying competitors, categorizing and grouping them on some relevant dimensions, and identifying forces inducing convergence among the mental models of various industry actors. Gripsrud and Gronhaug (1985) were the first to show that managers consider only a modest fraction of 'objectively' discernable competitors as important rivals. On an average, managers in their study conducted in a small Norwegian town, named about three competitors each out of a total of forty-three retailers. Their findings "suggested that an adequate assessment of retail structure as a determinant of retail strategy and performance is difficult to make from 'objective' market structure data alone."

In a study by Clark and Montgomery (1999), managers named relatively very few competitors. In both the studies by De Chernatony, Daniels, and Johnson (1993a, 1993b), limited subset of firms were found to exist in the respondent managers' competitive space. In the former study a total of 56 firms were named by two groups of respondents, suppliers and buyers. Suppliers mentioned on average 5 competitors and the average was 4.2 competitors in case of buyers. In the latter study consisting of 24 senior managers, the average number of competitors named by each manager was five. Porac and Thomas (1994) study of retail managers found that managers had relatively narrow band of rival firms in their mind. Porac, Thomas, and Baden-Fuller (1989) concluded that managers limit their vision of the marketplace by psychologically segmenting it. They refer to this process of segmentation as formation of 'cognitive oligopolies.'

Studies have found managers using various dimensions to define, categorize their competitors into groupings that are amenable to be processed smoothly by their limited attention capabilities. In Gripsrud and Gronhaug (1985) study, a particular store was perceived to be a competitor by 11 other retailers because this store in question was having largest sales in that area. Likewise stores that were very near were perceived as the most important competitors. In Clark and Montgomery (1999) study, managers relied more on supply-based attributes to identify competitors than demand-based attributes. They conclude that this might be due to the tendency of the business world to "favor product categories (as opposed to customer benefits) as a way of classifying firms." Attributes such as size, target firm success and threatening behavior by the target firm were found to be significant but not dominant attributes used in the competitor identification process.

A slightly different categorization approach was followed by a group of studies (Porac, Thomas, & Baden-Fuller, 1989; Porac & Thomas, 1994). These studies using taxonomic interview procedures have found support for claims that managers' mental models are arranged according to the principles of cognitive psychology. Further, the Industrial Organization paradigm literature on strategic groups (Thomas & Venkatraman, 1988; Thomas & Pollock, 1999) has mainly used economic and financial measures to group competing firms. Reger (1990) and Reger and Huff (1993) have questioned these findings and concluded that managers use different sets of measures to classify competitors into groups and economic and financial measures are just one among them. In Reger (1990) study managers used dimensions like history of

competitors, past and expected future successes, management competency and future strategic directions.

Research works studying homogeneity among managers' mental models have yielded conflicting results. Some studies have found significant levels of homogeneity among mental models of managers of competing firms (Calori, Johnson, & Sarnin, 1992; Porac, Thomas, & Baden-Fuller, 1989; Porac, et al., 1995; Reger & Huff, 1993; Spender, 1989; Walton, 1986). Others have found varying degrees of heterogeneity among mental models of managers (Daniels et al., 1994; De Chernatony et al., 1993a, 1993b; Hodgkinson & Johnson, 1994; Johnson et al., 1998; Reger, 1990). Porac and Thomas (1994) study of U.S. grocery retail managers found that managers grouped firms which were perceived to be the most similar. Porac et al. (1989) established support for their claim that knowledge structures of competitive environment are represented in a hierarchical fashion and were also similar in their content and structure.

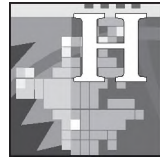
Porac et al. (1989) argue that with increasing rates of belief similarity of actors' mental models over time creates stable market networks resulting in what Spender (1989) labels as 'industry recipe', which informs rivals on what bases they will be competing with one another. They show how the structure of that industry both determines and is determined by managerial perceptions of the environment, this forming the basic premise of the theory of competitive enactment (Smircich & Stubbart, 1985). These findings also support the 'social constructionist' view on evolution of market structures (Whitley, 1992). The Calori et al. (1992) study which had 16 English and 17 French managers as its respondents, demonstrated significant convergence and divergence among managers' mental models. A higher level of similarity was found in both the cases - among mental models of managers belonging to the same industry and among mental models of managers operating from the same national base.

Daniels et al. (1994) work found managers' mental models being most diverse at company and management levels, and this diversity was less at the company level and least at the management function level. Similarly, De Chernatony et al. (1993a) showed that mental models of managers across competing firms had low convergence levels, but the convergence levels were high for mental models within the same firms. The second study by De Chernatony et al. (1993b) looked at the dimensions suppliers and buyers use to evaluate competitors. The sample consisted two sets of respondents - suppliers and buyers. The suppliers were required to name who their competitors were and the buyers were asked to identify who was competing for their custom. Managers' mental models of competition were found to be diverse and highly idiosyncratic.

Hodgkinson and Johnson (1994) study, adopting a modified version of taxonomic interview procedures found the mental models displaying varying degrees of heterogeneity and homogeneity. The mental models were homogeneous within the same functional area and within the same organization. The mental models were heterogeneous between functional areas and between organizations. Johnson et al. (1998) retested these functional area and organization effect hypothesis and found weak support for the former and no support for the latter. In addition to these two re-tests, the study also tested national and organizational level effects and these two effects were supported. In other words managers of

the same country are likely to hold similar mental models and managers functioning at the same organizational level will hold similar mental models.

Daniels, Johnson, and De Chernatony (2002) found middle managers rating mental models of other middle managers in their own organization as most similar to their own. The senior managers were found to possess mental models which differed from mental models of managers within their organization and also of their competitors. The authors conclude that institutional environment plays a significant role in patterning similarities in middle managers' mental models. They also argue that greater differentiation amongst senior managers' mental models might be due to the influence of task environment. Spencer, Peyrefitte, and Churchman (2003) also contend that institutionalization processes and task environment factors bear significant influence on managers' mental models of competition. They further elaborate that task environment influences originate from distinctive strategic positions adopted by firms to achieve competitive advantage. Finally, Tyler and Gyanwali's (2009) study moves beyond narrow confines of competitor cognition and focuses on much broader managerial mental models of market orientation. Using a multi-method case study, they examine shared mental models of market orientation in terms of competitor, customer, technology, and inter-functional coordination. Findings indicate that top managers displayed more comprehensive, shared, and integrated mental models of market orientation in terms of internal strengths (technology and inter-functional coordination), external opportunities (customer needs), and threats (competitors' cost advantages).



YPOTHESES

All the studies published so far on cognitive perspective of competitive structures, and reviewed over here, have focused on studying convergence levels of mental models of industry 'insiders' (e.g. managers of competing firms, exception being De Chernatony (1989) and Daniels et al. (1994) who have looked at customers mental models). Our study seeks to bridge the gap by studying the perceived similarities/dissimilarities between mental models of competitive environment of industry 'insiders' and 'outsiders' (e.g. consultants, academics, analysts and shareholders). Chen, Farh, and Macmillan (1993) exploration of the expertness of four groups of industry 'outsiders' - consultants, security analysts, stakeholders, and academics found analysts to be the most accurate and highly reliable followed by academics, who were as reliable as consultants and stakeholders. Beliefs and commonly held assumptions of competitive interaction are part of this 'expertness' that guide strategic action. This belief similarity among market participants might be the result of market information regimes (Anand & Peterson, 2000). They note that "market information regimes are the medium through which producers observe each other and market participants make sense of the world... In market information regimes, information typically takes the forms of sales reports of "hot selling" items, newspaper articles, rumors or gossip with connections to past, present, and future courses of action". Their study shows that information regime acts as a market structuring mechanism, where the interactive beliefs of different market participants cohere around a well defined competitive market boundary.

This is expected in H1.

Hypothesis 1: There will be perceptual similarity about the composition of competitive space between industry 'insiders' and industry 'outsiders.'

Hypothesis 1a: There will be perceptual similarity about the composition of competitive space between managers and consultants.

Hypothesis 1b: There will be perceptual similarity about the composition of competitive space between managers of listed companies and analysts.



ETHOD

Sample

The participants in this study were selected from national retail banking industry. This included 3 categories - retail bankers, consultants who consulted the industry, and financial analysts following the national retail banking industry. The first category was representative of 'industry insiders' and the remaining two categories representing 'industry outsiders'. The industry was selected as it satisfied three parameters - two of competitor cognition literature and one of data set. Firstly, the retail banking industry had more than 100 banks vying for the retail pie, rendering it a critical mass of competitive space. This critical mass, we felt, was enough in terms of placing large demands on a managers' processing capability, given his/her cognitive limitations as brought out by the literature review. Secondly, the industry is faced with immense competition from other sectors like non-banking finance companies, resulting in blurred competitive boundaries. Finally, we felt after interacting with industry consultants having general management practice, that the retail banking industry had relatively better strategic planning and competitive tracking systems in place when compared to other industries.

The selection criteria applied in selecting the respondents for the study was as follows: Retail bankers - managers who were involved in the competitive strategy decision making process and held positions like Executive Vice-President, VP and Product Head. Consultants - consultants consulting the retailing banking industry and having a minimum of 2 years of retail banking consulting experience. Financial analysts - analysts currently following the retail banking industry and having a minimum of 2 years experience in analyzing the industry. The sampling technique adopted was a variant of convenient sampling (a variant in the sense, we asked the initial respondents in our study to name and refer us to managers in their organization or their competitor organization). This technique was selected considering the difficulties like getting managers to talk about their competition, executive time pressures and the practice of consultants not publishing their consulting experience (the exception being financial analysts who were tracked by their articles). A total of 50 respondents were interviewed - 29 bankers from 11 banks, 10 consultants from 6 consulting organizations and 11 financial analysts from 8 organizations (1 independent analyst). The interviews were conducted at the respondents' office in the period and all the respondents were male except two. Though a sample of 50 respondents may seem small, there is literature suggesting that a sample of 15 to 25 would generate enough constructs representative of its universe and most of these constructs were elicited from a few

first respondents (Ginsberg 1989).

Procedure

In order to test the hypothesis stated in the study, the nature of data elicited should establish the existence 'content similarity' in mental models of 'industry outsiders' and 'industry insiders'. This 'content similarity' is operationalized in terms of respondents naming similar set of competitors and defining the set on similar constructs. Although there exist varied cognitive mapping techniques (Huff, 1990), only a handful of them have been used in the competitor cognition literature. These techniques are hierarchical sorting method, repertory grid and visual card sort technique. This study used repertory grid which measures similarities in individual mental models across the three groups. The other two methods were not found suitable to the study purpose as the former has been primarily used to "map out collective beliefs" and the latter fails to produce as detailed and complex maps as in repertory grid (Daniels, De Chernatony, & Johnson, 1995). The repertory grid technique was developed by George Kelly (as cited in Bannister & Mair, 1968) to operationalize his Personal Construct Theory and a detailed account of the theory and technique is found in their book.

A repertory grid interview was administered to each of the participant lasting for about 25 minutes on an average. Firstly, the managers were asked to produce a list of their competitors (other two categories of 'industry outsiders' were asked to produce a list of closely competing banks in the retail banking industry). These in repertory grid terms are called 'elements'. Secondly, the names of the competitors elicited were written on small cards and three cards were randomly presented at a time. This random generation of cards was done with the help of random number tables. Thirdly, the respondents were asked to identify two firms that were similar on an important attribute that differentiated them from the third. The exact words assigned to two firms being similar (similarity pole) and the third being dissimilar (contrast pole) were recorded. These in repertory grid terms are called 'bi-polar constructs'. Though a construct has two poles, our study will be using just constructs to differentiate the competitors as we are focusing on the content part of competitor cognition and not the structure part. Finally, the second and third steps were repeated till no new constructs to differentiate competitors were elicited from the respondent. For instance, a respondent of a leading public sector bank identified 11 competing banks (including his), and the following constructs or attributes that he thought differentiated his bank from those of his competitors: Public sector/private sector; large/small branch network; large/small ATM network; country wide presence/narrow & focused presence; High technology/low technology; Many customer segments/few customer segments; Head office control/Branch control; Good customer service/Bad customer service; International bank/Domestic bank; Fast decision making/Slow decision making; Highly profitable/Not so profitable; and Trustworthy/Not so trustworthy.

All 50 respondents used 712 constructs in total to define their competitors. Some respondents used different wordings to describe a construct, which in meaning was essentially the same used by all others. So to weed out duplicate items, labels like more high tech; better technology platform; better technology; more higher tech; better utilization of technology; excellent IT infrastructure (central database); better tech-

orientation: tech-savvy; better IT systems; ready made technology were all changed to a label 'technology'. For instance, using the above example of the public sector bank respondent, the following constructs were used in the analysis (the respondent's bi-polar responses are in parentheses): Government ownership (Public sector/private sector); Branch network (large/small branch network); ATM network (large/small ATM network); Geographic spread (country wide presence/narrow & focused presence); Technology (High technology/low technology); Customer segments (Many customer segments/few customer segments); Autonomy (Head office control/Branch control); Customer service (Good customer service/Bad customer service); Foreign ownership (International bank/Domestic bank); Decision making speed (Fast decision making/Slow decision making); Profitability (Highly profitable/Not so profitable); and Trustworthiness (Trustworthy/Not so trustworthy). After this procedure 232 discrete constructs were left which formed the total list of constructs named by all respondents. All respondents named 321 competitors in total and 32 were found to be discrete.

Though the managerial cognition literature acknowledges that comparing idiographic maps still proves to be a problem area (Hodgkinson, 1997), there is no dearth of reasonably good solutions to carry out the procedure (Eden & Ackermann, 1998). The approach taken by this study is to follow two important studies - Porac, Thomas, and Baden-Fuller (1989), and Daniels, Johnson, and De Chernatony (2002) in cluster analyzing each respondent in terms of the competitors named and constructs used to define competitors. Both the studies argue that the best way to test the similarities/dissimilarities of mental models of competition was through hierarchical cluster analysis and its output - hierarchical dendrograms. Therefore, agglomerative hierarchical cluster analysis with binary squared Euclidean distance measure of similarity, and Ward's sum of Squares clustering algorithm was used in analyzing the data. Ward's method was used as it avoids "chaining" problems present in other methods (Hair Jr., Anderson, Tatham, & Black, 1992). Another clustering technique K-clustering was found to be inappropriate, as it demands number of clusters to be specified before the analysis. This, we felt would impose clustering rather than generating clusters. The respondents data set consisting of competitors named and constructs elicited were binary coded. A respondent was coded 1 if he had named a competitor present in the total list of competitors named by all respondents and 0 for not naming. A respondent was given 1 if he had named a construct present in the total list of constructs named by all respondents and 0 for not naming. The first cluster analysis was carried out on 50 respondents clustering on the elements they named and the second cluster analysis on the constructs they used to differentiate competitors. We would briefly outline the procedure followed by hierarchical cluster analysis:

1. Standardization of the variables (Binary coding the data).
2. Calculation of similarities and distances between two objects (Binary squared Euclidean distance was used due to the binary nature of data)
3. Algorithms used to form clusters: Agglomerative methods like Ward's, consider each case to be a separate cluster at the beginning of the analysis. In the second step Ward's algorithm finds next two subjects that are most similar and creates a cluster with two subjects. In the third step, it

identifies the next two most similar subjects and creates a two-subject cluster. Ward's algorithm proceeds in this fashion of combining a single subject into a pre-existing cluster till all the subjects are finally combined into one cluster.

4. Interpretation of the Agglomeration schedule determining the optimal number of clusters: The results of agglomerative hierarchical cluster analysis is usually summarized in an agglomeration schedule. The schedule displays the cases being combined at each stage of the process and the clustering coefficient. The coefficient is the squared Euclidean distance over which the any cases were joined. Small coefficients indicate that very similar subjects or clusters are being clustered and large coefficients indicate that very dissimilar subjects or clusters are being clustered. The coefficients also guide the researcher in deciding how many clusters are needed to represent the data. One should usually stop agglomerating as soon as the increase in the coefficient between two steps becomes very large. Another tool which helps in interpreting the results of agglomerative clustering is a dendrogram. The dendrogram shows which subjects/clusters were joined together into clusters and at what distance. The dendrogram plotted by SPSS (Norusis, 1994) for this study does not plot actual distances but rescales them to numbers between 0 and 25. To the question 'how many clusters should be formed?' there lies "no standard, objective selection procedure exists" (Hair Jr., et al., 1992). The literature suggests that theory about the number of underlying groups, ease of profiling the groups and magnitude of change in the agglomeration coefficient should serve as useful guidelines to select optimal number of clusters.



RESULTS AND DISCUSSION

The results of the study will be presented addressing the analysis of two specific issues. Firstly, cluster analysis of the competitors named by respondents and secondly, cluster analysis of constructs named by the respondents. The agglomeration schedule of the cluster analysis of competitors named respondents is shown in Table 1.1. While inspecting the agglomeration levels in the Table 1.1 for sudden increases in the agglomeration levels, one would find that a big jump has occurred at stage 48, where the coefficient jumps in going from two to one cluster ($140.100 - 96.792 = 43.308$). This clearly suggests that a two-cluster solution should be selected as largest increases were seen in going from two to one cluster. However, to put the findings to a much more rigorous scrutiny, the study selected stage 46 at which another big jump is noticed in the agglomeration coefficient ($84.519 - 75.400 = 9.919$). At this stage the algorithm is clustering respondents two and thirteen, resulting in all the respondents being clustered into 4 clusters ($50 - 46 = 4$). Therefore, a four-cluster solution was found to be optimal. The dendrogram showing a four-cluster solution is displayed in Figure 1.1. The respondents have been identified in the dendrogram with a label of six alphabets, the first four and the last two abbreviating their name and organization respectively. The coding scheme for respondents is 'B' for banker-managers, 'C' for consultants and 'F' for financial analysts. Two long bars denote the point where the two respondents two and fourteen have been combined into a cluster.

Respondents-Competitors Dendrogram using Ward Method Rescaled Distance Cluster Combine

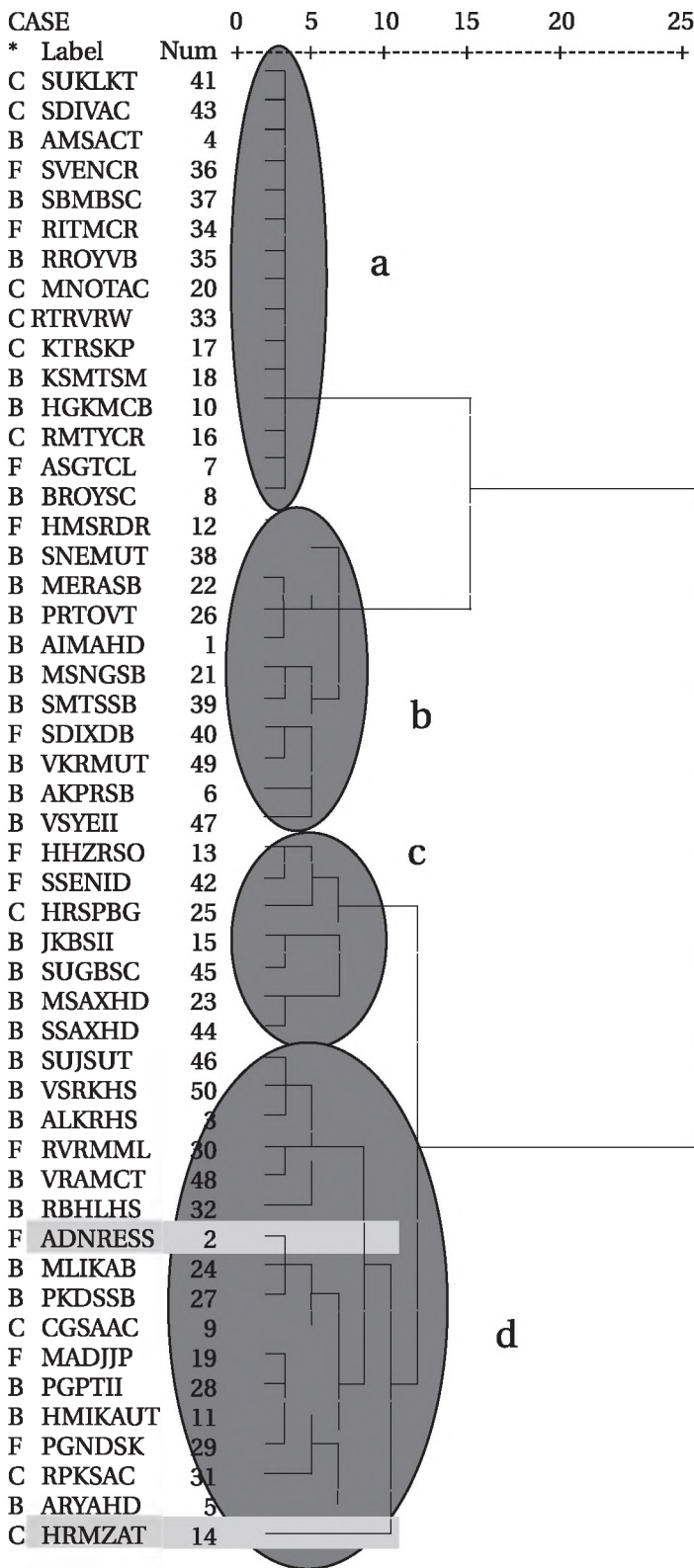


figure 1.1

***Legend:**
 B-Bankers
 C- Consultants
 F-Analysts

Table 1.1 Respondents - Competitors Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appear		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	41	43	.000	0	0	2
2	4	41	.000	0	1	4
3	36	37	.000	0	0	4
4	4	36	.000	2	3	6
5	34	35	.000	0	0	6
6	4	34	.000	4	5	9
7	20	33	.000	0	0	9
8	22	26	.000	0	0	26
9	4	20	.000	6	7	11
10	17	18	.000	0	0	11
11	4	17	.000	9	10	13
12	10	16	.000	0	0	13
13	4	10	.000	11	12	15
14	7	8	.000	0	0	15
15	4	7	.000	13	14	48
16	46	50	.500	0	0	19
17	19	28	1.000	0	0	20
18	2	24	1.500	0	0	30
19	3	48	2.333	0	16	34
20	11	19	3.167	0	17	27
21	15	45	4.167	0	0	40
22	23	44	5.167	0	0	40
23	13	42	6.167	0	0	40
24	21	39	7.167	0	0	33
25	12	38	8.167	0	0	39
26	1	22	9.500	0	8	32
27	11	29	10.917	20	0	37
28	40	49	12.417	0	0	38
29	30	48	13.917	0	0	34
30	2	27	15.417	18	0	36
31	6	47	17.417	0	0	36
32	1	12	19.483	26	25	44
33	13	25	21.817	23	0	41
34	3	30	24.183	19	29	35
35	3	32	26.650	34	0	45
36	2	9	29.400	30	0	43
37	11	31	32.250	27	0	42
38	6	40	35.500	31	28	39
39	6	21	38.917	38	24	44
40	15	23	42.417	21	22	41
41	13	15	46.726	33	40	47
42	5	11	51.126	0	37	43
43	2	5	56.076	36	42	45
44	1	8	61.237	32	39	48
45	2	3	67.933	43	35	46
46	2	14	75.400	45	0	47
47	2	13	84.519	46	41	49
48	1	4	96.792	44	15	49
49	1	2	140.100	48	47	0

The rescaled distance cluster combine is five, and below this distance four clusters labeled a, b, c and d are evident and are also marked by grey circles. A striking feature of the dendrogram is the absence of a distinct cluster purely representing any one of the three groups of respondents. In each of the four clusters all the three groups have been represented more or less proportionately and very strongly so in cluster 'a'. Cluster 'a' consists of five consultants, three financial analysts and six managers. It constitutes 30% of the total respondents and each group has 30% representation of their respective groups. They

have been combined at rescaled distance cluster combine of 1, which means that they have very strong similarities. This indicates the homogeneity of perceptions of competitive space (competitors named) between 'industry insiders' and 'industry outsiders', thus strongly supporting Hypothesis 1a and Hypothesis 1b.

The agglomeration schedule of the cluster analysis of constructs used by respondents to define competitors is shown in Table 1.2. While inspecting the agglomeration levels in the Table 1.2 for sudden increases in the agglomeration levels, one would find that a big jump has occurred at stage 46, where the coefficient jumps in going from four to three clusters (487.479 - 463.711 = 23.768). This clearly suggests that a four-cluster solution should be selected as largest increases were seen in going from four to three clusters. The dendrogram showing a four-cluster solution

is displayed in Figure no. 1.2. Two long bars denote the point where the two respondents numbered one and seven have been combined into a cluster. The rescaled distance cluster combine is five, and below this distance four clusters labeled e, f, g and h are evident and are also marked by grey circles. Again a striking feature of the dendrogram in Figure 1.2, as was observed in the previous finding is the absence of a distinct cluster purely representing any one of the three groups of respondents. Cluster 'e' has three consultants, nine managers and one financial analyst. This trend is reproduced in each of the clusters where there are at least one or two consultants/financial analysts in each of the groups. Though four distinct clusters might have been formed, the three groups have very strong membership in all the four clusters. This strongly supports Hypothesis 1a and Hypothesis 1b.

Respondents-Constructs Dendrogram using Ward Method Rescaled Distance Cluster Combine

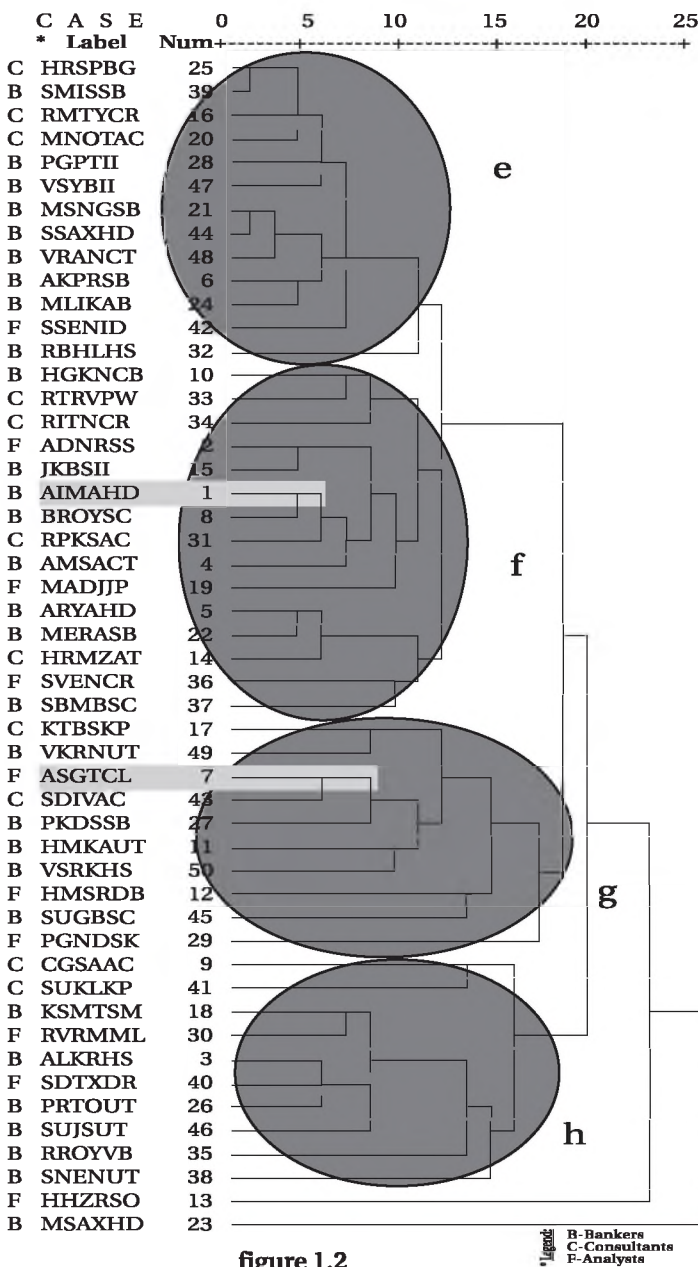


Table 1.2 Respondents - Constructs Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appear		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	25	39	1.000	0	0	4
2	21	44	3.500	0	0	3
3	21	48	7.667	2	0	11
4	16	25	12.000	0	1	16
5	6	24	17.00	0	0	10
6	16	20	22.167	4	0	11
7	5	22	27.667	0	0	17
8	2	15	33.167	0	0	27
9	1	8	38.667	0	0	12
10	16	28	44.567	6	0	13
11	6	21	50.00	5	3	19
12	1	31	57.000	9	0	18
13	16	47	63.767	10	0	19
14	7	43	70.767	0	0	23
15	3	40	77.767	0	0	16
16	3	26	84.767	15	0	25
17	5	14	91.933	7	0	35
18	1	4	99.433	12	0	27
19	6	16	107.2012	11	13	22
20	10	33	115.712	0	0	26
21	18	30	124.212	0	0	28
22	6	42	132.833	19	0	33
23	7	27	141.833	14	0	34
24	17	49	151.333	0	0	38
25	3	46	160.833	16	0	28
26	10	34	170.333	20	0	32
27	1	2	179.833	18	8	29
28	3	18	190.333	25	21	39
29	1	19	200.976	27	0	32
30	11	50	211.976	0	0	34
31	36	37	222.976	0	0	35
32	1	10	235.533	29	26	36
33	6	32	248.521	22	0	37
34	7	11	261.521	23	30	38
35	5	36	274.654	17	31	36
36	1	5	288.687	32	35	37
37	1	6	303.714	36	33	46
38	7	17	318.786	34	24	42
39	3	35	334.286	28	0	43
40	12	45	350.286	0	0	42
41	9	41	366.786	0	0	44
42	7	12	383.770	38	40	45
43	3	38	402.020	39	0	44
44	3	9	421.770	43	41	47
45	7	29	442.014	42	0	46
46	1	7	463.711	37	45	47
47	1	3	487.479	46	44	48
48	1	13	517.285	47	0	49
48	1	23	557.900	48	0	0

Strategies are products of managerial decision-making process, and the decision making process is heavily influenced by decision makers' cognitive frames (Hambrick & Mason, 1984). Porter (1980) argues that competitive strategy is at the core of business strategy and notes that managers should attempt a fine-grained analysis of their competitive environment, which is very difficult considering the limitations of human mental capacities (Schwenk, 1988). To circumvent some of these limitations, managers resort to grouping a limited subset of their competitors in the form of mental models on certain relevant strategic dimensions, and focusing all their attention on them. Research has also indicated that these model configurations of industry actors (rivals, customers and suppliers etc.) have varying levels of convergence due to the interactive nature of actors mental models (Lant & Baum, 1995; Regeer & Huff, 1993; Porac & Thomas, 1990). As noted by Hodgkinson, (1997), a review of literature on cognitive analysis of competitive structures shows that virtually all the studies have focused on convergence levels of mental models of actors within the industry (e.g. managers of competing firms, exception being De Chernatony (1989) and Daniels et al. (1994) who have looked at 'outsiders' i.e. customer mental models). This study extends the theory by incorporating perceived mental models of competitive environment of industry outsiders (e.g. consultants, academics, analysts and shareholders) and also examining similarities/dissimilarities.

The findings of the study empirically validate the 'social constructionist' explanations of competitive structures in markets and industries (Porac et al., 1995; Levenhagen, Porac & Thomas, 1993; Easton, Burrell, Rothschild, & Shearman, 1993; Porac et al., 1989; Bogner & Thomas, 1993). The theory predicates that markets and industries are social constructions that emerge from constant interaction of cognitions between industry actors. Over a period of time, these interactions between buyers, producers, and other industry actors in the form of sales reports of "hot selling" items, newspaper articles, rumours or gossip with connections to past, present, and future courses of action" (Anand & Peterson, 2000) will establish industry events, best practices, rules of the game and terms of conducting business. A two way interactive link of acquiring and disseminating processes is established between the firms of the industry and other actors. This study dealt with three groups of respondents considered 'industry outsiders', there is need to focus on perceptions of other actors like academics, shareholder and business journalists. And studies in future might look at specific processes that might facilitate cohering of beliefs

among industry actors and pinpoint in which industry contexts these operate. We believe that our study is an important response to Tyler and Gyanwali's (2009) call to broaden the set of dimensions included in competitor and market cognition research. Likewise, we show that the emergence of industry recipes cannot be fully understood unless we include the mental models of all relevant actors situated both from within, and outside the task environment.



CONCLUSION

Our findings indicate strong support for the homogeneity of perceptions of competitive space between 'industry insiders' and 'industry outsiders'. Two major managerial implications of the study are outlined in this section. Firstly, we show that managers can rely on 'industry outsiders' assessments of competitive space to make sense of ambiguous market fields. This shows that managers should take into account the perceptions of competitive space of 'industry outsiders' in the strategic decision making process. There exists a need for managers to keep track of their consistency of perceptions of the list of their competitors and attributes used to define them and compare these with those 'industry outsiders'. Secondly, the study results supporting the social constructionist viewpoint show that a manager can actively interact with 'industry outsiders' to ensure that beliefs of all industry participants cohere on a similar platform, thus creating less ambiguous market fields. This would help him/her to predict the future competitive scenario much better.

There exist some limitations of this study that need to be highlighted. Firstly, the study though having had an express intention of studying the content part of competitor cognition, had to drop at the analysis stage the data pertaining to respondents rating of constructs on a 1-5 scale, due to the data analysis technique not able to accommodate that data. This we feel would have brought out subtle differences in the definitions of competitors. Nevertheless, we feel that this should not cast grave doubts on the findings of the study as most of the studies in the literature reviewed have followed a similar procedure resulting in valid conclusions. Secondly, the agglomerative hierarchical clustering technique used for data analysis was found to be less than satisfactorily rigorous. The clustering techniques, as a whole, have been attributed to 'imposition of clusters' rather than identifying clusters. Another major limitation of these techniques is different algorithms producing different cluster solutions. In this study, we have used Ward's algorithm and would suspect one to find different cluster solutions if a different algorithm is used.

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XBRL – A MAJOR STEP IN GLOBALIZATION OF INTEGRATED FINANCIAL REPORTING SYSTEM

S. N. Maheshwari , Suneel Maheshwari

ABSTRACT

The most important role of financial statements is to present a true and fair picture of the business activities to the stakeholders so that they can use the information for meaningful decision making. To achieve that goal, stakeholders today are asking for integration of both financial and nonfinancial (environmental, social, and governance) performance measures in order to assess the attractiveness of a company (Watson et. al 2011). The challenge is to provide high quality information to the stakeholders efficiently and securely over the internet throughout the information supply chain. Requirements to file the financial reports in XBRL (eXtensible Business Reporting Language) format by various regulatory agencies around the world represent a crucial step in providing information to stakeholders in an efficient and secure way throughout the information supply chain.

XBRL is developed to address the limitation of traditional HTML reports, when used for data exchange. Traditional HTML reports are self-contained and its information cannot be automatically identified or retrieved by other computer software applications. XBRL solves this problem by 'tagging' individual items of data so that another computer can understand it and work with it.

The objective of this article is to provide a review of XBRL concepts that are important for professional accountants. The article explains the need for its origin in the US and its global acceptance, applications, advantages, risks, and implementation issues related to XBRL. Our effort is to provide the practitioners and users of XBRL with the information about XBRL and to underscore the need for its implementation. Opportunities and challenges created by XBRL implementation are also discussed. Current state of XBRL development in India has been summarized as well.



NEED FOR XBRL

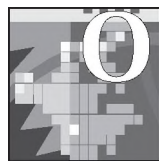
We will start with the example of transport industry in the United States of America (USA) in the 1960s. To send the goods from one part of the USA to another the goods were loaded on to a truck, then to transport it by the train those goods were unloaded at the train station and reloaded on to a train. At its destination the goods were again physically offloaded from the train and reloaded into another truck to its final destination. When the concept of 'containerization' was introduced, the non-value added activities of unloading and reloading were eliminated. The goods were loaded into a container which was hauled at the back of a truck, the same container was then loaded on to the train, and finally the same container was attached to another truck for transportation to its final destination. The process of containerization eliminated the need for loading and reloading the goods thus making the process more efficient and error free.

Until very recently, around the globe, a very similar situation existed in the corporate world for financial reporting. Companies are required to file the financial information with the regulatory agencies like Securities and Exchange Commission (SEC), Securities and Exchange Board of India (SEBI), Internal Revenue Services (IRS), Banks etc. These regulatory agencies would then pick information from the submitted financials and rekey the data for their analysis. Same was the case with analysts and stakeholders who followed a company. So each entity would extract and rekey the data and create its own reports for a very specific purpose. The effort of extracting and rekeying the data is at best a non-value added activity. By some estimates, in the 1990s the cost of this non-value added activities comprised of 11% of the total salaries paid in the United States. Similar was the case over rest of the world.

The first step to remove the redundancy in financial reporting and analysis started in 1998, when Charles Hoffman, a CPA, started to investigate the use of XML (eXtensible Markup Language) for financial reporting purposes. In 1999, Charles was joined by a member of AICPA and they developed some initial financial reports and called it XFRML (eXtensible Financial Reporting Markup Language). It was presented to the AICPA; that quickly realized the importance of the effort and joined it by providing funding. Later on the name was changed from XFRML to XBRL.

XBRL has been developed by XBRL International, a not for profit consortium of over 550 companies and organizations, which promotes it globally. For the last decade, XBRL development has been on the agenda for IASB (International Accounting Standards Board). The IASB is the independent standard-setting body of the IFRS Foundation. IASB is responsible for support and adoption of IFRS and development of XBRL taxonomy for IFRS. XBRL will also meet the requirements of regulators, lenders, analysts, tax authorities, and others consumers of financial information, who are increasingly demanding reporting in XBRL. Due to the efforts of XBRL International, IFRS taxonomy is already used in Australia, Belgium, Chile, France, South Africa, and the US. XBRL is now widely adopted and is at various stages of implementation by over 550 organizations in 117 countries,

including 19 stock exchanges, and 10 country-wide taxing authorities. The next few paragraphs will discuss XBRL and its benefits and the process of creating business reports using XBRL.



OVERVIEW OF XBRL

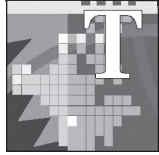
XBRL is used to electronically communicate business and financial data between issuers (businesses) and receivers (regulators, supervisors, investors, analysts, and aggregators) of financial information. XBRL is not an accounting standard. An understanding of XBRL properly begins with a discussion of XML, the Extensible Markup Language. XBRL and HTML are members of a family of XML languages.

HTML is like a weak sibling of XML (Tomblin et. al 2003). At most HTML contains a predetermined set of tags that can determine how a webpage will be displayed and contain some metadata (data about data) that describes the webpage. HTML cannot tell us about the nature and structure of data. XML on the other hand does not have any predefined tags. One of the strengths of XML is that it can be used to create tags for a variety of purposes. In addition descriptive tags can be created to describe the data. For example, 'sales revenue is \$12000.' In HTML, there is no simple way to extract or separate the sales revenue data in the statement and use it for an alternate purpose. In XML, however, it can be described as <SalesRevenue> \$ 12000</SalesRevenue>. The tag is self-describing and provides a logical structure for contained data in plain text. Also since XML is vendor and system independent, and in plain text it is simple to construct a system (software application) to import, export, and process the XML data. Also, it is easy to add functionality by adding tag attributes.

Because XBRL is derived from XML hence it has naturally inherited all its strengths (and potential weakness). XBRL leverages the same mechanism of XML and augments it with an extensive metadata structure for capturing a greater breadth and variety of information about the data. Although XML-based, it consists of more than just markup tags. It was actually designed to carry processing instructions that tell computers what to do with data. It has the ability to 'tag' or code each element of the financial or business report with information such as description, units, currency etc. A 'tag' is like a barcode for an individual piece of information in the information supply chain. XBRL tags identify an individual piece of information rather than a complete document.

XBRL is essentially a dictionary of "tags" that can be applied to each element in a financial statement. The tags of the XBRL specification are organized into a logical structure known as taxonomy - a system for the classification of data. Taxonomy tells standard software what the item represents and how it relates to other items in the report, much like giving all the facts in the report a unique barcode. For example, an accounting element like 'asset' can be tagged. The computer then needs to be taught the attributes (owned by the company, used over a period of time etc.) of an asset. In case there is a new item in current assets, the eXtensible or expandability of the language ensures that a new element can be easily added to the existing structure. XBRL can capture information about relationships

among elements through a variety of link bases - presentation, calculations, formulas, and reference rules. The following paragraphs explain some technical terms that a professional accountant should know about XBRL. Once technical terms are introduced, the process of creating a XBRL document is explained.



TECHNICAL TERMS IN XBRL

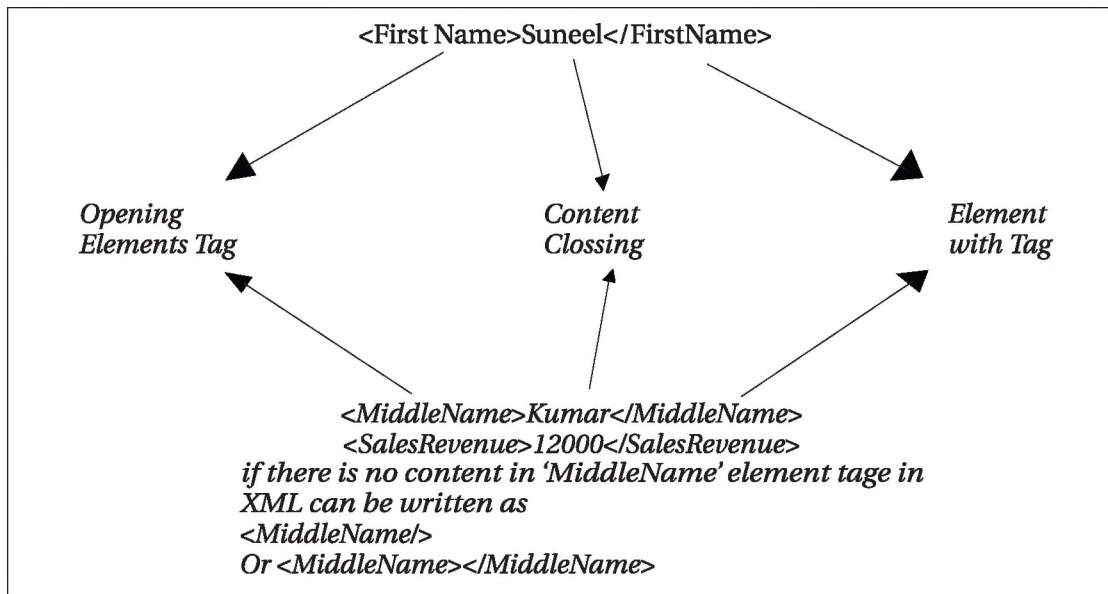
Tag: In XBRL financial data is tagged so that it can be easily understood by machines. Below is an example of flexibility that is offered by XBRL in defining tags. Content in a tag is not limited to one item.

Tag is like a barcode for the item in financials. For example, `<SalesRevenue>12000</SalesRevenue>`. The words "Sales Revenue" together with opening and closing bracket is a tag. The closing tag is distinguished by `</>`. The tag is self-describing and provides a logical structure for contained data in plain text. Note that there is no space in the element name. In between tags there is a value. The above tag is in a machine readable form. From the above example, the computer understands that there is something called sales revenue with a value of 12000. The value of 12000 will appear in the 'instance document.'

To explain the term to a machine, XBRL allows each element of financial statements to carry certain properties through the concept of metadata.

Metadata is data about data. For each element its 'attributes' and 'relationships' to other elements is defined. Sales Revenue has a monetary value and normal balance of revenue is a credit balance. All the properties to identify sales revenue and how a computer should treat it, is provided in the schema files.

Below is an example from Ernst & Young, LLC website regarding the information that is tagged for the 'cash equivalent' element. (Figure 1)



ABC Corporation (in millions)			June 30	
Balance Sheet			2009	2008
Assets				
Current assets:				
Cash equivalents	\$ 19,188	\$ 21,081		
Short-term investments (including securities pledged as collateral of \$3,797 and \$ 9,624)	54,322	86,183		
Total cash and short-term investments	73,510	107,264		
Accounts receivable, net of allowance for doubtful accounts of \$ 357 and \$ 426	35,601	29,252		
Inventories	3,538	4,640		
Deferred income taxes	5,562	6,091		
Other	7,514	6,641		
Total current assets	126,175	153,888		

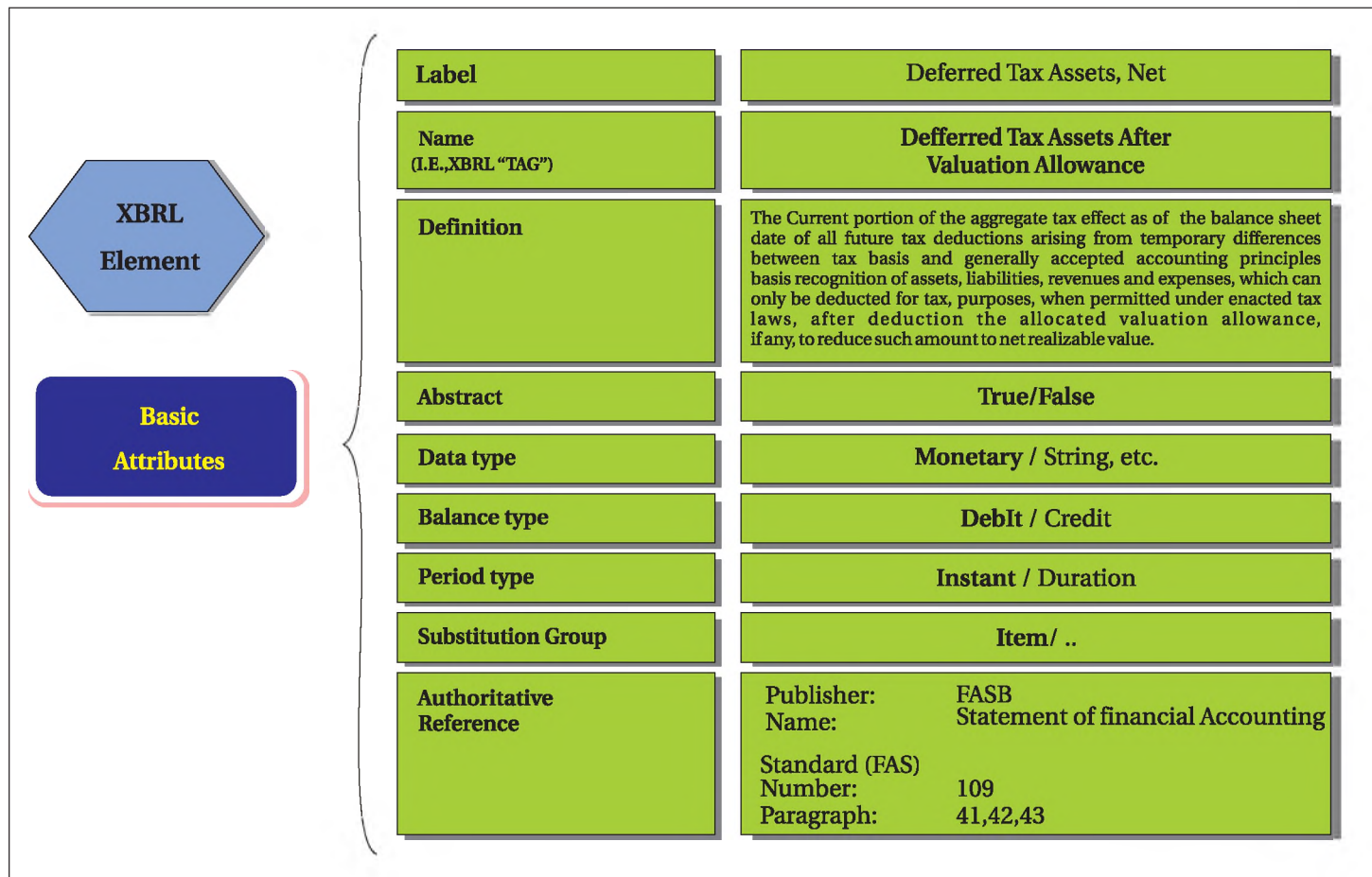
21,081-What is being tagged?
 cash/cash equivalents: 21,081,000,000
 Currency: US dollars
 Reporting period: 2008-06-30
 Balance: Debit
 Company : ABC Corporation
 Statement : Balance Sheets
 Definition : Cash equivalents, excluding items classified as marketable securities, include short-term, highly liquid investments that are both readily convertible to known amounts of cash, and so near their maturity that they present insignificant risk of changes in value because of changes in interest rates

Figure 1

Element: An element is a business concept (assets, liabilities, etc.) which is defined based on specific rules (but without the prefixes), such that it can be understood by the computer.

Figure 2 provides an example for XBRL element 'Deferred Tax Assets Net' along with its attributes.

Element Attributes



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Figure 2

Abstract: Abstract combines all tags of the same group under one heading, in a way that the hierarchy among the elements can be depicted in a systematic and logical manner. Below is an example from US GAAP taxonomy for Assets Abstract.

- XBRL US GAAP Taxonomy Element
- AssetsAbstract
- AssetsCurrentAbstract
- CashAndCashEquivalentsAtCarryingValue
- MarketableSecuritiesCurrent

Taxonomy: The word taxonomy implies classification of some kind of knowledge or rules governing this classification. The taxonomy of XBRL is, in literal terms, a dictionary of elements that are reported. The taxonomy provides the tags (barcodes) for all the elements appearing in the annual report. In XBRL taxonomy consists of core part which is a schema(s) and linkbases. Schema contains the definitions of elements (such as assets along with its characteristics) whereas linkbases

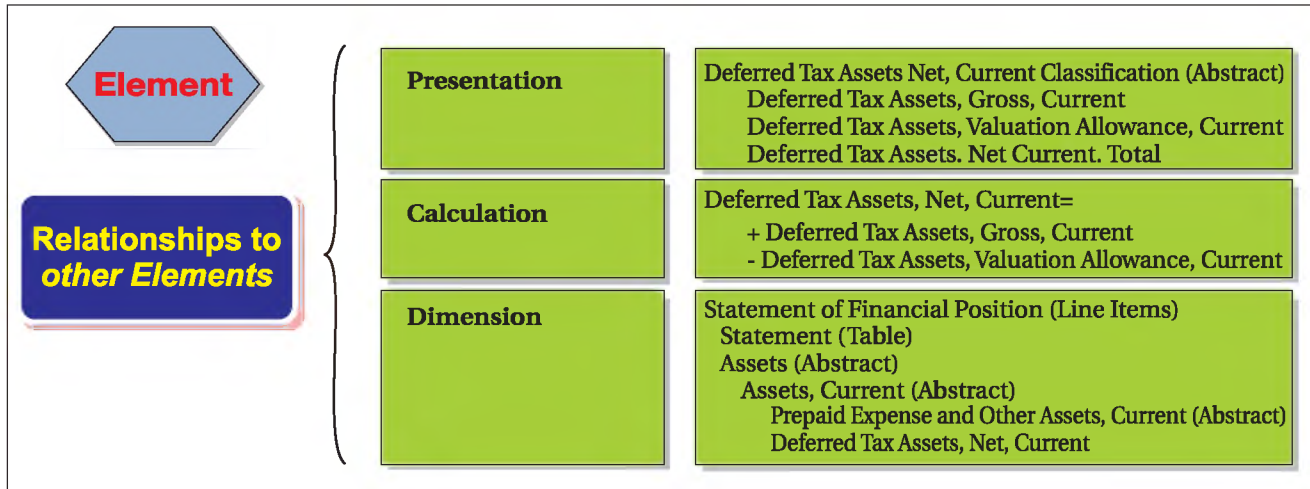
provides relationships among those elements.

Linkbase: Linkbases define relationships, based upon certain criteria, among elements and link them with a specific external resource that justifies their existence. To show the relationship link between say assets and current assets, first the items need to be located through a 'locator.' Then an 'arc' from asset to current asset will link the two elements. As a matter of good practice, relationship information is shown in a separate file than the definition file. Based on the types of relations, there are five categories of link bases (layers): presentation, calculation, definition, reference, and label.

The presentation link base uses parent-child relations to organize elements, which makes it easier for the user to search for elements/concepts. Calculation link bases contain the validation rule that applies to all instance documents referring to a particular taxonomy. Definition link base provides the opportunity to define different kinds of relations. Reference relationship presents relationships between elements and

external regulations or standards. Figure 3 shows an element (Deferred Tax Assets, Net) along with its three relationships.

Relationships



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Figure 3

There might be some differences in definitions of elements as per Indian (or US) GAAP and IFRS. That means there is a need to define interactions between two GAAPs. Similarly there is a need to define the relationship between Assets and Accounts Receivables. To define those relationships, XBRL uses the technology of XML Linking (X Link). All the relationships are defined in the linkbases, which are classified as per the specific purpose. Through the Label Linkbase, a different label can be assigned for a different purpose even in a different country.

Schema: The main purpose of schema is to provide a computer with the necessary information to be able to identify the accounting term and how to process it. An XBRL schema stores information about the elements in the taxonomy. For example, names, ids, balance, and other characteristics of the element are stored in the schema. It is a space where an unstructured list of elements and references to linkbase(s) files are described. Schemas along with linkbases form the XBRL taxonomy. To distinguish between the elements defined under two different schemas, namespaces (<http://xbrl.iasb.org/int/fr/ifrs>) are used. Namespaces are a way to identify where different parts of the XML documents come from. Since XML documents are built over multiple layers based technologies, there are multiple namespaces to be declared. Although namespaces read like a URL address, they are not the same as a URL address and for convenience they can be assigned a prefix. For example, ifrs = <http://xbrl.iasb.org/int/fr/ifrs>. In this case namespace (<http://xbrl.iasb.org/int/fr/ifrs>) can be identified by ifrs.

After the schema file, all XBRL taxonomy concept file contains an import element. This links the XBRL namespace to the actual schema file that contains the definition of actual XBRL vocabulary. After the <schema>element and <import>element the concept definitions follows. The element simply defines a business concept. XBRL uses a link to connect concepts.

Figure 4 provides an example of a partial schema information document created by The Institute of Chartered Accountants of India (ICAI).

		Type Group	Substitution	Balance Type	Period	Abstract	Niltable
1	Sources of Funds	Monetary	Item	Credit	Instant	False	True
2	Shareholders Funds	Monetary	Item	Credit	Instant	False	True
3	Minority Interest Net	Monetary	Item	Credit	Instant	False	True
4	Net Deferred Tax Liability	Monetary	Item	Credit	Instant	False	True

Figure 4

Taxonomy Extension: It is expected that most of the concepts will be defined in the public taxonomies, such as IFRS. Public taxonomies define elements and relationships among them according to particular standards or rules, such as International Accounting Standards (IAS). XBRL defined concepts help companies to create financial statements that are XBRL compliant and valid in accordance with the requirements of regulators. For a specialized and diverse industry, say finance, companies are required to provide information on additional concepts. XBRL allows for addition of an element not included in the base taxonomy, without loss of integrity or comparability of data. This will invariably involve modifying relationships among elements. Taxonomy extensions can be created by regulators or an issuing company itself.

Tagging: The creation of XBRL documents involves the process of tagging the document. Tagging is the process of assigning barcodes to all the elements appearing in the annual report.

Instance Document: An XBRL document can be viewed as a system of barcodes. These barcodes not only contain the information but also attributes that describe the information. A XBRL instance report is an electronic document which contains the elements, their values, and an explanation of the context in which they are placed. For example a footnote

appears on the instance document and provides additional information about the elements on the report. Once all the elements appearing in the annual report have been tagged the XBRL instance document is generated and the process is complete. The XBRL instance document contains all the facts that are reported in the annual report along with the descriptive attributes about the data that is reported. The instance document is platform independent and can be reused to represent and transfer data as per the requirements of the user.

(http://www.irisbusiness.com/xbrl_introduced.php)



How is a XBRL Document Created

To implement XBRL reporting process will require professional experts with in-depth knowledge of accounting and financial reporting systems and auditing procedures. Accounting professionals will need to interact with the IT professionals for selection of the right software. XBRL team will need to be formulated to implement XBRL in the organization. Figure 5 shows the entire process of how XBRL works along with its deliverables. Figure 5 has been provided by the SEC in its preparers' guide. The figure is followed by three steps explanation for creating a XBRL document.

How does XBRL work?

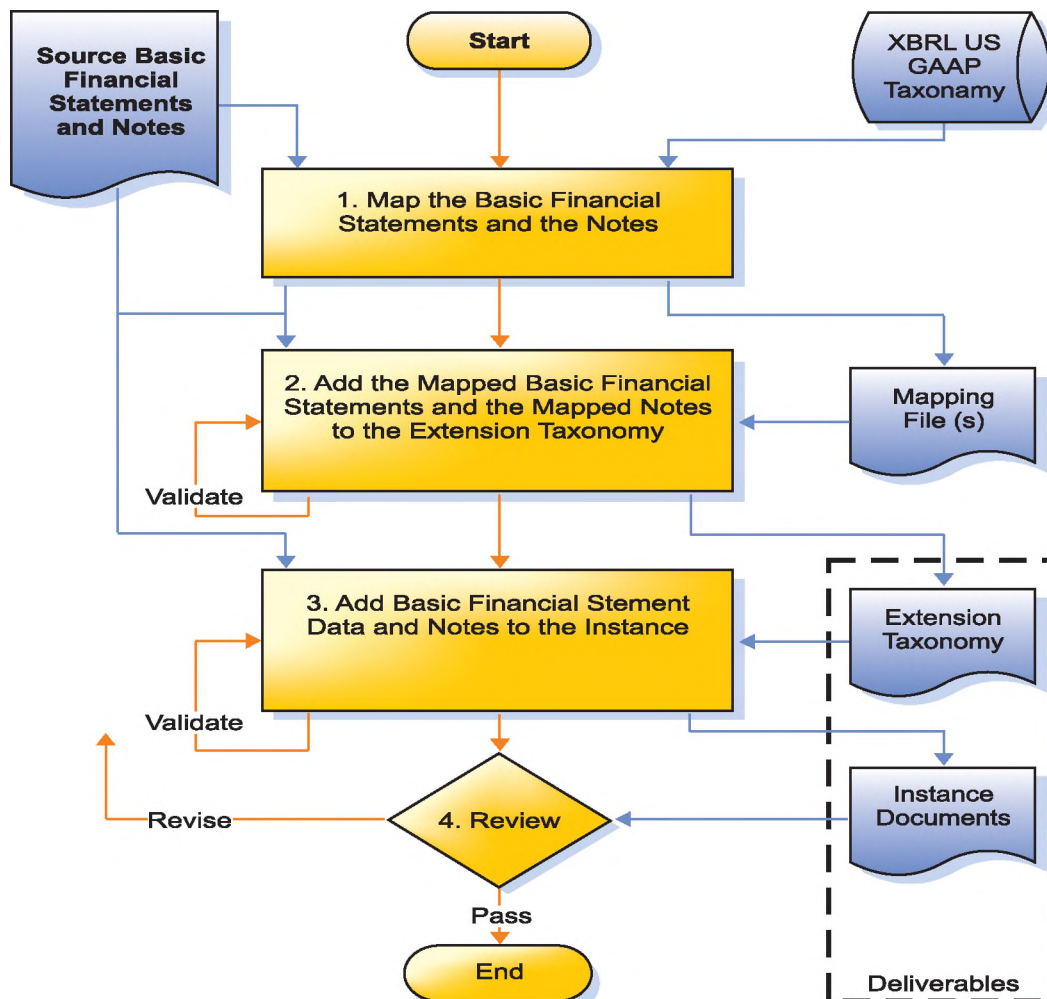


Figure 5

Blue indicates Information and Information Flow;
Orange indicates Process and Process Flow
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Step 1: Map Financial Statements and Notes to the Published Taxonomy.

Mapping involves following procedure to be followed by the XBRL team. Start with the set of published financial statements. Compare the concepts (line item) in the financial statements to the elements in the published taxonomy. Assign a taxonomy element to each financial statement concept (line item). If an appropriate concept cannot be found by the

company's XBRL team, then note that difference to create extension taxonomies. Similar process is used for notes. The process can be performed using a spreadsheet. The XBRL team can list the financial statement line items and disclosures in one column and the corresponding concept from the published taxonomy element in the adjacent column. The process of selection may need significant judgment in mapping for some financial statement items. XBRL team must therefore involve a professional accountant, who is familiar with the financial statements, for mapping and reviewing. An example of mapping, from the preparers guide, is provided below in Figure 6 (Copyright 2008 XBRL, US Inc).

Mapping of a Balance Sheet

Financial Statement as Prepared	XBRL US GAAP Taxonomy Element	Remarks
1 Assets	Assets Abstract	
2 Current Assets:	Assets Current Abstract	
3 Cash and cash equivalents	Cash And Cash Equivalents At Carrying Value	
4 Marketable debt and equity securities (Note 3)	Marketable Securities Current	
5 Accounts receivable (Note 4)	Receivables Net Current	
6 Inventories (Note 5)	Inventory Net	
7 Current deferred tax assets (Note 12)	Deferred Tax Assets Net Current	
8 Other current assets	Other Assets Current	
9 Total Current Assets	Assets Current	Total of
	4..8	
10 Property, Plant, and Equipment at cost, net (Note 6)	Property Plant And Equipment Net	
11 Deferred Tax Assets (Note 12)	Deferred Tax Assets Net Noncurrent	
12 Other Assets (Note 7)	Other Assets Noncurrent	
13 Total Assets	Assets	Total of
	9+10..12	
14		
15 Liabilities and Stockholders' Equity	Liabilities And Stock holders Equity Abstract	
16 Current Liabilities:	Liabilities Current Abstract	
17 Short-term borrowings (Note 8)	Short Term Borrowings	
18 Current maturities of long-term debt (Note 9)	Long Term Debt Current	
19 Accounts payable, Trade	Accounts Payable	
20 Accrued payroll and employee benefits	Employee Related Liabilities	
21 Other accrued liabilities	Accrued Liabilities	
22 Total Current Liabilities	Liabilities Current	Total of
	17..21	
23 Long-Term Debt (Note 9)	Long Term Debt Noncurrent	
24 Other Long-Term Liabilities	Other Liabilities Noncurrent	
25 Total Liabilities	Liabilities	Total of
	22..24	
26 Commitments and Contingent Liabilities (Note 14)	Commitments And Contingencies Not numeric	
27 Stockholders' Equity (Note 10):	Stockholders Equity Abstract	
28 Class A Common stock, issued 5,094,370 shares in 2013 and 5,089,370 shares in 2012	Common Stock Value	
29	Common Stock Shares Issued	
	Parenthetical	
30 Paid-in capital	Additional Paid In Capital Common Stock	
31 Retained earnings	Retained Earnings Accumulated Deficit	
32 Accumulated other comprehensive income	Accumulated Other Comprehensive Income Loss Net Of Tax	
33 Treasury stock-at cost, Class A Common stock, 128,000 shares	Treasury Stock Value	
34	Treasury Stock Shares	
	Parenthetical	
35 Total Stockholders' Equity	Stock holders Equity	Total of
	28,30..33	
36 Total Liabilities and Stockholders' Equity	Liabilities And Stock holders Equity	Total of
	25+35	

Figure 6

Step 2: Create and Validate the Instance Document.

The instance document is an XBRL-formatted financial report which can be read by computers. To create an instance document, the preparer associates the factual financial information with elements from both the published and extension taxonomies, using a tagging software. Thus published and extension taxonomies serve as inputs to generate the instance documents. The taxonomy contains the elements and structure for the financial statements. The instance document contains the quantitative (21,081) and

contextual information from the financial statements and includes the period being reported (e.g. for the year ended June 30, 2008) and the monetary type (e.g., U.S. dollars) in the report. The process of associating is called tagging and an instance report is the outcome of the tagging process. Contextual information is separated from the original taxonomy so that the taxonomy concepts can be reused. Contextual information changes from period to period. Figure 7 shows an example for XYZ company's current assets being tagged. Figure 8 shows an example of tagging a note in detail.

XYZ Company's Current Assets, with Elements Tagged

XBRL Contexts	December 31,2013	December 31,2012	
(In thousands, except share information)			
ASSETS			XBRL US GAAP Taxonomy Mapped Element
Current assets:			Assets, Current [Abstract]
Cash and cash equivalents	\$ 663	\$ 649	Cash and Cash Equivalents, at Carrying Value, Total
Marketable debt and equity securities	6,283	5,095	Marketable Securities, Current, Total
Accounts receivable (Note 4)	24,138	25,532	Accounts Receivable, Net, Current, Total
Inventories (Note5)	20,152	24,007	Inventory, Net
Current deferred tax assets (Note 13)	503	493	Deferred Tax Assets, Net, Current
Other current assets	908	366	Other Assets, Current
Total current assets	\$ 52,647	\$ 56,142	Assets, Current, Total

Figure 7

Tagging a Note Table in Detail

Domain Member	Line Item Element	2007-12-30	2006-12-31
Land Member	Property, Plant & Equipment, Gross	31659000	31601000
Building & Building Improvements (Member)	Property, Plant & Equipment, Gross	79726000	79696000
Leasehold Improvements (Member)	Property, Plant & Equipment, Gross	84737000	76606000
Equipment (Member)	Property, Plant & Equipment, Gross	203532000	193117000
Construction in Progress (Member)	Property, Plant & Equipment, Gross	8420000	5377000
Property, Plant and Equipment, Type (Domain)	Property, Plant & Equipment, Gross	408074000	386397000
	Accumulated Depreciation, Depletion & Amortization, Property, Plant & Equipment	209117000	188675000
Property, Plant & Equipment, Net, Total		198957000	197722000

Figure 8

Since XBRL is based on XML, all instance reports generated in XBRL go through two levels of validation. At level 1, it needs to be ensured that all XML rules are followed. Level 1 validation ensures that correct syntax is used. At level 2, the validation check ensures that XBRL document confirms to vocabulary in XML schema. Figure 9 shows the two validation levels.

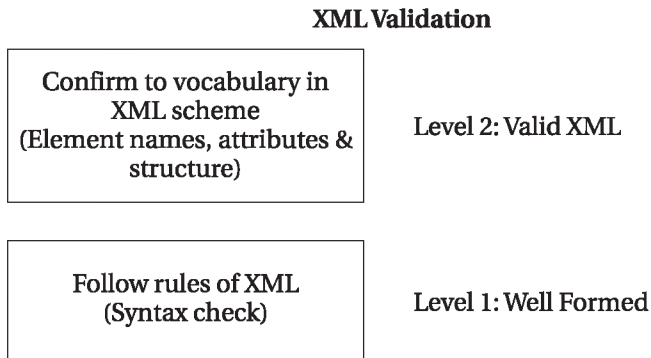
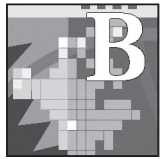


Figure 9

Step 3: Review the Instance Document.

Use of XBRL instance documents does not alter management's responsibility, under any law, for the completeness, accuracy, and presentation of its company's financial statements. Instance document should be reviewed by the XBRL team including professional accountants who are most familiar with the company's financial statements.



ENEFITS OF XBRL

A good example of benefits of XBRL implementation is release of information on Singapore companies and industry segments by Singapore Accounting and Corporate Regulatory Authority (ACRA) through an online tool called Open Analytics. Entrepreneurs can access the information and perform competitive analysis. Banks can use it to assess the attractiveness of the firms, sectors etc. Analysts can monitor the performance trends in the industry. Uses are endless from the same set of data that is made available as each user can generate its own customized analysis without wasting time on collecting, compiling, and reentering the data. There is no doubt that global adoption of XBRL will revolutionize the financial reporting process. Some of the general benefits of XBRL can be classified into following categories:

Increase in Efficiency: XBRL has the potential to eliminate most of the non-value added activities relating to extracting and rekeying the data and increase the usability of financial information. XBRL eliminates rekeying errors and misclassifications by third parties. Tags with established definitions remove ambiguity as to what a data point represents. Improvements in data quality translate into better analytics for your firm and for your clients. With full adoption of XBRL, companies can automate data collection and improve information system at the company.

Decrease in Costs: Data from different company divisions with different accounting systems can be assembled quickly, cheaply and efficiently. Once data is gathered in XBRL, different types of reports using varying subsets of the data can be produced with minimum effort. A company's finance

division, for example, could quickly and reliably generate internal management reports, financial statements for publication, tax and other regulatory filings, as well as credit reports for lenders. Automated software packages can check data for accuracy.

Standardization in Data Collection: The taxonomy specifies the characteristics of various elements of financial statements thereby ensuring consistent interpretation globally. "The IASB (International Accounting Standards Board) is developing a taxonomy which reflects International Financial Reporting Standards (IFRS). National XBRL jurisdictions will extend this taxonomy to reflect their particular local implementation of IFRS. Taxonomies will thus be available to enable those reporting under IFRS in different countries to use XBRL, enhancing efficiency and comparability as adoption of IFRS expands around the world."

Stakeholders' Satisfaction: Increasing usability and convenience of data collection and analysis will benefit potential investors and stakeholders, thereby improving customer relationships. Users can use the data as per their requirements. It will also help increase access to new sources of capital globally thereby helping reduce the cost of capital.

Increased flexibility: XBRL will allow providers to extend taxonomies for new information exchanges without undermining existing taxonomies. This eXtensible feature when used to the fullest will help provide integrated reports that include both the financial and non-financial performance measures without programmatic changes.

Potential for improved Transparency: Through its layered component-based architecture, it will become feasible to access the detailed information about any subject or issue of interest. Although the degree of transparency will be controlled by the organization, it will still be possible to evaluate organizational performance and effectiveness on specific financial and ESG (environmental, social, and governance) issues.

XBRL Implementation Challenges:

In terms of challenges the validation errors generated by software may be highly technical and difficult to comprehend. Creation of an extension schema poses another challenge. Although default schema and linkbase files exist in all taxonomies, there is a need to customize each link to suit the company's reporting requirements. On one hand, all concepts in a standard taxonomy may be needed and on the other there may be a need to create additional concepts under a specific role. Existing taxonomies should be used so that duplicate or unnecessary extensions are not needed. In addition, the existing taxonomy should be used correctly.

In the US "Public companies have submitted 1,400 filings in XBRL format to date to the Securities and Exchange Commission's (SEC) EDGAR (Electronic Data Gathering And Retrieval) system since the mandate for public company reporting in XBRL became effective in June 2009. Over 5,000 problems related solely to the use of the US GAAP Taxonomy have been identified in those filings, ranging from incorrect signs to missing concepts." (XBRLUS, pp. 1). Other common errors relate to 1) no value when values is required 2) zero values when value should be there 3) incorrect negative value

4) incorrect values. "These issues are problematic because they ultimately lead to 1) mistakes in how public company financial data is reported and presented, and 2) a lack of comparability in financial fundamentals from company to company." (XBRL, US, pp. 1). Trained experts in XBRL are still in short supply and cost of implementation will be another major factor. (Note: EDGAR system will soon be replaced by Interactive Data Electronic Applications (IDEA) to give investors a better and more up-to-date financial disclosure in a form they can readily use).

In all the optimism about XBRL, it is easy to forget as to what is not included in the purview of XBRL. XBRL neither represents a set of accounting standards nor a chart of accounts. It is not a GAAP translator so it will not translate financial statements from one GAAP to another. XBRL does not represent a transaction protocol (Singal, 2009). It is about reporting business information and not about capturing data at the transaction level. XBRL is not a proprietary technology and therefore is expected to be widely used in software applications.

Applications of XBRL

XBRL is becoming a standard means to communicate information between businesses and on the internet. For the countries that are going to adopt XBRL standard, it will impact nearly every corporate entity in that country. XBRL creates agreement on how to identify reporting concepts and allows disparate systems and different organizations to use the numbers that relate to that concept. Because the information provided by XBRL can be easily customized to the needs of the users, it has many applications. We will discuss some of the general applications for XBRL and some of them directly follow from the benefits mentioned earlier.

Fraud Prevention: Transaction history in many organizations still remains disaggregated leading to significant loss of economic resources due to inefficient fraud prevention system. Currently the information is either not available or lost from many critical control points in real time. XBRL will empower forensic accountants to dig deeper and conduct a comprehensive analysis from multiple data sources with significantly less effort, instead of just wasting their time in compiling data from multiple sources for analysis. For example, in the US, the Federal Financial Institutions Examination Council, the umbrella agency for banking regulations, found that when the data was filed in XBRL, its 90 day review cycle was significantly reduced to two days. The analysis of comprehensive data may also help in assessment of business risks due to comprehensive auditing.

Financial Reporting and IFRS Conversion: XBRL based reporting is poised to become regulatory standards in many more countries. Companies will need to move to XBRL reporting format to be in compliance with IFRS and national GAAPs. XBRL allows for reporting under different taxonomies and therefore can be used to satisfy filing and reporting requirements in many countries.

Corporate Performance Management: Corporate performance management is important for both external and internal stakeholders. Stakeholders today are interested in a comprehensive assessment of the company's attractiveness.

In addition to financial measures, that includes the ESG (environmental, social, and governance) factors as well. Through XBRL the current taxonomy can be extended to include more elements that measure the ESG factors as well. Thus XBRL can provide opportunities to the outsiders to give a more complete picture of the organization performance and its other responsibilities. In the same way, the GAAP taxonomy can be extended to link it with management reporting structures. Reports can then be provided internally to any user at any level in the organization in real time.

Investment and Lending Analysis: Currently, there exists a significant gap between what the issuers provide and what the receivers want in terms of information. Translating the available information to match individual needs, an investor has to spend lot of time and effort. For example to compare revenue growth/profit margins trend data of a company with its peers or the industry will require a lot of manual rework of the data. With XBRL, less time will be spent in getting the data ready for analysis and more time can be devoted for actual analysis and decision making. For banks and financial institutions also, availability of more standardized information and the ability to customize it for its use will speed up the lending process. Following paragraphs discuss the development of XBRL in India and expansion of opportunities for professional accountants.



XBRL DEVELOPMENT IN INDIA

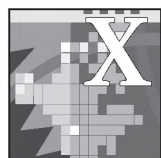
The Institute of Chartered Accountants of India (ICAI), the premier accounting and standards setting body in India recognized the importance of XBRL reporting along with the adoption of IFRS. In 2007, ICAI facilitated the constitution of a group with representation from various regulators – SEBI, Reserve Bank of India (RBI), Insurance Regulatory and Development Authority (IRDA), and MCA (Ministry of Corporate Affairs) for development and promotion of XBRL in India. In December 2008, XBRL India was established with local jurisdiction of XBRL International. ICAI also registered 'XBRL India' under Section 25 of the Companies Act for managing the Indian jurisdiction of XBRL International. The primary objective of XBRL India is to promote and encourage the education, marketing, and adoption of XBRL in India. XBRL India is also entrusted with the responsibility of maintaining and updating taxonomies in line with the international developments. Members of XBRL India (<http://www.xbrl.org/in/>) include regulators, stock exchanges, software companies, and others. XBRL India has developed General Purpose Financial Reporting XBRL taxonomy for Commercial and Industrial Companies and the banking sector which is acknowledged by XBRL International (XII). Other taxonomies for Insurance, Power, and NBFCs (Non-Banking Financial Companies) are under the process of being developed (Editorial Board ICAI, 2011).

MCA, the regulator of companies in India, has mandated, in the first phase, the filing of financial statements for the year ended March 2011 in XBRL format vide general circular no. 09/2011 dated 31st March 2011 in respect of the following classes of companies:

- (a) All companies listed in India and their subsidiaries, including overseas subsidiaries;

- (b) All companies having a paid up capital of Rs. 5 crore and above or a Turnover of Rs. 100 crore or above.

This will cover more than 25000 companies. In the second phase it will be made applicable to Banking, Insurance, NBFCs, Power sector, and unlisted companies. The mandate, first of its kind, from MCA has been coined as 'Big Bang' because of its application to wide range of companies. It would be the first time when there will be an interface of the user of financials with the full range of financial statements. Other regulatory agencies like BSE and NSE have also transitioned from paper to XBRL, but have not exposed filers to XBRL documents. RBI has asked banks to submit certain reports in the XBRL format. SEBI is going to adopt a phased implementation of filing/reporting of financials by Mutual Funds and Listed Companies.



XBRL AND OPPORTUNITIES FOR PROFESSIONAL ACCOUNTANTS IN INDIA

MCA has mandated that all companies having a paid up capital of INR 5 Crores (INR 50 million) and above or a turnover of INR 100 Crores (INR 1 billion) or above will file balance sheet and profit and loss account for the year 2010-11 onwards using XBRL taxonomy. Excluded from the mandate are banking, insurance, Non-Banking finance companies and their overseas subsidiaries.

Professional Accountants in India will be beneficiaries of this change because the implementation of XBRL will open up multiple opportunities for creation of XBRL documents (Jani, 2011). Professional help of Chartered Accountants will be required in following areas:

- Assessment of XBRL reporting requirements that would be applicable
- Evaluation of various options available for implementing XBRL and selection of the best alternative

- Development of country specific taxonomies, which is dictionary of all the elements and requirements as laid by the accounting standards and company law requirements
- Creation of financial documents (instance documents) that are to be mapped to taxonomies
- Assessment of impact of XBRL implementation on company's existing MIS system
- Help in investment and credit analysis activities as the information will be easy to compare across companies

To facilitate the process of implementing, XBRL India and ICAI plans to host a series of workshops. The workshop will provide the basic training tools and the process of creation of XBRL documents. For details please visit www.xbrl.org/in.



CONCLUSION

In conclusion, the XBRL based reporting has the potential to change financial reporting and analysis process globally, for good. XBRL would greatly increase the speed of handling of financial data, reduce the chance of error, and permit automatic validation of information. Consumers of financial data, including investors, analysts, financial institutions and regulators, can receive, find, compare, and analyze data much more rapidly and efficiently in XBRL format. XBRL is flexible so it can adapt to different languages and different GAAPs. Companies can use XBRL to save costs and streamline their processes for collecting and reporting throughout the information supply chain. XBRL will obviously improve the quality of corporate information for internal and external reporting purposes. The XBRL reporting will impact decisions about the investments, lending, and investment in the economy. Thus XBRL has the potential to impact economic policy at a global level.

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PERFORMANCE OF INDIAN EXPORTS DURING THE POST WTO PERIOD: A CRITICAL EVALUATION

Rajwant Kaur, Amarjit Singh Sidhu

ABSTRACT

The present paper is an attempt to study the performance of exports of India by examining the commodity composition and direction of Indian merchandise exports. An attempt has also been made to measure its impact on Gross Domestic Product and Balance of Trade during the post WTO regime. Based on the VECM results, the evidences support that there exist a significant long term bidirectional causation between the variables i.e. export causes economic growth and economic growth has influenced exports growth during the post WTO period. The study found that there is an increase in Indian merchandise exports during the post WTO Period from 1995-96 to 2009-10 but it could not reduce the trade deficit. The study further found that both exports and imports have increased as a percentage of GDP during the period under study. However, imports have increased at much higher rate as compared to exports as a result of which additional revenue has not been generated to improve the standard of living of the society in India. On the basis of analysis, we recommend that there is a need to review the foreign trade policy followed during the post reforms/WTO Regime. The study further recommends that the policy makers should think on an alternative model of development based on the vast domestic market.

Keywords: Export Performance, WTO, GDP

INTRODUCTION

The ultimate goal of economic development is to raise the level of living of the large majority. The economic development of an economy is depending upon the activities of human efforts on productive actions. The challenge of development... is to improve the quality of life. Especially in the world's poor countries, a better quality of life generally calls for higher incomes- but it involves much more. It encompasses as ends in themselves better education, higher standard of health and nutrition, less poverty, a cleaner environment, more equality of opportunity, greater individual freedom and a richer cultural life (World Development Report, 1991).

Debate is going on among the economists and the policy makers, regarding the choice of strategy of development for a country. According to one school of thought, all countries are dependent on each other. All the countries must accept the fact that they are part of a world economy. The growth in International business has forged a network of global linkages around the world that binds all countries, institutions and individuals-much closer than ever before (Czinkota et al. 1994). Therefore, it is difficult for a country to survive without trade with other countries due to the unequal distribution of natural resources. Large share of basic needs of human beings depend upon the trade in the contemporary world. Therefore, trade must be promoted for steady and sustainable economic growth in the world economy.

The various theories of International Trade like Absolute Advantage Theory, Comparative Advantage Theory, Heckscher and Ohlin Theory and Porter's Competitive Advantage of Nations etc advocates that trade is good for the global economy. Trade appears to be one of the most distinctive and fundamental activity of human societies (Arora, 2007). The diversity in the geographical distribution of wealth and natural resources compel humankind to obtain those commodities from remote areas, which cannot be generated within his own locality. The differences of human wants account for an extensive system of exchange between the inhabitants of different places and nations (ibid 2007). International trade strengthened foreign exchange reserves and accelerate the supply of imports of capital goods in the country, which results in enhanced productive capacity at domestic level and improved situation of balance of payments in the economy of each country.

The above discussion leads us to the conclusion that External sector is very significant for a country to achieve growth at domestic and international level. The performance of export of any country is hallmark of its competitive status at global level and performance of imports are recognized as an indicator of high standard of living of people of a country.

There is another school of thought, which argues that developing and economically weak countries should go for the Import Substitution Policy (Inward-looking Development Strategy), by producing those products which a country used to import from the other countries. By doing so a country may reduce its import bill and improve its balance of payments situation. The argument is that a country should take measures to become self-reliant rather than dependent on other countries over the period of time. To achieve the goal of self reliance, more and more countries across the world

adopted the import substitution policy approach during the first half of the 20th century. However, the increasing marketisation of the production processes mainly controlled by developed world led by the TNCs have created an environment in which the developing and least developed countries have been compelled to open their economies for the production of developed world. The formation of WTO has further activated the process of liberalization and globalization.

The World Trade Organization (WTO), which established on 1st January 1995, replaced the General Agreement on Tariffs and Trade (GATT). WTO is a Multilateral Trade body, which provides a comprehensive regulatory framework for the promotion of global trade. It has 153 members on May, 2010, which is representing more than 97 per cent of total World Trade.

Prior to the formation of WTO, India had largely been remained insulated from the world trading system for more than four decades since independence (Srinivasan, 2001). It has been argued that decades of pursuit of an inward-looking development strategy, almost hostile attitude towards foreign trade, technology and investment and by pessimism about export markets, inevitably led India to become marginalized in world trade (Ibid, 2001). In the light of above situation, Indian policy makers introduced large scale reforms after 1991.

The Government of India have taken a number of initiatives in the foreign trade policy like simplification of Import-Export procedure, reduction in Tariffs and Non-Tariffs barriers, Foreign Currency reforms, Liberal Credit, setting up of Export Promotion Zones, incentives for the Foreign Companies and Joint Ventures etc. As a result of these reforms, the commodity structure and geographical pattern of exports of India has changed under the WTO regime. The total value of India's international trade has gone up during the post reforms period. However, In spite of the remarkable growth in Indian trade, its share in world trade was only 0.66 percent in 2001, which was less than that of small countries like Taiwan and Singapore (Datt, 2006). In 1980-81, exports as percentage of GDP were only 5.5 percent, which marginally increased to 5.8 percent in 1990-91 which substantially improved to 11.7 percent in 2003-04. This implies the growing importance of exports for the Indian economy (ibid).

Objectives of the Study

The present paper is an attempt to study the performance of export sector of India during the post reforms period from 1995-96 to 2009-10. To measure the performance of Indian exports, the present study has focused on the following objectives:

- To study the commodity composition of Indian merchandise exports over the period under study;
- To study the direction of Indian merchandise exports during the period under study;
- To study the impact of export reforms on the Gross Domestic Product (GDP) during the WTO regime and;
- To study the impact of the exports performance on the India's balance of trade during the study period.

The above objectives have been achieved by examining the performance of Indian exports during the Trade Liberalization Regime i.e. from 1995-96 to 2009-10. The analysis has been divided into four sections. Section-II deals with a brief review of the selected studies, followed by data base and methodology. Trade policy reforms in India during the trade liberalization regime are analyzed in Section-III. The analysis of data and findings of the study, conclusions and recommendations are presented in Section-IV.

SECTION II



REVIEW OF LITERATURE

The performance of Exports has been examined extensively in the theoretical and empirical literature. The Trade and development literature has emphasized exports as a vehicle to speed up economic growth through a variety of channels, namely, efficient allocation of resources, improved productivity, economies of scale, enhanced capacity utilization, and diffusion of modern technological knowledge and innovation. It is due to these considerations that most of the countries around the world had embraced export oriented policies as part of their growth strategies. However, the Marxist or the neo-Marxist considers trade as one mechanism for exploitation of the less developed countries (LDCs) by the industrialized West (Rati Ram, 1985). Although further theoretical insights would be valuable, empirical analysis of the issues are needed as well for a better understanding of the relationship between exports and growth (ibid). Number of studies, both empirical and conceptual has been conducted to examine the relationship between exports and economic growth. The evidences from literature have revealed both positive and negative effects of exports growth on the economic growth.

One school of thought favour trade liberalization policy while other opposes it. The studies which described the positive relationship between export growth and economic growth includes Feder (1982) and Marin (1992) which found that countries exporting a major part of their production seem to grow faster than others. The growth in exports results from reduced protectionism and it has a stimulating influence across the economy as a whole in the form of technological spillovers and other externalities. All these studies have investigated the relationship between export growth and economic growth using a variety of techniques. Gupta (1985) applied causality test (Haugh 1976 and Sims 1972) to analyze the relationship between export growth and economic growth of Israel and South Korea covering the period of first quarter of 1960 to the last quarter of 1979. The study found that there is a positive relationship between GNP (Gross National Product) growth and export growth. Others studies like Balassa (1978), Michaelopouls and Jay (1973), Tyler (1981), and Krueger (1977) also support this hypothesis.

Krueger (1998) also recommended the policymakers to adopt pure outward oriented strategies because trade liberalization enabled a country to achieve a higher rate of growth. Similarly, Kalirajan, K. (2001) found that trade policy reforms has contributed positively to Gross Domestic Product (GDP), protected the interest of consumers, and benefited to the economy as a whole. According to Thirlwall (2000), trade

liberalization and export performance is positively correlated but it depends upon the production and demand characteristics of the goods produced and exported. Babatunde (2009) used panel least square estimation technique to determine the impact of real exchange rate based trade liberalization in promoting the export growth of Sub-Saharan Africa during the period 1980 to 2005. The study found that trade liberalization stimulates export performance through increased access to imported inputs. The study further identified evidences that a more competitive and stable real effective exchange rate positively influence export performance.

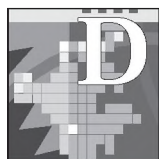
On the other hand, Bhagwati, Jagdish N. and Srinivasan, T. N. (1975) found that the foreign trade policy reforms led to negative impact on the India's economic growth, saving, research and development (i.e. domestic policies) during the period 1950-70. Sidhu et al. (2004) covered a period of 20 years i.e. 1980-81 to 1999-2000 and used time series data to analyze the significant changes in commodity composition and the direction of Indian merchandise exports and imports. The study found that foreign trade reforms could not contribute positively to reduce balance of payment deficit due to the reason that the percentage increase in exports was less than percentage increase in imports. Kusi (2002) found that trade liberalization could not produce expected gains to export performance and clear relationship between trade reforms and improved export performance was lacking.

Pacheco-Lopez (2004) found that trade reforms of Mexico during the mid 1980s had a significant impact on trade, exports and imports but the propensity to import has exceeded the propensity to export which worsened the balance of trade. Jenkins (1996) analyzed the impact of trade liberalization on export growth of Bolivian through three means (i) removal of bias against exports; (ii) access to imported inputs; and (iii) more competitive and stable real effective exchange rate. The study found that better export performance has been associated with more competitive and stable real effective exchange rate and trade liberalization has not had a major direct impact on manufactured exports. The summarized form of review of literature is presented in table-I.

Table 1: Literature Focusing on the Impact of Trade Liberalization on Export Performance

Author	Country	Results
Jagdish N. Bhagwati and T.N. Srinivasan (1975)	India	Wasteful allocation of resources among inter-industrial and inter-firm and the foreign trade policy changes led to negative impact on the economy's growth, saving, research and development (i.e. domestic policies).
Feder (1982)	Developing countries	Countries exporting a major part of their production seem to grow faster than others.
Marin (1992)	Developing countries	Supported outward oriented strategies
Sanjeev Gupta (1985)	Israel and South Africa	Positive relationship between GNP (Gross National Product) Growth and export growth
Rhys Jenkins (1996)	Bolivia	Better export performance has been associated with more competitive and stable real effective exchange rate and trade liberalization has not had a major direct impact on manufactured exports.
Anne O. Krueger (1998)	Developing Economies	Outer oriented strategies led more growth in the developing economies
Kaliaapa Kalirajan (2001)	India	Trade policy reforms has contributed positively to Gross Domestic Product (GDP), protected the interest of consumers, and benefited to the economy as a whole.
Newman Kwadwo Kusi (2002)	South Africa	Trade liberalization could not produce expected gains to export performance
A.S. Sidhu and Ratinder Kaur (2004)	India	Foreign trade reforms could not contribute positively to reduction of balance of payment deficit due to the reason that the percentage increases in exports was less than percentage increase in imports.
Musibau Adetunji Babatunde (2009)	Sub Saharan Africa	Trade liberalization stimulate export performance through increased access to imported inputs and evidence revealed that a more competitive and stable real effective exchange rate positively influence export performance.
Anthony P. Thirlwall (2000)	41 African and Asian countries	Trade liberalization and export performance is positively correlated but it depends on the production and demand characteristics of the goods produced and exported.
Penelope Pacheco-Lopez (2004)	Mexico	Trade reforms had a significant impact on trade, exports, and imports but the propensity to import has exceeded the propensity to export, which led to negative impact on the balance of trade.

In the light of above debate on the gains from Export-led Growth for the developing countries, the following methodology has been designed to address the objectives laid down for the present study.



DATA BASE AND RESEARCH METHODOLOGY

The secondary data have been used to analyze the performance of external sector of India. The secondary data have been taken from various sources, which include Economic Survey of India, and various issues of Reserve Bank of India. The data have also been taken from the Reports of Centre for Monitoring of Indian economy (CMIE), and Official Websites of the Government of India. The present study covers a comprehensive period of 15

years from 1995-96 to 2009-10 to evaluate the performance of exports with special focus on composition and direction of Indian exports.

The data on composition and direction of Indian exports have been taken from the Reserve Bank of India. To study the composition of Indian merchandise exports, the average percentage share of agricultural & allied products, ores and minerals, leather & manufacturing, chemicals & allied products, engineering goods, gems & jewellery, handicrafts, petroleum and others have been calculated for the period under study. The direction of Indian exports has been analyzed by calculating the percentage share of all the imperative destinations, namely, OECD* (Organization for Economic Cooperation and Development), OPEC* (Organization of

Petroleum Exporting Countries), Eastern Europe* and Developing countries*.

The performance of Indian exports under the trade liberalization period has been examined with the help of the Granger causality test. Therefore, to apply Granger Causality test, the quarterly data has been taken. There is a general consensus among the researchers that the number of observations should be more than thirty for the application of this test. So accordingly, the data on quarter basis was generated from the monthly data. The data used for this analysis is taken from 1996-97 Q1 to 2008-09 Q4, which comprises 52 observations**. All the data has been taken from Handbook of Statistics of Indian Economy published by the Reserve Bank of India (RBI). We have taken three variables namely, real exports (X), real imports (M) and real GDP (measured as economic growth) to study the causal relationship between exports and economic growth. The value of real exports is obtained by taking the value of exports in domestic currency and divided by the GDP deflator index (base year 2000). The GDP deflator index is used as price deflator for all nominal series to deflate the inflationary effects. The real exports, real imports and real GDP are transformed to natural logs denoted as lnX, lnM and lnGDP.

There are large number of empirical studies that validate the strong relationship between exports and economic growth. An assessment of the relationship between exports and economic growth has got more attention during the era of globalization. Several studies like Michaely (1977), Balassa (1978), Tyler (1981), Gupta (1985), Kavoussi (1984), Ram (1985), Sheehy (1990), and Hatemi and Irandoust (2002) found positive impact of exports on economic growth, while the others studies like Boltho (1996) and Medina Smith (2001) found negative or neutral effects and raise some doubts with regard to promoting exports as a comprehensive development strategy.

In the light of this controversy, an attempt has been made to apply the co-integration and vector error correction model to examine the ELG hypothesis in India during the post WTO regime. To set the stage for Granger Causality test, stationarity and the order of integration of the variables was initially examined through unit root tests. A number of unit root tests are available for this purpose. In the present study, the Phillips-Perron test (named after Peter C. B. Phillips and Pierre Perron) is used. It is a non parametric test, which is used to examine whether the variables are stationary or non-stationary and, also used to test the [null hypothesis](#) that a time series is [integrated of order one](#) i.e. I(1).

If the variables are integrated of order one, we may proceed further to calculate co-integration rank using the maximum likelihood test. For this purpose, we have used the procedure established by Johansen and Juselius (1990) and Johansen (1991) to examine the existence of a long run equilibrium relationship between exports and economic growth. After examination of the long run equilibrium relationship, the next step is to test the direction of causality using the error correction model of Engle and Granger (1987).

*The OECD includes Eastern Union (like Belgium, France, Italy, Netherlands and UK); North America (like Canada and USA), Asia and Oceania (like Australia and Japan) and other

OECD countries. The OPEC includes countries, namely, Indonesia, Iran, Iraq, Kuwait, Saudi Arabia and U.A.E. and Eastern Europe includes Romania and Russia. The developing countries include continent Asia, Africa and Latin American countries.

**To bring uniformity, quarterly data was developed on the basis of monthly data, as the GDP data were available on quarterly basis only.

If the variables have co integrating vector (or equation), it means causality exists in at least one direction. According to Engle and Granger (1987), if two series, say X and Y, are integrated, then there is a possibility of a causal relationship in at least one direction. The direction of a causal relationship can be identified in the Vector Error Correction Model (VECM). Engle and Granger (1987) found that, in the existence of co-integration, it always presents a corresponding error-correction representation, captured by the error correction term (ECT). This means that changes in the dependent variable are a function of the level of disequilibrium in the co-integrating relationship as well as changes in other explanatory variables (Bhattacharya, 2009). The ECT is used to determine long run adjustment of co-integration variables and the incorporation of ECT in the VECM allows us to detecting both short and long run causal relationship among variables.

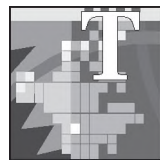
Hypotheses of the Study

For the purpose of the analysis, the following hypotheses are tested:

Table-2

Null Hypotheses	Alternative Hypotheses
1. H0: Exports Growth (X) does not cause GDP	H1: Exports Growth (X) cause GDP
2. H0: GDP does not cause Exports Growth (X)	H1: GDP cause Exports Growth (X)

SECTION III



RADE POLICY REFORMS IN INDIA DURING THE POST-LIBERALIZATION PERIOD

Many countries of the world adopted outward-looking strategies with a view to integrating themselves into the world economy to improve their growth prospects during the last quarter of the twentieth century. In the era of globalization, trade policy of each country reflects the main aim of achieving greater openness through export promotion strategies, liberal import policies and competitive exchange rate policies. In the light of the experience of other countries and in the expectation of the positive impact of export promotion led growth model, large scale reforms and the policy changes have been introduced in India since early nineties. India presents an interesting case in view of there increasing emphasis on outward-looking policies from a broader perspective. The reforms implemented in India during the post-reforms are not very different from the reforms undertaken by many developing countries. However, the difference lies in the speed with which these reforms have been implemented. India's reforms are being implemented in

a gradual manner like China. Nevertheless, the reasons for the gradual approach to reforms are different for China and India. Being the largest democracy with a pluralist society in the world has made it necessary for India to obtain a reasonable consensus across different interest groups before policy changes could be implemented and this has been the major cause for the slow pace of reforms. The main thrusts of trade policy reforms have been to open up India's trade and hence the policy measures had been related to export promotion and import liberalization' (Kalirajan, 2001).

In the expectation that trade liberalization accelerate the process of economic growth, India become the founder member of WTO by signing this agreement before 31 December, 1994.

The Trade policy of India was in need of major reforms as India could not expand its share in global exports. The relative bias against exports is highlighted by the fact that the exports remained stagnated between four to seven percent of GNP (Gross National Product) for about four decades and it was as low as 4.6 per cent in 1972-73, reached 7.2 per cent in 1976-77, and has since settled down to around 6 per cent during the 1980s (Kumar, et al. 1980). India's share in global exports has declined steadily throughout first four decades, from 2.4 per cent in 1948 to 0.4 per cent in 1984 and its share in exports of all developing countries has also declined, from 4.6 per cent in 1955 to 1.7 per cent in 1984 (ibid). Indian exporters faced many obstacles which affected their export prospects. The statistics reveals that the export growth in India has neither been adequate according to its requirements nor in line with the expansion of world trade or other developing countries.

Over the years, the significant changes in the foreign trade policy of India have been focused towards liberalization: Country-specific and commodity-specific measures have been taken to promote exports. Efforts have also been made to reorient institutional infrastructure towards creating an export friendly environment (Economic Survey of India, 1999-00) to achieve the higher economic growth. It is now widely recognized that major reforms in trade policy have accelerated India's transition towards a globally oriented market by stimulating exports and facilitating imports of indispensable inputs as well as capital goods. The trade liberalization episodes have generally reduced export-bias and supported the export-led-growth hypothesis. Trade policy reforms measures include free exports and imports; reduction and rationalization of tariff structure and removal of Non-Tariff Barriers; decentralization; liberalization of exchange rate regime; setting up of trading houses, Special Economic Zones, Export Promotion Industrial Parks; reservation of items for Small Scale Sector and reforms in labour laws; and Various exemptions under the EXIM policies to increase exports and imports and make the trade policy regime transparent and less cumbersome. The following trade policy reforms have been introduced from time to time by the Government of India during the Post Liberalization. The EXIM Policy measures of 1992-97, 1997-02, and 2002-07 are given in Appendix-I.

- In 1991 imports were regulated by means of a positive list of freely importable items. Since 1992 imports are regulated through a limited negative list rather than an examtive.

- Quantitative restrictions on imports of most intermediate inputs and capital goods have been eliminated.
- In July 1991 out of 5021 Harmonized System (H.S.) tariff lines (6 digits), 80 percent i.e. 4000 lines were subject to import licensing restrictions. As of December, 1995 more than 3000 tariff lines covering raw materials, intermediates and capital goods were made free of import licensing requirements.
- A large number of items covering 1487 tariff lines whose import is otherwise restricted, are now allowed to be imported under freely tradable special import licences, which are granted to the export houses/ trading houses/star trading houses and super star-trading houses.
- Control on exports has been liberalized to the extent that now all goods may be exported without any restriction except the few items mentioned in the negative list of exports. The items in the negative list are regulated because of strategic considerations, environmental and ecological grounds, essentially domestic requirements, employment generation, and on grounds of socio-cultural heritage. (Economic Survey, 1995-96)
- Import restrictions were gradually lifted in the course of 1991-92 and the new liberalized exchange rate management system was introduced in the budget in 1992-93 to remove import licensing in most capital goods, raw materials, intermediates and components and introduced a dual exchange rate system with one rate effectively floated in the market (Mathur, 2006)

SECTION-IV



EXPORT PERFORMANCE DURING POST WTO PERIOD

Global economic integration in all its manifestations aimed at improving allocation of resources, raising economic growth, promoting technology transfer, enhancing market size, creating a fair competition, reducing poverty and to raise the living standards of people (Wolf, 2005). The open trade regime has produced huge opportunities for higher growth by creating positive conditions to flourish trade at global level. The government of India as discussed in the previous section has introduced a variety of reforms in the foreign trade policy to compete at international level. However, how these policy changes have affected the performance of Indian exports is an issue of debate. The following discussion is focused on this aspect.

Dynamics of Commodity Composition of Indian Exports

Table 3 presents the commodity composition of Indian exports and the items of composition of the Indian exports include, namely, agricultural & allied products, ores & minerals, manufactured goods and petroleum and others. The principal item of Indian Exports has been represented by agricultural based commodities. The data reveals that it contributes in the range of 13-14 percent of total exports. The share of agricultural & allied products was 19.13 per cent in 1995-96, which increased to 20.50 per cent in 1996-97. However, it declined to 18.93 per cent in 1997-98, 18.16 per cent in 1998-99, and 15.23 per cent in 1999-2000, which further declined to 13.40 per cent in 2000-01. It slightly increased to

13.46 per cent in 2001-02 as compared to the previous year, which again declined to 12.73 per cent in 2002-03, 11.79 per cent in 2003-04, 10.14 per cent in 2004-05 and 9.91 per cent in 2005-06. Its share improved for two consecutive years, namely, 10.03 per cent in 2006-07 and 11.31 per cent in the year 2007-08, which again declined to 9.59 per cent in 2008-09. The analysis of data reveals that the share of agricultural and allied products declined to 9.59 per cent in 2008-09 from 16.05 per cent in 1994-95. So the study found that the share of agricultural commodities has declined during the post WTO period.

The analysis of data reveals that the percentage share of ore and minerals in the total Indian exports has continuously declined in the first five years of WTO period. The annual growth rate of ore and minerals was 3.69 per cent in 1995-96, which declined to 2.49 per cent in 1999-2000. However, annual growth rate of ores and minerals slightly increased from 2.58 per cent in 2000-01 to 3.71 per cent in 2003-04, which further increased to 6.08 per cent in 2004-05. It declined to 5.97 per cent and 5.54 per cent in 2005-06 and 2006-07 respectively. The share of ore and minerals slightly improved to 5.59 per cent in recession period of 2007-08, which further declined to 4.27 per cent in 2008-09.

The annual average percentage of the share of manufactured goods in Indian exports was 74.68 per cent in 1995-96, which declined to 73.54 per cent in 1996-97. However, it improved during the next three consecutive years and reached to 75.83 per cent in 1997-98, 77.64 per cent in 1998-99 and 80.7 per cent in 1999-00, which declined for two consecutive years to 77.05 per cent in 2000-01 and 76.13 per cent in 2001-02. In 2002-03, it slightly increased to 76.33 per cent. The share of manufactured goods again declined to 75.95 per cent in 2003-04, 72.69 per cent in 2004-05, 70.38 per cent in 2005-06, 67.20 per cent in 2006-07, which further declined to the level of 63.19 per cent in 2007-08. From the analysis of data, the study found that the annual average share of manufactured goods was 74.68 per cent in 1995-96, which declined to 67.37 per cent during the post WTO period.

Table 3 further reveals that the share of petroleum products in the total exports was 1.43 per cent in 1995-96, which rose to 14.67 per cent in 2008-09. The analysis reveals that the share of petroleum products has shown a declining trend during the period from 1995-96 to 1999-00. The share of petroleum products was increased from 4.19 per cent in 2000-01 to 17.41 per cent in 2007-08, which declined to 14.67 per cent in post recession period of 2008-09.

Table 3: Commodity Composition of Indian Exports

(Rs. Crore)

Year	Total	Primary Products		Manufactured goods								Petrlm	Others
		Agr & allied prod.	Ore & min	Total	Lthr & mnf	Chm & allied prds	Eng goods	Textiles & textile prds	Gems & jewel	Handicrafts	Other mnf gds		
1994-95	82674	13269 16.05	3103 3.75	64067 77.49	5057 6.12	9630 11.65	11015 13.32	22349 27.03	14130 17.09	1213 1.47	674 0.81	1309 1.58	926 1.12
1995-96	106353	20344 19.13	3930 3.69	79433 74.68	5861 5.51	12032 11.31	14688 13.81	26865 25.26	17644 16.59	1452 1.36	891 0.83	1518 1.43	1128 1.06
1996-97	118817	24363 20.50	4162 3.50	87377 73.54	5701 4.79	13890 11.69	17618 14.82	30657 25.80	16872 14.19	1689 1.42	951 0.80	1710 1.44	1205 1.01
1997-98	130101	24626 18.93	3943 3.039	8660 75.83	6157 4.73	16339 12.56	19832 15.24	33636 25.85	19867 15.27	1954 1.50	876 0.67	1311 1.011	560 1.19
1998-99	139753	25387 18.16	3759 2.69	108506 77.64	6987 4.99	16867 12.07	18780 13.44	37301 26.69	24945 17.85	2664 1.91	963 0.68	376 0.26	1725 1.23
1999-00	159561	24301 15.23	3970 2.49	128761 80.76	891 4.31	20395 12.78	22325 13.99	42562 26.67	32509 20.37	2897 1.81	1182 0.74	169 0.10	2361 1.47
2000-01	203571	27288 13.40	5267 2.58	156858 77.05	8883 4.36	26889 13.20	31150 15.30	51555 25.32	33733 16.57	3022 1.481	626 0.79	8542 4.19	5615 2.75
2001-02	209018	28144 13.46	6021 2.88	159146 76.13	9110 4.36	28862 13.80	33183 15.87	48677 23.28	34845 16.67	2618 1.25	1852 0.88	10107 4.83	5600 2.67
2002-03	255137	32473 12.73	9660 3.78	194765 76.33	8945 3.50	36080 14.14	43715 17.13	56221 22.03	43701 17.13	3801 1.48	2302 0.90	12469 4.88	5770 2.26
2003-04	293367	34616 11.79	10885 3.71	222829 75.95	9939 3.39	43406 14.79	57005 19.43	58779 20.03	48586 16.56	2296 0.78	2818 0.96	16397 5.58	8640 2.94
2004-05	375340	38078 10.14	22819 6.08	272872 72.69	10881 2.89	55911 14.89	77949 20.76	60906 16.22	61834 16.47	1696 0.45	3696 0.98	31404 8.36	10166 2.71

2005-06	456418	45220 9.91	27288 5.97	321261 70.38	11944 2.61	65390 14.33	96157 21.06	72618 15.91	68753 15.06	2045 0.45	4355 0.95	51533 11.29	11116 2.43
2006-07	571779	57392 10.03	31686 5.54	384261 67.20	13650 2.38	78442 13.71	133790 23.39	78613 13.75	72295 12.64	1982 0.34	5489 0.95	84520 14.78	13920 2.43
2007-08	655864	74209 11.31	36717 5.59	414599 63.21	14101 2.15	85328 13.01	150435 22.94	78209 11.92	79228 12.07	2046 0.31	5252 0.80	114192 17.41	16147 2.46
2008-09	840755	80649 9.59	35877 4.27	566402 67.37	16355 1.95	104442 12.42	217482 25.87	92062 10.91	28575 15.31	384 0.16	6102 0.73	123398 14.67	34429 4.1

Note: 1. Figures in dark refer to percentages

2. Handicrafts excluding handmade carpets

Source: - 1. Data collected from RBI, database (Handbook of Statistics of Indian Economy, 2009-10) and averages calculated by author. 2. Data for 2008-09 are provisional and for 2007-08 are revised

The analysis of data on the basis of commodity composition of Indian exports during the postWTO-period reveals that Indian export sector has remained under pressure. Several policy reforms were introduced in the Indian Foreign Trade Policy, but it could not improve the performance of exports during the process of trade liberalization.

Direction of Indian Exports

Table 4 shows the destination of Indian exports. The foremost destination of Indian exports includes OECD, OPEC, Eastern Europe, Developing countries and others. The analysis of data on direction of Indian exports reveals that the share of OECD countries has sharply declined from 55.68 per cent in 1995-96 to 37.44 per cent in 2008-09. The share of OECD countries in Indian Exports has shown a declining trend except the years of 1997-98, 1998-99 and 2002-03 respectively. The share of Indian exports to European Union (EU) has also shown a declining trend and its share decreased from 27.38 per cent in 1995-96 to 21.32 per cent in 2008-09. Similarly, the share of Indian exports to North America and Asia & Oceania has also declined from 18.32 per cent and 8.34 per cent in 1995-96 to 12.22 per cent and 2.52 per cent in 2008-09 respectively.

However, the share of Indian exports to OPEC countries has shown an upward trend and has increased from 9.68 in 1995-96 to 21.27 per cent in 2008-09. It is a major change in the destination pattern of Indian exports during the Post-WTO period. On the other hand, the share of Eastern Europe in Indian exports has sharply declined from 4.21 per cent in 1995-96 to 1.10 per cent in 2008-09.

The share of developing countries in Indian exports as a group has increased from 28.93 percent in 1995-96 to 37.5 per cent in 2008-09. The share of Asia, Africa and Latin American countries in Indian exports has also increased from 22.98 per cent, 4.76 per cent and 1.18 per cent in 1995-96 to 28.03 per cent, 6.33 per cent and 3.13 per cent respectively in 2008-09. The increase in share of developing countries in Indian exports is a major development during the WTO phase. The study found that the destination of Indian exports has changed during the Post-WTO period. In other words, Indian exports have reached to new areas of international market, as a result of which geographic base has expanded during the period under study.

Table 4: Direction of Indian Exports

Year	Total	OECD				OPEC	Eastern Europe	Developing Countries				
		Total	EU	N. America	Asia & Oceania			Total	Asia	Africa	Latin American countries	Others
1994-95	82674	48491 58.65	22075 26.70	16602 20.08	7623 9.22	7626 9.22	3319 4.01	21883 26.47	17921 21.67	2755 3.33	1207 1.46	1355 1.64
1995-96	106353	59223 55.68	29129 27.38	19487 18.32	8870 8.34	10299 9.68	4482 4.21	30768 28.93	24444 22.98	5060 4.76	1264 1.18	1580 1.49
1996-97	118817	66035 55.57	30726 25.86	24525 20.64	8722 7.34	11462 9.65	3900 3.28	35630 29.99	28875 24.30	5046 4.24	1709 1.44	1790 1.51
1997-98	130101	72415 55.66	33986 26.12	26893 20.67	8952 6.88	13110 10.08	4770 3.66	38325 29.46	29629 22.77	6087 4.68	2609 2.00	1482 1.14
1998-99	139753	81045 57.99	37639 26.93	32279 23.09	8819 6.31	14938 10.68	4430 3.17	38795 27.76	28795 20.60	7413 5.30	2587 1.85	546 0.39
1999-00	159561	91461 57.32	40656 25.47	38886 24.37	9330 5.84	16882 10.58	5603 3.51	45326 28.41	35557 22.28	6737 4.22	3033 1.90	291 0.18

2000-01	203571	107237 52.68	47561 23.36	45509 22.35	10341 5.08	22157 10.88	6020 2.96	59447 29.20	45858 22.53	8938 4.39	4652 2.28	8709 4.28
2001-02	209018	103120 49.33	46957 22.46	43391 20.75	9494 4.54	24917 11.92	5984 2.86	64553 30.88	49278 23.57	10783 5.15	4492 2.14	10444 4.99
2002-03	255137	127679 50.04	55763 21.86	56110 21.99	11789 4.62	33318 13.06	6040 2.37	86445 33.88	67661 26.52	12465 4.88	6319 2.48	1655 0.64
2003-04	293367	136151 46.40	63827 21.76	56306 19.19	10934 3.73	43858 14.95	7147 2.44	104697 35.69	84674 28.86	14219 4.84	5805 1.98	1513 0.51
2004-05	375340	163977 43.69	78808 20.99	65746 17.51	13216 3.52	59343 15.81	7999 2.13	141971 37.82	112187 29.89	20123 5.36	9661 2.57	2051 0.54
2005-06	456418	202936 44.46	99106 21.71	81351 17.82	15250 3.346	7483 14.78	8768 1.92	175927 38.55	137165 30.05	25232 5.53	13531 2.96	1305 0.28
2006-07	571779	240080 41.98	121296 21.21	90393 15.81	19416 3.39	94812 16.58	7032 1.22	228136 39.91	70190 29.76	39274 6.86	18671 3.26	1719 0.30
2007-08	655864	258764 39.45	138860 21.17	88482 13.49	20784 3.16	108662 16.57	7395 1.13	278487 42.46	207251 31.59	49241 7.51	21995 3.35	2556 0.39
008-09	840755	314835 37.44	179214 21.32	102705 12.22	21241 2.52	178789 21.27	9256 1.103	15265 37.52	35729 28.03	53242 6.33	26295 3.13	22610 2.69

Note: Figures in dark refer to percentages.

Source: 1 Data collected from RBI, database and Author's Calculations

2 Data for 2008-09 are provisional and for 2007-08 are revised.

Exports and Economic Growth (Gross Domestic Product)

Exports and Imports as Percentage of GDP: The picture of Indian exports, imports and their contribution to the GDP of the country are presented in Table 5. The data shows a significant increase in the exports and imports in terms of its share in the GDP for the period 1995-96 to 2009-10.

The share of exports in GDP of the country was 8.92 per cent in 1995-96, which increased to 15.80 per cent in 2008-09, and the share of imports in GDP was 10.29 per cent in 1995-96, which increased to 25.83 per cent in 2008-09. The increasing share of

export and import as a percentage of GDP shows the positive impact of liberal policies on the Indian economy. It also implies that integration of Indian economy with the rest of the world has increased during the Post-WTO period. Furthermore, both exports and imports as percentage of GDP have increased. However, the higher share of Indian GDP is going to meet the requirements of import payments. The pro export-led growth model school of thought suggests that the surplus generated from the exports contribute to the development of the developing countries, but it could not happen in case of India.

Table 5: Exports and Imports as Percentage of Gross Domestic Product (GDP)

Year	Exports (Rs. Crore)	Imports (Rs. Crore)	Trade Balance	Export (% of GDP)	Imports (% of GDP)	Exports as a percentage of Imports
1995-96	106352	122678	-16326	8.92	10.29	86.7
1996-97	118817	138920	-20103	8.62	10.08	85.5
1997-98	130101	154176	-24076	8.52	10.1	84.4
1998-99	139752	178332	-38580	7.98	10.18	78.4
1999-00	159095	215529	-56434	8.15	11.04	73.8
2000-01	201356	228307	-26951	9.58	10.86	88.2
2001-02	209018	245200	-36182	9.17	10.76	85.2
2002-03	255137	297206	-42069	10.39	12.11	85.8
2003-04	293367	359108	-65741	10.65	13.04	81.7
2004-05	375340	501065	-125725	11.92	15.91	74.9
2005-06	456418	660409	-203991	12.73	18.41	69.1
2006-07	571779	838048	-266269	13.85	20.3	68.2
2007-08	655864	1005159	-349295	13.89	21.28	65.2
2008-09	840755	1374436	-533681	15.8	25.83	61.17
2009-10	845125	1356469	-511344	-	-	62.3
Average	5358276/15	7675042/15	-2316767/			
15	=357218.4	=511669.5	15=-154451			

Source: Foreign Trade and Balance of Payments, Centre for Monitoring Indian Economy, 2010 and Author's calculations

The trend of Indian exports and imports as a percentage of GDP during the post WTO period is presented in Figure 1. It is visible from the Figure 1 that the share of exports and imports

as a percentage of GDP has increased during the study period but the increase is much higher in case of imports.

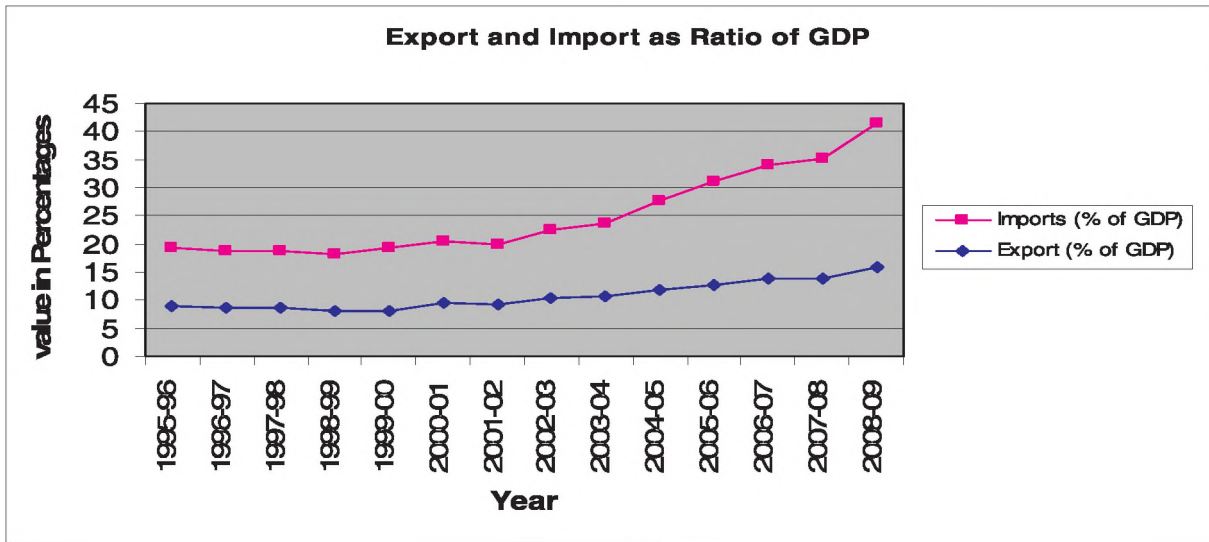


Figure 1

Exports, Imports and Balance of Trade: The picture of Indian exports, imports and balance of trade are clear from Table 5. The data reveals that the trade balance shows a negative balance of (-) Rs. 16326 in 1995-96, which further increased to (-) Rs. 511344 in 2009-10. The analysis found that both exports and imports have increased during this period. The share of exports as a percentage of imports was 86.7 per cent in 1995-96, which declined to 62.3 per cent in 2009-10. This development has taken place due to the fact that the imports have increased at a higher rate as compared to exports, which has put negative impact on the balance of trade during the study period. The trends of Indian exports, imports and trade balance during the post WTO period are presented in Figure 2

It is clear from figure 2 that although the share of both exports and imports has increased during the study period but due to higher increase in imports has further widened the trade deficits and balance of payments deficits.

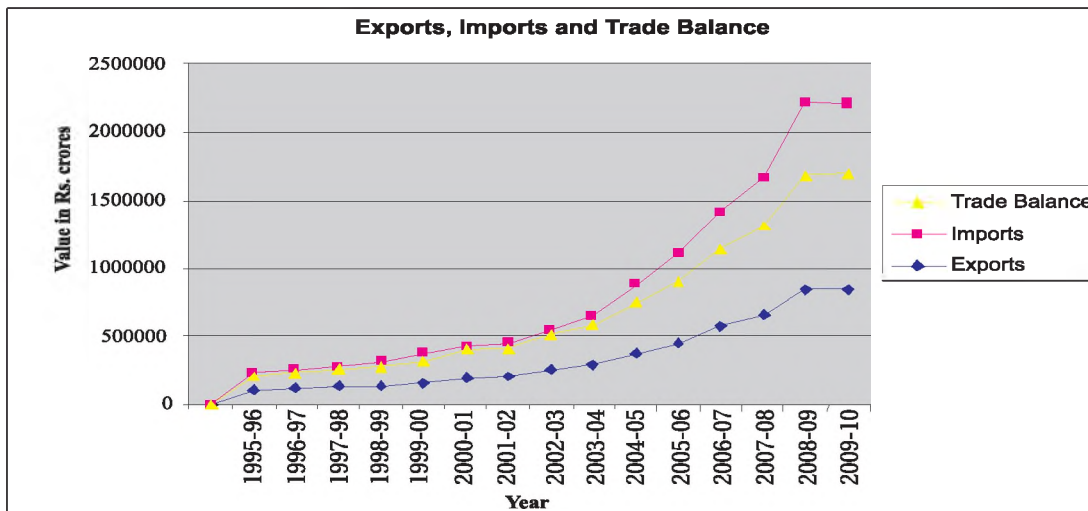


Figure 2

Export led Growth Hypothesis: Empirical Evidence: The role of exports in the developing countries has been subject to a wide range of empirical and theoretical studies. Many economists and scholars have not been agreed upon the applicability and validity of ELG hypothesis. A vast literature concerned with the export-led growth hypothesis provides mixed results.

As discussed in the previous section of research methodology, the results of unit root test is presented in Table 6, which confirms that the variables, namely, real exports, real imports and real GDP are non-stationary in levels but they are stationary at first difference. It means that all the variables are integrated of order 1 or I (1). It fulfills the initial property of co-integration test, which can be used to investigate the existence of a long run relation between the variables. This is first step in exploring the causality among the variables.

Table 6: Univariate Stationary Properties of Time Series Phillips Perron Test Results (Intercept)

Variable	Level	First difference T statistics
LnX	-0.5029 (0.8819)	-13.526 (0.000*)
LnM	-0.6544 (0.8487)	-7.491 (0.000*)
LnGDP	-0.4116 (0.8991)	-16.625 (0.000*)

*MacKinnon (1996) one-sided p-values

The critical values for the variables in levels are -2.919 and -2.597 at 5 % and 10% significance level respectively. The size of bandwidth is chosen based on the Newey-West method. In order to capture the impact of variables observed in the past time period in explaining the future performance (Bhattacharya, 2009), the optimal lag length p is required. It is determined through combination of information criterion (minimum of AIC, FPE, HQIC, SBIC), which is 4 in the present study. We have used the maximum likelihood test procedure

established by Johansen and Juselius (1990) and Johansen (1991) to examine the existence of a long run equilibrium relationship between exports and economic growth (measured by GDP). According to the Trace test and Max eigenvalue test, the null hypothesis of no co-integration has been rejected on the basis of existence of 1 co-integration equation (both tests at 5 per cent significance level). The results of Johansen Co-integration test are presented in Table 7.

Table 7: Johansen Co-integration Test Statistics

Unrestricted Cointegration Rank Test				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.479621	35.58544	29.79707	0.0096
At most 1	0.098588	4.885138	15.49471	0.8209
At most 2	0.000147	0.006899	3.841466	0.9332
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values				
Hypothesized No. of CE(s)	Eigenvalue	Max-eigen Statistic	0.05 Critical Value	Prob.**
None *	0.479621	30.70031	21.13162	0.0017
At most 1	0.098588	4.878239	14.26460	0.7571
At most 2	0.000147	0.006899	3.841466	0.9332
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values				

Granger argued that standard Granger or Sims tests are likely to provide invalid causal inferences when the time series are co-integrated (Oskooee and Alse, 1993). So the error correction model introduced as an additional way through which Granger causality could be determined. The causality can be verified through the statistical significance of the t-test of the lagged error correction terms or the f-test applied to the joint significance of the sum of the lags of each explanatory variable (Elbeydi, et al. 2010). The findings of present study suggest that there exist a significant long term bidirectional causation between the variables i.e. export causes economic growth and economic growth also causes export. The coefficient of Error correction contains the information about whether the past values of the variables affect the current values of the variables under study and, a significant coefficient implies that past equilibrium errors plays a role in determining the current outcomes (Bhattacharya, 2009). However, we found that there is a strong causality from export growth to GDP and vice-versa during the post WTO period. Further, the empirical results suggest that both the variables, exports and economic growth are related with past deviations and any increase in export growth would have a positive impact on the economic growth in the both short-run and long-run. The result of VECM reveals that export has been instrumental in accelerating economic growth in India during the post liberalization period.

Table 8: Causality Results Based on Vector Error Correction Model (VECM)

Error correction	(lnGDP)	$\hat{\Delta}$ (lnX)	? (lnMt)
CointEq1	-0.064403 [-1.91194]	0.500929 [1.93371]	-0.185097 [-0.61477]
D(LNGDP(-1))	-0.239791 [-2.33962]	1.047985 [1.32959]	0.697941 [0.76186]
D(LNX(-1))	-0.069263	0.257239	0.103383

	[-1.61383]	[0.77936]	[0.26949]
D(LNM(-1))	0.013439 [0.42727]	-0.151922 [-0.62805]	-0.169798 [-0.60396]
C	0.021519 [3.17338]	-0.039334 [-0.75423]	0.012603 [0.20792]
R-squared	0.988316	0.518317	0.373711
Adj. R-squared	0.983713	0.328563	0.126991
F-statistic	214.7245	2.731523	1.514717



CONCLUSION/RECOMMENDATIONS

In the light of above discussion, the study concludes that the Indian economy has integrated with the rest of the world during the post WTO period. The study found that the share of agricultural commodities of Indian exports has declined during the post WTO period. The share of ore and minerals remained inconsistent during this period. The share of manufactured goods also declined from 74.6 per cent in 1995-96 to 67.37 per cent in 2008-09. So the analysis of Indian exports on the basis of commodity composition reveals that significant changes have taken place in the Indian exports during the post WTO period.

The analysis of direction of Indian exports reveals that the geographic base of Indian exports has also changed during the period under study. The share of Indian exports to OPEC countries and the developing countries has increased during the post WTO period. On the other hand, share of Eastern Europe has sharply declined during this period. So the study concludes that Indian exports have reached to new areas of international market.

The analysis of exports and imports as a percentage of Gross Domestic Product (GDP) shows the impact of liberal policies on the Indian economy. The study found that though the share of both exports and imports as a percentage of GDP has increased during the period under study, but the increase has been much higher in case of imports, which has further

widened the trade deficit. Moreover, the higher share of Indian GDP has been eaten by the increasing liabilities on account of import payments, as it happened in Mexico after trade liberalization. The pro export-led growth model school of thought suggests that the surplus generated from the exports contribute to the development of the developing countries, but it could not happen in case of India.

On the basis of empirical evidence, the present study found that there exist a significant long-term bidirectional causation between the determinants i.e. export causes economic growth and economic growth has also influenced export growth during the post WTO period. Based on the VECM results, the evidence suggests that both the variables exports and economic growth are related with past deviations and higher export growth have a positive impact on the economic growth in both short-run and long-run. Our study reveals that the exports have positively contributed to accelerate the economic growth of India during the post liberalization period.

The study strongly recommends for the review of foreign trade policy, which could strengthened the domestic base of the Indian economy for sustainable development and could positively contribute to reduce the increasing pressure on the Balance of Trade and Balance of Payments. There is a scope for further analysis to investigate the impact of export-led economic growth model on the transfer of technology, level of competition and reduction of poverty in India during the post-WTO period.

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Appendix-I

EXIM Policy Measures 1992-97

- The new five-year Export-Import Policy (1992-97) was introduced with effect from April 1992. Several schemes were introduced to eliminate regulatory measures and discretionary
- The Liberalised Exchange Rate Management System (LERMS) was introduced on March 1, 1992.

- The import licensing system was eliminated for capital goods, intermediates and components and these items could be imported on Open General Licence (OGL) subject to payment of tariffs.
- The 15% Foreign Exchange Conservation (Travel) Tax was abolished w.e.f. June 1992.
- A new deposit scheme was introduced in June 1992 to promote the investments from Non-Resident Indians.
- The Export promotion capital goods (EPCG) scheme was introduced to boost exports.
- The other major schemes, namely, Duty Exemption Scheme (DES), Scheme for Gems and Jewellery, and policies enlarging the scope of instruments of export promotion such as export oriented units (EOU) and export processing zones (EPZ), joint ventures and different types of trading houses were introduced.

EXIM Policy Measures 1997-2002

- The peak rate of import duty was reduced to 40 per cent advalorem except for passenger luggage, alcoholic beverages, dried grapes and a few other products during 1997-98.
- The peak rates for imports of raw materials and capital goods for projects were reduced to 30 per cent and 20 per cent respectively.
- A surcharge of 10% on basic duty was introduced to control imports of consumer goods in 1998-99.
- The peak tariff rate of 35% plus a 3.5% surcharge on tariffs and a 4% special duty on items from which QRs have been removed. In addition, countervailing duties ranging from 16% to 32% are imposed on certain goods. Basic tariffs have been increased on vegetable oils from 25% to 45%, on tea, coffee, copra and coconut from 35% to 70%. Uniform rates of 75% and 85% are imposed on crude edible oils and refined oils respectively. Maximum tariffs on imports of rice are 80%.
- The total numbers of customs duty rates are 35 per cent, 25 per cent, 15 per cent and 5 per cent during 2001-02. The Special Additional Duty imposed in 1998-99 (for all products except for petroleum products) is still applicable. However, the surcharge of 10% on basic duty that was introduced in 1998-99 is now removed.

EXIM Policy Measures 2002-07

- All QRs on exports were removed.
- Duty Entitlement Pass Book scheme to be continued.
- Duty Free Credit Entitlement Certificate Scheme for service providers revamped/ recast into the served from India scheme.
- Exclusive services Export Promotion Council to be set up.
- EPCG and other schemes to continue with further improvements
- Transport assistance for export of agro products – special focus on cottage sector and handicrafts
- Major new incentives for SEZs include it concessions and permission to set up overseas banking units
- Benefits for export-oriented industrial clusters
- Incentive package for hardware sector
- Procedural simplifications to further reduce transaction costs – new commodity classification for imports and exports adopted
- Diversification of markets with new programs for Africa & CIS
- Quantum increase in assistance to states for export development and market access initiative
- New Scheme called 'Target Plus Scheme' introduced.
- EPCG Licence can also be used for import of capital goods for supply to specified notified projects.
- Import of second-hand capital goods to be permitted without any age restrictions. Minimum depreciated value for plant and machinery to be located into India reduced from Rs. 50 crores to Rs. 25 crores.
- All exporters with minimum turnover of Rs. 5 crores and good track record to be exempt from furnishing bank guarantee in any of the schemes.
- All goods and services exported, including those from Domestic Tariff Area units, to be exempt from Service tax.
- EOUs to be exempted from service tax in proportion of export of goods and services
- EOUs to be permitted to retain 100 percent of export earnings in Export Earners Foreign Currency (EEFC) accounts.

Trade Policy Measures of 2008-10

The latest trade policy measures for 2008-09 and 2009-10 include the following:

- Interest subvention of 2 per cent from December 1, 2008 to September 30, 2009 to the labour-intensive sectors of exports such as textiles (including handloom), handicrafts, carpets, leather, gems and jewellery, marine products and SMEs. This was further extended to March 2010.
- Inclusion of handicrafts items in the Vishesh Krishi and Gram Udyog Yojana (VKGUY);
- Provision of an additional Rs 1,100 crore to ensure full refund of CST/terminal excise duty/duty drawback claims on deemed exports.
- Extension of the DEPB scheme till the end of December 2010.
- Restoration of DEPB rates for all items where they were reduced in November 2008 and increase in duty drawback rates on certain items effective from September 1, 2008.
- Provision of additional fund of Rs 1,400 crore for the textile sector to clear the backlog claims of the Technology Upgradation Fund (TUF).
- Excise duty reduction across the board by 4 per cent for all products except petroleum products and those products where the current rate was less than 4 per cent.
- Extension of the adjustment assistance scheme to provide enhanced Export Credit Guarantee Corporation (ECGC) cover

at 95 per cent to badly hit sectors up to March 2010.

- Sections 10A and 10B related to sunset clauses for STPI and EOUs schemes respectively extended for the financial year 2010-11. Anomaly removed in Section 10AA related to taxation benefit of 'unit vis-à-vis assessee';
- Additional items allowed within the existing duty-free imports entitlement for some employment-oriented sectors like sports goods, leather garments, footwear and textile items.
- Measures related to service tax which include, among others, exemption from service tax on services linked to exports like the transport of goods by road and commission paid to foreign agents.
- Diversification of exports to emerging markets of Africa, Latin America, Oceania and CIS countries under the Focus Market Scheme and Market Linked Focus Product Scheme.
- Setting up a Directorate of Trade Remedy Measures to support Indian industry and exporters especially the MSMEs, in availing of their rights through trade remedy instruments under the WTO framework.
- Higher support for market and product diversification and additional resources under the MDA and MAI.
- Introduction of EPCG at zero duty for engineering and electronic products, basic chemicals, pharmaceuticals, apparels and textiles, plastics, handicrafts, chemicals and allied products and leather and leather products till March end 2011.
- Duty drawback facilities on jewellery exports to neutralize duty incidence
- Expanding the Market Linked Focus Product Scheme to bicycle parts, motor cars and motor cycles, apparels and clothing accessories, auto components etc. for exports from April 4, 2009 to September 30, 2009.
- Enhancement of the Export Obligation Period under the Advance Authorization Scheme from 24 to 36 months without payment of composition fee.
- Widening the coverage of the ECGC by making available back up guarantee to the ECGC to the extent of Rs350 crore to enable it to provide guarantees for exports to difficult markets/products.
- Abolishing basic customs duty of 5 per cent on rough / unworked corals.
- Constituting two high-level committees, one chaired by the Prime Minister and the other by the Cabinet Secretary for regular monitoring.
- A Committee under the Chairmanship of Finance Secretary constituted to resolve all problems related to non-availability of dollar credit to exporters by the concerned Banks.
- To accelerate exports and encourage technological up gradation, additional duty credit scrips for status holders @ 1 per cent of the f.o.b. value of past exports for certain specified sectors upto March end 2011.
- New incentives in January 2010 by adding new products in FPS, new products and markets under MLFPS, new products under VKGUY and new markets under FMS.

MODELING AGGREGATE PRODUCTION PLANNING PROBLEMS AS LINEAR PROGRAMS

Richard Sandbothe, Ramesh Soni

ABSTRACT

Aggregate production planning (APP) seeks to determine production levels for a company's product families over a 12 to 18-month planning horizon. However, the coverage of methods available to create feasible, low-cost aggregate production plans in many production and operations management textbooks does not begin to capture the complexity of aggregate production planning, especially its multiperiod, multiproduct environment. More sophisticated solution procedures such as linear programming receive little or no coverage at all. This paper will explain how to model different APP environments using linear programming. Examples of each environment are included.

Keywords: *Aggregate Production Planning, (APP), Aggregate Planning, Linear Programming, LP*

INTRODUCTION

Aggregate production planning (APP) is a medium-range component of a company's overall production planning system. At this planning stage, production levels for product families are determined in order to meet a given demand pattern over the planning horizon (Cox & Stone, 2010).

The minimum cost aggregate production plan may result from any one of three "pure" strategies or a mixed-strategy consisting of a combination of any two, or all three pure strategies Heizer & Render, 2011; Stevenson, 2009). The pure strategies are:

- (i) Use inventory and stockouts as a buffer to separate production from demand.
- (ii) Change the utilization of the workforce through overtime and undertime to match production with demand.
- (iii) Change the size of the workforce through hiring and layoffs to match production with demand.

For students in a first course in operations management, aggregate production planning can be an excellent introduction to the challenges involved in developing a feasible, low-cost production plan.

However, the coverage of methods available to create feasible, low-cost production plans in many production and operations management textbooks does not begin to capture the complexity of aggregate production planning, especially its multiperiod, multiproduct environment. More sophisticated solution procedures such as linear programming receive little or no coverage at all.

Heizer and Render (2011) and Stevenson (2009) discuss why linear programming and other mathematical modeling techniques are not widely used in industry for activities such as aggregate production planning. According to them, mathematical modeling techniques tend not to be accepted by managers as decision making tools because:

- (i) Mathematical models are too unrealistic. Managers complain that some modeling assumptions, such as linear costs or a deterministic environment, do not capture the complexity of aggregate production planning and managers will not use them if they are not realistic.
- (ii) Mathematical solution techniques are too complicated. Managers do not understand how the techniques work and managers will not use them if they do not understand them.

There are actually two competing model criteria here: the model's level of realism of a planning activity and the level of managerial understanding of how the model works.

Models are abstractions of reality. In model building, there is a trade-off between realism and abstraction but also a trade-off between complexity and simplicity. If the reality of a decision is complex and difficult to understand, a model would be constructed which gives up some of that realism in return for a better understanding of the decision to be made.

Another approach would be to increase managers'

understanding of mathematical modeling techniques, specifically how to model various decision environments, so that through experience, more realistic planning models can be constructed. That is our purpose in this paper.

This paper will explain, within the context of the three pure strategies, how to model different APP environments using the mathematical modeling technique of linear programming. The modeled decision problems can then be solved by linear programming software such as LINDO (Schrage, 1997) or a spreadsheet application such as Excel with the Solver add-on .

The next section of the paper reviews the relevant literature. In Section 3, the basic concepts, assumptions, and definitions used throughout the rest of the paper are introduced and a simple production planning problem is created and studied. Section 4 looks more closely at the linkage between inventory and/or stockouts between neighboring time-periods. The discussion will illustrate a variety of options available under Pure Strategy I.

Pure Strategies I and II both involve changing production capacity and are discussed together in Section 5. The formulation and solution of a multiperiod-multiproduct APP problem appears in Section 6. Section 7 concludes the paper with discussion and a suggestion for future research.



VIEW OF RELEVANT LITERATURE

Aggregate production planning is an approach to plan for capacity to meet the medium-term demand forecast over a 12 to 18 month period. Aggregate production planning has been a subject of research since the 1950s. Holt, Modigliani and Simon (1955) proposed a Linear Decision Rule (LDR) approach for finding an optimal production and employment schedule, given quadratic cost functions for inventory, labor and overtime costs. In another early work by Bowman (1956), a specialized linear optimization technique called the Transportation Method was proposed to find the cost minimization solution to production planning. A more generalized approach using Linear Programming (LP) to find an optimal mix of production and employee levels was first proposed by Hanssmann and Hess (1960). The LP approach was extended further by Goodman (1974) to incorporate multiple objective functions by using Goal Programming. Linear programming continues to be a useful tool in modeling and solving large-scale optimization problems, including those involving production planning and scheduling (see for example, Sang-jin and Logendran (1992), Wang and Liang (2005), and Wu (2010).

Others have proposed methods for finding satisfactory, if not optimal, aggregate production planning solutions. Interested readers should see, for example, Bowman (1963), Jones (1967), Taubert (1968) and Lee and Khumawala (1974).

Saad (1982) surveyed and classified then existing aggregate production planning models into two broad categories: descriptive and normative models. Based on Saad's work, Sakalli, (2010) et al. classified traditional models of aggregate production planning into six categories: 1) linear programming, 2) linear decision rule (LDR), 3) transportation, 4) management coefficient approach, 5) search decision rule (SDR), and 6) parametric production planning models. Some

of these models have made their way into modern operations management textbooks.

Six current textbooks in production and operations management were reviewed for their coverage of aggregate production planning. All textbooks mentioned the three pure strategies in some form and also the concept of a mixed (or hybrid) strategy.

Table : Textbook Procedures for Generating an Aggregate Production Plan

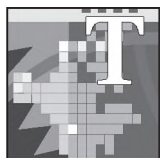
Author	Trial-and-Error Procedures	Transportation Model
Heizer and Render (2011)	X	X
Stevenson (2009)	X	X
Krajewski, et. al.(2010)	X	X
Jacobs and Chase (2010)	X	X
Reid and Sanders (2010)	X	
Swink, et. al.(2011)	X	

As Table 1 shows, all the textbooks introduced some type of trial-and-error solution procedure. These procedures consist of comparing production and demand levels using period-by-period or cumulative graphs and using spreadsheets to cost out various solutions—usually the three pure strategies. However, both Jacobs and Chase and Reid and Sanders create and cost out a mixed strategy as well.

As for methods that will find the minimum cost aggregate production plan, only Stevenson (2009) and Jacobs and Chase (2010) mention linear programming as a possible candidate. No textbook gives an example using linear programming to model and solve an APP problem.

A modification of the transportation model approach attributed to Bowman (1956) is the only procedure presented that would generate a minimum cost aggregate production plan. To use the transportation model, demand can only be met by using inventory/backorders (Pure Strategy I) and regular time, overtime, and subcontracting (Pure Strategy II).

The textbook examples are typically 3 or 4 time periods in length for a single product. Options for meeting demand in a time period consist of regular time and overtime production and subcontracting production to another company. All examples allow the holding of inventory from one period to the next. Only Stevenson introduces the possibility of backordering. Stevenson (2009) is the only author that also suggests that the model can be extended to multiple products.



THE BASICS

Every linear program is designed to optimize an objective function subject to constraints that define the set of feasible solutions. In the case of aggregate production planning, the goal is to find the plan that minimizes the total relevant cost function. The constraints can be broadly defined as belonging to one of three groups:

1. Inventory "Balancing" Constraints,
2. Simple Upper Bounds,
3. Production Capacity Variation Constraints.

We begin by introducing the following notation (other notation will be introduced as needed throughout the article).

- N = total number of products (or product families)
- T = number of periods in the planning horizon
- P_{it} = number of units of product i produced in period t
- I_{it} = ending inventory of product i in period t
- P_{it}^{max} = maximum allowable production level of product i in period t
- d_{it} = demand for product i in period t
- c_i = per unit production cost of product i
- h_i = inventory holding cost per unit per period of product i

Our first example is to determine the number of units of each product i to produce in each period t . There is an upper limit on production in each period. The objective is to minimize total production costs plus total inventory holding costs over the planning horizon. The problem can be stated in linear programming form as shown below. The Objective Function (1), to be minimized, and the Constraint Set (2) - (5) will be referred to as the Basic Model. The solution will consist of the values of the variables (production and inventory levels) that satisfy the Constraint Set and result in the minimum value of the Objective Function.

$$\text{Minimize } z = \sum_{i=1}^N \sum_{t=1}^T (c_i P_{it} + h_i I_{it}) \tag{1}$$

$$\text{subject to: } I_{i,t-1} + P_{it} - I_{it} = d_{it} \text{ for all } i, t \tag{2}$$

$$P_{it} \leq P_{it}^{max} \text{ for all } i, t \tag{3}$$

$$I_{i0} = 0 \text{ for all } i \tag{4}$$

$$P_{it}, I_{it} \geq 0 \text{ for all } i, t \tag{5}$$

An assumption we will make is that per unit production costs are relatively constant over time. This results in $\sum_{t=1}^T \sum_{i=1}^N c_i P_{it}$ being a constant. Another assumption is that the inventory holding cost per unit per period is constant over time.

The rather simple nature of this model comes about by the fact that we only need to minimize total holding costs. Real production planning problems are usually more complex. Before we get to these more complex (and realistic) models, let's look at this current model more closely. Constraints (2) are our inventory balancing constraints. They express the accountant's inventory balance equation, namely that beginning inventory (which is ending inventory from the previous period) plus production minus ending inventory equals demand (goods sold). This is the basic constraint which can be modified to give all the other kinds of inventory balancing constraints. The upper bounding of production is accomplished by Constraints (3). These constraints are called simple upper bound (SUB) constraints. A typical convention is to assume that the inventory levels at the beginning of the problem are zero (Constraints (4)). If not, these inventory levels should be explicitly stated as constraints. Finally, the nonnegativity conditions are imposed in Constraints (5). The nonnegativity conditions are usually assumed unless there are

explicit constraints to the contrary. The nonnegativity of all variables can be assumed in all the following examples.



INVENTORY BALANCING CONSTRAINTS

Constraints (2) in the Basic Model are used to link production of different periods together by way of ending inventory levels.

A variation of the Basic Model would be to allow backordering. A backorder is the exact opposite of an inventoried item. Inventory occurs when production is greater than demand. Backorders occur when demand is greater than production. Define B_{it} to be the number of units of product i on backorder at the end of period t and b_i to be the cost of having one backorder for product i for one period (we will assume this cost doesn't vary over the planning horizon).

A distinction must be made between inventory level and inventory status. Inventory level is the number of units of an item on hand (I_{it}), while inventory status is the difference between inventory level and backorder level ($I_{it} - B_{it}$). Because there are costs associated with holding inventory and backorders, an optimal solution will not have a positive inventory level and a positive backorder level for a product in the same period. The inventory balancing constraint now becomes:

$$(I_{i,t-1} - B_{i,t-1}) + P_{it} - (I_{it} - B_{it}) = d_{it} \quad \text{for all } i, t$$

Our new production model with backordering is shown below. Constraints (10) are included to ensure that all demand is met by the end of the planning horizon.

$$\text{Minimize } z = \sum_{i=1}^N \sum_{t=1}^T (c_i P_{it} + h_i I_{it} + b_i B_{it}) \quad (6)$$

$$\text{subject to: } I_{i,t-1} - B_{i,t-1} + P_{it} - I_{it} + B_{it} = d_{it} \quad \text{for all } i, t \quad (7)$$

$$P_{it} \leq P_{it}^{\max} \quad \text{for all } i, t \quad (8)$$

$$I_{i0} = 0 \quad \text{for all } i \quad (9)$$

$$B_{iT} = 0 \quad \text{for all } i \quad (10)$$

A second variation of the Basic Model is to permit lost sales. Lost sales are different from backorders in that they are not carried forward to the next period. Once a unit of demand is "lost", it cannot be recovered in a later period. The inventory balancing constraint which allows lost sales but no backorders is then:

$$I_{i,t-1} + P_{it} - I_{it} + S_{it} = d_{it} \quad \text{for all } i, t$$

where S_{it} is the number of lost sales of product i that occur in period t . The objective function would contain an appropriate lost sale cost penalty.

A third variation of the Basic Model considers production cost differentials. We will illustrate this by assuming that the cost differentials are due to producing in regulartime and overtime. Let R_{it} = the number of units of product i produced in regulartime in period t and let O_{it} = the number of units of product i produced in overtime in period t . Let r_i and o_i be the per unit production costs for regulartime and overtime

manufacture, respectively. The inventory balancing constraint (assuming no backorders or lost sales) becomes:

$$I_{i,t-1} + R_{it} + O_{it} - I_{it} = d_{it} \quad \text{for all } i, t$$

The objective function becomes:

$$\text{Minimize } z = \sum_{i=1}^N \sum_{t=1}^T (r_i R_{it} + o_i O_{it} + h_i I_{it})$$

Additional constraints will be needed to specify the maximum allowable regulartime production and the maximum allowable overtime production. An explanation of how to construct these constraints for various situations is presented in the next section.



HANGING CAPACITY

There are several ways to define capacity. For our purposes the two most common are as a number of units or as a number of production hours. If each product always has the same proportion of total capacity or if all products have about the same production rate, capacity expressed in units may be appropriate. For more complex situations, such as when total capacity can be reallocated between products from period to period or products have differing production rates, capacity in terms of a number of production hours is the more appropriate convention. We will define capacity as a number of production hours.

Capacity changes can be classified as either short-term or long-term. Short-term changes to capacity would include the use of overtime and subcontracting. Changing the actual number of workers (and thus the production capacity in a labor intensive operation) would be an example of a long-term capacity change. An assumption of linear programming is that all variables are continuous. Obviously, it is difficult to hire a fraction of a worker. If the number of workers is large, this will usually not be a problem. If the number of workers is small, the linear programming formulation will give a lower bound on the cost of the optimal production plan. The lowest cost feasible production plan could be found by integer programming.

Short-Term Capacity Changes

Let us go back and consider the situation mentioned at the end of Section 4. Production could be planned to occur either during regulartime or overtime, with appropriate cost penalties (Pure Strategy II). Define R_t^{\max} to be the maximum number of regulartime hours allowed in period t and O_t^{\max} to be the maximum number of overtime hours allowed in period t . Let m_i be the number of hours it takes to produce one unit of product i . Notice that $m_i R_{it}$ and $m_i O_{it}$ will be, respectively, the total number of regulartime hours and overtime hours used to produce product i in period t . The variation of the Basic Model that permits regulartime and overtime appears below.

$$\text{Minimize } z = \sum_{i=1}^N \sum_{t=1}^T (r_i R_{it} + o_i O_{it} + h_i I_{it}) \quad (11)$$

$$\text{subject to: } I_{i,t-1} + R_{it} + O_{it} - I_{it} = d_{it} \quad \text{for all } i, t \quad (12)$$

$$\sum_{i=1}^N m_i R_{it} \leq R_t^{\max} \quad \text{for all } t \quad (13)$$

$$\sum_{i=1}^N m_i O_{it} \leq O_t^{\max} \quad \text{for all } t \quad (14)$$

$$I_{i0} = 0 \quad \text{for all } i \quad (15)$$

Sometimes regulartime wages are guaranteed regardless of worker utilization (*i.e.*, workers are paid for a 40-hour work week, whether or not there is enough work to keep them busy the whole time). In this case regulartime production costs $\sum_{i=1}^N \sum_{t=1}^T r_i R_{it}$ are a sunk cost and can be removed from the objective function. The problem then reduces to trading off overtime production costs and inventory holding costs.

Long-Term Capacity Changes

Short-term capacity changes assume that maximum allowable regulartime production (R_t^{\max}) is constant. When the size of the workforce is allowed to vary (through hiring or layoffs), we have a long-term capacity change. By changing the size of the workforce, maximum regulartime production will now be a variable. Define H_t as the increase to the maximum regulartime hours in period t and F_t as the decrease to the maximum regulartime hours in period t . A production capacity balancing constraint is then devised for the production planning model which relates R_{t-1}^{\max} to R_t^{\max} , namely,

$$R_{t-1}^{\max} + H_t - F_t - R_t^{\max} = 0 \quad \text{for all } t$$

As appropriate cost penalties for H_t and F_t in the objective function, let u be the cost of increasing capacity by one regulartime hour and let f be the cost of decreasing capacity by one regulartime hour. An optimal solution will not have H_t and F_t both positive in the same period. The variation of the basic model which allows changes in the workforce size is given below.

$$\text{Minimize } z = \sum_{i=1}^N \sum_{t=1}^T (r_i R_{it} + h_i I_{it}) + \sum_{t=1}^T (uH_t + fF_t) \quad (16)$$

$$\text{subject to: } I_{i,t-1} + R_{i,t} - I_{it} = d_{it} \quad \text{for all } i, t \quad (17)$$

$$\sum_{i=1}^N m_i R_{it} \leq R_t^{\max} \quad \text{for all } t \quad (18)$$

$$R_{t-1}^{\max} + H_t - F_t - R_t^{\max} = 0 \quad \text{for all } t \quad (19)$$

It is possible to have the option of both short-term capacity changes (overtime) and long-term capacity changes (variable workforce size). In this case, both R_t^{\max} and O_t^{\max} will be variables. In practice, overtime is usually limited to a maximum percentage of regulartime hours. For example, if workers regularly work a 40-hour week and can be called on to put in a maximum of an additional 8 hours per week on overtime, the overtime maximum is 20% of the regulartime maximum. Additional constraints will be needed in the production planning model to describe O_t^{\max} as a percentage of R_t^{\max} . This is handled by letting v equal the maximum overtime

hours allowed as a fraction of regulartime hours and by including the following constraints in the model:

$$vR_t^{\max} - O_t^{\max} = 0 \quad \text{for all } t$$

The linear program of the production planning problem which allows overtime and changes to the workforce size follows. Notice that we do not consider a cost of changing O_t^{\max} . One could say that this cost is included in the costs u and f which have to do with changing R_t^{\max} . When R_t^{\max} is changed, O_t^{\max} changes as well.

$$\text{Minimize } z = \sum_{i=1}^N \sum_{t=1}^T (r_i R_{it} + o_i O_{it} + h_i I_{it}) + \sum_{t=1}^T (uH_t + fF_t) \quad (20)$$

$$\text{subject to: } I_{i,t-1} + R_{i,t} + O_{it} - I_{it} = d_{it} \quad \text{for all } i, t \quad (21)$$

$$\sum_{i=1}^N m_i R_{it} - R_t^{\max} \leq 0 \quad \text{for all } t \quad (22)$$

$$\sum_{i=1}^N m_i O_{it} - O_t^{\max} \leq 0 \quad \text{for all } t \quad (23)$$

$$R_{t-1}^{\max} + H_t - F_t - R_t^{\max} = 0 \quad \text{for all } t \quad (24)$$

$$vR_t^{\max} - O_t^{\max} = 0 \quad \text{for all } t \quad (25)$$

Finally, if regulartime wages are guaranteed, the following Objective Function (26) would replace Objective Function (20):

$$\text{Minimize } z = \sum_{i=1}^N \sum_{t=1}^T (o_i O_{it} + h_i I_{it}) + \sum_{t=1}^T (wR_t^{\max} + uH_t + fF_t) \quad (26)$$

where w is the regulartime wage per hour.



EXAMPLE

An example is now presented to demonstrate how to formulate a production planning model as a linear program.

The Problem

Assume a company produces three product families and must plan monthly production levels for these families over the next six months. In order to satisfy demand, overtime is available when needed and the workforce size can be varied from month to month. Furthermore, workers are guaranteed the full monthly regulartime wage, even if underutilized. This results in a production planning model similar to Objective Function (26) with Constraint Set (21) through (25).

The forecasted demands for each product family are presented in Table 2. Other information relevant to the product families is listed in Table 3.

The regulartime wage is \$12.00 per hour and the overtime wage is \$18.00 per hour. The cost of hiring one worker is \$1200 and the cost of laying off one worker is \$900. Each worker equates to 150 regulartime hours per month (and is guaranteed payment for those 150 hours). Each worker can work up to 37.5 overtime hours per month. The initial number

of workers is 35 and the workforce cannot exceed 50 workers in any month.

Table : 2 Forecasted Monthly Demands

Month	Product Family		
	1	2	3
1	4000	8000	10000
2	5000	9000	10000
3	6000	12000	13000
4	6000	9000	17000
5	4000	5000	8000
6	1000	8000	9000

Table: 3 Product Family Information

	Product Family		
	1	2	3
Beginning Inventory	0	3000	8000
Holding Cost per Unit per Month	\$0.55	\$0.30	\$0.35
Production Rate (units per hour)	2	4	3

The problem is one of determining monthly production rule for each product family that will minimize total relevant cost.

The total relevant costs are composed of regular time wages, overtime wages, inventory holding costs, hiring costs, and layoff costs.

The first step is to modify some of the above data into useful model parameters. Some information, such as the holding cost per unit per month and the regular time wage per hour, needs no modification. The overtime production costs per unit for each product group (o1, o2, o3) are \$9.00, \$4.50, and \$6.00, respectively, found by dividing the \$18.00 overtime wage by the production rates. The per-hour hiring cost (u) is \$8.00 (\$1200 hiring cost per worker divided by 150 regular time hours per month) and the per hour layoff cost (f) is \$6.00 (\$900 divided by 150 hours). The productivity coefficients (m₁, m₂, m₃) will be 0.50, 0.25, and 0.3333, respectively, which are in hours per unit and thus just the reciprocal of the production rates. Beginning regular time capacity (R^{max}) is 5,250 hours (150 hours per worker times 35 workers) and regular time capacity cannot exceed 7,500 hours (150 hours per worker times 50 workers). Finally, the maximum overtime hours allowed as a fraction of regular time hours (v) is 0.25 (37.5 maximum overtime hours divided by 150 regular time hours).

The resulting linear programming formulation of the production planning example appears below. The linear program will contain 82 variables and 52 constraints. As the number of products (or product families) and length of the planning horizon increases, the number of variables and constraints becomes enormous. If our example had 100 product families and a 24 month planning horizon, there would be 7,397 variables and 2,545 constraints.

$$\text{Minimize } z = \sum_{t=1}^6 (9O_{1t} + 4.5O_{2t} + 6O_{3t} + 0.55I_{1t} + 0.30I_{2t} + 0.35I_{3t} + 12R_t^{\text{max}} + 8H_t + 6F_t) \quad (27)$$

$$\text{subject to: } I_{i,t-1} + R_{i,t} + O_{it} - I_{it} = d_{it} \quad \text{for all } i, t \quad (28)$$

$$0.50R_{1t} + 0.25R_{2t} + 0.3333R_{3t} - R_t^{\text{max}} = 0 \quad \text{for all } t \quad (29)$$

$$0.50O_{1t} + 0.25O_{2t} + 0.3333O_{3t} - O_t^{\text{max}} = 0 \quad \text{for all } t \quad (30)$$

$$R_{t-1}^{\text{max}} + H_t - F_t - R_t^{\text{max}} = 0 \quad \text{for all } t \quad (31)$$

$$0.25R_t^{\text{max}} - O_t^{\text{max}} = 0 \quad \text{for all } t \quad (32)$$

$$R_0^{\text{max}} = 5250 \quad (33)$$

$$R_t^{\text{max}} \leq 7500 \quad \text{for all } t \quad (34)$$

$$I_{10} = 0 \quad (35)$$

$$I_{20} = 3000 \quad (36)$$

$$I_{30} = 8000 \quad (37)$$

The Solution

The optimal linear programming solution to our example was obtained in 90 simplex pivots using LINDO. The minimum value of the Objective Function (27) was \$594,001.75. Again, linear programming assumes that all variables are continuous, and some variables in our solution had fractional values (for example, in the optimal solution R_{3t} was 12751.2734 units). If we assume that all variables must be integer and especially that each R_t^{max} must be a multiple of 150 hours (so that the number of workers will be integer if no part-time workers are allowed), a feasible integer solution can be constructed with an objective function value of \$595,331.25. Since the gap between the upper bound and lower bound is small (only \$1329.50 or 0.22%), it is probably not worth the added computational effort to locate the optimal integer solution or verify that our feasible integer solution is optimal.

A summary of the feasible integer solution is given in Table 4 and the cost summary of this solution is presented in Table 5. In Table 4, "RT" denotes the number of units produced in regular time, "OT" represents the number of units produced in overtime, and "INV" is the ending inventory level.

Table: 4 Aggregate Production Planning Solution

Month	Product Family									Workers
	1			2			3			
	RT	OT	INV	RT	OT	INV	RT	OT	INV	
1	4000	0	0	5000	0	0	12750	0	10750	50
2	5000	0	0	9000	0	0	8250	0	9000	50
3	3252	2748	0	12000	0	0	8622	3	4625	50
4	2250	3750	0	9000	0	0	12375	0	0	50
5	4000	0	0	5000	0	0	8000	0	0	40
6	1000	0	0	8000	0	0	9000	0	0	37

Table : 5 Aggregate Production Plan Cost

Regular time Wages	\$498,600.00
Overtime Wages	58,491.00
Hiring Cost	18,000.00
Layoff Cost	11,700.00
Inventory Holding Cost	8,531.25
Total Cost	\$595,331.25



CONCLUSIONS AND FUTURE RESEARCH

This paper explains how to model different APP environments using the mathematical modeling technique of linear programming. Beginning with a very simple example, the article progresses through increasingly complex formulations. A later section of the article presents and solves a multiperiod-multiproduct APP model. LINDO was used to solve the model and the solution was presented in a series of tables. These examples were designed to help managers easily model a variety of APP environments.

Most operations management textbooks have avoided discussing the application of linear programming for modeling APP problems. Linear programming is deemed to be too complex for managers to understand. However, the authors of this article disagree with this view. Also, for many years, solving linear programming models required specialized software. Now, however, spreadsheet applications are capable of solving linear programming problems-thus eliminating the need for specialized software. Given our view

that linear programming is not too complex for managers to understand and given that LP solving tools are now readily available, we believe that introductory operations management textbooks should include LP formulations for APP problems.

Will the availability of LP solving tools be enough to encourage managers to use LP modeling for aggregate production planning? This is a question that needs to be investigated further. Yet, it is widely known that managers are often content with satisficing in their decision-making. That is, they prefer an easy to understand method that may not lead to an optimal decision over a realistic, but more complex, approach. This is evidenced by the coverage of aggregate production planning in many of the currently popular operations management textbooks. These textbooks claim that the easiest of all APP approaches for managers to understand is the graphical method approach. However, the graphical approach compromises when it comes to the realism of the decision environment. The following figure illustrates the tradeoff between model understandability and model realism.

Model Understanding – Realism Tradeoff

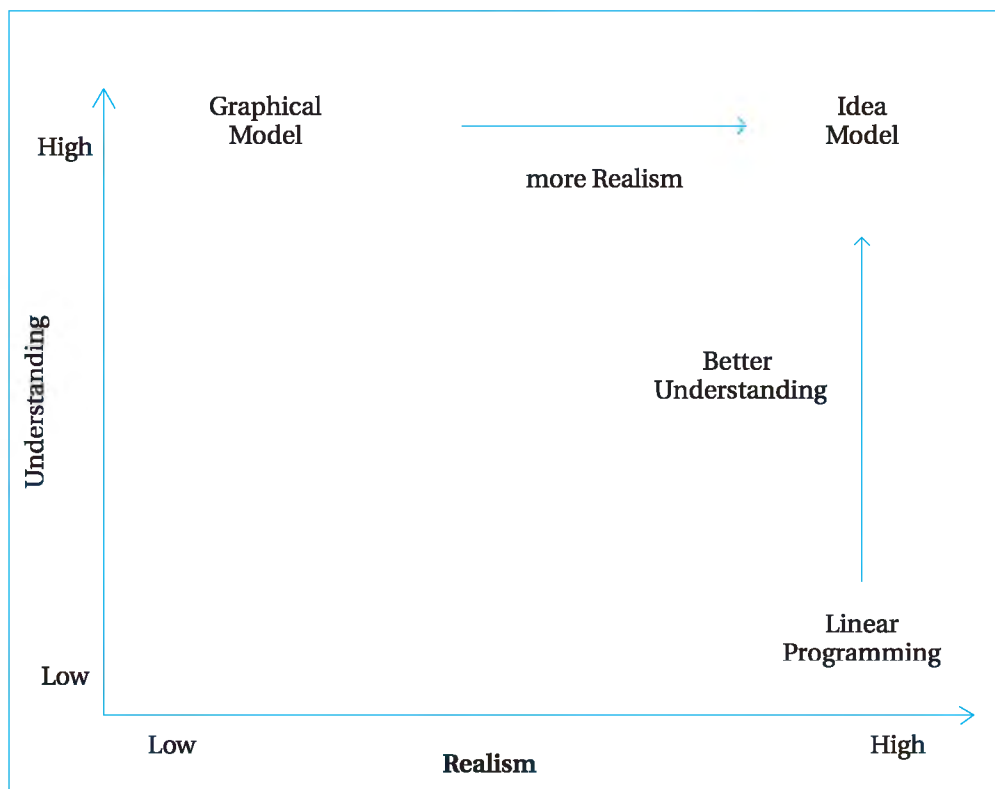


Figure: 1

The ideal planning model should have a high level of realism and a high level of understanding by managers. Graphical methods, while easy to understand, lack the ability to effectively model complex planning environments. Linear programming, however, can be adapted to complex decision environments and, as it has been illustrated in the paper, can be made easily understandable to managers. Perhaps a future study can confirm that the linear programming modeling of aggregate production planning is indeed an understandable and practical approach for managers to use.

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1. If the process is capital intensive, long-term capacity changes would be brought about mainly by the addition or removal of manufacturing equipment.
 2. The number of product groups is small and the length of the planning horizon is short only so that our solution can be easily illustrated.
 3. The optimal integer solution could be found by integer programming. However, this solution's value could not be lower than \$594,001.75, thus \$594,001.75 is a lower bound. Our feasible integer solution with a value of \$595,331.25 is an upper bound on the optimal integer solution. Furthermore, our feasible integer solution might be the optimal integer solution. (The optimal integer solution to this example has an objective function value of \$594,731.25.)



FINANCIAL SERVICES

Authors:
Thummuluri Siddaiah

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Pearson Education

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Price : Rs. /-

Reviewed By:
Mr. Himanshu Puri,
Faculty, DIAS

The book titled “Financial Services by Thummuluri Siddaiah” is the compilation of comprehensive text about various services that are covered under the umbrella of financial sector of an economy. Four essential things are attached to the financial system of a country, of which financial services forms the one part and rest are financial assets, financial markets and financial institutions. Financial services are the services provided by the financial sector and are broadly divided into two major groups, i.e. Fund/Asset based and Fee based/Advisory. This book covers both of these types of services. The book provides the analytical framework for a range of financial products and services offered by various financial institutions and agencies. The thrust of the book is on the fundamentals of financial services domain in lucid and simple style. The simplified presentation of regulatory and legislative frameworks is an important characteristic of this book. The book is meant for all the advance students of finance, management, commerce, accounting and other practitioners in this field.

The book is divided into twenty three chapters where chapter 1 and 2 presents the bird eye view of the financial service industry and stock exchanges in India respectively. The inter-relationship between different components of financial system is the highlight of chapter 1. Chapter 2 deals with the origin and development of stock exchanges in India with the focus on two major stock exchanges, i.e. NSE and BSE. Chapter 3 focuses on presenting the financial instruments that are in use. The regulatory framework for issuing different kinds of securities is also discussed in this chapter. Chapter 4 to chapter 8 covers the concept of capital issues, its management, its pricing and various intermediaries in such issues. The whole procedural aspects involved in the issue, various methods of pricing capital issue and various roles of intermediaries have been discussed in detail. Moreover, stock market transactions and merchant banking concept are also covered in chapter 6 and 7 respectively. Introduction about financial derivatives with the focus on its various types is explained in chapter 9. The origin and development of derivative trading in India has been given emphasis in this chapter. Depository and custodial services, insider trading, credit rating services, mutual funds and insurance services are taken up in chapters 10, 11, 12, 13 and 14 respectively. These chapters emphasize upon the risk averse investor's major

investment option, i.e. Mutual Fund along with the major services like credit rating, insurance, depository and custodial services. The upcoming concepts like securitization, factoring and forfaiting services are described in chapter number 16 and 23. Chapter 15 deals with a kind of financing for new and risky ventures, i.e. Venture capital financing. The chapter focuses on basic concept and features along with the discussion on venture capital funds in India. Chapter 17 explains about restructuring of corporate and chapter 18 about leasing and hire purchase. Chapter 19 to chapter 22 deals with the concept of NBFC's and its types. Chapter 19 elucidates special features of NBFC's and presents the prudential norms governing them. Chapter 20 explains the concept of chit funds, their origin, modus operandi and their legal framework. Chapter 21 presents an overall idea of the functioning of Nidhis and chapter 22 describes the concept and importance of housing finance in India.

The book is very much reader friendly with up to date comprehensive coverage and also uses certain pedagogical feature like real-life examples, box items, cases and questions which makes every reader delighted. In this book, every chapter begins with the learning objectives which really help the students to know the exact reason for learning the specific concept. Moreover, margin notes are used frequently which highlights the important definition and facts to facilitate the learning process. The chapters are also interspersed with boxes that provide interesting facts related to the topic discussed in the chapter. Such additional information actually helps in retaining the reader's interest and provides them insights into real world events. One of the another best feature of this book is its case study approach which helps the student to analyze the concepts learned with real as well as hypothetical case data. The summary at the end of each chapter is provided for quick recapitulation of the key concepts in the chapter. It also helps in revision by the students.

This book is highly recommended for all those people who have finance as their specialized field. This is a book that will guide and provide ample knowledge to the one planning to go for financial sector employment or business. It's a modest attempt by the authors to come out with the easiest and reader friendly book on such a crucial area of finance.



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John Boyce

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Reviewed By:
Ms. Shilki Bhatia

MARKETING RESEARCH

Managers need information to produce products and services that create value in the minds of the customer. But the perception of the value is subjective one, and what customers value this year may be quite different from what they value next year. As such the attributes that create value cannot be simply deduced from common knowledge. Here comes the importance of marketing research, which is the study of people's behavior, opinions, attitudes, needs by seeing out existing data or through specially planned research projects. Marketing research provides a valuable service to every member of the community- consumers, business executives, managers of government departments or students and plays a useful role in our everyday lives.

The book titled "Marketing Research" authored by John Boyce breaks new ground, covering marketing information systems, consumer privacy and the impact of internet while tackling the nuts and bolts of marketing research. The book is divided into five parts. The first section sets the scene for marketing research in three chapters which introduces the concept.

In the first three chapters, the author has marked the origin of marketing research in Australia proceeding with the explanation of concept with its significance. Understanding of the types of market research projects help the students design a quality research proposal.

The second part of the book explores the issues necessary for setting out to research. It is always a good sense to find out if any relevant information exists already. The fourth chapter explains the utility of secondary data in a research and how apart from other sources the Australian Bureau of Statistics is a reservoir of quality data.

Qualitative research is a marketing research tool, and is often a part of the marketing research process and marketing research plan. Planning market research focus groups is a first

step to gaining insight and knowledge about customers, prospects, and experts. Almost anyone can conduct an interview with the right techniques and questions. Like most things in life, it takes knowledge, practice, and desire. The author through chapters five and six has been successful in justifying the significance of the focus groups and depth interview in obtaining opinions and behavioral information from professionals and senior executives.

In our everyday lives, lot of time is spent in communicating with people. With having several methods of communicating it becomes difficult to zero down to the most appropriate method depending on the purpose and circumstances. The main criteria –ability to reach the respondents and cost of doing so and many other related factors are discussed by the author in chapter seven.

For drawing conclusions about any group-people, plant, store-sampling offers a practical compromise between certainty and expediency. Like marketing research as a whole, sampling is not a science but rather a craft or a discipline using scientific techniques wherever applicable. In chapter eight, the author conceptualized the different methods of sampling, the researcher could adopt.

Measurement-the task of assigning numbers to characteristics of the objects investigated in the marketing research, is a fundamental activity in any research project. Scales are used for measurement and they play an important role. The concept of scaling in detail has been very well discussed in chapter nine.

It is impossible to ignore the importance of a questionnaire in any survey. The quality of data depends very much on how well the questionnaire is planned and designed. The tedious task of designing a unique and error free questionnaire has been simplified by the author in a lucid way in chapters ten and eleven.

Fieldwork is an important part of any research project in which interviewers take part. In 1991, the Market Research Society of Australia (MRSA) recognized the need for quality in market research fieldwork when it set up Interviewer Quality Control Australia (IQCA). In chapter twelve the author has very well discussed the importance of fieldwork in the research process highlighting the steps involved and the possible interviewer errors. An illustrative questionnaire is a value addition for the students for gaining an insight into the process.

Data preparation is the next step after a survey's fieldwork has been completed, to analyse the findings. For this the understanding of the main principle of turning the raw data into analysed and useable findings is a must. Keeping this in mind the author has dedicated three chapters in the fourth part of the book to analyzing and reporting. Not many years ago, anyone who wanted to know how to analyse statistics had to know the formulae involved in the process and be able to use them. These days knowledge of the formulae is no longer necessary. However, the researcher still needs to know the analysis processes. Chapter thirteen gives a basic outline of the process of data preparation and chapter fourteen introduces the students with the most frequently used statistical analysis concepts and methods. A detailed description of the methods of statistical analysis is beyond the scope of this book.

The report can make or break the research project. A well

written and designed report increases the client's understanding of the findings and strengthens the confidence in the conclusions and the recommendations. On the other hand an ineffectively written report may destroy the client-researcher relationship. Through chapter fifteen the author has clearly explained the guidelines for preparing reports.

The last part delves into ethics. Ethics is mainly about relationships between people. Because there are several relationships between people in the research process, ethical dilemmas can arise at any time. The author in chapter sixteen has in detail conceptualized ethics highlighting the importance of ethics, ethical responsibilities of each party in marketing research, ethical issues with emphasis on Australian privacy legislation

Another noteworthy factor of this book is that several market research exercises are included under different chapters which enable the readers to understand the practical dimensions of the concepts explained in the book. The text of the book is in plain and lucid language. It makes the readers to develop more interest while reading and also learn it quickly.

The book is a practical, student-friendly text, tailor-made for TAFE and revised to reflect current marketing practice.

The modest pricing by the publisher makes it very affordable and a true value for money invested.



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Ms. Anju Batia

MOBILE LAW

With a global coverage vision the 'Satellite communication technology', much advanced & quicker than the terrestrial radio system, is the most phenomenal feature of Information Revolution and the wonderful gizmo called 'mobile phone' is perhaps the best buddy of modern man. A mobile phone, if we consider in literal sense is 'a communication device which is handy enough to be carried to any place you might go' but it is much more than that today. It is your own personal GPS, music player, camera, recorder, planner, calculator, alarm clock & is laced with internet facilities as well if it is a smart phone or i-Phone. The 'mobile-mania' is growing day by day worldwide, as a study says approximately 91% people between age group of 15-34 are addicted to their cell phones. Even in a developing country like India the total number of mobiles has far outstripped the total number of landline connections as every second person, be it rural or urban, educated or uneducated, male or female is carrying a mobile phone in their hands. It has become a necessity rather than a luxury & is a status symbol with facilities of radio, MP3, MP4, video & mobile television backed by 3G & 4G technology, internet and GPRS.

Due to global access and near universal penetration level mobile phones have made great influence on the way humans interact, communicate, exchange thought processes, govern, educate, entertain and disseminate information. It is expected that by 2020 it will be the primary device for accessing internet for exploring & enhancing business opportunities. Mobile phones, communication devices, mobile platforms data & information resident therein have a large no. of legal issues & ramifications connected therewith.

The bandwidth of the book ranges between sixteen chapters which connote its meaning & significance, jurisdiction & law concerning mobile service provider & their liabilities, mobile banking, mobile crimes, Intellectual

Rights & privacy and mobiles & Cyber Appellate Tribunal. In chapter 1 the author explains the indispensability of mobile phones in our lives that how this tiny gadget has facilitated social connectivity as well as business activity. It has become an extended limb without which one feels handicapped

One cannot distinguish between the uses & abuses of mobiles until he is able to appreciate the terminology, words & phrases in context of mobile usage. The terms like abuse, access, Bluetooth, cyber bullying, CDMA, communication media, cyber ethics, cyber law, cyber crime, safety, terrorism, GPRS, GSM, identity theft, mobile banking, internet banking, mobile applications, mobile authentication, mobile computing, smart phones, social networking and unique identification have been defined in Chapter 2 in a very lucid and simple manner for layman's understanding. Keeping in view the overnight innovation in IT technology predictions are made by a Google spokesperson that most of the people would be transmigrating to doing research on mobile devices rather than on PCs in next three years is putting a question mark to various ifs & buts that cannot be ignored in the long run.

We agree that social networking has facilitated instant connectivity and information but has also put a challenge to our fundamental Right to Privacy. People can peep into the information which one want to keep private or only between friends. In third chapter of the book the author tackles various national and international perspectives concerning privacy and mobiles.

India was one of the leading countries to introduce cyber law under IT Act, 2000, but there was no such handling of the issues of privacy and data protection. This Act was amended as Information Technology Act, 2008 transforming it into India's Mobile law, which incorporates many provisions applicable to the

communication devices, mobiles, personal digital assistants and smart phones as well. The author has beautifully captured new connotations of terms like communication devices, computer networks, cyber security, electronic signatures and authentication of electronic records as per mentioned in various section of IT Act 2008.

In these dynamic times i.e. an era of technological neutrality, biometrics, UID & digital signatures are the most popular forms of authentication of records. Author has discussed the procedure and mandatory requirements for all kinds of electronic/digital signatures as per mentioned in IT Act 2008. In chapter 3 & 4 the author bespeaks of legal validity, recognition and acceptability of mobile records, mobile contracts and agreements, principles of law for audit and retention of mobile records and security procedures to safeguard electronic records resident on communication devices as per description in the various section of IT Act 2008 to make people aware of changing scenario of mobile electronic governance in India. The author has provided appropriate cases and quotes from the Act in support of his opinions to enhance knowledge as well as interest of the relevant stakeholders in the mobile eco-system.

'Mobile service providers' are not only the persons providing internet services but all other intermediaries who are in the business of network service providing i.e. third party information or data being made available by them on their services. Their role in fast changing mobile eco system in terms of providing necessary relevant third party data or information resident in their computers, computer systems, computer networks, computer resources and communication devices is very significant.

The chapter five streamlines the provisions of law determining the specific nature, ambit, objectives, scope and applicability of their respective service offering along with ample examples of breach in confidentiality resulting from vested interest of parties.

Now a day with advancement of technology, electronic transaction, electronic formats and mobile contracts are very much in practice. M-Banking, M-commerce, M-payments and a variety of other mobile applications are a part of our daily routine. The provisions regarding their validity, legal formalities enforceability and evidentiary value of e-contracts and m-contracts have been discussed in chapter 6.

The mobile records of communication devices of the parties as well as records of service providers could be used for proving existence of a mobile contract, as the author reiterates in chapter 7. He further wonders that in spite of clear legal proposition there is very little jurisprudence in terms of case law on mobile contracts. Mobile authentication and mobile signatures have a great scope for development in future as the present practice of two factor authentication/qualified factor authentication are not fool proof and bear security risk.

In chapter 8 the author has thrown light on legal issues concerned with mobile banking and payments. Since banks in India are using computer and electronic formats from October 17, 2000, lot many legal issues have cropped up with respect electronic formats and security procedure. The chapter briefs up the RBI's rules and regulations regarding mobile banking and mobile payments. Along with it security standards,

regulatory and supervisory issues, interbank operations, customer complaints and grievance redressal, remittance of funds for disbursement in cash standards on delivery channels like ATM, Internet Banking, Electronic transfer of funds, and standards on security and privacy have also been encapsulated in this chapter.

Not only for benefits and comforts, mobile technology is also being used as a vehicle of crime by unscrupulous people. Through the use of applications like cameras, geographic location applications or data analysis tools, the identify theft, re-chapping of mobile, hacking, mobile pornography, mobile cyber stalking, software piracy, mobile credit card fraud or mobile phishing like mobile crimes have become very common place. In Chapters 9, 10 & 11 the author has pinpointed soaring mobile crime through misuse of mobiles and the menace of cyber terrorism. There is a need for adequate checks & balances to prevent misuse of mobiles & communication devices & the amended IT Act, 2008 has documented its powers to combat with many of the cyber crimes as well as ingenious use of mobiles. It is also constantly updating itself to keep in sync with the requirements of times of proliferating mobile crime & cyber terrorism.

Children are the most vulnerable & soft target of the cyber criminals & pedophiles for child pornography. Since more and more mobiles are landing in the hands of children there is an urgent need to protect children and minors from indecent content and undesirable conduct been available and accessed through communication devices and mobile platforms.

Similarly, infringing the intellectual property rights, piracy of confidential data and trade secrets using mobile phones has also become a very common place. The provision to curb such transgression as per mentioned in amended IT Act 2008 have been discussed in chapter 12, 13, 14.

Our day to day digital life style is revolving around the mobiles; the intrusion in privacy is a serious issue. India is one of the few countries in the world which have a detailed legislative framework to regulate mobiles and other communication devices. The book also bespeaks of remedies pertaining to mobile contraventions and violations. In chapter 16, the author has talked about Cyber Appellate Tribunal to handle complicated complex and ticklish techno legal issues. This tribunal indicates the substantial growth of legal jurisprudence and mobile law in India.

The book also contains The Information Act 2000, The Cyber Regulation Appellate Tribunal Rules 2000, the information technology rules 2003, the regulation on quality of service of Dial-up and leased line internet services, 2001, the telecom regulatory authority of India regulation 2005, the telecom commercial communication customer preference regulations, 2010.

A number of latest and interesting cyber cases have been discussed to get a deeper insight into the law relating to them. Pedantic & sagacious statements conforming law have been used in a very colloquial manner. The book is an authoritative treatise on legalities surrounding mobile usage & is of great & is of great use for sages as well as laymen.

Editorial

Policy



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- Editor-in-Chief

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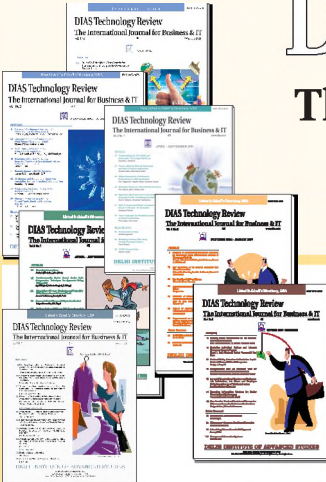
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DELHI INSTITUTE OF ADVANCED STUDIES

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DELHI INSTITUTE OF ADVANCED STUDIES



VISION

We strive to provide a dynamic learning environment for imparting holistic education that inculcates professional excellence, induces competitive spirit, instils leadership quality to carve a niche in the changing global scenario

THE INSTITUTE

DELHI INSTITUTE OF ADVANCED STUDIES is a dynamic, growth oriented institution, affiliated to G.G.S. Indraprastha University. Established by Shri Laxman Das Sachdeva Memorial Educational Society, the Institute is providing dynamic learning environment that is changing in response to changing needs of society. At DIAS, pursuit of Excellence is a way of life. The guiding philosophy behind all the academic activities of the Institute is to inculcate professionalism in management and to enhance the effectiveness of organization. The Institute seeks professional excellence through ethics, passion and perseverance.

Shri S.K. Sachdeva, a Well-known name in the educational world, is the Chairman of the Institute. Dr. S.N Maheshwari, former Principal of Hindu College, Delhi University is its Director.

The Institute runs the following programmes affiliated with Guru Gobind Singh Indraprastha University.

Programme	Duration	No. of Seats
MBA (Full Time)	2 Years	120
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Having capable and accomplished professionals in the standard setting process is the key to the issuance and sustainability of every high quality product.

We are really fortunate to have a panel of eminent and distinguished academicians and professionals who are continuously offering support to us for keeping the journal scholastic, intellectually vibrant and comprehensively informative. We particularly express our gratitude to the following panel for reviewing the articles and offering their valuable suggestions:

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DELHI INSTITUTE OF ADVANCED STUDIES

is organizing

NATIONAL CONFERENCE

“TECHNO TRYST – 2012: DATABASE TECHNOLOGIES AND ITS IMPACT ON INFORMATION SYSTEM”

Saturday, 24th March 2012

at
Conference Hall, DIAS



The database can be coined as one of the milestones of Information Systems. However, databases alone are not capable enough to balance the complexity of managing fast-growing information stores. The database technologies, their applications and integration of databases along with the current and emerging technologies form the broad theme of the conference.

KEY FOCUS AREAS:

Database Technologies:

- Relational Databases
- Distributed Database
- Object Oriented Databases
- Mobile Databases
- Very Large Scale Databases
- Embedded databases
- Semantic Databases
- Spatial databases
- Multimedia databases
- Parallel databases
- Deductive and Active Databases

Database Applications:

- Accounting Information System
- Financial Management Information System
- Enterprise Collaboration System
- Health Telematics System
- Digital Imaging System
- Learning Management System
- Content Management System

Integration of Databases and Emerging Technologies:

- Data warehousing
- Web Based Information System
- Geographic Information system
- Data Integration Resources on the Internet
- Knowledge Discovery through Data Mining
- Databases and E-Commerce
- Databases and M-Commerce
- Database Technologies for the Cloud
- Role of Databases in Bio-informatics
- Databases and Digital Libraries
- Data and Information Quality
- Data and Information Security

The above areas are indicative only. Paper presenters may present papers on other issues relating to the main theme of the conference.

WHO SHOULD ATTEND?

- Academicians/trainers
- Research scholars
- IT students
- Software Consultants
- Corporate Executives
- Security Experts

REGISTRATION:

All participants who wish to attend the conference are required to register. For registration, please fill in the registration form along with the Demand Draft of the applicable fee in favor of Delhi Institute of Advanced Studies, payable at Delhi and send it to Ms. Barkha Bahl (9811765551), Event In-charge, latest by 13th March, 2012. Registration form can be downloaded from our website www.dias.ac.in.

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DIAS Conference Hall

EVENT INCHARGE :

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