



## INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT AND MANAGEMENT

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- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on December 17, 2011 <http://epw.in/user/viewabstract.jsp>

**CONFLICT MANAGEMENT AND LEADERSHIP STYLE AS PREDICTORS OF ORGANISATIONAL LEARNING**

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**ABSTRACT**

*Handling conflicts constructively is one of the greatest challenges in the present world. Though societies have matured and scientific knowledge has increased yet organisations face damaging conflicts. In order to overcome such types of situations organizations should have leaders who can handle those situations and help the organization to effectively meet the changing demands of today's environment. Leaders influence learning of executives in the organizations by helping to promote vision that guide and ensure organizational learning processes in which executives routinely share their learning with others and improve their ability to perform better. The current paper describes the relationship of conflict management and leadership style with that of organizational learning which is supported by literature review and shows that no research has been carried out on all the three variables together in Indian organizations.*

**KEYWORDS**

Conflict Management, Innovation, India, Leadership Style, Organizational Learning.

**INTRODUCTION****CONFLICT MANAGEMENT**

Conflict is a process that begins when one party perceives that another party has negatively affected, or is about to negatively affect, something that the first party cares about (Robbins et al., 2009). The definition is broad enough as it encompasses large range of conflicts that employees experience in organizations like incompatibility of goals, differences over understanding of facts, disagreements based on behavioral expectations etc. Conflict is an interpersonal process that arises from disagreements over the goals to attain or the methods to be used to accomplish these goals. (Newstrom and Devis, 1998). Conflict can occur within an employee, between individuals or groups and across organizations as they compete. While conflict is endemic in organizational life, it need not always be negative. Those working together must understand the basic principles of how to use conflict to facilitate becoming a learning team that increases its capacity to take effective action through diffusion of knowledge and skills.

**LEADERSHIP STYLE**

Leader is defined as any person at any level of organization, in any field, who significantly influences others, for good or bad, to achieve the organization's mission or the mission of the people of the organization (Haldar, 2010.) Organizations are in search of good leaders and strong management for best performance. Leaders should challenge the status quo, to create visions of the future and to inspire members to achieve their targets in an organization. There are various theories of leadership like The Great Man Theory, Trait Theory, Situational Leadership, Contingency Theory, Transactional Theory and the recent Transformational Theory developed by Bass and Avolio 1994. According to them transformational leadership is a process in which the leaders take actions to try to increase their associates' awareness of what is right and important, to raise their associates' motivational maturity and to move their associates to go beyond the associates' own self-interests for the good of the group, the organization, or society. Such leaders provide their associates with a sense of purpose that goes beyond a simple exchange of rewards for effort provided. Transformational leadership display five styles of leadership.

The transactional leadership style is an exchange process based on the fulfillment of contractual obligations. It consists of three factors: Contingent reward leadership, Management-by-exception (active) and Management-by-exception (passive) (Bass and Avolio, 1994; Antonakis et al., 2003).

The laissez-faire leadership style "represents the absence of transaction of sorts with respect to leadership in which the leader avoids making decisions, abdicates responsibility, and does not use his/her authority" (Antonakis et al., 2003). Laissez-faire leadership is virtually an avoidance of leadership behaviors, avoidance of taking any action (Stewart, 2006; Bass, 1999). This is also defined as non-leadership or the most passive leadership.

**ORGANISATIONAL LEARNING**

Dixon (1999) defined organizational learning as the intentional use of learning processes at the individual, group and system level to continuously transform the organization in a direction that is increasingly satisfying to its stakeholders. Organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free and where people are continually learning how to learn together. (Senge, 1990). All organizations learn in a different way. Some learn lesser and some to a greater extent. Sometimes learning is not achieved up to the level it should as organizations repeat their mistakes, fail to satisfy customers and are not able to improve their performance.

Organizational learning requires four steps of the learning cycle and each step is dependent on the other. The organization defines a strategy for accomplishing their tasks and those tasks are delegated to individuals. The task system works on certain norms. Although the norms, strategies and assumptions may be tacit rather than explicit guide the way the organization accomplishes its tasks. (Argyris and Schon, 1978).

**LITERATURE REVIEW**

Rognes, J. and Schei, V. (2009) in their paper demonstrated that an integrative approach is useful for various outcome-dimensions of conflict. The authors have pointed out that motivation and good relationship is necessary for organisation’s growth. Many conflicts that organizations face have a constructive approach to handle. The authors have used a model in which an integrative approach is used to find out the outcome like quality, fairness, satisfaction and trust. The authors have conducted five studies on a large number of people and the results showed that intergrative Sapproach to conflict management would be positively related to agreement quality, perceived fairness, satisfaction and trust. In all studies authors have found different outcomes and have concluded that demographic characters play a role in integrative approach while as individuals characters are also important.

Hanna K., et al., (2010) in their paper have discussed that leaders influence student learning by helping to promote vision that guide and ensure organizational learning processes in which teachers routinely share their knowledge and improve their ability to teach well (Leithwood and Riehl, 2003; Hallinger, 2003; Bell et al., 2003; Voulalas and Sharpe, 2005).The authors have considered vision to be the essence of leadership. The purpose behind this study was to find the relation between leadership style (Transformational, Transactional and *laissez-faire*) and organizational learning. Transformational leadership, vision and organizational learning processes are the key to school improvement (Bass, 2000; Fullan, 1995, 1997; Lam, 2001; Leithwood et al., 1998; Leithwood, 2004). According to MLQ factorial structure leadership style correlate with work effectiveness in the following way: Transformational factors are more positively related with work effectiveness. Amitay et al., (2005) studied the relationship between leadership style and organizational learning in 44 community health clinics. The result was found that transformational leadership elevates the interests and aspirations of employees, was associated with more intensive organizational learning activity. Ben-Horin Naot et al. (2004) found correlations between high-level organizational learning and supportive leadership.

Moore L. et al.,( 2006) in their paper have described the demographics and leadership styles of current Extension leaders and the influence of demographic variables on leadership style. Of the 47 participants 70.2% were males. Mean age was 54.5 years. The mean tenure in extension was 22years.The authors have described about transformational and transactional leadership. Krishnan and Park (1998) noted that demographic characteristics exert considerable influence on the leadership style of top managers. Differences in the preferred leadership styles of men and women is perhaps one of the most well researched aspects of leadership. In the meta analysis by Eagly and Johnson (1990) where they found that women tend to use a more participative and inclusive style while men tend to use a more directive and controlling style.

Carla Curado in her paper states that Organisational learning seems to develop competencies that are valued by the clients, hardly imitable and they contribute to the competitive advantage of the firm. However the organizational learning process remains a “black box” to all researchers (Crossan and Berdrow, 2003) Organisational learning turns out to be unique competitive advantage to the firm (Geus, 1988). In order to leverage knowledge based resources the firm should promote the organizational learning (Tetrick and Da Silva, 2003). The author also talks about the Chief Knowledge Officer and his role in the organization. The author has concluded that in designing the organization for organizational learning it might be better to follow the organic design approach; the existence of CKO element in the firm’s structure, Dynamic approach to social change is required.

**RESEARCH METHODOLOGY**

**OBJECTIVES**

The following are the objectives of the study:

1. To study the Conflict Management strategies in Indian Organizations.
2. To study the Leadership style of executives in select Indian Organizations.
3. To study the Organizational Learning in select Indian organizations.
4. To study the Conflict Management and Leadership Style as Predictors of Organizational Learning.

**HYPOTHESIS**

**H1:** Conflict management and leadership style predict organizational learning.

**SAMPLE**

The sample comprises of middle and senior level executives of an Indian manufacturing organization. In total 30 samples were collected by convenience sampling method.

**TABLE 1: DEMOGRAPHIC PROFILE OF RESPONDENTS (n=30)**

Title	Parameters	Frequency	%
Age (Yrs.)	25-34	11	36.66
	35-44	15	50.00
	45 and above	04	13.33
	Non-Respondents	0	0
Gender	Male	30	100
	Female	0	0
Qualification	Under graduates	22	73.33
	Post graduates	05	16.66
	Non-Respondents	03	10.00
Experience (Yrs.)	5-10	13	43.33
	11-20	12	40.00
	21-30	04	13.33
	Non-Respondents	01	3.33
Nature of organisation	Manufacturing	30	100

**DATA COLLECTION TOOLS**

Three standardized scales were used on each subject of the sample. The details of the instruments are:

1. Organizational Conflict Management Scale (OCS) by Dr. Upinder Dhar & Dr. Santosh Dhar (2003).It has twenty statements with 4 items each with high reliability and validity. The scale measures the level of conflict.
2. Multifactor Leadership Questionnaire 360 Degree Feedback (MLQ) by Bruce Avolio and Bernard Bass (1995). The scale has 45 Statements, 3 Dimensions (Transformational, Transactional, Passive/Avoidant) with 9 factors. It is on five point Likert scale and measures the style of leaders in an organization.
3. Organizational Learning Diagnostics (OLD) by Udai Pareek (2003). It has twenty three items grouped in three columns under Phases heading and the next five columns under Mechanisms heading.It is on five point likert scale.

**DATA ANALYSIS**

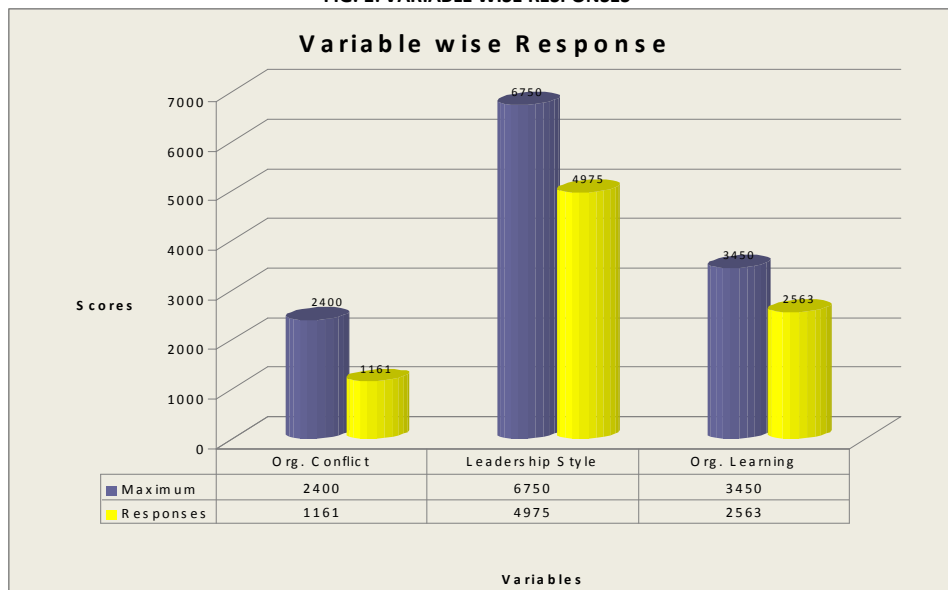
Data is analyzed graphically and by using the statistical tools like correlation analysis, regression analysis and Cronbach’s Alpha to get the objective of the study with the help of SPSS 16.0.

**RESULTS AND DISCUSSION**

The Fig. 1 shows the score of organizational learning is highest (2563/3450, 74.3%) among all the three variables followed by leadership style (4975/6750, 73.7%) and the least is the conflict management. According to Hambrick & Mason, 1984, the cognitive bases of a strategic leader are reflected in organizational outcomes such as an organizational culture supportive of learning.

Leaders play a central role in the organizational learning process in multiple ways. Because of their central role in an organization and their ability to span boundaries across levels, not much learning in an organization could take place without leaders providing guidance, support, and institutionalization (Berson et al., 2006). In this study also organizational learning is highest followed with leadership style.

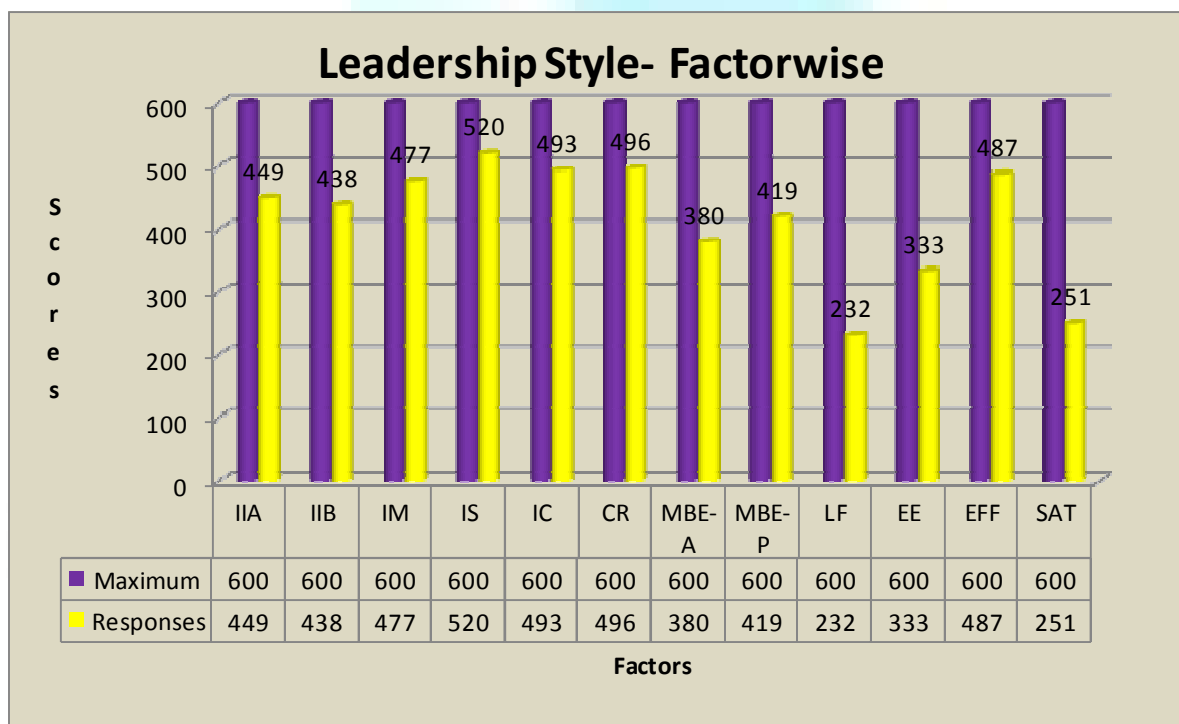
FIG. 1: VARIABLE WISE RESPONSES



The conflict management is on the lower side. Managing conflicts constructively and effectively in organizations is not an easy task. As per Sayeed and Mehta (1981) who reported that there is very little relationship between leadership style and effective conflict management. This finding to some extent supports the present study concerning emergence of fewer relationships between leadership and conflict management.

In order to improve organizational learning, proper leadership style and conflict management strategy needs to be adopted. When a leader tends to adopt more than one method to deal with a conflicting situation he is said to be flexible since his approach is to try different methods which would have been totally avoided by a manager who rigidly applies a particular method and sticks to it over a period of time. This is supported by Sayeed and Mathur, 1980.

FIG. 2: LEADERSHIP STYLE- FACTOR WISE



IIA: Idealised Influence (Attributed); IIB: Idealised Influence (Behavioral); IM: Inspirational Motivation; IS: Intellectual Stimulation; IC: Individualised Consideration; CR: Contingent Reward; MBE-A: Management by Exception (Active); MBE-P: Management by Exception (Passive); LF: Laissez Faire; EE: Extra Effort; EFF: Effectiveness; SAT: Satisfaction.

Fig. 2 shows various factors of leadership style. The first five factors belong to transformational leadership. The next three factors are of transactional leadership while the remaining are of laissez faire. The highest score is shown by Intellectual Stimulation, IS (520/600, 86.66%) of transformational leadership style. This is supported by Tichy and Devanna (1986) stating that the intellectual stimulation of subordinates is more important at higher levels of the organisation. The role of transformational leadership is crucial in cultivating organizational learning at school. (Leithwood et al., 1998; Silins et al., 2002; Johnson, 2002). This is followed by Contingent Reward, CR (496/600, 82.66%) of transactional leadership immediately followed by Individualised Consideration, IC (493/600, 82.16%) of transformational leadership. The least score is of laissez faire (232/600, 38.66%). A similar outcome is typical of employees' laissez-faire leadership style, characterized by avoiding making decisions, abdication of responsibility and renunciation of their authority (Antonakis et al., 2003; Bass, 1999; Stewart,



2006). According to Kotter (1999), leadership is about coping with change by setting directions; aligning people; motivating and inspiring towards a vision. Transformational leadership is based on personal values, beliefs and qualities of the leader. It focuses on qualities like vision and shared values useful in building relationships and enlisting followers in the change process. The transformational leader brings about major changes in the organisation's vision, strategy, culture and promotes innovation in culture and technology. According to Steers (1991), effective transformational leadership can influence major change in the attitudes and assumptions of subordinates and build commitment to the organisation's goals and stimulate dedication to greatness.

FIG. 3: ORGANISATIONAL LEARNING- PHASE WISE

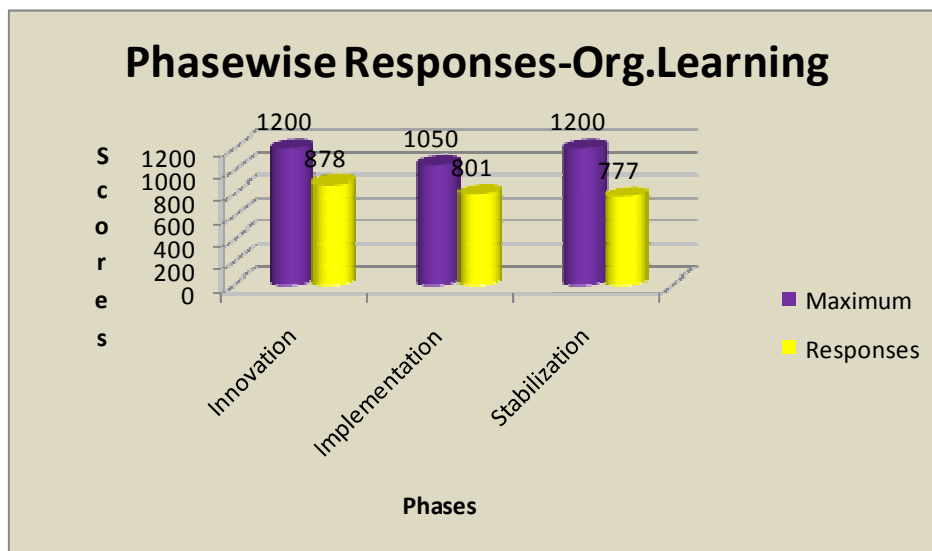


Fig. 3 shows phasewise responses of Organisational learning. Out of the three factors of Organisational learning the highest score is of implementation (801/1050, 73.16%) followed by innovation (878/1200, 76.28%) and the least score is of stabilization (777/1200, 64.75%). According to Nelson et al., 1995; Romm et al., 1996; Gulati et al., 2004; Lewis, 2004, organisational learning promotes implementation part in information systems. According to authors a learning organization with a more adaptive culture is necessary in order to accommodate changes in work procedure, organizational structure and job responsibilities caused by implementation part of information system. Lindley and Wheeler 2001 show that a learning organization will drive the continual development of an information system which caters to changing business processes.

The second highest score is of innovativeness. The results show that organisational learning supports innovativeness which according to Farrell and Mavondo, 2004; Baker and Sinkula, 1999 in their studies have proved that organisational learning leads to innovativeness. Also, it has been found that organizational learning makes business process reengineering (BPR) easier (Smeds, 1997). In terms of individual impact, some research studies (Harris, Mowen, and Brown, 2005) indicate that learning orientation has an influence on employee job satisfaction and his or her ability to openly accept challenges and organizational commitment.

FIG.4: ORGANISATIONAL LEARNING- MECHANISE WISE

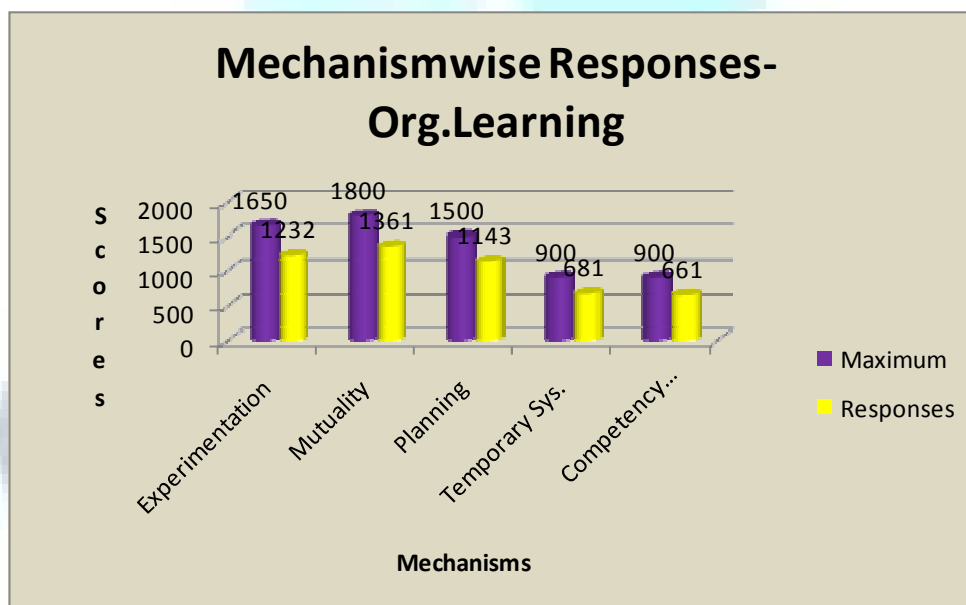


Fig. 4 shows mechanism wise response of organisational learning. The highest score is of planning (1143/1500, 76.2%) followed by temporary systems (681/900, 75.66%). The least score is of competency building with (661/900, 73.44%). According to Serrat (2009) who states that in a learning organization, planning is based on careful reflection through probing questions that draw on data and information from monitoring, review and self- and independent evaluation. To stimulate creativity and generate new ideas and innovative practices, an organization should take a balanced approach to the importance of both planned and emergent learning. Planning is an important aspect of any organisation for its ultimate objective. Leadership styles have to play significant role in planning things and helping develop needed competencies of HRs for organizational excellence help and inspire people to go beyond the perceptible world which should be in tune with well designed roles, structures and processes for organisational learning to thrive.

## DATA ANALYSIS BY USING SPSS 16

The analysis of data is done by using the statistical techniques like Regression and Correlation Analysis.

**TABLE 2: DESCRIPTIVE STATISTICS**

	Mean	Std. Deviation	N
Org_ Learning	85.43	<b>8.89</b>	30
Conflict_ Mgmt.	38.70	<b>5.78</b>	30
Leadership_ Style	165.83	<b>6.45</b>	30

The descriptive statistics shown in Table 2 shows that the Standard Deviation of conflict management is lowest which means all respondents have less variability in their views about conflict level in their organization. As the average age of the respondents is nearly 40 and they have settled down in their life, they want to build a healthy environment in the organisation by co-operating with each other. Many interactions in life are mixed-motive conflicts in which the collectively optimal outcome requires mutual cooperation but individual self-interest makes it tempting not to cooperate (Axelrod, 1984; Kelley & Thibaut, 1954; Rubin & Brown, 1975). Learning to manage conflict is integral to a high-performance team in an organisation. Although very few people go looking for conflict, more often than not, conflict results because of miscommunication between people with regard to their needs, ideas, beliefs, goals, or values. The link between positive affect and decisions to cooperate or help another person has long been established (Isen & Levin, 1972).

**TABLE 3: CORRELATION BETWEEN VARIABLES**

	CM	LS	OL
CM	1		
LS	0.244**	1	
OL	-.553	-.365	1

\*\*p<.05 (CM- Conflict Management, LS- Leadership style and OL is Organisational Learning).

The correlation between conflict management and leadership style is 0.244 but is insignificant while as correlation between conflict management and organizational learning is negative and insignificant. This is supported by Bose and Pareck (1986) who witnessed a relationship between dysfunctional managerial leadership style and functional conflict management approaches (viz., confrontation, arbitration, compromise and negotiation). The other relationships between the overall functional style and approach and avoidance conflict management were non-significant. The results obtained here are in contrast with the results of (Lam, 2002; Leithwood and Menzies, 1998) who found out that leadership improves the process and the result of organizational learning activities. The research literatures indicate transformational as well as transactional forms of leadership to be positively associated with processes of organizational learning.

**TABLE 4: REGRESSION COEFFICIENTS**

Variable	Beta	Sig.
Conflict Management	<b>-.493</b>	.004
Leadership style	<b>-.245</b>	.135

Dependent Variable: Organisational Learning

In table 4 we see that both the independent variables are not predictors of organizational learning as the beta is negative in both the cases but conflict management is significant (p<.05) as compared to leadership style. The reason may be due to small sample size and the sample taken from only one organization. According to Tompkins and Rognes (2004) the right type of conflict at critical moments in a group's development propels the group to the next stage. However, if the conflict is too emotionally negative, or if it is the wrong type of conflict for that stage, the group is likely to repeat a prior stage in which the learning was incompletely integrated, thus giving the team another opportunity to master that stage. As Hogan et al. (1994) pointed out that organizations will not ask for psychologists help if psychologists continue to argue that leadership has significant impact on group, team and organizational effectiveness. It is not only these two variables which are affecting organisational learning but there are other variables which do have an impact on organisational learning.

**TABLE 5: COEFFICIENT OF DETERMINATION**

R	R square	Adjusted R square
.602	.362	<b>.315</b>

Dependent Variable: Organisational Learning

The Coefficient of correlation (R) is found to be .602. Adjusted R square is 0.315 which shows that the two independent variables i.e conflict management and leadership style together predict organizational learning with 0.315 of determination. Hence 31.5% of dependent variable is explained by two independent variables. There are other variables which can have an effect on the dependent variable and hence other effect of other variables can be taken into consideration.

## CONCLUSION

The present study, examining linkages between organizational conflict and leadership styles as predictors of organizational learning has been studied. The result of this study has shown that out of the three leadership styles the most preferable style is Transformational as shown in fig.2. Throughout the learning process, leaders provide the guidance which is necessary to cross organizational boundaries and integrate what is learned. Also leaders are important in institutionalizing learning by integrating new and existing knowledge in the organization's policies and practices.

While our review has presented leadership as a great influence on organizational learning, we realize that this is not always the case. When leaders rely on warnings and fear, followers may avoid bringing new ideas and accept institutional procedures. The results in this study do not support that the two independent variables predict the dependent variable to a larger extent but both the independent variables definitely have an effect on the organisational learning. In practice we suggest developing specific training programs to help employees articulate a style that is task-oriented, inspiration-oriented and communication-oriented and reduce the conflicts so that organization can be more learned. Attention must be directed not only towards different methods of managing conflict but also conditions under which active and passive roles are to be preferred.

## LIMITATIONS

First, the data was collected by means of questionnaires from two sectors of organization which was selected at random and the sample size was too small. The organization was a single organization and hence the effectiveness could not be generated. In this study we examine the link between leadership style and conflict management issues. However, since only manufacturing organization was involved, more research is needed to examine the appropriateness of the measures to other sectors as well.

## FUTURE RESEARCH

Future research on the linkage between leadership theories and conflict management strategies offer a wide scope for future research. At the organization level, a valuable contribution would be to conduct mediation studies to identify how leaders influence the exploitation of institutionalized knowledge through culture and social processes. The role of transformational leaders in exploration has been explored at multiple levels of the organization, but their role in exploitation bears further analysis. In fact, we expect such leaders to find the right balance between exploiting institutionalized learning from the past and exploring new learning which could bridge a link between leadership style and organizational learning.

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## A STUDY ON TRAINING FACTORS AND ITS IMPACT ON TRAINING EFFECTIVENESS IN KEDAH STATE DEVELOPMENT CORPORATION, KEDAH, MALAYSIA

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### ABSTRACT

*In Malaysia so many enterprise implement various training program to enhance their employees by working performance. But as overall view, the training environment still exist shortages in enterprise today, for instance, lack of knowledge of training, resources, trainer etc. Employee training has been a matter of concern and attention by many business fields nowadays. Organizations realize that employee training is an essential element to increase efficiency of job performance and keep their business running, as competition are getting more intense. Training is the process of providing employees with specific skills or helping them correct deficiencies in their performance (David, 2010). This study, combining theoretical and empirical research, trying to find factors that affect employee training and its impact in acting human resource practices thereby laying the theoretical foundation for the future research about survey on the employee training, also provide a good reference. Therefore, the problem addressed in this study is examine the factors affect training (types of training, training environment, work environment and employees' personal characteristics) and training effectiveness on human resource practices in Kedah State Development Corporation (KSDC) which is the parent company under BDB Company. This research also determines the main factors which influence employee training on human resource practices. Management is committed to human resource development as well as its social responsibilities through various programs. Training and development programs are offered by the KSDC Company that training program also adapted to the latest technological advances.*

### KEYWORDS

Job performance, Skills, Technological advances, Training, Work environment.

### INTRODUCTION

Employee training has been a matter of concern and attention by any business field nowadays. Organizations realize that employee training is an essential element to increase efficiency of job performance and keep their business running, as competition are getting more intense. Training is the process of providing employees with specific skills or helping those correct deficiencies in their performance (David, 2010). For example, new equipment may require workers to learn new ways of doing the job or a worker may have a deficient understanding of a work process. In both sides, training can be used to correct the skill deficit. Training is focus on the current job, the scope of training is on individual employees (Robert, 2010). It is also job specific and addresses particular performance deficits or problems. Training tends to focus on immediate organizational needs and fairly quick improvement in workers' performance. It strongly influences present performance levels.

A fundamental objective of training is the elimination or improvement of performance problems. To be successful, a training program must have clear stated and realistic goals (David, 2010). These goals will guide the program's content and determine the criteria by which its effectiveness will be judged. For example, management cannot easily realistically expect that one training session will make everyone an accounting expert. Such an expectation guarantees failure because the goal is unattainable. If the goal is to improve specific skills, the training needs to be targeted to those skill areas. In contrast, the company's training goal may be to provide employees with a broader understanding of the organization (Luis, 2010).

### RESEARCH OBJECTIVES

The research objective is to find out the factors towards training and its effectiveness of training objectives.

*The research objectives are:*

- To determine the influence of training types on training effectiveness in Kedah state development Corporation Company.
- To determine the influence of training environment on employee's training effectiveness in Kedah state development Corporation Company.
- To determine the influence of work environment on employee's training effectiveness in Kedah state development Corporation Company.
- To determine the affect of employees' personal characteristics (age, gender, marital status, education level and length of working in current job) on training effectiveness in Kedah state development Corporation Company.

From the study, the company will know that training of staffs of the company can enhance the sense of belonging and sense of ownership. To company, the more fully on staff training, the more attraction for employees, the more high value-added human resources to invest, thus creating more benefits for enterprises (Ford, 1988). Training not only improves the skills of workers, but also increases awareness of the value of their own employees to have a better understanding of the objectives.

Training also adapt to market changes, competitive advantage. Corporate training is a reserve force to maintain the vitality of business always following the operation. To put it bluntly enterprise competition is the talent competition. Wise entrepreneurs clearly understand that the training is the development cannot be ignored in human investment. Developed countries in promoting technical innovation, not only pay attention to the introduction of mechanical equipment, the upgrading of hardware investment, but pay more attention to improving the quality of the software as the main objective of technical inputs. Facts have proved that talent is the primary resource, with first-class talent, you can develop first-class products, to create first-class performance, and companies can compete in an invincible position in the market.

Therefore the study focus on the evaluation of factors of training effectiveness on human resource practices. An in depth analysis of the possible factors influencing the achievement of training objectives will provide assistance for this study.

## LITERATURE REVIEW

In this part the relevant literature will be reviewed to get a better understanding of the importance of factors affecting employee training and its effectiveness on human resources practice. Firstly, many of these supervisors may feel morally responsible for offering the training program for their employees whether these employees find their jobs satisfying, frustrating, challenging, boring, significant or meaningless becomes a serious concern for these managers. Secondly, managers are concerned about the factors affecting of employees training has on performance. Many of the organizations heads believe that employee training program can lead to high productivity, low absenteeism and motivation for the job performance. Examination of theories of employee training and its effectiveness, which aid in determining whether overall employees will feel satisfied or dissatisfied in their training program. It is now important to understand what has led the employee to feel satisfied or dissatisfied in their training program offered by their companies, therefore the causes or sources of training resources will be discussed by each term towards training effectiveness.

## UNDERSTANDING OF TRAINING EFFECTIVENESS

In this dynamic and ever changing environment, organizations both public and private must increase the importance on employees' learning and development of skills. This shows that put investment in employee training program can bring employers a favorable return but rarely is the effectiveness of this expenditure assess. Studies suggest that many training and development activities are implemented on blind faith with only the hope that they will yield resist (Arthur, Bennett, Edens & Bell, 2003) ; According to (Broad and Newstrom, 1992; Robinson and Robinson, 1989). Seldom are training programs rigorously evaluated to determine their effect on the behavior or job performance of participants. One of the more optimistic estimates suggests that no more than 15 percent of learning transfers to the job (Cromwell and Kolb, 2004). Other studies of transfer rates find they typically average only in the 10 to 40 percent range (Baldwin and Ford, 1988; Burke and Hutchins, 2007; Fitzpatrick, 2001; Ford and Kozlowski, 1997). Therefore, it is important to explore methods to encourage transfer of learning in order to achieve greater training impact on human resource practices.

Previous studies (Mayfield, 2011) suggested that training effectiveness is a good predictor of employee training. This association suggests that when employee have been trained in a training program, the training effectiveness is likely to be followed by job behavior (Pelham, 2009). Previous studies also suggest that demographic variables such as age, degree held, and experience were related to training impact in some studies (Devins, Johnson and Sutherland, 2004) .The focus of previous work has been on the relationships between training effectiveness and employees' demographic variables.

## TRAINEE PERSONAL CHARACTERISTICS

A variety of trainees' personal characteristics have been studied in relation to transfer of learning during the training program. The related personal characteristics that figure out with the age, gender, marital status, and etc. With the trainees' self-confidence and belief in his or her ability to successfully acquire and transfer the target skill (Gist, Stevens & Bavetta, 1991). For individual training effect, age (Hill, 2002); gender (Chou, 1994; Elizabeth, 2002); marital status (Dewberry, 2001) is also important factors. In the study, these variables as control variables to be more, rather than the independent variables to be studied. The results of these studies is that for the training guide, training, which should be fully taken into account the individual's personality characteristics and psychological interaction between the demographic variables of the training process. This interaction makes the training process more complex. Elizabeth (2002) in the study found, young, highly educated women are more vulnerable than other women training means training to produce a virtuous cycle of career development effect. Trained adult women tend to retire later, suggesting that a more knowledgeable and more wealth to more career women in skills, the ability to stay longer in the professional community. Chou (2001) found that gender and learning style and cognitive style will interact and affect the training methods on the role of training effectiveness. Study also found that gender training methods may also directly regulate the relationship between performance and training. Elizabeth (2002) found that some women show a unique "train track" (training track), they will continue to follow the trainer and receive continued.

Trainees with a high degree of education level tend to be more motivated learners and accomplish more (Chiaburu and Marinova, 2005). A direct access has been established between efforts to build the self-confidence of learners and the likelihood of their using skills on the job (Salas and Cannon-Bowers, 2001). This is one of the reasons for investing in good training program and preparing trainees for training. On the other side, understanding the objectives of the training, its relevance to individual and organizational needs and expectations for application can greatly improve learner motivation (Montesino, 2002). Assessing individual needs and providing good environment for training can also have a positive effectiveness on human resource practices among employees in the firm. This is because a better skill among employees is achieved through their personal characteristics. Besides, trainees' ability to improve his or her performance through training (Salas, Rozel, Mullen & Driskell, 1999) program itself .According to Sutherland (2009) who found variation on training impact level based on the length of work experience.

## TYPES OF TRAINING

As in the companies in Malaysia, training for technical and non-technical workers in the organizations under study is mainly job rotation (Hooi, 2010) Though alternatives to training were suggested, the implementation of these programs is still in the infant stage and has yet to achieve desirable results. The types of training and alternatives to training base on the firm needs and also relevant to the employees' job performance.

The local company place little emphasis on training needs analysis and provide training mainly for replacement purposes (Chew, 2005), (Yong, 2003) argues that local firms with less interest in skill enhancement, approach training on a needs basis and limit learning to job specific training. Management in local organizations does not expect employees to commit to lifelong learning especially in new technology and employees do not regard competence enhancement a passport to career advancement. Training and development focus on technical knowledge and skill training with little emphasis on social and intercultural skills and competence development (Rowley and Abdul-Rahman, 2007). The studies show that it is not evidence relationship between the training impact and the types of training. Training type affected firm performance (Devins, Johnson, & Sutherland, 2004; Kitching & Blackburn, 2002; Eraut et al., 1998). According to Kitching & Blackburn, (2002) employees in the smallest organizations are more likely than those employed in the largest organizations to have gained a qualification.

## TRAINING ENVIRONMENT

Training environment that includes: training facilities, site layout, sound lighting, hardware environment, classroom climate, student involvement of the soft environment. Therefore, only the training of managers and trainers work together to create a better learning atmosphere and environment. According to (Martin, 2010; Ford, and Weissvein, 1997). Training environment have an effect on training effectiveness on human resource practices among employees .

## WORK ENVIRONMENT

Work environment includes such factors as managerial support, peer encouragement, adequate resources, opportunities to apply learned skills, technical support, and consequences for using training on-the-job (Burke and Hutchins, 2008; Colquitt *et al.*, 2000; Kontoghiorghes, 2001; Lim and Morris, 2006; Rouiller and Goldstein, 1993; Tracey *et al.*, 1995). Research has shown that removing barriers to application in the work environment is so important that training opportunities should be turned down by employees if proper follow-up support is not available (Rossett, 1997). Employees have been trained after training program, they should relate to their current job performance and also the behavior of the job. Managers can show support for training in a variety of ways ranging from simply allowing employees to attend the training to participating in the training itself as an instructor (Birdi *et al.*, 1997; Brinkerhoff and Montesino, 1995; Broad and Newstrom, 1992; Burke and Baldwin, 1999). Supervisors signal whether the training is to be used and how quickly changes are expected. A

supervisor who does not view the training as useful or relevant can easily undermine application in a variety of direct and covert ways. A supportive organizational climate is also communicated by how the work is designed and skill application rewarded.

Peer support enhances learning transfer through the feedback, encouragement, problem-solving assistance, supplemental information, and coaching provided to trainees (Facteau *et al.*, 1995; Hatala and Fleming, 2007) and may have a stronger influence on trainee transfer than supervisory support (Gilpin-Jackson and Bushe, 2007). In summary, behavioral changes following training will be short-lived without activities to support transfer towards work environment. The most important variable for the purpose of this study is "Training effectiveness" which have an effect on both of organizational needs and individual needs in the company. The independent variables are: 1. types of training (technical or non-technical); 2. Trainees' personal characteristics (age, gender, marital status, level of education and length of working in current job); 3. training environment; 4. work environment.

## RESEARCH HYPOTHESES

This study aims to investigate relations between organizational factors which towards training (types of training, training environment and working environment) and individual factors which towards trainees on trainees personal characteristics (age, gender, marital status, education level and length of working in current job) with training effectiveness. According to our frame work the following hypotheses are formulated.

H1: Types of training between technical training program and non-technical training program will affect training effectiveness.

H2: Training environment will affect training effectiveness.

H3: Work environment will affect training effectiveness.

H4: Trainees' personal characteristics (age, gender, marital status, education level and length of working in current job) will affect training effectiveness.

## METHODOLOGY

A detailed study was undertaken by set of activities. Systems of models, techniques are used to find the results of the research problem. In this study, applied research is used. The researcher tries to solve an ongoing problem within some organizational framework by introducing training models and observing the results of training effectiveness. This research is basic research, as we know, the literature on this study was qualitatively examined and the information was collected by using the questionnaires. Firstly, the research process has been identified and the research problems were formulated. Then, there were also discuss about the instruments to be used and the decisions that should be taken for achieving the purpose of the research were thoroughly analyzed. Later on, the research design was created to answer the research objectives or hypotheses.

In the preliminary stage, the literature of this subject was examined. As a quantitative study, conclusions are based on the questionnaires distributed to respondents. Statistical data used as a medium to obtain needed information. This study aims to determine the relations between independent variable organizational factors towards trainings (types of training, training environment, working environment) and individual factors towards trainees (personal characteristics: age, gender, marital status, education level, length of working in current job) and dependant variable (training effectiveness on human resource practices). The findings and the conclusion of the study solely depend on the utilization of the statistical data collected.

In order to increase an academic knowledge in conducting a research, the researcher proposed to use questionnaires as a method for collecting data information. The questioners were used for gathering information about the training and its effectiveness (organizational factors toward training program and individual factors toward trainees) on human resource practice. The following section will be an explanation of the instrument applied in this research. The unit of analysis for this study is employees in Kedah State Development Corporation Company.

Before the study was carried out, initial contacts with targeted company (KSDC) were made on April 16, 2011 by formal letter whereby a sample copy of the questionnaire was attached. As a result of these contacts, HR manager of Kedah State Development Corporation agreed to participate and permit other employees to participate in the study.

Population is the target group. The population considered for the study is finite and it includes all employees of KSDC, amounting to 120 people. Sampling unit: The sampling unit is the basic unit containing the elements of the population. It is all members of the population are used as a sample. According to the sample determination table provided by Sekaran (2003), the appropriate sample size for population of 120 is 92(n). 92 sets of questionnaires were distributed to KSDC Company. The sample size chosen this study was 92 employees in KSDC Company. It was considered that 92 employees adequate to represent the total population of KSDC. Primary data are the first hand information from the respondents. The researcher considered structured questionnaire while collecting primary data. In this, field study was done, which aims at discovering the relations and interactions among variables.

Secondary data are the published data from KSDC, Books, Online journals, Publications by KSDC, Journals, magazines, websites, etc. The questionnaire is one of the main tools for collecting data from the respondents. The types and designs of questionnaires that are used depend on the studies that have been carried out the questionnaire will be distributed in English and will consist of four sections. First section will ask the demographic information of respondent (gender, age, marital status, education level and etc.). Second section will contain 15 items that measure training effectiveness. In the third section will contain 8 items towards training environment. The last section contains 6 items will ask on work environment. According to Training Effectiveness questionnaires the researcher formulate questionnaire. According to a Likert scale technique which is a psychometric scale commonly used in questionnaires, and is the most widely used scale in survey research. The rating scale from 1 (strongly disagree) to 5 (strongly agree) was used.

## DATA ANALYSIS

Various statistical methods will be used to analyze the data that we will collect from the respondents. In this study, the researcher used The Statistical Package for the he latest version (2008) of the Statistical Package for the Social Sciences (SPSS 16.0) will use for the statistical analysis. All the items and variable was coded before entered to the employee. In this study, the responses and information collected from the survey was tested using statistical techniques such as frequency distribution and descriptive statistics, correlation analysis by using the reliability test. Frequency distributions were obtained for all the personal data or classification variables. The frequencies were computed to analyze respondent's profile. Such like frequency analysis use for the respondent's demographic factors of gender, age, and education level, length of working in current job. Besides, Pearson Correlation Analyses were used to examine the relationship between independent variables and the dependent variables. The hypotheses of research will analysis with regression analysis and person correlation analysis with the acceptable Cronbach Alpha values are 0.60 and above (Sekaran, 2003). Therefore, for the items that have low Cronbach Alpha values (less than 0.59) will be eliminated from further analysis process. The statistical tools will be defined as follows:

**PERCENTAGE ANALYSIS:** Percentage analysis consists of reducing a series of related amounts to a series of percentages of a given base.

**CORRELATION ANALYSIS:** The Correlation analysis is performed on log normalized spot expression levels. Spots can then be clustered according to how closely correlated they are. Spots with a high correlation value (i.e. close to 1) show similar expression profiles while spots which a high negative correlation value (i.e. close to -1) show opposing expression profiles.

**REGRESSION ANALYSIS:** In statistics, regression analysis includes any techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed.

**ANOVA:** An ANOVA is an analysis of the variation present in an experiment. It is a test of the hypothesis that the variation in an experiment is no greater than that due to normal variation of individuals' characteristics and error in their measurement.

**T-test:** T-test for comparing the means of two samples (or treatments), even if they have different numbers of replicates. In simple terms, the t-test compares the actual difference between two means in relation to the variation in the data (expressed as the standard deviation of the difference between the means).

**RESEARCH FINDINGS**

Firstly, the main study has an assessment that discusses the respondents' demographic profiles and purification of the measurement variables. Secondly, the reliability tests were conducted to test the consistency of the questionnaires. Thirdly, the hypothesis testing presented through correlation.

**OVERVIEW OF DATA COLLECTED**

A total of 92 questionnaires were distributed to employees in KSDC in Kedah State which located in north Malaysia by researcher. All the questionnaires were returned. Hence, 92 questionnaires were used in the statistical analysis, representing a response rate of 100%.

**RELIABILITY TEST**

Reliability tests were conducted on the independent and dependent variables which are: training effectiveness, training environment, and work environment. The Cronbach's alpha values of the study variables are shown in table. As revealed, the reliability coefficient of the study variables exceeded the minimum acceptable level of 0.60 (Nunnally, 1978). As a result, Cronbach's alpha for the training impact variable is (0.805); for training environment variable (0.697); and finally, for work environment (0.700).

**TABLE 1: RELIABILITY COEFFICIENT OF THE STUDY VARIABLES**

Variables	Total Items	No. of Items Deleted	Alpha Coefficient
Training Effectiveness	15	None	0.805
Training Environment	8	None	0.697
Work Environment	6	None	0.700

**THE RESULTS OF HYPOTHESES TESTING**

**CORRELATION ANALYSIS**

Correlation test used for inferential statistics. The Pearson correlation will be used to measure the significance of linear bivariate between the independent and dependent variables thereby achieving the objective of this study (Sekaran, 2003). Variable association refers to a wide variety of coefficients which measure the strength of a relationship among variables in the model. Furthermore, correlation is a bivariate measure of association (strength) of the relationship between two variables. It varies from 0 (random relationship) to 1 (perfect linear relationship) or -1 (perfect negative linear relationship). It is usually reported in terms of its square ( $r^2$ ), interpreted as percent of variance explained (Hair, Black, Babin, Anderson & Tatham, 2006). Table 4.7 below shows that organization variable was partially significantly correlated in with training effectiveness. Types of training was not significantly correlated with training effectiveness (-0.087), training environment was more significantly correlated with training effectiveness (0.495), and work environment was correlate variable with training effectiveness with high value equal to (0.367).

**TABLE 2: CORRELATIONS BETWEEN VARIABLES**

		types of training	TI	TE	WE
types of training	Pearson Correlation	1	-.087	-.034	.027
	Sig. (2-tailed)		.410	.750	.799
	N	92	92	92	92
TEF	Pearson Correlation	-.087	1	.495(**)	.367(**)
	Sig. (2-tailed)	.410		.000	.000
	N	92	92	92	92
TE	Pearson Correlation	-.034	.495(**)	1	.338(**)
	Sig. (2-tailed)	.750	.000		.001
	N	92	92	92	92
WE	Pearson Correlation	.027	.367(**)	.338(**)	1
	Sig. (2-tailed)	.799	.000	.001	
	N	92	92	92	92

\*\* Correlation is significant at the 0.01 level (2-tailed).

**REGRESSION RESULTS**

**The first hypotheses** of this study proposed that training types would affect training effectiveness in Kedah state development corporation. Hence, to determine to what extend the training types influence the employees' training effectiveness on human resource practices regression test was conducted. As shown in table 4.8, the results of regression test the training types as the independent variable against training effectiveness as the dependent variable. The results of regression analysis indicated an insignificant p value  $p > 0.05$  (0.410). Therefore it can be concluded that training types does not affect the training effectiveness.

**TABLE 3: REGRESSION BETWEEN TYPES OF TRAINING AND TRAINING EFFECTIVENESS**

Model	R	R Square	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
1 (Constant)	.087	.008	3.708	0.151		24.484	0.000
Types of Training			-0.072	0.087	-0.087	0.828	.410

Dependent Variable: TEF

**The second hypotheses** of this study proposed that training environment would affect training effectiveness in Kedah state development corporation. Hence, to determine to what extend the training environment influence the employees' training effectiveness on human resource practices regression test was conducted. As shown in table 4.9, the results of regression test the training environment as the independent variable against training effectiveness as the dependent variable. The results of regression analysis indicated a significant p value  $p < 0.05$  (0.001). Therefore it can be concluded that training environment influences the training effectiveness and significantly contribute to the R square value. The results of regression analysis indicated that training environment explained about 25% ( $R^2 = 0.245$ ) of the variance in training effectiveness.

**TABLE 4: REGRESSION BETWEEN TRAINING ENVIRONMENT AND TRAINING EFFECTIVENESS**

Model	R	R Square	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
1 (Constant)	.495	.245	1.874	.319		.879	.000
Training environment			.481	.089	.495	.406	.000

Dependent Variable: TEF

**The third hypotheses** of this study proposed that work environment would affect training effectiveness on human resource practices in Kedah state development corporation. Hence, to determine to what extend the work environment influence the employees' training effectiveness on human resource practices regression test was conducted. As shown in table 4.10, the results of regression test the work environment as the independent variable against training effectiveness as the dependent variable. The results of regression analysis indicated a significant p value  $p < 0.05$  (0.001). Therefore, it can be concluded that work environment affects the training effectiveness and significantly contribute to the R square value. The results of regression analysis indicated that work environment contributed about 14% ( $R^2 = 0.135$ ) to the variance in training effectiveness.



**TABLE 5: REGRESSION BETWEEN WORK ENVIRONMENT AND TRAINING EFFECTIVENESS**

Model	R	R Square	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
1 (Constant)	.367	.135	2.405	.318		.566	.000
Work environment			.324	.086	.367	.744	.000

Dependent Variable: TEF

**ANALYSIS OF DIFFERENCES**

T-test is used to find the differences between training effectiveness with gender. Likewise t-test is used to find the differences between training effectiveness with marital status. Otherwise, the ANOVA is used to find differences between training effectiveness with age, educational level, and length of work experience. Independent sample t-test is applied in many researches concerns the means and standard deviations of two groups on the variable and examines whether the numerical difference in the means is significantly different from 0 (zero) as postulated in null hypotheses (Sekaran, 2003).

**GENDER AND TRAINING EFFECTIVENESS**

From the table it is observed that the results of testing the differences between male and female who were participants did not have different scores of training effectiveness at significant level 0.05 levels (t= 0.435, and p =.435 which is p >0.05). The results of data analysis are shown in table 6 below.

**T-TEST RESULT BETWEEN MALE AND FEMALE**

**TABLE 6: T TEST**

No	Male	Female	Sig
Mean	3.545	3.611	.435
SD	.475	.333	

**AGE AND TRAINING EFFECTIVENESS**

In order to find the differences between age and training effectiveness, it is observed from ANOVA test results that there are no differences among the respondents' age regarding the training effectiveness levels. With (F=0.597, p>0.05), there is no differences between three ages groups on training effectiveness. This is shown in table: 7

**TABLE 7: ONE WAY ANOVA OF AGE GROUPS ON TRAINING EFFECTIVENESS VARIABLE**

Age	Mean	F	Sig
Under 25 Years	3.651	.695	.597
25-35 years	3.626		
36-45 years	3.606		
46-55	3.460		
More than 55 years	3.622		
Total	3.587		

**MARITAL STATUS AND TRAINING EFFECTIVENESS**

From the table it is observed that the results of testing the differences between single respondents and married respondents who were participants did not have different scores of training effectiveness at significant level 0.05 levels (t= 0.528, p>0.05). Based on means, the male participants were better than female participants in received training. The results of data analysis are shown in table: 8 below.

**TABLE 8: T-TEST RESULT BETWEEN SINGLE AND MARRIED RESPONDENTS**

No	Single	Married	Sig
Mean	3.627	3.570	.528
SD	.420	.528	

**EDUCATIONAL LEVEL WITH TRAINING EFFECTIVENESS**

In order to find the differences between respondents based on their educational level and training effectiveness, it is observed from ANOVA test results that there are no differences among the respondents' educational level regarding the training effectiveness levels. With (F=1.491, p=. 201; >0.05). This is shown in table: 9.

**TABLE 9: ONE WAY ANOVA OF EDUCATIONAL LEVEL AND TRAINING EFFECTIVENESS VARIABLE**

Education Level	Mean	F	Sig
SPM below	3.497	1.491	.201
SPTM/diploma	3.658		
Bachelor	3.478		
Master	3.688		
Phd	3.866		
Professional	3.933		
Total	3.587		

**WORK EXPERIENCE AND TRAINING EFFECTIVENESS**

In order to find the differences between respondents based on their length of work experience and training impact, it is observed from ANOVA test results that there are a significant differences among the respondents' regarding the training effectiveness levels based on their work experience. With (F=5.030, p=. 003; >0.05), this is shown in table: 10 Results showed the less experienced participants have higher training effectiveness (mean = 3.819).

**TABLE 10: ONE WAY ANOVA OF WORK EXPERIENCE AND TRAINING EFFECTIVENESS VARIABLE**

Work Experience	Mean	F	Sig
Below 5 years	3.819	5.030	.003
6-10 years	3.595		
11-15 years	3.526		
Above 16 years	3.425		
Total	3.587		

**CONCLUSION**

The result of the final relationship variables and the testing of the influence of the variables are detailed to figure the relationship and degree of influence among predictors for the training effectiveness as dependent variable.(Table:11 below)

**TABLE 11: RELATIONSHIP VARIABLES**

Hypotheses	Results
Types of training between technical training program and non-technical training program will affect training effectiveness.	Rejected
Training environment will affect training effectiveness.	Accepted
Work environment will affect training effectiveness.	Accepted
Trainees' personal characteristics (age, gender, marital status, education level and length of working in current job) will affect training effectiveness.	Partially Accepted

## DISCUSSIONS AND CONCLUSIONS

The purpose of this study was to examine whether that organizational factors such as (types of training, training environment, work environment influence training effectiveness among employees in their workplace. The results supported that some factors such as training environment and work environment significant correlation with training effectiveness in organization. Other purposes of this study were to examine whether there were a significant differences between males and females, respondents age, level of education, marital status, and length of work experience of respondents on the training effectiveness. The problem and the gap in the research and literature arise from the fact that organizational and individuals' factors have not been identified widely.

Various methods of analysis were used in measurement. First are the demographic factors or personal information about the respondents which need to be considered in the study as it could describe the respondents' characteristics and their background. Different personal backgrounds would mean different personality and different levels of job performance among the respondents.

The demographic part was dealt based on the descriptive analysis. The aims of the analysis are to see the total percentage of those respondents based on the demographic factors which as mentioned earlier include: gender, age, marital status, educational level and work experience. Gender of respondents shows that male respondents are (43) in number making (37%) while female respondents makes (58) and is represented by (63%) this make a total of 100% of the gender of the respondents. The age of the respondents shows that the age range under 25 years had 13 respondents (14.1%); 25-35 years had 25 respondents (27.2%) and 36-45 years had 31 and represented (33.7%), 46-55 years had 20 and represented (21.7%), and more than 56 years had 3 respondents (3.3%) which the total gives 92 which is 100%. The marital status had singles having (27) respondents (29.3%) and married respondents had 65 with (71.7%) with total 100%. Most of respondents have SPTM/DIPLOMA education level which is (26.15%) and only 2 of them were professional. Finally, work experience shows that respondents have different length of work experience and most of respondents having more than 11 years work experience.

Training for organizations seems to be imperative process to improve the equality and products of the firm. Thus, this study attempt to determine factors related to firm performance. Overall, the results from this study yielded somewhat mixed results on the effects of organization factors on firm training effectiveness. Furthermore, the outcomes from analyzing the demographics variables did not differentiate between male and female as well as between respondent's ages, educational level, marital status on the level of training effectiveness. Only one of individual variables has been found to affect training effectiveness which is length of work experience. The specific research hypotheses addressed were:

**H1:** Types of training between technical training program and non-technical training program will affect training effectiveness.

**H2:** Training environment will affect training effectiveness.

**H3:** Work environment will affect training effectiveness.

**H4:** Trainees' personal characteristics (age, gender, marital status, education level and length of working in current job) will affect training effectiveness.

**H1: Types of training between technical training program and non-technical training program will affect training effectiveness.**

Regression analysis was conducted to assess if the type of training affects training effectiveness among this study sample. The results from this study indicated insignificant (0.410;  $p > 0.05$ ) correlation between these variables which somewhat inconsistent with previous studies who found that training types affected firm performance (Devins, Johnson, & Sutherland, 2004; Kitching & Blackburn, 2002; Eraut et al., 1998). One possible justification for the inconsistent result of this hypothesis due to largest number of employees in the organization. According to Kitching & Blackburn, (2002) employees in the smallest organizations are more likely than those employed in the largest organizations to have gained a qualification. Therefore, types of training do not influence the training effectiveness in this study.

**H2: Training environment will affect training effectiveness.**

Regression analysis was conducted to assess if the training environment affects training effectiveness among employees. The result showed that training environment influencing the probability positive outcome for employees. The result was consistent with previous studies who found that training has positive outcome in firm performance (Martin, 2010; Ford & Weissvein, 1997).

**H3: Work environment will affect training effectiveness.**

Regression analysis was conducted to assess if the work environment affects training effectiveness among employees performance. Workplace environment has found to be factor necessary for enhancing individual performance. The result of this study hypothesis was statistically significant (0.000;  $p < 0.05$ ) which was consistent with previous studies who found work environment lead to positive firm performance (Kontoghiorghes, 2001; Lim & Morris, 2006). A various researchers (Rouiller & Goldstein, 1993; Tracey et al., 1995; Burke & Hutchins, 2008; Colquitt et al., 2000) have agreed the importance of workplace environment factors such as managerial support, peer encouragement, adequate resources, opportunities to apply learned skills, technical support, and consequences for using training on-the-job.

**H4: Trainees' personal characteristics (age, gender, marital status, education level and length of working in current job) will affect training effectiveness.**

There is a strong call from previous studies regarding to test individual variables on workplace setting. Sample t-test and ANOVA was conducted to assess if differences exists between gender, age, marital status, educational level, and work experience among respondents on training effectiveness. The findings from this study indicated some notable differences associated with some employee characteristics. For example only length of work experience has been found to be factor influenced training effectiveness (0.003;  $< 0.05$ ). Otherwise, none of remains factors (gender, age, marital status, and educational level did not find to influence training effectiveness. The results somehow was consistent with Sutherland (2009) who found variation on training effectiveness level based on the length of work experience, in other hand the results was inconsistent with Sutherland (2009) who found a variation on training effectiveness based on gender and age variables.

## IMPLICATION OF THE STUDY

The results of this study provide major contribution to knowledge. First, it provides clear understanding of organization and individual variables on training effectiveness in organization. There has been very little empirical work to verify or refute them. This study has described the key components of organizations and their effects. From the findings it has been found that a positive relationship between training environment and work environment with the training effectiveness. Therefore, these findings indicated that it is important for the management to consider the factors and characteristics of individuals before setting up the goals. Management team should emphasize training opportunities as they may relate to increase job performance with enough training. As a result if these factors are considered, an organization will increase its chances of success.

## RECOMMENDATION OF FUTURE RESEARCH

According to limitation of this study, the sample may not be representative of the population because the sample drawn from one organization in Kedah State in North Malaysia, and did not involve other locations or different organizations in Malaysia. In addition, this research chooses only on public firm, therefore, it would be beneficial for future research to consider the suggestion that whether in public or in private organizations expand the study to enhance the consistency of the results. In addition, further studies will be conducted in order to determine the validity of the model in other organization as well as taking into consideration other variables to measure training among the companies so that this will increase the accuracy of understanding the drivers that could impact training.

## CONCLUSION

The objectives in this study have been achieved whereby the results had shown that training environment, work environment and employees' characteristics are related to training effectiveness in Kedah State Development Corporation Company. Training environment is found to be the strongest driver of training effectiveness in Kedah State Development Company. Therefore; it should channel more time and resources in this area as it brings a great effectiveness of Kedah

State Development Corporation Company. Researcher suggests that KSDC Company should take a look at the inordinate amounts of time and money spent on program or curriculum design and redesign. If something is not working in a company, training specialists are brought in to improve or upgrade the courses. New programs are sought, written and bought in hopes that this will improve the quality of training for the employees. Also take a look at the tests used after a training program, if any are used at all. The implication is that passing these tests indicates the employees possess a certain level of intellectual competency and should be able to implement what they were taught back on the job. Besides, trainers are often rewarded and evaluated based on the number of employees who like the class. For company needs, not necessarily the people. And, when these courses are taught, there is very rarely any noticeable behavioral change or improvement in the workplace.

With the results of this study also given an avenue for the organization under study to have a working material and an update on their employees which all enable them put the results into practice. The results will also be applicable in other related organizations in the country as they have similar characteristics. Conclusively, the result has brought up to organization factors under study which will be beneficial to their organization performance. Finally, this research is significant as a theoretical contribution in exploring the training impact that the organization and individual variables are having an effect on the organizations training effectiveness.

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**EDUCATIONAL HYPERMEDIA - IMPACTS ON TEACHING AND LEARNING PROCESSES**

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**ABSTRACT**

*Educational processes are immersed with educational hypermedia technology for past decades. As students understanding ability, cognitive skills, educators' experiences and subject knowledge have greater influence in educational processes, there are needs to implement new techniques in its processes to achieve the required goals. Constructive methodologies need to be developed and incorporated in teaching processes. One such method identified is using hypermedia in daily classroom activities. In developed countries, this educational technology is used wide-spread. In developing and underdeveloped countries, usage of educational hypermedia is blooming. The available hypermedia technology should be used effectively in conceptual and contextual ways. This paper discusses the impacts of this hypermedia technology in teaching and learning processes. Also, the problems in using hypermedia in classroom on both learners and educators perspectives have been identified. This paper suggests some changes required in teaching pedagogies to utilize the hypermedia technology in classroom environment to make all the students to get benefit out of this innovation.*

**KEYWORDS**

Hypermedia technology, Educational hypermedia, Teaching and learning processes, Impacts on educational methodologies, Constructive Methodologies.

**INTRODUCTION****H YPERMEDIA AND EDUCATIONAL TECHNOLOGY**

A multimedia system in which related items of information are connected and presented together is defined as hypermedia. Hypermedia is used as a logical extension of the term hypertext in which graphics, audio, video, plain text and hyperlinks intertwine to create a generally non-linear medium of information. This visual, interactive and non-linear medium for communication is based on a human-computer interaction paradigm in which the user can browse through a database using point and click interaction techniques. Hypermedia provides user-centered control of multimedia databases through application of powerful hardware and highly interactive software (Marchionini, 2003).

Due to technological growth, educational technology has tremendous development in various dimensions. The learning and teaching processes have significant changes due to these innovations. The technology has changed the educational processes to higher degrees. In particular, hypermedia technology has simplified the teaching and learning processes in the classroom. Educators have opportunities to provide good quality education by using hypermedia technology. Hypermedia has been accepted as a best educational technology by most of the educators. It has not been accepted by some educators as they do not match their expectations.

Simple introduction and implementation of educational technology in the educational environment do not help for sustainable growth in student's achievements. Proper factors that support student's achievements have to be identified while using the available technology. As learning is an active process of recreating and developing knowledge, educational technologies should emphasis more on constructivism in learning (wikibooks). Various constructive teaching and learning methodologies need to be developed to support student's achievements while using such technology. The role of the educators has been revolutionized and they have to provoke the learners for active learning while using hypermedia in the classrooms.

Student's active participation is one of the important factors in learning processes. Learning is an interactive process which requires both educators and learners actions and reactions. Learning does not refer only memorizing the subject topics but also includes how they can be transferred into real life applications. The major goal of educational processes is to get required knowledge and understanding skills, cognitive skills and transferable skills by the students. Otherwise, the students will not benefit in life long learning. While using hypermedia in the classroom, all these points have to taken into account to provide quality education. Apart from these, the users should have enough background and knowledge about the hypermedia technology. The effective usage of hypermedia perfectly depends on the student's level and the educators teaching pedagogies. Though numerous researches have been made in this field, still the discrepancies between hypermedia potentials and educators / learners requirements could not be fully eliminated.

This paper identifies the potential uses of hypermedia as educational technology and highlights the positive and negative impacts of hypermedia technology on educational methodologies. Problems in using hypermedia on both educators and learners perspectives are identified as well. Beside, some change which may be considered in teaching and learning processes using hypermedia in the classroom are suggested.

**STATEMENT OF PROBLEM**

Though hypermedia technology has been used widespread all over the world, they do not meet educators and learners requirements as expected. Hypermedia has made the learning processes easy for some users and in the contrary, too difficult for the others based on their backgrounds. It has modernized the teaching and learning styles in many aspects. They have significant impacts on educators and learners. They have both positive and negative impacts on teaching and learning processes. These impacts are not properly addressed to convene the educators and learners to use hypermedia in their educational processes. The methods to reduce the negative impacts of hypermedia on cognitive skills are also not properly explained. Thus, this paper identifies the major positive and negative impacts of educational hypermedia with respect to educator's and learner's perspectives.

**RESEARCH QUESTIONS**

1. What are the significant impacts of hypermedia on teaching and learning processes?
2. Does the available hypermedia effectively used in conceptual and contextual learning processes?

3. How the educators and students are influenced by educational hypermedia?
4. Are constructive methodologies incorporated in the available hypermedia to ensure all educators and learners get benefit?
5. What are the changes required in teaching and learning processes to use available hypermedia in the classroom?

## LIMITATIONS

As hypermedia development are based on the needs and requirements of the local users, the identified impacts may vary. The suggested changes required in teaching and learning processes also depends on the classroom environment. These impacts may be studied further extensively using various other means as impacts on teaching processes and impacts on learning processes.

## LITERATURE REVIEW

Hypertext attempts to get around the limitations of text by structuring it into a mesh rather than a line. As well as static material text and static diagrams and photographs – hypertext systems may also include more dynamic material such as animation, video and audio clips, and even full computer applications. Such systems are often known as multimedia or hypermedia. More interactive hypermedia may contain embedded games or applications. Some hypermedia may contain more intelligent components or agents actively working to shape the experience for the user. Some educational hypertexts adapt their content depending on a model of the learner (Dix et al, 2008).

Adaptive educational hypermedia is one of the first and most popular kinds of adaptive hypermedia. It applies adaptive hypermedia to the domain of education. The most popular adaptive hypermedia systems are web-based systems. An interesting aspect of adaptive hypermedia is that it makes distinction between adaptation (system-driven personalization and modifications) and adaptability (user-driven personalization and modifications). However, the truth of adaptive hypermedia systems is somewhere in the middle, combining and balancing adaptation and adaptability (wiki, 2011).

Teacher's knowledge and training is a critical component in the successful integration of technology in today's classroom. The concern regarding teacher participation for the effective utilization of educational technology was reinforced by Cuban (1996). The preparedness of teachers to utilize technology was additionally addressed by Ivers (2002) (Miller, 2006)

There are various learning-styles, experts and theorists have classified learners as visual, auditory, or tactile (touching) and kinesthetic (moving). Learners that prefer the kinesthetic learning style like to learn best when they are involved or active and find it difficult to sit still for long periods, they may often use movement as a memory aid. Those who prefer a tactile way of learning may use writing and drawing as memory aids and learn well in hands-on activities like projects and demonstrations (Teaching English Website 2006). Visual and in particular auditory learners tend to do well in the classroom. Tactile/kinesthetic learners typically do not. Research increasingly suggests that the majority of students classified as "at risk" of academic failure fit the description of concrete/common sense learner style, and favour the tactile/kinesthetic mode. Kinesthetic activities make abstract concepts concrete. This is extremely important for students/learners who have difficulty dealing with abstractions. Whether the learner's preferred modality is auditory, visual, or tactile/kinesthetic, it is known that none of us always remembers what is seen or heard, and all of us remember best what we have had an opportunity to do.

Innovations in the field of information technology (IT) continue to increase at an ever spiraling rate; advances in operating systems, software, communication devices and methodologies are renovating the inventory of IT products on a near daily basis. Businesses are embracing many of these technologies and are anticipating that university graduates will have the skills to quickly adapt to their business environment and choices of technologies. The IT educator plays a significant role in preparing students in IT fields of study to enter the IT-permeated business environment. That role is, in part, influenced by the educator's attitudes and choices regarding adoption of innovations. Educators in every discipline help to prepare their graduates for the world beyond the classroom. Every discipline has those educators who are considered "techies" or innovators - those who are first to adopt new technologies. It is expected that a higher percentage of IT educators would be early adopters of IT innovations (Gillard et al. 2008).

Modern technologies such as Computer and Telecommunications technologies have been the most remarkable and transformative of the technologies emerging over the past 30 years. The emergence and convergence of these technologies has been termed Information and Communication Technology (ICT), a term sometimes synonymously used with Information Technology (IT). IT is defined as the combination of computer technology with telecommunications technology. The term includes computer hardware and software, data, image, and voice networks (Whitten et al., 2004, p.12) (Randolph, 2008).

## RESEARCH METHODOLOGY

### DATA COLLECTION

Secondary data were analyzed for this research purpose. The data collected by distributing the questionnaires, prepared by the same authors for other researches related to educational hypermedia development methodologies and knowledge enhancement tools, were analyzed to identify the impacts of educational hypermedia on teaching and learning perspectives.

The data collected were segregated, summarized and analyzed. The closed ended questions were categorized based on the research questions. The answers of the open ended questions were considered for theoretical definitions and explanations.

Interviews were conducted with some of the respondents to get clear ideas about the usage and impacts of educational hypermedia in their day – to – day teaching and learning processes. Professors, lecturers and teachers opinions were considered for conducting study about the educator's perspectives of hypermedia. Students' opinions were used to judge learner's perspectives. General users in private and public sectors were included in studies to know the view of professional development impacts of hypermedia. Developers, who had enough knowledge about educational hypermedia development processes or developed some hypermedia, were considered to identify the developer's perspectives.

### DATA ANALYSIS AND INTERPRETATIONS

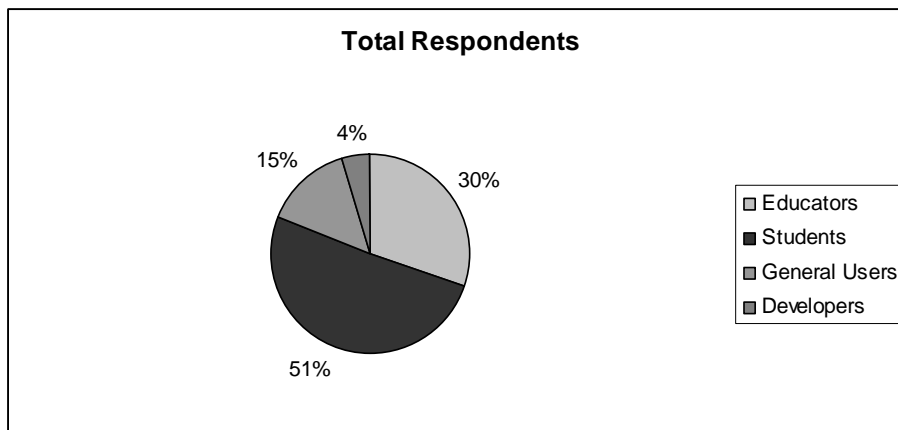
#### Analysis on Number of Respondents

TABLE 1 – RESPONDENTS TYPES

Profession	Respondent	%
Educators	54	30.3%
Students	90	50.1%
General Users	26	14.6%
Developers	8	5.0%
Total	178	100

Table 1 shows the professions of the respondents considered for the study. Educators include 25.9% of Ph.d's, 51.9% of Master's and 22.2% of bachelor's and other educational qualification holders. 40% of the students were studying bachelor, 44% of the students were studying diploma and 16% of the students were studying foundation. 23.1%, 30.8%, 27%, 19.1% of the general users were Master's, Bachelor's, Diploma and other qualifications respectively. These general users were the people basically working in different administration related works in public and private sectors who were using hypermedia in some or the other way, in their job profile. Also, the general users had the good knowledge about the impacts and usage of educational hypermedia, as they were using hypermedia during their studies. These general users basically supported the research as the feedback of hypermedia usage and impacts. 100% of the developers were Master's, who were working in IT sectors as programmers or assistants. This has been represented in Fig 1.

FIG. 1 RESPONDENTS PROFESSION ANALYSIS



Knowledge about Hypermedia Analysis

The respondents were asked about their knowledge about hypermedia to know their background. Though the knowledge about hypermedia cannot be exactly measured and rated, the basic idea about these optional questions was to have an overall opinion about the knowledge of the respondents about the education hypermedia. This helped the researchers to relate their responses in close – end questions with their experience and knowledge. This has been shown in Table 2.

TABLE 2 – RESPONDENTS KNOWLEDGE ABOUT MULTIMEDIA

Response	Educators	Students	General User	Developers	Total	Total %
Excellent	49	39	4	5	97	54.5%
Very Good	5	34	8	2	49	27.5%
Good	0	15	13	1	29	16.3%
Average	0	2	1	0	3	1.7%
No Idea	0	0	0	0	0	0%
Total	54	90	26	8	178	100%

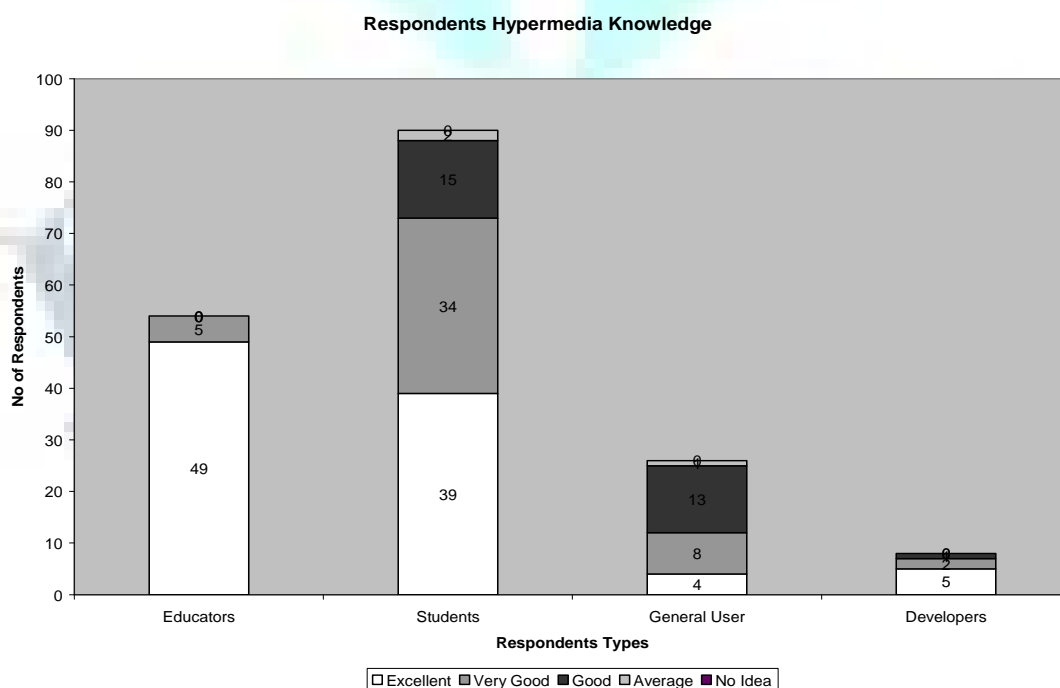
In the respondents, 90.7% of the educators had excellent knowledge about hypermedia usages in the classroom. 85.2% of the educators had excellent knowledge about up – to – date hypermedia tools. 74.1% of the educators said that they know the pros and cons of hypermedia in teaching and learning processes.

43.3% of the students had excellent knowledge about hypermedia usages in the classroom. 38.9% students said that they know about different hypermedia. 33.3% of the students had excellent knowledge about up – to – date hypermedia tools. 52.2% of the students said that they know the pros and cons of hypermedia in teaching and learning processes. The students studying foundation level said that their knowledge about hypermedia usages in teaching and learning processes is average and also they were not aware of pros and cons of the hypermedia technology in education.

15.4% of the general user had excellent knowledge about hypermedia usages in the classroom. 46.2% general users knew about using different hypermedia. 38.5% of the general had excellent knowledge about up – to – date hypermedia tools. 34.6% of the general users were aware of pros and cons of hypermedia in teaching and learning processes.

62.5% of the developers said that they have excellent knowledge about the hypermedia technology. 75% of the developers knew about the usage of different hypermedia. 87.5% of the developers said that they were aware of up – to – date hypermedia tools. 75% of the developers knew about the pros and cons of hypermedia in educational methodologies. These have been graphically represented in Fig 2.

FIG. 2: RESPONDENTS TYPES – KNOWLEDGE ABOUT MULTIMEDIA



**QUESTIONNAIRE ANALYSIS**

Table 3 shows the analyses on questionnaire.

**TABLE 3: RESPONSES ON QUESTIONNAIRE**

No	Area	Strongly agree	Agree	No Idea	Disagree	Strongly Disagree
1	Hypermedia has significant impacts on teaching and learning processes	139	36	2	1	0
2	Currently available hypermedia are effectively used in conceptual and contextual learning	14	19	5	92	48
3	Constructive methodologies are incorporated in the available hypermedia to ensure all educators and learners get benefit	9	12	4	42	111
4	Hypermedia adversely affects the personal information infrastructure	57	96	4	13	8
5	Changes are required in teaching and learning processes to use available hypermedia in the classroom	49	52	11	37	29

**INTERPRETATION**

More than 98% of the respondents, either strongly agreed or agreed that hypermedia has significant impacts on teaching and learning processes. 78.7% of respondents, either strongly disagreed or disagreed that the currently available hypermedia is effectively used in conceptual and contextual learning. For this question, 32.7% of the educators either agreed or strongly agreed that the currently available hypermedia is used effectively. 80.4% of the respondents strongly disagreed or disagreed that constructive methodologies are incorporated in the available hypermedia to ensure all educators and learners get benefit. In this, 74.1% educators and 77.8% of the students either strongly disagreed or disagreed. 55.6% of the educators, 53.9% of the general users, 87.5% of the developers and 55.6% of the students suggested that changes are required in teaching and learning processes based on the available hypermedia to use available hypermedia potentially in the classroom.

**HYPERMEDIA TECHNOLOGY AND DEVELOPMENT STRATEGIES**

Now – a – day's hypermedia system plays a vital role in educational systems. As the whole world is experiencing new technological developments, traditional ways of teaching will not be so effective and constructive. Hypermedia and hypertext should be used as effective tools for both teaching and learning. In hypermedia environment students need to participate actively. As the understanding capacity of student's is divergent and the requirements of the courses vary, hypermedia should provide facilities by considering all these issues. Also, it should motivate the students towards learning. When hypermedia is designed, proper designing approach should be followed in order to satisfy all needs.

Hypertext and hypermedia usage in education needs an active participation of students (Pehl et al). Motivation towards learning is one of the most important issues in using hypermedia in education. Teaching and learning processes will be successful only if the students participate actively. The hypermedia system should have proper stimuli to make the students to participate actively. Apart from this, the student's cognitive skills should not get affected (Marchionini, 2003). Also, the student's various skills such as analytical and transferable skills should be optimized.

As we have different educational systems, the hypermedia should match to the corresponding environment. Another major consideration should be on student's learning and understanding perspectives. As every student has different understanding capability, the hypermedia may provide additional tools to assist the students to understand the concepts easily. The educators should feel convenient to use hypermedia in their teaching processes. It should contain audio and video aids in order to be consistent in teaching. Required authoring tools should also be included in interactive modes.

Like any other software methodology, the life-cycle of an educational hypermedia application should not stop after the implementation and hand-over. It should be maintained and continually improved. As suggested by Thomas (1994), problems reported should be acted on at the earliest opportunity and feedback should be actively sought from learners and teachers.

The complex learning processes propose the needs for situated learning, social negotiation and multiple perspectives on the different aspects of the subject matter. Different learning strategies must be adopted to assist the learner in the construction of knowledge. Educational technology has grown enormously and the usage of hypertexts and hypermedia in education has become fundamental component of teaching and learning processes.

The developed countries receive the full potentials of that hypermedia and use the educational hypermedia in their daily activities. They develop hypermedia based on their requirements and benefit at the maximum. The developed countries use educational hypermedia in advanced contextual and conceptual ways. The students and educators utilize the potentials of hypermedia optimally and get benefit out of it. The teaching and learning processes have been simplified to match to the environmental needs. The latest hypermedia technologies and development strategies are used in all aspects. Hypermedia technology has become an essential in teaching and learning processes in developed countries.

The developing and underdeveloped countries try to extract some features of this educational hypermedia to go with their educational requirements and environments. Current development strategies could not match to their necessities in contextual meanings. The educational hypermedia have greater impacts on both teaching and learning processes of educational processes either in positive or in negative aspects. The potentials of the educational hypermedia utilizations perfectly depend on the systems that have been adapted.

As, most of the hypermedia technologies uses English language as development tool, the developing countries and underdeveloped countries with lack of necessary English language proficiency of the students hinder in using the full potentials of educational hypermedia in classroom environment. As English is the medium of instruction in most of the higher education providers, the students with average English background feel that the educational hypermedia do not match to their requirements. Understanding the subjects and course contents have become little difficult in these situations.

Proper development strategies have to be adopted in developing educational hypermedia to cohere with the local requirements and potentials of hypermedia. Clear methodologies should be realized in order to achieve the required outcomes in using hypermedia in classroom environment. The learner's requirements should be addressed in these development strategies to minimize the negative impacts in learning processes. Also, the educator's perceptions have to be considered as essential developmental strategies to maximize the teaching efficiency.

Thus educational hypermedia has major impacts on educational methodologies in various aspects. The impacts of educational hypermedia shall be differentiated in two ways: Positive Impacts and Negative Impacts. Also, they shall be distinguished separately for teaching processes and learning processes. But, in overall, the impacts have greater influences in cognitive psychology.

**IMPACTS OF HYPERMEDIA ON EDUCATIONAL PROCESSES****IMPACTS ON TEACHING PROCESSES***Positive Impacts on Teaching Processes*

Teaching processes are made easy by hypermedia technology. The educators could use hypermedia in the classroom environment irrespective of the subject being taught. As educator's knowledge plays a vital role in using hypermedia, educators could select any hypermedia methodology based on their training and knowledge. New teaching methods have been introduced. The educators need not to be physically present even in the classroom. The virtual classrooms are increased and classrooms have become global. Any educator can teach any student in the other corner of the world. The doubts could be clarified by the experts at any time, from any corner of the world. The educators shall adopt any teaching process based on the classroom environment. As numerous resources are available in hypermedia, the learning processes continue even for the educators. Educators could know and learn new concepts and utilize the same in their teaching processes.



### Negative Impacts on Teaching Processes

Though the educational hypermedia has positive impacts on teaching processes, still they have some negative impacts too. The educators need to prepare themselves to utilize hypermedia effectively in the classroom. They have made to spend considerable time for this preparation. Text book usage has become nearly zero in the classroom, which in turn, affects the cognitive skills of the educators. The traditional teaching methodologies have been totally eradicated. But, in heterogeneous educational environment, still in some places traditional teaching is more effective than the hypermedia. New teaching processes have been introduced irrespective of the educational atmosphere, in which, the educators may not have enough knowledge and training. The educators need to train themselves to know the usage of the technology.

As most of the educators are fully engaged with administrative works, it is difficult for them to make necessary changes, addition or deletion in the available hypermedia data. Apart from this, the data transferring has become a tedious job for the educators. Thus, the educators can not fully utilize the hypermedia in their teaching processes. The resources available in some hypermedia are not enough for the particular course. Thus the educators could not provide enough guidance for cross references and resources. Some hypermedia lacks in required links like links to learning outcomes, links to various format of the course materials and links to descriptive test manager. These make the educators to lack in proper classroom assessments, which are major part of teaching processes.

### IMPACTS ON LEARNING PROCESSES

#### Positive Impacts on Learning Processes

Students could get good benefit out of the available hypermedia at any time. As hypermedia provides necessary information regarding any subject immediately, students shall learn the subject easily with the help of experts advises and methods. Virtual classrooms assist the learning processes in various ways. Students could contact any experts as and when they get the doubt. Educational advises are available freely at any time. Students could use the given references to learn in depth of the subject. Students could get full subject knowledge, if they could utilize the potentials of the hypermedia. Simultaneous preparation, relating the various courses and continuous learning are the some the important impacts on learning processes.

#### Negative Impacts on Learning Processes

The most important negative impact of hypermedia is using textbooks in the classrooms. Students lack in learning through reading books. As, hypermedia provides various assistances, students get cognitive laziness. In some cases, if the students have poor language knowledge, they get frustrated in learning and show very poor interest. The students with poor background of English language could not benefit fully out of hypermedia features. As, hypermedia affects the personal information infrastructure in all levels, students are deficient in reading, writing and logical thinking.

### CONCLUSION & RECOMMENDATIONS

Hypermedia as a technology supports teaching and learning processes in many ways. But, the educational environment, socio – cultural heritages and ethical issues need to be considered while using hypermedia in the classroom. The technology should provide required resources and other related materials to support teaching and learning processes. They should be interactive. The language barriers should be removed by introducing translations to other languages. The educators must know to utilize the hypermedia in the classroom based on the student's level. Educators should be well aware of various features of the available hypermedia, in order to get full benefit. More contextual and conceptual methodologies must be used while creating hypermedia. The developers should think in various directions to assist the learning processes in all stages.

Hypermedia should provide shared teaching and learning environment to help the educators and learners. Students should be self – motivated and their responsibilities should be increased. The required knowledge enhancement tools should be added to the currently available hypermedia. The educator's responsibilities should be increased by developing new teaching processes. The educators should use various teaching processes to reduce the negative impacts on cognitive skills. Textbooks should be used in the classrooms to avoid cognitive laziness.

### FURTHER SCOPES

As educational processes are changing rapidly, more constructive methods shall be used to develop the research in various aspects. We have identified some common impacts on teaching and learning processes based on the research methodologies used. The impacts may be further studied globally in various educational environments.

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## TECHNOLOGICAL 'CATCHING UP' IN BANGLADESH-EPZs: A PERFORMANCE APPRAISAL

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### ABSTRACT

*In view of the fact that East Asian economies extracted vast technological benefits adopting EPZ-strategies, an over-crowding as well as increasing variants of EPZs have mushroomed in the developing countries (DCs) such as Bangladesh over the years and produced a variety of empirical results. Although rewarding experiences with DC-EPZs in terms of inward foreign investment, employment generation and export promotion are often discussed in literature, the performance assessments of these EPZs in terms of reaping technological rewards such as backward linkages, product diversification and transfer of technology (TT), thus catching-up technological leaders, seem to be missing. In view of this shortcoming in the context of DCs, this study attempts to make a query about the overall technological orientations of DC-EPZs as well as their potentials of technological catching up adopting Bangladesh-EPZs (BEPZs) as a case study. In doing so, this study applies a number of assessment measures including the ones used by the Asian and Pacific Centre for Transfer of Technology (APCTT) using secondary industry-specific and country data from various government and non-government as well as local and international sources. The empirical examination of the industry distribution in BEPZs using four major propositions indicates that the degree of learning and catching up can be expected to be higher for fast-evolving EPZs like the ones observable in Bangladesh. The study ends with the recommendation of developing an ample amount of 'dated workforce' for the DCs like Bangladesh where EPZ-strategies may be carefully planned and pursued as technological kick-starter of their economies.*

### KEYWORDS

Export Processing Zones (EPZs), Technology Transfer, Catching-up, East Asia, Developing Countries.

### INTRODUCTION

The past few decades have observed a progressive strengthening of international economic relationships and a growing integration of the world economy. The growth in FDI is the single most distinctive feature of globalization and, in turn, reflects the increasing importance of integrated, cross-border value-added activities of MNCs/TNCs. The surge in FDI-flows to developing countries (DCs) has been influenced by the liberalization of trade and investment regimes in many DCs (Henley and Kirkpatrick, 2001). EPZs seem to be well-fitted policy instruments for the attraction of FDI (Mauricio *et al.*, 1998). Among the pioneers, East Asian EPZs have distinctively emerged as an example to DCs of how "the existence of a functioning EPZ may accelerate the rate of technological progress in DCs" (Tyler and Negrete, 2009: 5). Being inspired by the East Asian success, an over-crowding as well as increasing variants of EPZs have mushroomed in the DCs such as Bangladesh over the years and produced a variety of empirical results<sup>1</sup>. Although Bangladesh's rewarding experiences with EPZs in terms of inward foreign investment, employment generation and export promotion (Bhattacharya, 1994) are often discussed in literature, the performance assessments of Bangladesh-EPZs (BEPZs) in terms of technological issues such as backward linkages, product diversification and transfer of technology (TT) seem to be missing. In consideration of all these views, this study aims to conduct an empirical examination of the BEPZs with the help of a number of measures including the ones used by the Asian and Pacific Centre for Transfer of Technology - APCTT (APCTT, 1986).

The study of the technological orientations of BEPZs can be considered important from the catching-up points of views. A catch-up economy has a clear objective to pursue, namely, to close the technological gap between itself and more technologically advanced countries. Abramovitz (1989) and Juma and Clark (2002) as well as the convergence hypothesis (Janne, 2006) suggest that followers tend to catch up faster if they are initially backward –"the larger the technological and, therefore, the productivity gap between the leader and the follower, the stronger the follower's potential for growth in productivity" (Abramovitz, 1989: 221). Bangladesh, initially being a technologically backward country, therefore has a great potential to narrow the technology gap with the leaders by pursuing economy-wide EPZ-strategy. The aim of this study, in this sense, to examine the *overall technological orientations of Bangladesh-EPZs (BEPZs) as well as their potentials of technological catching up* can be considered to be well-justified and empirically valuable.

In order to attain the above major objective, the following specific objectives will be accomplished:

- 1) To develop an overall understanding of the background, operational objectives of BEPZs and their links with the country's Technology Plans (section 3.0);
- 2) To study the proportion of capital- and labour-intensive firms in BEPZs, thus measure the trend with industrial diversification in BEPZ towards higher capital intensities (section 4.0);
- 3) To examine the level of linkages of EPZ-units with the local economy (section 5.0).

### METHODOLOGICAL ISSUES

The difficulty with examining catching up activities of 'special technology infrastructures' (STIs)<sup>2</sup>, eg, technology park (TP), export processing zone (EPZ) or Industrial Parks (IPs), is that there is no standard method for evaluating their success or failure. There is no established definition of success or a standard way to examine a company's effect on an economy (Drescher, 2001). While number of jobs and tax revenues generated usually remain to be the main focus, to ensure long-term success, a STI must focus on technology transfer (TT) and development of local technological capability (TC). The experience of Silicon Valley, for example, provides some insight into the mix of factors required for a successful STI and the culture and patience required to see long-term benefits (Wessner, 2009). Categorically, a range of studies that have attempted to determine success or failure of STIs tend to focus on benefits received by the economy or the community and by businesses located in the STIs. A group of researchers, such as Johnston (2001), are more positive suggesting that firms in STIs generally receive four basic benefits, and, thus assessment of these can present a performance picture of STIs:

- 1) A broadened understanding of mutual needs between university and industry researchers;

<sup>1</sup> (Basile and Germidis, 1984; World Bank, 1992; Jenkins *et al.*, 1998)

<sup>2</sup> For a complete conceptual outlining of STI, refer to Sharif (2011).

- 2) Increased information and knowledge transfer;
- 3) Access to student workers, faculty consultants, laboratory, computer and other resources;
- 4) Increased business opportunities.

Many zones under investigation indicate that at least some job creation and economic diversification had been effected as a result of the development of the zone. Whether the job creation and tax revenues generated exceed the initial investment is a difficult question as many zones take several years to become profitable and attract a large number of tenants. Sometimes zones offer generous subsidies and tax incentives to attract business, adding to the initial expense. Sharif (2011) highlighted this approach of attracting business as short-term objectives which have no profound spillover effects on the economy. Therefore, while assessing the technical performance of EPZs, measuring the short-term benefits in an easy quantitative way cannot serve the ultimate purpose of measuring the extent of technology-oriented benefits from the zones. Other than these approaches, some other broad measurement activities are carried out currently at four levels – firm/department, inter-firm/inter-department, industry and regional/international – as used by the Asian and Pacific Centre for Transfer of Technology - APCTT (APCTT, 1986).

In order to accomplish the objectives of this study as well as to conduct the empirical examination and analysis, related secondary data will be obtained and compiled from various government- and non-government- statistical databases, publications, journals, organizational websites (eg BEPZA, IASP, etc.), books, etc. Following APCTT (1986) approaches partially, this study will make enquiries on technological catching-up performances of BEPZs from industry and regional/international points of view. To check the trend with the technological orientations, a scoring-based appraisal of the degree of diversifications of the industrial units in BEPZs will also be conducted.

## AN OVERVIEW OF THE EPZS IN BANGLADESH

Within the evolving package of export-promotion measures targeted to augment private investment, particularly of foreign origin, the establishment of EPZs in Bangladesh occupies a conspicuous place. Under the 2<sup>nd</sup> Five Year Plan (2FYP), the government established the Bangladesh Export Processing Zone Authority (BEPZA) in 1983 through an Act of Parliament (Act. No. 36, 1980) to assign the responsibility of developing EPZs (APCTT, 1986). The act was however subsequently amended by two Ordinances in 1984 and 1988.

Under the aegis of the BEPZA, the two largest EPZs of the country in Chittagong and Dhaka were established in 1983 and 1993 respectively. Considering increasing demand of both local and foreign investors, the Government established eight more EPZs throughout the country: Comilla, Mongla (Khulna), Ishurdi, Adamjee (Narayanganj), among others. One EPZ that is being established in Comilla is well connected with the Chittagong sea port and the Zia International Airport by road and railway. Mongla EPZ is located in the southern part of the country, is well connected with the capital (Dhaka) by road and is only a few kms away from the country's second sea port (Mongla). Among the most recent ones, the EPZ in Adamjee is already in operation. Adamjee EPZ is located in Narayanganj (a historically prominent commercial district in Bangladesh), 15 kms from Dhaka city centers; 40 kms from Zia International Airport (Dhaka), 255 kms from Chittagong Port. In October 1996, the Government of Bangladesh enacted a law allowing the establishment of EPZs by the private sector. Taking advantage of the new provision, Youngone Corporation (Korea) set up the country's first *private EPZ* in Chittagong, namely Karnaphuli EPZ, which so far attracted a cumulative investment of \$43.69 million from 2006 to April 2009 (BEPZA, 2009). Karnaphuli EPZ is located in North Potenga and Halishahar, within 6 Kms from Chittagong Port, 10 kms from main business center of Chittagong, 12 kms from Shah Amanat International Airport (Chittagong).

As studies, such as Aggarwal (2005), suggest that location of a zone in a development region and / or near strategic positions such as bigger cities, ports and airports affect both the investment and export competitiveness, it can be expected that BEPZs are in a position to enjoy locational advantages in attracting investment and gaining export competitiveness. The links of investment and export competitiveness with the technological progress will, however, be taken later in this study.

### OBJECTIVES OF BANGLADESH-EPZS

The primary objectives of BEPZs, as outlined in the official website<sup>3</sup> of BEPZ Authority (BEPZA), is to provide special areas and treatments where potential investors would find a congenial investment climate, free from cumbersome procedures. The specific objectives are:

- 1) Promotion of foreign direct investment (FDI) and local investment;
- 2) Promotion and diversification of export and thus
- 3) Development of backward and forward linkages;
- 4) Generation of employment and thus upgradation of skill and development of management practices;
- 5) Transfer of technology (and knowledge).

The continuing relevance of EPZs in Bangladesh possibly lies in the country's effort to address the structural impediments which inhibit the inflow of FDI. With the crumbling of the tariff wall in the Bangladesh economy, the temptation of foreign investors to produce for a captive domestic market no longer exists. Understandably, future FDI in the country will essentially flow to industries producing for overseas markets. However, it is well recognized that the absence of adequate infrastructural facilities constitutes one of the main factors which deter the inflow of foreign capital. The EPZs, as one form of special technology infrastructure (STI) of the country, are expected, therefore, to offer the best package available in the country in terms of well-equipped industrial sites, and related commercial and financial services and facilities.

### LINK OF BEPZ-OBJECTIVES WITH TECHNOLOGY PLANS

Growth theories and the study of STI-schemes do highlight the importance of government intervention for inducing technical progress in a DC (Sharif, 2011). Therefore, prior to the assessment of the EPZ, this section examines the 2<sup>nd</sup> Five Year Plan (2FYP) and the National S&T plan (NSTP), both of which were formulated in the same year, 1980. NSTP aimed at ensuring transfer and utilization of research results in industries, generate internationally competitive technology, develop modern support facilities and provide support to emerging technologies, like, biotechnology, genetic engineering, micro-electronics, etc. The NSTP recognizes that the integration of scientific and technological considerations into the overall development strategy of the country should be a national priority. One sub-section of the NSTP (1986) deals with the –

“establishment of a national capability for development of indigenous technology, and attainment of a national capacity for the assessment, selection, acquisition, adoption and adaptation of foreign technology” (p. 22).

In line with the above recognition and with the fulfilment of the primary objectives of developing and transferring technology efficiently, the NSTP aimed strategically to:

#### BOX 1.0: SIMILARITY BETWEEN NSTP-AIMS AND TP-FEATURES

- |    |   |
|----|---|
| a. | Ensure the transfer and utilization of results of research in production sectors of the national economy;   |
| b. | Ensure the establishment of institutional facilities for relevant knowledge assimilation and skill development for the learning-adsorption process on imported technology;  |
| c. | Ensure the provision of facilities for transfer and productive utilization of research results through the institutionalization of engineering design, prototype development and commercialization of products in the relevant sector corporations and individual units in both public and private enterprises; |
| d. | Generate the technologies which are internationally competitive, particularly those with high export potential;   |
| e. | Ensure the development of support facilities like information and documentation services, computer services and software packages, standardization and quality control;   |
| f. | Provide support to emerging technologies like biotechnology, genetic engineering, micro-electronics, new and renewable sources of energy and so forth.  |

Source: Author's own scrutiny on literature

<sup>3</sup> Source: <http://www.epzbangladesh.org.bd> as on 28 December 2010.

Since the NSTP formulated aims having strong similarity with Technology Park (TP) features and, moreover, the 2<sup>nd</sup> FYP envisaged technology and export-promotion through establishing Export Processing Zones (EPZs), it can be said that similarity exists between the features of the TP (Sharif, 2011) and the objectives of the NSTP of Bangladesh. Although the national technology assessment in Sharif (2011) showed no practical implications of the NSTP objectives in the economy of Bangladesh, these objectives are mostly reflected by the policy declarations of the second five year plan (2FYP) under which EPZ was enacted. Therefore, it is expected in this study that NSTP-objectives would be reflected in the operational activities of EPZ as well as in the selection of industries while allocating spaces in EPZs. In consideration of this expected linkage between NSTP and EPZ-objectives, this study applies a number of measures to assess the technological performances of the BEPZs and, thus, assess, *to what extent can the EPZs facilitate catching up possibility for Bangladesh?*

**INDUSTRY DISTRIBUTION OF EPZ-FIRMS**

The international product cycle operates in a manner whereby countries over time transit from the production of lower technology goods to higher technology goods. The main purpose of this section is to examine whether industrial operations in BEPZs have experienced a transition from labour-intensive assembly to more complex and capital-intensive products. As Brautigam (2007:1) argued, when a country moves from simple assembly to more complex products, it indicates that the country is moving up the 'learning curve' (refer to technology S-curve, Sharif, 2011). The sectoral orientation of EPZs has therefore been argued to have a great influence on the transfer of technology (TT) and skills. Amirhamdi and Wu (1995) cited the example of Masan EPZ (South Korea) where electronics and chemical industries were predominant. The industries most likely to involve TT are listed to be those producing capital and intermediate goods, such as electrical equipment, industrial chemicals, metallurgy, and rubber -- industries that normally require a high level of investment.

Sharif (2011) made an in-depth study of the inherent features of the world-EPZs and presented a comparative picture between the zones of East Asia and those of the DCs. In most cases, it was found that a single industry accounts for more than 40% of total EPZ activity. Electronics prevail in East Asia (Korea, Malaysia and Taiwan) and Mexico, while textile and garments dominate in the DCs. Rabbani (1980), and Cling and Letilly (2001) explained the reasons for East Asia's strategic emphasis on electronics by a number of factors:

- 1) higher relative capital intensity,
- 2) product dynamism,
- 3) aggressive international marketing (facilitating forward linkage),
- 4) high level of -product sophistication and -development of the country.

In line with the above observation and the empirical findings in Rabbani (1980), Cling & Letilly (2001) and Sharif (2011), this section develops four *propositions* to make an assessment of the current industry distribution and its trend in Bangladesh-EPZs (BEPZs) over the years. The propositions are as follows:

**BOX 2.0: PROPOSITIONS OF THE STUDY**

<b>Proposition 1:</b>	The more likely industries are labor-intensive lightweight manufactures (thus facilitating transfers of little complex or simple technologies only).
<b>Proposition 2:</b>	A single category of industries dominates EPZ-activity in Bangladesh.
<b>Proposition 3:</b>	The dominating industry is overwhelmingly dominant over the years. This hypothesis is inspired by Roberts' observation (1992) that: "...once a particular industry begins to dominate activity in an EPZ, it tends to become overwhelmingly dominant" (cited in Jenkins et al., 1998: 21)
<b>Proposition 4:</b>	Capital-intensive industries (or industries with high level of investment) result in higher rate of returns.

*Source: Formulated on the basis of literature review*

In order to examine the validity of the above propositions, Table 2.0 is constructed to highlight an overview of Bangladesh EPZs in terms of *capital intensity* (or amount of investment made) of firms and *industry distribution*. Examining 'capital intensity' is considered important in this study in light of Gu's observation (2000) on Taiwan and Korea that high level of capital investment is a critical factor for rapid catching-up. As Scherer (1992) explained 'product diversification' as the mechanism for increasing returns to capital (and to learning), checking yearly 'industry distribution' is also deemed necessary here. As Gu (2000) argued, the increasing returns come from a temporary innovation rent (associated with product diversification) which (1) augments qualitatively the returns to their investment in physical and human capital, and (2) creates a monopolistic competitive advantage to the latecomer. In the earlier literature, new and dynamic industries were argued as the opener of more technology opportunity than traditional industry (Liu, 2007). For this reason, in earlier literature, from Gerschenkron (1962) and onwards, targeting new industry as a strategy to give latecomer country a good opportunity to catching-up was emphasized. Also, empirically, researchers found the catching-up of the Asian NIEs such as Taiwan and Singapore to be fastened by targeting new industry (Liu, 2007).

In light of Aggarwal's (2005) argument that composition of economic activities in the zones such as clustering and capital intensity also affect the export competitiveness, proposition four will therefore be verified through the construction of Table 5.0 using export data besides investment and employment data. In Table 5.0, export earnings will be used as a proxy of rate of return due to unavailability of empirical data on firms' rate of return - the way Ohanian and Wright (2007) used 'export earnings' to research rate of return from capital flows for 200 countries between 1950 and 2005. Export data has been also important here in the sense that, besides government's strong emphasis on targeting new industry, the higher export-orientations played key role in the catching-up process of the newly emerging economy, such as Taiwan and Singapore (Liu, 2007).

**EXAMINING PROPOSITIONS 1-3**

From the computed data in Table 2.0, the first three propositions can be verified as follows:

- 1) Bangladesh-EPZs (BEPZs) are dominated mostly by labor-intensive industries such as garments, knitting, terry towel, caps, tent, which belong to 'textile and garments' (T&G) category.
- 2) At the initial stage of EPZ-operation in Bangladesh (the second EPZ emerged in 1993), the industry concentration reflected the typical EPZ-picture of the DCs with 81% T&Gs. There is no doubt that the EPZs were dominant by the overcrowding number of T&Gs.

**TABLE 2.0: YEARLY INDUSTRY DISTRIBUTION OF BANGLADESH EPZ**

Major Category of Industries	Capital Intensity per employee * (in US\$)			Yearly distribution of industries in EPZs (number of industries in percentages)			
	2003	2006	2009	1986	1997	2003	2009
Textiles and Garments	4,910	5,254	5,540	81.0	64.2	51.0	52.2
Electric and Electronic	14,182	22,794	25,414	1.0	9.5	16.0	16.2
Footwear and Leather	8,916	6,562	6,629	0.0	4.2	8.0	4.4
Heavy Engineering	34,047	37,546	39,364	15.0	15.4	16.0	16.4
Service-oriented industries	N/A	10,878	12,372	N/A	N/A	2.2(b)	1.0
Agro products	N/A	9,509	12,424	N/A	N/A	1.1(b)	2.3
Miscellaneous				3.0	6.8(a)	5.7	7.5
Total				100.0	100.0	100.0	100.0

*Notes: (a) Includes furniture manufacturing (1.1%); paper products (2.1%); plastic materials (2.1%) and sports items and toys. (b) New additions in the list; N/A: Not available.*  
 \* Capital intensity per employee = Total investment (cumulative) ÷ Total no. of employees  
 Sources: Bangladesh Export Processing Zones Authority (BEPZA).

3) By 2003, the proportion of 'electrical and electronic' (E&E) goods jumped to a higher level steadily from 1% industrial share in 1986 to 16.2% share in 2009. T&Gs, on the other hand, experienced drastic fall of their shares in total number of industries, from a substantial share (81%) in 1986 to nearly half (52.2% share) in 2009. The share of heavy engineering is also on the rise. The continuous growth of the capital-intensive industries proves that:

- a) the initially dominant T&Gs could not hold their dominance in the EPZs; (thus)
- b) Roberts' proposition (1992) does not appear to be valid in cases of Bangladesh-EPZs.

Since the investment per employee in E&Es (nearly \$21,000 in average) and heavy engineering (nearly \$37,000 in average) shows much higher capital-intensity of these firms as compared to the others, it can be deduced that:

- Bangladesh-EPZs (BEPZs) are becoming 'less footloose' in nature indicating greater permanence of foreign investment in the zones;
- BEPZs have created great opportunity of fast catching up (refer to Gu's observation, 2000).

#### EXAMINING PROPOSITION 4

The broad association between GDP per capita and technology indicators is confirmed in literature in numerous occasions (Sharif, 2011). The association however has changed over time and a variety of national patterns has come into existence. As Pianta (1995) argued, most countries have experienced strong growth by making a balanced use of a couple of 'engines of growth' offered by technology:

- disembodied innovative activity (proxied by R&D intensity)
- technology embodied in investment (proxied by capital formation per employee).

In a similar fashion to Pianta (1995), UNU (2011) explained technological change as a unidirectional advance from a low to a high technology by a set of indicators such as capital intensity, expenditures for R&D, and sophistication of engineering and design. Sharif (2011) used R&D intensity as a proxy to check innovative activity in Bangladesh and then cross-check with some selected country experiences. Checking R&D intensity (and sophistication of engineering and design as well) in case of Bangladesh-EPZs in this study however appears to be difficult due to unavailability of firm-specific data.

In an attempt to compare and contrast the different firms' performance, Migdad (2002) used two technology indicators of firms:

- cost per job creation (CJC) or capital intensity (K/L)
- growth of employment (GE).

Data on capital formation (Pianta, 1995) in order to calculate capital intensity (Migdad, 2002; UNU, 2011) of the BEPZ-firms is not readily available for collection. As a partial fulfilment, technology embodiment in investment is therefore examined here by calculating yearly investments per worker at the firm levels. In line with Migdad (2002), Tables 3.0 and 4.0 are constructed to present 'investments per worker' and 'number of workers per firm' and thus make an assessment of the degree of technological attainments of BEPZ-firms during 2002-2011.

In Table 3.0, 'heavy engineering firms' appear to have consistently ranked number 1 position over nine years due to deployment of the highest investments per worker. E&E, although ranked in between 3 and 5 during 2002-08, continued to rank 2 from 2008-09. Garments, generally being one of the most populous industry in terms number of workers employed, have persistently ranked the lowest (ie, 15) since 2003-04. Plastic products ranked number 2 for a few years (2003-07) and then started losing its dominance among the list of countries since 2007-08 due to poor investments per worker. Among all, service-oriented industries have displayed some interesting pattern by staying in the middle of the Table (ranks 7-8) for six consecutive years and then start slowly rising to rank 3 in 2010-11 through rank 5 in 2009-10. In terms of diversity in the mix of industries in BEPZs, it can be said that Bangladesh has shown some success in attracting FDIs in:

- highly capital-intensive industries such as heavy engineering, electronics, etc.; and
- new types of industries such as agro products and service-oriented industries since 2003-04.

It is important to note that investment per worker can be calculated to be high (or low) as a result of the simultaneous presence of very high (very low) volumes of yearly investments as well as bulk (low) employment. It order to check this possibility and thus develop greater conceptual clarity about the intensity of investments per worker (as in Table 3.0) in genuine sense, 'number of workers per firm' is calculated and presented in Table 4.0.

TABLE 3.0: INDUSTRY-WISE INVESTMENT PER WORKER (IN USD), BEPZS, 2002-03 TO 2010-11

Category of Industry (in alphabetical order)	I	II	III	IV	V	VI	VII	VIII	IX
	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Agro product	N/A	4,818 (11)	14,898 (04)	9,509 (09)	22,422 (03)	13,213 (06)	12,424 (06)	13,080 (06)	17,608 (06)
Caps	2,955 (10)	3,194 (13)	3,401 (14)	3,454 (14)	4,453 (14)	5,589 (13)	6,714 (11)	6,364 (12)	6,367 (12)
Electrical & electronics	14,182 (04)	17,095 (03)	17,204 (03)	17,707 (03)	16,135 (05)	17,405 (04)	25,414 (02)	24,333 (02)	20,998 (02)
Footwear & leather	8,916 (06)	9,139 (08)	10,183 (09)	9,889 (08)	8,392 (09)	7,599 (09)	6,629 (12)	6,807 (11)	6,576 (11)
Garment accessories	15,866 (02)	14,611 (05)	14,439 (05)	13,097 (05)	15,895 (06)	17,858 (03)	16,470 (04)	18,450 (04)	17,824 (05)
Garments	2,248 (12)	2,803 (15)	2,729 (15)	2,646 (15)	2,592 (15)	3,321 (15)	3,394 (15)	3,478 (15)	3,508 (15)
Heavy Engineering (a)	34,047 (01)	26,492 (01)	27,807 (01)	37,546 (01)	35,128 (01)	26,974 (01)	39,364 (01)	33,889 (01)	32,117 (01)
Knitting	2,474 (11)	3,132 (14)	4,850 (12)	4,558 (12)	5,024 (12)	5,052 (14)	5,488 (14)	5,580 (13)	5,578 (14)
Plastic products	8,889 (07)	17,890 (02)	18,270 (02)	20,547 (02)	25,039 (02)	9,248 (08)	10,047 (08)	9,113 (09)	8,634 (09)
Paper products	6,726 (08)	8,117 (09)	8,719 (10)	7,625 (10)	6,751 (10)	7,320 (11)	7,324 (10)	12,248 (08)	12,248 (07)
Ropes	15,271 (03)	15,835 (04)	13,815 (06)	14,963 (04)	16,271 (04)	13,513 (05)	13,368 (05)	12,528 (07)	9,680 (08)
Service-oriented	N/A	10,927 (07)	11,168 (08)	10,878 (07)	11,575 (08)	12,119 (07)	12,372 (07)	17,698 (05)	19,471 (03)
Tent	2,148 (13)	3,256 (12)	4,028 (13)	4,481 (13)	4,865 (13)	6,845 (12)	5,964 (13)	5,284 (14)	5,580 (13)
Terry towel	3,952 (09)	5,164 (10)	6,312 (11)	7,793 (11)	6,636 (11)	7,404 (10)	7,927 (09)	7,998 (10)	8,168 (10)
Textiles	10,968 (05)	11,980 (06)	11,622 (07)	11,828 (06)	12,839 (07)	18,522 (02)	18,886 (03)	19,223 (03)	19,334 (04)

Source: Author's own calculations based on the BEPZA data.

Notes: N/A – not available;

The numbers in parentheses in columns I-IX indicate industries' rank (rank 1 – highest investment/worker and 15 – the lowest investment/worker).

(a) Heavy engineering now includes chemical production, partial automobile manufacturing for Nissan, Mitsubishi, and Hino, and mobile phone manufacturing for Sony.

In Table 4.0, 'garments', as assumed, have mostly ranked the lowest (ie, 15) in between 2003-11 employing highest number of workers per firm. 'Heavy engineering firms' appear to have ranked in between 3 and 5 over nine years due to relatively low employment per firm. E&E has mostly ranked 6 during 2002-11. Plastic products ranked number 2-3 for a few years (2003-07) and then started dropping in the list for being an employer of relatively higher number of workers since 2007-08. Paper products which occupied variably lower ranks between 7 and 11 in terms of investments per worker (Table 3.0) have ranked in terms of workers employed per firm the top in 2002-03 and 2003-04, and consistently ranked 2 since 2004-05. Among all, agro-products have displayed a significant pattern by topping the list of industries just from the second year of its emergence in the BEPZs' industry list since 2002-03.

From Tables 3.0 and 4.0, the following findings can be considered to be the major ones:

- 1) Heavy engineering and electrical and electronics (E&E) industries are highly capital-intensive – a good sign of high technical orientation in BEPZs (Table 3.0);
- 2) Agro products and paper products are capital-intensive in the sense that these industries require very few workers as compared to other industries located in BEPZs (Table 4.0);
- 3) Garments, knitting, tent and caps are relatively less capital intensive due to the fact that investment per worker in these industries have been one of the lowest among all (Table 3.0) and workers employed (per firm) have been relatively higher than others (Table 4.0).

TABLE 4.0: WORKERS PER FIRM, BEPZS, 2002-03 TO 2010-11

Category of Industry (in alphabetical order)	I	II	III	IV	V	VI	VII	VIII	IX
	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Agro product	N/A	72 (02)	19 (01)	30 (01)	14 (01)	34 (01)	27 (01)	36 (01)	26 (01)
Caps	1327 (12)	1519 (14)	1590 (14)	1784 (13)	1535 (13)	1140 (14)	1098 (14)	1090 (14)	1126 (13)
Electrical & electronics	181 (06)	234 (08)	238 (08)	194 (06)	205 (06)	210 (06)	190 (06)	214 (06)	250 (07)
Footwear & leather	363 (08)	411 (10)	411 (10)	433 (09)	523 (09)	606 (11)	731 (11)	881 (11)	887 (11)
Garment accessories	83 (02)	135 (06)	169 (06)	194 (06)	241 (07)	254 (08)	238 (08)	198 (05)	214 (05)
Garments	1469 (13)	1681 (15)	1953 (15)	1953 (14)	1945 (14)	1820 (15)	1853 (15)	1888 (15)	1906 (15)
Heavy Engineering(a)	127 (04)	127 (05)	149 (05)	116 (04)	126 (03)	158 (03)	146 (03)	133 (03)	151 (04)
Knitting	1126 (10)	1114 (12)	815 (12)	925 (11)	895 (11)	1007 (13)	834 (12)	922 (12)	984 (12)
Paper products	57 (01)	47 (01)	45 (02)	55 (02)	62 (02)	58 (02)	58 (02)	53 (02)	53 (02)
Plastic products	112 (03)	95 (03)	89 (03)	79 (03)	62 (02)	178 (05)	166 (04)	217 (07)	231 (06)
Ropes	139 (05)	186 (07)	215 (07)	205 (07)	190 (05)	228 (07)	229 (07)	256 (08)	335 (08)
Service-oriented	N/A	97 (04)	103 (04)	151 (05)	157 (04)	174 (04)	181 (05)	173 (04)	144 (03)
Tent	1296 (11)	1446 (13)	1351 (13)	1267 (12)	976 (12)	1003 (12)	1039 (13)	1015 (13)	1181 (14)
Terry towel	321 (07)	324 (09)	294 (09)	277 (08)	364 (08)	366 (09)	416 (09)	421 (09)	423 (09)
Textiles	660 (09)	735 (11)	712 (11)	791 (10)	794 (10)	599 (10)	564 (10)	605 (10)	558 (10)

Source: Author's own calculations based on the BEPZA data.

Note: N/A – not available;

The numbers in parentheses in columns I - IX indicate industries' rank (rank 1 – lowest no. of workers; 15 – the highest number of workers).

Now, as a combination of the observations from Tables 2.0, 3.0 and 4.0, it can be concluded that BEPZs have experienced higher technical orientations by accommodating more capital-intensive and relatively less labour-dependent firms (eg, heavy engineering and E&E) and showing greater diversifications in industry mix with inclusion of agro-products – an industry consistently ranking number 1 for being the lowest employment provider and relatively more capital-intensive in nature.

However, although an attempt is made above to draw an analytical conclusion about EPZ-based industries' comparative capital intensity (as a proxy of technical orientation) by examining degree of investment per worker and employment per firm on the basis of industry-specific yearly data from BEPZA, the overall outcome of the analysis from Tables 3.0 and 4.0 has appeared to be somewhat clumsy and complex. Due to this reason, in order to make a systematic analysis of the performance of industries in BEPZ in terms of technical orientation and rate of return, Table 5.0 is constructed where technical orientation is measured via *investment per worker* (Table 3.0) and *workers per firm* (Table 4.0), and rate of return (ROR) or return on investment (ROI) is measured via *average export earnings per worker*. As in management studies, scoring and ranking systems are considered to be extremely valuable tools to predict the future, make decisions, and improve behavior – sometimes all of the above (Yates, 2009), this part of the research has made use of this tool to rank industry performances on the basis of *investment per worker*, *workers per firm* and *average export earnings per worker* in order to deal with the fourth proposition of this study.

Experiences of the successful East Asian zones show that firms with higher capital intensity per worker reflect the following features (Sharif, 2011):

- less footloose in nature;
- high technology orientation;
- higher export earning; and
- lower employment relative to labour-intensive firms.

Additionally, it is also important to take into account that higher capital intensity and higher export earnings may be assumed to represent a large firm in size or may lead a firm to be large in course of time with higher capital intensity (Vermuelen, 2004; Jauhari, 2009). Now, if the firm in consideration is large (eg, heavy engineering, as observable in Table 3.0), the empirical findings on size in terms of capital intensity, export generation, etc. would be consistent with two technology-related arguments:

First, large firms may benefit from economies of scale in the adoption of new technology and have more capacity to finance technology adoption in imperfect financial market settings (Cohen and Klepper, 1996).

Second, the economies of scale from which large firms benefit allow them to operate with a more efficient division of labour resulting in better conditions for mechanization and technological upgrade (Correa *et al.*, 2008).

In line with the observations made on the successful East Asian zones in Sharif (2011), Table 5.0 ranks the firms on the basis of:

- (a) level of capital intensity per worker (columns I, II and III),
- (b) workers per firm (columns IV, V and VI), and
- (c) potential for generating greater export earnings (columns VII, VIII and IX).

The scores are assigned and the final industry performance-ranks are calculated in Table 5.0 in the following ways:

- Score 13 for highest capital intensity per worker and 1 for the lowest;
- Score 13 for lowest employment (ie, indicator of more capital-intensity) and 1 for the highest (ie, indicator of more labour-intensity in firms)
- Score 13 for highest export earning per worker and 1 for the lowest ones

Thus,

Rank 1 for the highest total scores (columns X, XI and XII).

TABLE 5.0: INDUSTRY PERFORMANCE ON THE BASIS OF CAPITAL INTENSITY AND AVERAGE EXPORTS, 2002-03, 2005-06 AND 2008-09

Category of Industry (in alphabetical order)	Investment per worker (Scores)			Workers per firm (Scores)			Exports per worker in million US\$ (Scores)			Rank (Scores)		
	I	II	III	IV	V	VI	VII	VIII	IX	2002-03	2005-06	2008-09
	2002-03	2005-06	2008-09	2002-03	2005-06	2008-09	2002-03	2005-06	2008-09	X = I+IV+VII	XI = II+V+VIII	XII = III+VI+IX
Caps	2,955(04)	3,454(02)	5,651(03)	1327(03)	1784(02)	1098(02)	0.008(07)	0.011(07)	0.013(09)	9(13)	11(11)	9(14)
Electrical & electronics	14,182(10)	17,707(11)	2,794(12)	181(09)	194(09)	190(10)	0.013(11)	0.013(09)	0.012(08)	3(29)	2(30)	2(30)
Footwear & leather	8,916(08)	9,889(07)	6,562(05)	363(07)	433(06)	731(05)	0.006(05)	0.008(05)	0.009(06)	6(20)	7(18)	8(16)
Garment accessories	15,866(12)	13,097(09)	16,625(10)	83(12)	194(09)	238(08)	0.010(08)	0.016(11)	0.022(11)	2(32)	3(29)	3(29)
Garments	2,248(02)	2,646(01)	3,369(01)	1469(02)	1953(01)	1853(01)	0.008(06)	0.008(05)	0.008(05)	10(10)	12(07)	11(07)
(a) Heavy Engineering	34,047(13)	37,546(13)	39,364(13)	127(10)	116(10)	146(12)	0.118(13)	0.105(13)	0.083(13)	1(36)	1(36)	1(38)
Knitting	2,474(03)	4,558(04)	5,934(04)	1126(05)	925(04)	834(04)	0.006(05)	0.007(04)	0.009(06)	9(13)	10(12)	9(14)
Plastic products	8,889(07)	20,547(12)	9,686(08)	112(11)	55(12)	166(11)	0.011(10)	0.010(06)	0.009(06)	4(27)	2(30)	6(25)
Paper products	6,726(06)	7,625(05)	7,319(06)	57(13)	79(11)	58(13)	0.009(08)	0.010(06)	0.011(07)	5(26)	6(22)	5(26)
Ropes	15,271(11)	14,963(10)	3,689(09)	139(10)	205(08)	229(09)	0.010(09)	0.014(10)	0.018(10)	3(29)	4(28)	4(28)
Tent	2,148(01)	4,481(03)	5,578(02)	1296(04)	1267(03)	1039(03)	0.013(11)	0.012(08)	0.012(08)	8(16)	9(14)	10(13)
Terry towel	3,952(05)	7,793(06)	8,126(07)	321(08)	277(07)	416(07)	0.004(05)	0.007(04)	0.009(06)	7(17)	8(17)	7(20)
Textiles	10,968(09)	11,828(08)	9,127(11)	660(06)	791(05)	564(06)	0.014(12)	0.019(12)	0.024(12)	4(27)	5(25)	3(29)

Source: Author's own calculations based on the BEPZA data.

Note: The figures in parentheses in columns I - XII indicate industries' total scores;

(a) now includes chemical production, partial automobile manufacturing for Nissan, Mitsubishi and Hino, and mobile manufacturing for Sony.

Since the number of capital-intensive units is calculated to be increasing at a consistent rate (see Table 2.0) in the EPZs, it can be said that Bangladesh possesses higher chances of *technical capability* (TC)-building opportunities with higher export potential. In support of this observation, Table 5.0 now shows a very promising picture for the EPZs of Bangladesh (BEPZs).

Columns X - XII of Table 5.0 highlight that *Heavy engineering firms* rank the top due to (uncomparably) the highest capital intensity, reasonably low employment and its performance as the highest export earner in all three fiscal years, 2002-03, 2005-06 and 2008-09.

*Electrical and electronics (E&E)*, although rank 3 in 2002-03 move up to position 2 in 2005-06 and continue to hold the position in 2008-09 due to increasingly higher capital intensities than the one in 2002-03.

Among the textile and garments (T&G) category of industries, 'garment accessories' and 'ropes' rank 2 and 3 respectively in 2002-03. Although T&Gs are labour-intensive in nature, Table 5.0 shows high capital intensity and low labour intensity of the above firms, thus higher ranks.

Garment accessories although having relatively higher investment and higher exports in 2002-03, plunge one step down to rank 4 in both 2005-06 and 2008-09 due to increasingly higher levels of employment than in 2002-03. *Electrical and electronics (E&E)* now take over Garment accessories' previous rank (2) in 2005-06 and continue to hold it until 2008-09.

Textiles, although plunged one rank down to 5 due to higher employment per firm and relatively lower investment per worker than other industries in year 2005-06, have jumped two places up to rank 3 by almost doubling the investment (of 2002-03) and lowering employment with steady increase in exports in 2005-06 and then in 2008-09.

Garments generally being less capital-intensive and more labour-intensive score low and thus rank the lowest among all the industries in BEPZs in all three years of this study.

Although agro products and service-oriented industries display promising character in terms of investment per worker and workers per firm, these industries have not been brought under consideration in Table 5.0 due to their emergence in BEPZs after 2002-03.

The empirical observation now verifies the **fourth proposition** of this section with the observation that 'higher capital intensity' resulted in higher rate of returns (ie, proxied by export earnings) for BEPZs. Only capital-intensive firms that show higher rate of return in terms of export-earnings are the 'heavy engineering' units followed recently by E&E firms.

Literature reviews show EPZs as a continually evolving phenomenon (see dynamic life cycle, as proposed in Sharif, 2011). In their infancy, EPZs are human capital based with very little spillover effects to the local economy in terms of foreign exchange earnings, and employment income. The story of Taiwan's EPZ (Kaoshiung) is a good example of how the inherent self-reliant nature of EPZ can be countered to convert EPZs into a catalyst for growth. As observed in cases of DCs, foreign investment initially also came in Taiwan for labour intensive, light industries, eg, textile. The country then offered special incentives to successfully attract capital intensive industries such as machinery, steel, petrochemicals, thus making the type of information (refer to the 'second wave of learning' in East Asia, Sharif, 2011) and technology transfer they were seeking possible (for details, see Wood-Kouassi, 2007).

The East Asian success stories as outlined above indicates that the zones shift to more technology-intensive industries as a country develops and moves up along the technological learning curve (Sharif, 2011). Manufacturing-oriented zones in this process can be re-oriented toward other industries over time such as service industries (Amirhamdi and Wu, 1995). In consideration of these views, an examination of the list of recent enterprises, export data, investments, etc. indicates that Bangladesh-EPZs (BEPZs) have been increasingly able to attract and facilitate:

- o non-traditional manufacturings, and
- o capital-intensive industries.

Warr (1989) and Rhee & Belot (1990) identified EPZs as one of several possible factors helping DCs to increase non-traditional exports. Radelet (1999) in this connection used the experience of the original four Asian NIEs (Hong Kong, Singapore, South Korea, Taiwan) to provide empirical support for this argument. Among non-traditional industries, examples of agro product- and service-oriented- industries in this study come forth – two fast growing industries in BEPZs. The emergence and growth of these industries indicate the diversifying capability of the BEPZs.

Certain structural transformations take place within a country's EPZ as the economy develops and diversifies. Transformation towards more capital-intensity in industries is one of them. For example, Xie's (2000: 152) observation can be noted in this regard:

"Rapid growth, technological learning, and the absorption of new technology combined can alter relative factor endowments."

BEPZs have also attracted a number of capital-intensive industries in recent years (Sharif, 2011). The following developments can be cited as some obvious examples of these kinds:

1. the chemical production;
2. mobile manufacturing for Sony,
3. partial automobile manufacturing operations for renowned companies such as Nissan, Mitsubishi, and Hino.

Diversifying into automobile-related industry can be treated as progression to industries with more advanced technology that involve more sophisticated local technology and create more local value-added (Omar and Stoever, 2008). Increasing imports by above companies also indicate technological sophistication of

BEPZ's auto parts production. Szamosszegi (2007) used similar kinds of evidences of technological sophistications in the Chinese EPZs (eg, Suzhou Industrial Park) that are increasingly becoming home to substantial amount of foreign investments from parts producers, including Delphi. Most recently, Chrysler has jumped on the bandwagon by transferring their plant operations to China (Wood-Kouassi, 2007). The levels of technological development and production capacity that exist in China today did not develop internally. As Thun (2004) noted:

"Once in China, GM and other US automakers provided technology and know-how to upgrade the Chinese parts and vehicle industries. Soon after, these companies began using Chinese-produced parts instead of US parts in their China-produced vehicles. After that, they began using Chinese parts in their US vehicle assembly operations". (p. 85)

In light of these empirical observations, it can now be deduced that that Bangladesh-EPZs (BEPZs) have created some opportunities of technology transfer (TT) by growingly accommodating operations of capital-intensive productions (eg, auto parts manufacturing). In order to strengthen this process and create more spillover-benefits of TT in the local economy, endogenous technological capability (TC) needs to be improved so that the country can adopt a superior method of TT (Sharif, 2011). Recalling the importance of the concept of 'dated labour' as postulated in vintage models (Sharif, 2011) can be of use here.

### LINKAGE EFFECTS OF BANGLADESH EPZs (BEPZs)

Experience shows that the success of EPZs will depend on the extent to which these zones are integrated with their host economies through backward and forward linkages, the transparency and responsiveness of the regulatory framework, as well as infrastructural efficiency (Omar and Stoever, 2008). Sharif (2011) highlighted the importance the Korean government laid on linkage effects and promotion of local components (vertical policies) and the Taiwanese government's emphasis on market-augmenting policies (horizontal policies) towards developing their technological infrastructure (TI). Omar and Stoever (2008:155) argued that EPZs' success must reflect:

"... deepening of the zones' linkages with the host economy and of the technological sophistication of the inputs purchased by companies in the zones from local suppliers."

The transfer of technology (TT) and linkage creation associated with the EPZs appear difficult to sort out (Leinbach, 1982). The linkages and externalities generated vary according to the stage of industrialization and the product cycle, availability of skills and entrepreneurship, the market for the product, and the efficiency of government institutions (Lall, 1978; Karunaratne, 1980). In light of these views, the linkage effects of the BEPZs can be perceived from two angles:

*first*, in terms of their interface with the global economy (forward linkage), and *second*, in terms of the level of their integration with the local economy (backward linkage).

Section 5.1 examines, in connection with the first set of linkages, the performance of the zones as regards *foreign trade and technology transfers (TT)*. Job creation by the zones and other issues relating to flow of goods and services from the domestic tariff area (DTA) to the EPZs are examined, with reference to the level of integration of the zones in the domestic economy. The latter factor (ie, regulatory framework, as well as infrastructural efficiency) will however be taken up in later part of the study.

### FORWARD LINKAGE (FOREIGN TRADE)

A total trade worth \$400 billion is done through the operations of over 3,000 EPZs or similar Zones around the world (World Bank, 2009). In a similar way, one of the major attractions for countries like Bangladesh, which especially face foreign exchange shortages, is the export earnings by the EPZ-units. In 1995-96, BEPZs accounted for more than 11% of the national export receipts and their net contribution to the balance of payment (BOP) was to the tune of 0.20% of GDP. Their contribution in both spheres has been on the rise in recent years. Table 6.0 provides information on forward linkages of BEPZs in terms of their contributions in national exports, 1990-2008.

TABLE 6.0 TRENDS IN EXPORTS BY ENTERPRISES IN THE EPZs AND IN BANGLADESH, 1990-2008

Year	Exports (\$m) from all EPZs	Yearly growth rates of EPZ-Exports	Bangladesh- Exports (\$m)	Growth rates of Bangladesh- Exports	EPZ-exports as % of Bangladesh- Exports
1990-91	47.99	40.32%	1200.00	23.97%	4.00%
1991-92	76.66	59.76%	1500.00	15.00%	5.11%
1992-93	127.05	65.73%	1700.00	13.33%	7.47%
1993-94 (a)	145.60	14.60%	2000.00	17.65%	7.28%
1994-95	228.26	56.77%	2900.00	45.00%	7.87%
1995-96	337.02	47.65%	3063.82	5.65%	11.00%
1997-98	636.05	88.73%	4590.00	49.81%	13.86%
1999-00	890.82	40.06%	5493.25	19.68%	16.22%
2000-01	1067.87	19.87%	5388.75	- 1.90%	19.82%
2001-02	1077.02	0.86%	5417.27	0.52%	19.88%
2002-03	1199.52	11.37%	5835.70	7.72%	20.55%
2003-04	1346.61	12.26%	7416.00	27.08%	18.16%
2004-05 (b)	1566.70	16.34%	8679.40	17.04%	18.05%
2005-06 (c)	1836.18	17.20%	10315.00	18.84%	17.80%
2006-07 (d)	2063.67	12.39%	12334.04	19.57%	16.73%
2007-08 (e)	2429.58	17.73%	14050.00	13.91%	17.29%

*Source:* Computed from BEPZA (Bangladesh Export Processing Zones Authority) data; Key Indicators of Foreign Trade Statistics 2006-07, BBS; The UNSD Annual Totals Table (ATT), IMTSS, the United Nations Statistics Division (UNSD), 2000; 1990-94 country export data (all in round figures) from 'Bangladesh 2008, CIA World Factbook'.  
**Notes:** (a) Dhaka-EPZs starts exports (\$5.23m); (b) Ishwardi-EPZ starts exports (\$1.09m); (c) Adamjee-EPZ starts exports (\$0.23m); (d) Uttara-EPZ starts exports (\$0.08m); (e) Karnaphuli-EPZ starts exports (\$9.86m).

A detailed report by the World Bank (2008) suggests that over a decade and half (1990-2006), world trade volumes have increased at an average rate of 7.4% in which exports grew at 7.6%. While world trade has grown steadily since 1990, export volumes of the DCs accelerated at an annual pace of 10% – 3.2% faster than the export gains from high-income countries (ie, 6.8%). In contrast to these figures, Table 6.0 indicates that between 1990 and 2006, Bangladesh's exports grew at a striking rate of 17.5% (1990-2000: 22%, and 2000-06: 13%) – almost twice and/or more the rate achieved by the DCs and developed economies (DEs) as well as the world as a whole. The magnificent contribution in promoting forward linkages of Bangladesh-EPZs (BEPZs) can be easily recognized by comparing growth rates of BEPZ-exports and the rates at which national exports grew during 1990-2006.

Table 6.0<sup>4</sup> indicates that exports from BEPZs had been rising at a remarkable rate of 35% (1990-2000: 52%, and 2000-06: 13%) – about 18% more than the growth in national exports in the aforesaid period. Kundra (2000) highlighted the share of EPZs in a country's exports as an index of their relative role amongst various other instruments of export promotion. Thus, the importance of BEPZ-exports at the same time can well be observed from the fact that these have had occupied an average yearly share of about 13.5% in total country-exports (1990-2000: 9%, and 2000-06: 18.6%). Finally, although not much important in the context of this study, it is impressive to note here that the recently established EPZs facilitated 9% (total: 19095) of the total employment created by the BEPZs – the rest accommodated by the pioneer two: Chittagong- and Dhaka-EPZs (total: 199204) by 2008.

### FORWARD LINKAGE BY OWNERSHIP TYPE

<sup>4</sup> EPZ-export data from 1983 to 1990 are deliberately ignored due to the fact that EPZs enjoyed massive growth rates ranging from 145% to 2000%. Inclusion of these data would distort the long-term averages and thus cause difficulty in comparative analysis between export growth rates from BEPZ and Bangladesh.



The trade data may be analyzed by the type of enterprise. Depending on the ownership of the units, the degree of dependence on imports, their share of trade surpluses and their gross export earnings differ. Consequently, this has implications for assessing the value added-generating potential of units operating under different ownership structures. The importance of these ownership structures in facilitating 'technology adoption and diffusion' can be recognized through the review of related literature. Empirical literature suggests that the firm's technology adoption decision relates to its *access to international knowledge* which can be transferred via FDI or through the participation in export markets (Correa *et al.*, 2008). The said ownership structures are formally divided in the following three categories by the BEPZA (Bangladesh EPZ Authority):

**BOX 2.0: CATEGORIES/TYPES OF INVESTMENT**

Type of investment	Description (in terms of ownership)
A	100% foreign owned (including non-resident Bangladeshis)
B	Joint venture (foreign and Bangladesh entrepreneurs)
C	100% Bangladesh entrepreneurs (resident in Bangladesh)

Source: BEPZA website, April 2006.

Studies suggest that firms with foreign ownership (eg, type A and B above) and those participating in highly competitive export markets (eg, all types above) are likely to get involved in the adoption of new and more productive technologies - product upgradations and/or cost reductions (Baumol 1990; Aghion and Schankerman, 2004, Comin and Hobijn, 2004). Coe, Helpman and Hoffmaister (1997) and Keller (2004), for example, argued that openness to trade and FDI are critical mechanisms for knowledge diffusion across countries. Openness to FDI in type A and B categories in BEPZs can not only introduce competitive pressure on firms but also allow firms to be exposed to global best practice technology and management techniques (ideas germinated from Djankov and Hoekman, 2000; Arnold and Javorcik, 2005). Table 7.0 indicates a substantial rise of the number of enterprises in BEPZs in nearly a couple of decades. Out of this, type A investments alone took the major share with 60%. Since firms with foreign ownership (eg, type A and B) comprises of 76% share among all enterprises, the greater possibility of adoption of new and more productive technologies can be assumed in BEPZs – the way Correa *et al.* (2008) suggested on the basis of a cross sectional study they conducted in Eastern Europe and Central Asia.

**TABLE 7.0: EPZ- ENTERPRISES BY TYPE OF OWNERSHIP, 1990-2009**

Type of investment	Investment	
	1990-91	2008-09
Type A	20 (40%)	181 (60%)
Type B	13 (26%)	46 (16%)
Type C	17 (34%)	72 (24%)
	50 (100%)	299 (100%)

Source: Computed from yearly BEPZA data, 1983-1991 and April 2009.

Note: Growth rates for types B and C are rounded up; Total number of enterprises until 1990-91 is calculated from yearly data, 1983 to 1991.

One of the most important roles played by governments while allocating enterprises in EPZs has been granting authorizations to domestic entrepreneurs to invest in EPZs (ie, type C in BEPZs). Baissac (2004), in this connection, observes heavy investments coming from 'private domestic concerns' via some institutional arrangements. A noticeable growth of type C investments during 1991-2009 in Table 7.0 indicates a similar picture for BEPZs as well. Due to its 24% share among all types of investments in BEPZs, type C category can be expected to produce a couple of positive outcomes by:

- 1) Allowing EPZs to play *catalytic role* in the development of the local economy 'under a number of arrangements, including subcontracting, joint-venturing, and observation' (Baisaac, 2004:72); thus
- 2) 'Creating the foundation for technology and knowledge internalisation' (Baisaac, 2004:72) by interacting with buyers in advanced markets (Fernandes and Isgut, 2007; Wagner, 2007).

According to Table 8.0, during 1993-96, foreign-owned enterprises (type A) in the BEPZs were the biggest importers. The value of imports as a share of the value of exports exceeded 92%. Type A companies were followed by those under local ownership (type C) as well as joint ventures (type B). In both the cases, the figure was about 77%. Given their lower import dependence, the joint ventures and local enterprises in the EPZs are performing better as net foreign exchange earners *vis-à-vis* the wholly foreign-owned firms.

**TABLE 8.0: YEARLY AVERAGE TRADE PERFORMANCE OF THE EPZ- ENTERPRISES BY TYPE OF OWNERSHIP, 1993-96 AND 2008-09**

Enterprise type	Exports (\$m)		Imports (\$m)		Imports as % of exports		Trade balance (in m\$)	
	1993-96	2008-09	1993-96	2008-09	1993-96	2008-09	1993-96	2008-09
Type A (Foreign-owned)	270.48 (87.25)	2043.83 (78.99)	249.80 (89.13)	1270.79 (78.34)	92.35	62.18	20.68 (69.54)	773.04 (80.08)
Type B (Joint ventures)	9.94 (3.21)	147.03 (5.68)	7.65 (2.73)	105.61 (6.51)	76.96	71.83	2.29 (7.70)	41.42 (4.30)
Type C (Local origin)	29.60 (9.55)	396.64 (15.33)	22.83 (8.15)	245.81 (15.15)	77.13	61.97	6.77 (22.76)	150.83 (15.63)
Total	310.02 (100.00)	2587.50 (100.00)	280.28 (100.00)	1622.21 (100.00)	90.41	62.69	29.74 (100.00)	965.29 (100.00)

Source: Computed from BEPZA data, 1993-96 and 2008-09.

Notes: 2008-09 indicate the period of 1 July 2008 to 30 June 2009;

Figures in parentheses stand for percentage shares of types A, B and C enterprises in column totals.

Figures for 2008-09 in Table 8.0 show some promising pictures for Bangladesh. By 2008-09, the overall value of imports as a share of exports fell by nearly 28% to about 63%. Although the foreign-owned enterprises (type A) are still the biggest importers in 2008-09 in absolute terms, the share of imports as percentage of exports reduced by 30% to 62% - a rate very similar to the one showed by type C enterprises (ie, nearly 62%). There is no noticeable improvement with the import share in exports for type B enterprises. The 2008-09 rate, ie, 71.83%, pinpoints the possibility that the joint venture enterprises might still prefer to procure inputs from their partner or sister organisation abroad. Column 5 shows an enormous rise in the trade balance from \$29.74 million to \$965.29 million in nearly 20 years time with type A enterprises securing 80% share, thus displaying overwhelming foreign dominance in the overall trade scenario of the EPZs as well as indicating the importance of FDI (as observed in Sharif, 2011).

#### BACKWARD LINKAGES

Jenkins, Esquivel and Larrain (1998) conclude that the EPZs are likely to be more successful when strong backward linkages can be developed: creating a demand for intermediate goods and services can enhance the viability of local industrial and service sectors and improve the host nation's labor and managerial skills.

Making an economic measurement of backward linkages generated by export-oriented firms in the local economy is however not straightforward (Leinbach, 1982). One measure uses the percentage of raw materials purchased locally by these firms as a share of total raw materials used. Another method, which may arguably give a better indication of the degree of integration of export-oriented firms in the host economy, uses the percentage of domestic expenditures in total output including wages paid, rental costs, purchases of locally procured raw materials and supplies, as well as other services (Jenkins *et al.*, 1998). Interestingly, in both the cases, locally procured raw materials and supplies have got special importance as a measure of backward linkages. We therefore measure backward linkages using this indicator.

Although the overwhelming dependence of EPZ enterprises on imports is a well-known phenomenon, DCs, when opting for establishing EPZs, generally hope that the scope and magnitude of local sourcing by enterprises in the zone will increase over time. The expectation is that the demand for goods and services by the EPZ units will be met by domestic enterprises which would supply inputs of good quality and at competitive rates. They envisage that the EPZ units would encourage potential local suppliers to enhance their capability in order to match the new demand. The Government of Bangladesh (GOB), in order to facilitate this process of matching demand and supply, is observed to extend to local suppliers fiscal incentives similar to those offered to exported-oriented units in the domestic tariff area (DTA). It is because, the supplier's outputs are deemed to be exports. Currently, enterprises in the EPZs procure their inputs through four channels, viz.

- (a) foreign imports,
- (b) inter-zone trade,
- (c) intra- zone trade, and
- (d) the DTA (domestic tariff area).

An enlargement of the purchases of goods and services from the DTA would, from the host country's point of view, represent a favourable change in strengthening backward linkage.

According to Table 9.0, during 1995-96, \$3.15 million worth of inputs accounting for 1.16% of total imports by the zone was procured from the DTA, 0.92% was supplied by units located inside the zones (intra-zone) and 0.26% originated from the zones (inter-zone). In short, foreign imports constituted 97% of total imports by enterprises in the EPZs. Although the dominance of foreign imports is still visible in the EPZs, there is a sign of improvement as non-foreign sources secured nearly 20% share in total imports in 2008-09 – a rise of 17% over the 1995-96 figure. Table 9.0 also shows that imports from the DTA as a percentage of total imports alone increased to 11% in 2008-09 from only 1% in 1995-96. The aforementioned figures suggest that the EPZ-enterprises are inclined towards making use of local suppliers, ie, DTA (columns 1, 3 and 5, Table 9.0).

**TABLE 9.0: ORIGIN OF IMPORTS BY ENTERPRISES IN THE EPZS, 1995-96 AND 2008-09 (IN MILL. US\$)**

Enterprise Type	Raw, Packing and Auxiliary Material							
	DTA		Foreign		Intra-Zone		Inter-Zone	
	1995-96	2008-09	1995-96	2008-09	1995-96	2008-09	1995-96	2008-09
Type A (Foreign-owned)	2.20 (0.81)	103.54 (6.38)	231.75 (85.65)	1047.24 (64.56)	2.42 (0.89)	91.67 (5.65)	3.63 (1.34)	28.35 (1.75)
Type B (Joint ventures)	0.33 (0.12)	17.66 (1.09)	7.43 (2.75)	81.72 (5.04)	0.00 (0.00)	4.22 (0.26)	0.00 (0.00)	2.01 (0.12)
Type C (Local origin)	0.62 (0.23)	59.93 (3.69)	22.15 (8.19)	172.81 (10.65)	0.06 (0.02)	4.70 (0.29)	0.00 (0.00)	8.36 (0.52)
Total	3.15 (1.16)	181.13 (11.17)	261.33 (96.58)	1301.78 (80.25)	2.48 (0.92)	100.58 (6.20)	3.63 (0.26)	38.72 (2.39)

*Source: Computed from BEPZA data, 1995-96 and 2008-09.*

*Note: 2008-09 indicate the period 1 July 2008 to 30 June 2009; Figures in parentheses stand for percentage shares of BEPZ-imports.*

It must be noted however that imports from the DTA may be underestimated because the data cover only those supplies which are procured with the approval of the BEPZA. There exists a host of items which are "freely" imported from the DTA (eg, office stationary). Altogether, it is thus reasonable to argue that technological competence of the local suppliers has been on a rise over the years due to the growing presence of EPZs in the local market of intermediate goods and services.

Table 10.0 makes an enquiry into the origin of imports by the local enterprises (Type C investors) in comparison to the ones computed for selected countries that include neighboring country, India, and successful East Asian counterparts. As compared to any of these countries, Bangladeshi enterprises in the EPZs have procured substantially more inputs from DTA. The imports made by the local enterprises from foreign sources (ie, 70%) appear to be much lower than the ones done by other countries - Hong Kong being the lowest (ie, 81%) & Malaysia the highest procurer (ie, 95%).

**TABLE 10.0: ORIGIN OF IMPORTS BY ENTERPRISES OF LOCAL ORIGIN (TYPE C) IN THE EPZS, SELECTED COUNTRIES, 2008-09 (MILL. US\$)**

	DTA	Foreign	Intra-zone	Inter-zone	Total
Bangladesh	24.38	70.30	1.91	3.40	100.00
India	5.15	93.88	0.14	0.83	100.00
Hong Kong	6.28	81.25	10.19	2.28	100.00
Malaysia	2.31	94.67	3.01	0.00	100.00
Japan	2.55	93.02	4.07	0.36	100.00
S. Korea	3.77	87.56	5.94	2.73	100.00

*Source: Computed from BEPZA data, 2008-09.*

*Note: 2008-09 indicate the period - 1 July 2008 to 30 June 2009;*

*Figures in parentheses stand for percentage shares of the origins of import in total imports.*

Although Tables 9.0 -10.0 highlight some promising backward linking pictures for Bangladesh-EPZs, it is important to take into consideration that imports by EPZs from the domestic economy essentially consist of peripheral items such as packaging and auxiliary materials. The products imported by units in the EPZs are observed mainly to be related to textile and wearing apparel. The other inputs of any consequence, produced from domestic sources, are for the production of footwear and leather goods. The total absence of fabricated metal products in imports from the DTA comes as a surprise, given the level of development of this activity in the national economy.

According to the entrepreneurs in the CEPZ, imports from domestic sources are relatively limited as compared to foreign sources because of the *inferior quality, high cost and unreliable supply*. As a result, enterprises even opt for inputs of relatively higher cost but which are supplied by a more dependable foreign source. It should be borne in mind that reluctance to rely upon local raw material also stems from the global strategies of the MNCs to which EPZ-enterprises mostly belong. Due to the cumbersome administrative arrangements governing duty-free exports, many local firms fail to supply their products to the EPZ-units at competitive prices by taking advantage of the incentive package on offer. Also, the volatile political situation in the country often deters the EPZ entrepreneurs from depending on local suppliers.

## CONCLUDING COMMENTS

In partial fulfillment of the objective of recognising the degree of 'catching up' and the possibility of 'closing technology gap' with respect to the EPZs in Bangladesh (BEPZs), the empirical examination of the industry distribution in BEPZs based on certain propositions showed that the low-end high-tech industries (heavy engineering and electronics) have been increasingly occupying higher share over the years in comparison to the share of low-techs (such as garments). In consideration of these yearly progresses in industry mix in EPZs, it can be said that the degree of 'technology gap' has narrowed down to a greater extent. The (computed) time series information on imports, exports and the trade balance of the EPZs has given an impression that the Bangladeshi zones have been able to maintain an average yearly net export of 20% of the total. Although export volumes have been increasing at a high rate every year, the increasing rate of imports at the same time has not allowed gaining higher net exports as has been observed in East Asia, especially, Korea. Since imports in the EPZs constitute a large volume of capital goods, royalties, technical fees, etc., EPZ-literature postulate that higher import in the form 'sophisticated technologies' can provide the host country-manpower an opportunity of *learning by using* leading to *spillover effects*. But, as long as an EPZ is dominant with higher proportions of labour intensive industries, the probability of *learning by using* and *catching up* becomes very low due to abundant use of low-technologies. However, since the proportion of capital intensive industries is increasing at a very high rate in BEPZs, the degree of *learning* and *catching up* can be expected to be higher. As it is found in Sharif (2011) that 'national technological capability' (NTC) of a developing country (DC) like Bangladesh is intrinsically weak in terms of innovational activities, the EPZs need to play a very strong role in kick-starting the technological development process in the economy. In this connection, what EPZs need to do is to continue welcoming high-tech industries and promote linkage with the local research-oriented institutions so that strong *spill-over effects* on the economy induce development of *indigenous human capital* with latest *technological know-why*. It justifies Sharif's observation (2011) on the importance of 'skilled labour' (or what vintage models postulated as 'dated labor') in operating an EPZ-scheme as a 'high road' strategy – the strategy pursued in East Asia or what Latin America practiced as a 'third generation EPZ' in their maquiladora-strategy. As a whole, this study however pinpoints that there is no alternative to developing a great amount of *dated workforce* for the DCs like Bangladesh that may pursue EPZ-strategies as technological *kick-starter* of their economies.

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**APPRAISING ICT RELEVANCE IN POLITICAL ADVERTISING****DR. CHINENYE NWABUEZE****LECTURER****DEPARTMENT OF MASS COMMUNICATION****ANAMBRA STATE UNIVERSITY****IGBARIAM CAMPUS****NIGERIA****RITA OKEKE****STUDENT****DEPARTMENT OF MASS COMMUNICATION****ANAMBRA STATE UNIVERSITY****IGBARIAM CAMPUS****NIGERIA****FESTINUS OKOYE****STUDENT****DEPARTMENT OF MASS COMMUNICATION****ANAMBRA STATE UNIVERSITY****IGBARIAM CAMPUS****NIGERIA****ABSTRACT**

*Political advertising is one of the key components of political communication used in ensuring political awareness creation, voter education and good political behaviour. Just as Information and Communication Technologies (ICTs) have enhanced the communication process, political advertising is also experiencing a great deal of ICT influence. This work examines the place of ICTs in political advertising. It adopts a qualitative approach in analyzing how ICTs are being used in positive and negative political advertising. It recommends that the Advertising Practitioners Council of Nigeria (APCON) should ensure that advertising practitioners adhere strictly to ethical codes in the interest of the integrity of the profession.*

**KEYWORDS**

Advertising, Political Advertising, ICTs, Political Communication.

**INTRODUCTION**

Awareness creation is a key component of political campaigns. The electorates need to know the candidates, understand their nature, policies, programmes and campaign promises. Effective awareness creation stands out a candidate among the crowd of other candidates gunning for a specific office. The specialized communication activity which specifically targets political awareness creation is political communication. This is the application of communication strategies in political information sharing, and dissemination. It is the study of who knows what about political affairs, when, where, and how (Baran, 2004). It has also been described as "the study of the flow of information through political processes" (Idong, 2008, p. 239). It is the livewire of every political activity.

Among the major strategies of effective political communication is political advertising. If advertising is "any paid form of non-personal presentation and promotion of ideas, goods, or services by an identified sponsor" (Kotler, 2003, p. 591), then political advertising is the paid promotion of political messages of various kinds – campaign messages, political party support messages, voter education messages, adoption of good political behaviour – through the media (mass, new and traditional) by an identified sponsor. Through political advertising the electorates are empowered with information upon which they would make the right choice of who would govern the nation at every level.

Information and Communication Technologies (ICTs) are electronic devices and facilities that have made the communication process more sophisticated, efficient, effective and result oriented. The political advertising process is not left out in this sophistication. If ICTs have enhanced the communication process used in creating and disseminating advertising messages, then political advertising has benefited from this development.

Such phenomenal new technologies as the computer, Internet, World Wide Web, satellite technology, GSM, electronic bill boards, new printing technology etc. are among the developments that have modified the creation and distribution of political advertising messages. These technologies have their positive and negative effects on the political advertising process but the positive aspects far outweigh the negative aspects. As Obasi (2007, p. 85) observes, the mass media can initiate issues that can provoke political leadership to action, oppose some unpopular policies of bad government, military or civilian, and promote ideas, mobilize opinions and enlighten the people on their general rights, duties and obligation. Political advertising plays crucial roles in achieving these goals. However, the focus of this work is on how ICTs have enhanced political advertising targeted at political campaigns.

The 2011 general elections in Nigeria featured the use of ICTs in political advertising message creation, sharing and dissemination. The wide use of electronic bill boards, sophisticated print technologies, digital radio and television adverts, mobile phone, and Internet in the elections at federal and state levels shows that Nigeria has come of age in the use of new technologies in communication. How these technologies were specifically used in advertising targeted at the electorate and the fallouts (ethical) of such use is the focus of this qualitative work.

**THE CONCEPT OF POLITICAL ADVERTISING**

Firstly, what is advertising? This is the paid promotion of goods and services through the media – mass and traditional - by a sponsor. It has been defined variously by different authors as follows: "any paid form of non-personal communication about an organization; product, service, or idea by an identified sponsor" (American Marketing Association, cited by Hanson, 2005, p. 298); "the non-personal communication of information, usually paid for and usually persuasive in nature, about products (goods and services) or ideas by identified sponsors through various media" (Arens and Bovee, 1994, p. 6); "mass communication which is aimed at helping to sell goods, services, ideas, persons and institutions or organizations" (Nwosu, 1990, cited in Nwabueze, 2006, p.

165). A review of various definitions shows that advertising is paid for; it is promotional communication process; it promotes goods, services, ideas etc; it is channeled through the media - mass, new, and traditional; it has an identifiable sponsor.

Political advertising, therefore, refers to the paid promotion of political ideas, programmes, policies, and products such as aspirants and party manifesto, through the mass, traditional and new media by an identified sponsor. The sponsor could be a political party, political office holder, campaign organization for a candidate, government or non-governmental agencies, corporate bodies, civil society groups, or individuals. The product could be an idea, political campaign promises or manifesto, an initiative calling for provision of campaign promises or to an extent, political behaviour that could help governance. Okeke (2011) observes that political advertisements is an effective tool for political mobilization and awareness creation.

Uncyclopedia (2011) defines political advertising as the use of advertising by politicians to bring their messages to the masses. It describes this form of advertising as a multi-billion dollar industry which adopts musicians, sophisticated photographers and creative artists to drive a message to a target audience. Political advertising has also been described as including communications supporting or opposing a candidate for nomination or election to either a public officer or an office of a political party ([www.ethics.state.tx.us](http://www.ethics.state.tx.us)). "It includes communications supporting or opposing an officeholder, a political party, or a measure (a ballot proposition)" ([www.ethics.state.tx.us](http://www.ethics.state.tx.us)). In political advertising the basic aim is to win the electorate and the general public to accept political parties' ideas, propositions, candidates or administration. However, it is basically used in promotion of party candidates. The various media of political advertising include the conventional advertising media such as newspapers, magazines, radio, television, the Internet, bill boards, posters, and such below-the-line media as T-shirts, caps, handkerchiefs, umbrellas, hand towels, cups, pen, exercise books etc.

In Nigeria, during the 2011 general elections, political advertising was the basic tool which various candidates used in targeting the electorate. The print and broadcast media, including outdoor media, below-the-line media, and transit media such as buses, taxis and tricycles (popularly called *keke*) were popularly used.

However, negative political advertising was also popular among political parties and their candidates. This is the paid promotion of negative, derogatory, defamatory messages against opponents of specific candidates who either sponsored the message by themselves or their campaign organisations and sympathisers did so. This work generally examines how new communication technologies impact on political advertising, especially the promotion of candidates for electoral offices or promotion of party platforms, manifestos, ideology, or candidates.

### CONCEPTUALIZING ICTs

Technological advancements have greatly improved communication activities of man. This feat is occasioned by Information and Communication Technologies (ICTs) which are electronic gadgets which enhance information storage, retrieval, processing, sharing and dissemination. The ICTs are referred to as New Information and Communication Technologies (NICTs) and New Communication Technologies (NCTs). These technologies have been divided into old communication technologies, that is, those used before the advent of computer (telephone, electronic news gathering camera, analogue radio and television, wireless intercom); and new communication technologies, that is, those that came after the computer was invented Direct Broadcast Satellite (DBS), digital radio and television, Internet, compact Disc, Mobile phone, websites, e-mail, video conferencing facilities (Akpan, 2004; Nwabueze, 2006; Okeke, 2011; Davies 2011). Technological advancement in the communication sector has brought about such activities as e-mail, e-banking, e-medicine, e-public relations, e-terrorism, e-advertising, video conferencing, Short Message Service (SMS), Multi Media Service (MMS), digital radio and television broadcasting, digital publishing, Direct image printing, among others. The ICTs today shape the existence of man. Organisations and individuals need to understand these ICTs and how to adopt them in daily transactions.

### ICTs, POLITICAL ADVERTISING, AND 2011 GENERAL ELECTIONS IN NIGERIA

The use of ICTs in advertising is evident in the sophistication of the various advertising media. Digital television production has made possible image manipulation such that candidates could be presented as animated images (cartoons) dancing and promising good things to the electorate. The image of a politician today could be embedded in a background showing good facilities (electric power and pipe-borne water), good roads and housing, farmers harvesting crops etc. During the 2011 elections in Nigeria, a good number of politicians, especially incumbent governors going for second term in office used these means to present their good deeds to the electorate and promise more if elected. This is made possible by the digitalization of the production equipment and process, now beneficial in political advertising.

The printing process has also witnessed phenomenal image manipulation relevant in political advertising. Images of politicians during the 2011 general elections were juxtaposed on a background showing good projects such as roads, schools, electric power, flourishing farm etc. which is an indication of what such politicians will provide if elected. Akashoro and Thanny (2009) write that computerized photography as exemplified by programs such as Photoshop conferred on humanity the power to distort and manipulate things around them.

Writing on impact of new technologies on advertising, Baran (2004) observes that the production of advertising has inevitably been altered by computers and that such developments as computer databases and computerized printing have fueled rapid growth of direct market advertising. Baran further describes the emergence of cyber advertising which, according to him, is the convergence of print and broadcast advertising with the internet.

Technological advancements in printing technology have made poster and bill board adverts to have high fidelity picture quality that are very attractive. During the 2011 general elections, bill boards, posters, and transit media (buses, taxis, tricycles) had digitally produced images of politicians with high fidelity pictures and aesthetic value. This was more popular than the use of Internet tools in advertising, though most political parties and individual candidates had websites where they advertised their programmes.

The Global system for Mobile Communication (GSM) was one of the dominant media of political advertising during the 2011 general elections in Nigeria. The use of short message service (SMS) – "a wireless service available on digital mobile phone networks" (Brand and Roald, 2004, p. 239), was common among political parties and campaign groups. Political parties and individual politicians, including campaign groups and well-wishers sent messages to several mobile phones encouraging people to vote for their candidates. Some promotional messages were recorded such that once a mobile phone call is picked, the recorded voice of an aspirant making campaign promises is heard. However, some of the text messages were sent by people using phony names or campaign groups to hide their identity.

Some instances of mobile phone use during the 2011 general elections in Nigeria exist. In a particular polling center in Abuja, the capital city of Nigeria, a voter's phone rang; he picked it and placed it on speaker phone. The voice of a woman was heard shouting "vote umbrella, vote umbrella". The voice was not identified but from the message content, the message sponsor was suspected to be the ruling People's Democratic Party (PDP). One of the Abia state governorship candidates, Paul Ikonke of Action Congress of Nigeria sent numerous text messages to mobile phones one of which is this: "Abians as we approach Easter the Resurrection of our Lord Jesus Christ, may we also experience the resurrection of Abia as we vote ACN 4 Gov. *Abia Ga Di Mma Ozo* (Abia will be good Again)". Such messages were common during the 2011 general elections.

However, negative use of ICTs in political advertising was common during the 2011 general elections. The broadcast and print media were used by campaign groups to disparage other candidates they saw as threats. For instance, it was common to see posters bearing the image of a governorship or senatorial candidate placed on the same poster with for instance, former military president General Ibrahim Babangida (IBB). This was to create the impression that the candidate was an anti-democracy element, which is the assumed impression IBB portrays. Image manipulation or placement is a new communication technology. It is the "improper control of people's perception of a given reality through the use of pictures" (Pettersson, 2003, cited by Akashoro and Thanny, 2008, p. 446).

The adoption of ICTs to facilitate negative political advertising was commonly expressed through text messages sent to mobile phones. Some of such messages will say that a strong candidate has withdrawn, or that he is a secret cult member, and as such another candidate should be voted. Some of such messages even said that a particular candidate was dead. This was an unethical use of ICTs in political advertising which should be abhorred. In another instance, a faceless

group going by the name "Imo 4 God" sent this disparaging text message to Imo people concerning one of the governorship candidates, Chief Rochas Okorocho: "In 2 days of madness and lies, Rochas and his cult brought shame to Imo. Beware of Cult youths with green and yellow rubber bands on their wrist. Resist them". This is one among the numerous negative uses of ICTs in political marketing.

### ETHICS, ICTs AND POLITICAL ADVERTISING

Ethics is a set of behavioural and moral guides or codes which a person or group of individuals observe voluntarily as their mode of operation. The Oxford Advanced Learner's Dictionary sees ethics as moral principles that control or influence a person's behaviour. Various professional groups have code of ethics that guides the practice of that profession. This also applies to the field of advertising.

Ethical advertising means "doing what the advertiser believes is morally right for a given situation" (Arens & Bovee, 2004, p. 43). Advertisers, like all communicators should realize that they have a social responsibility to the society and should operate with the professional code of ethics guiding their profession. Sending political messages condemning other candidates is grossly unethical, and this constituted the bulk of SMS adverts during the 2011 general elections in Nigeria.

To understand the demands of professional ethics in advertising – whether political or non-political - , advertisers should ask the following questions once they come across ethical dilemmas:

1. Which course of action will produce the most good for the greatest number of people?
2. Will either course of action violate someone else's rights?
3. Will either course of action result in unfair treatment of any affected party? Arens & Bovee (2004). Answers to these questions provide an ethical guide for political advertisers.

It is pertinent to note that negative political advertising may not be in the interest of the sponsor of such message. Sharyne (1984) after a study, found that negative political advertising produces negative effect toward both the competitor and the sponsor of such message. This invariably means that engaging in negative political advertising could damage the reputation of both the sponsor and target of the message. For instance, during the 2011 governorship elections in Imo State, a group suspected to be in support of the incumbent governor at that time sponsored messages describing one of the main contenders of that position, Chief Rochas Okorocho as a member of the Ogboni society (a secret cult.). That message could be said to have backfired because chief Rochas who was a popular candidate and was favoured by many, ended up winning more sympathy from the electorate, and eventually winning the election. People could sympathize with a target of negative political advertising. The best way is to be morally guided in the use of ICTs in political advertising.

Though ICTs have made unethical political advertising easier with numerous digital picture manipulation processes now possible, advertisers should understand the far-reaching implications of unethical practices on the image of the profession. The need for truth in advertising is paramount. Singh (2009) writes that digital enhancement of any form is a lie. This then raises the question as to whether digital manipulation can be done within the ethical standards of advertising practice (Akahoro and Thanny, 2008).

For instance, in most states in Nigeria, posters and giant bill-boards of digitally enhanced mega cities and infrastructures - bridges, sky scrapers, roads etc. - are used by incumbent governors to advertise the progress supposedly made by their administration, even when the public know that such aesthetically beautiful structures do not exist. This practice is grossly unethical and unprofessional. Excessive exaggeration is aimed at deceiving the public and should be discouraged.

### CONCLUSION

Advertising, no doubt, is a key component of political communication. It is useful in political awareness creation, voter education, achieving good political behaviour and invariably leads to good governance. Exposure to political advertising, according to Sharyne's (1984) study, would affect voter evaluations of candidates and criteria for those evaluations. It was also revealed that negative political communication affects both the sponsor and target of the message. This means that the basic way to successfully adopt political advertising in campaigns is to play "safe and decent."

The Advertising Practitioners Council of Nigeria (APCON) code of ethics states that advertising should not be conceived or delivered in a way that brings advertising into contempt or reduce public confidence in advertising (Oso, 2001). Use of ICTs in negative political advertising goes against this code and should be discouraged. The focus should be on how to harness the positive intentions for the invention of new communication technologies. As Idiong (2008, p. 244) writes, "Digital network (and indeed other ICTs) have the potential to broaden and enhance access to information and communication that can strengthen the process of democratization under transitional societies such as Nigeria." Similarly, the G-8 nations in the Okinawa Charter (2000) cited in Idiong (2008, p. 244) observe as follows concerning the use of ICTs in contemporary society:

*Our vision of an information society is one that better enables people to fulfill their potential and realize their aspirations. To this end we must ensure that IT serves the mutually supportive goals of ... enhancing the public welfare, and fostering social cohesion, and work to fully realize its potential to strengthen democracy, increase transparency and accountability in governance, promote human rights... and to foster international peace and stability (emphasis added).*

There is need for effective monitoring of ICT use in every kind of communication, including political advertising. The regulatory bodies such as APCON and Broadcast Organization of Nigeria (BON) should make further efforts in monitoring the media and practice of advertising. The profession should not be left unguarded, paving way for unscrupulous practitioners to reduce public confidence in advertising. The observation by Akashoro and Thanny (2008, p. 449) could suffice at this point:

*With the advancement in digital image, it is evident that there is no set of ethical standards and codes that can effectively curb excesses in use of photographs and images for advertising purposes. There is therefore the challenge of developing appropriate guidelines for advertising practitioners and policy makers.*

Political parties and politicians should also join hands in addressing the problem of negative political advertising. Members who engage in such acts should be sanctioned without waiting for regulatory bodies to take action. A holistic approach toward addressing this problem can bring about decent and ethical use of ICTs in political advertising. Empirical studies should be done in Nigeria to determine the effect of negative political advertising on electorates' perception of candidates and voting behaviour. This is one key way of discouraging negative political advertising in the country.

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## EFFECTIVE MAINTENANCE MANAGEMENT IN PETROCHEMICAL INDUSTRIES

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### ABSTRACT

*Traditional view of the general public towards maintenance is an unavoidable activity that costs money and takes time. To greater extent this view was matching with the view held in board rooms of Industry 20 -25 years before. People used to think of maintenance when things used go badly wrong. The moment there is a safety or environmental incident the people use to talk about gaps or cutback in maintenance. But slowly things have changed, not only industry but general public also started talking about maintenance needs, life cycle costing and effect of not doing maintenance on business. It is very good sign for a maintainer and a pride for each one who is in the field of maintenance. When we do business we manage risk of safety incidents, environmental incidents, loss of efficiency poor productivity or loss of image in the market. The Maintenance Management particularly in Petrochemical Industries plays a vital role in managing the risks related to safety and environment. The paper deals with the role of Effective Maintenance Management in managing such risks.*

### KEYWORDS

Efficiency, Effectiveness, Preventive Maintenance, Predictive Maintenance, Proactive Maintenance, Corrective Maintenance, Reliability Centered Maintenance, Mean Time Between failure, Mean time to failure.

### INTRODUCTION

Effective maintenance is one of the most cost effective methods for ensuring the reliability, safety and energy efficiency in process industry. Good maintenance practices not only ensure availability but achieve safety, reliability and aesthetics also. Through effective maintenance improvements can be seen in the performance of assets and this can be achieved immediately and at a relatively low cost. Maintenance is the decision and actions regarding the control and upkeep of property and equipment. These are inclusive, but not limited to the following actions 1) actions focused on scheduling, procedures, work/system control and optimization; and 2) performance of routine, preventive, predictive, scheduled and unscheduled actions aimed at preventing equipment failure or decline with the goal of increasing efficiency, reliability and safety. Maintenance Excellency represents the life cycle, cost effective mix of preventive, predictive and reliability centered maintenance technologies, coupled with equipment calibration, tracking and Computerized maintenance management capabilities all targeting reliability, safety, occupant comfort and system efficiency.

Asset Management has three purposes:

- To prevent and eliminate the failure of facilities, plant and equipment
- To minimize and eliminate risk in the use of facilities, plant and equipment
- To optimize value from the use of facilities, plant and equipment.

Five important issues which prevent the achievement of these three purposes-variability in process ,prevention of failure, risk control, accuracy control and process value contribution-which unless their effects and impacts are understood and completely controlled will continuously prevent organizations achieving success in asset management.

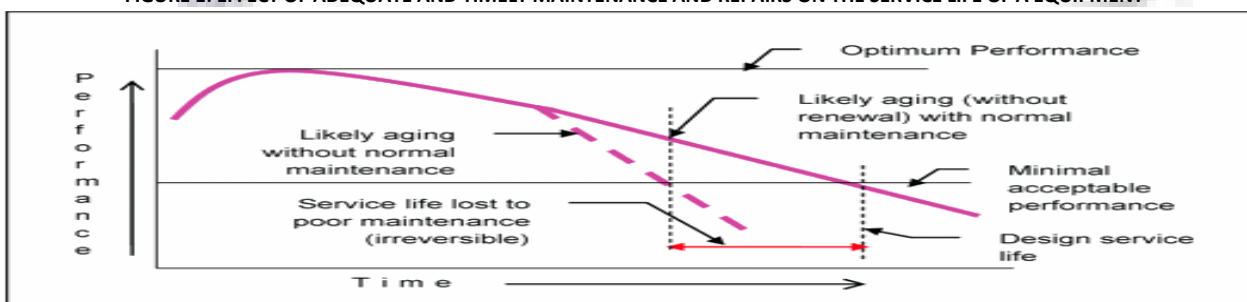
The markets of the early twenty first century are more niches focused and segmental than those of the previous century. The impact on business of many small markets means that new business opportunities can rise, mature and disappear within three to five years. Manufacturing must respond to the shortening of product life cycles by ensuring their plant and equipment is run effectively and efficiently from the start of product life.

Efficiency in general describes the extent to which time or effort is well used for the intended task or purpose (It is a measure of how economically the firm's resources are utilized when providing a given level of requirements). Effectiveness means capability of producing an effect and is more frequently used in connection with the degree to which something is capable of producing a specific desired effect. In management effectiveness relates to getting the right things done (The accomplishment of the right thing on time, and within the quality requirements specified).

Many methodologies such as Total Productive Maintenance, Root cause Failure analysis, Failure Mode Effect criticality Analysis, Risk based inspection were used specially in response to the need to remove the causes and cost of defects and failure demanded by the effective asset management. New technologies in predictive maintenance and condition monitoring have allowed machines' condition to be monitored and determine how they can most optimally be used and maintained, and to tell the operators of impending problems before production is affected. Effective utilization of asset is a condition for business prosperity and effective operation and maintenance is the only way to ensure better utilization.

The following figure (figure 1) depicts effect of adequate and timely maintenance and repairs on the service life of a equipment.

**FIGURE 1: EFFECT OF ADEQUATE AND TIMELY MAINTENANCE AND REPAIRS ON THE SERVICE LIFE OF A EQUIPMENT**



**RISK IN BUSINESS**

Survival and prosperity decide the success of any business activity. Risk is inherent in all the tasks we undertake. So also with the business activity, no one likes to meet adverse effects while taking some risks, particularly the non speculative or pure risks. Such risks, which involve loss, include

- Physical harm to employees
- Property damage to organization
- Physical harm or property damage to public
- Capital loss
- Security loss

In order to reduce risk, the potential hazards that are likely to result in loss are to be eliminated or controlled to the possible extent. To decide on the loss control approaches, the hazards are to be identified. Hazard as relates to "Accident" is defined as the potential for causing harm to persons, damage to property or environment degradation. Hazards are due to transfer of energy in one form or other and if the energy transferred is more than the withstanding capacity at the receiving end, hazard is created. The hazard identification is essential for

- Statutory compliance
- Minimize loss exposure and risk
- Better safety Management

Hazard Identification techniques are as follows:

Reactive approach

- Accident Investigation
- Plant Inspection
- Critical Incident Technique
- Incident recall Technique

Proactive Approach

- Job safety Analysis
- Failure Mode Effect Analysis
- Hazard operability Study
- Fault Tree and Event Tree Analysis
- Management Oversight Risk Tree Analysis
- Fire Explosion and Toxicity Index
- Material/Chemical Reactive Analysis
- Consequence Analysis

Effective Maintenance Programme plays a vital role in hazard control and risk minimization.

**EFFECTIVE MAINTENANCE**

The following figure (figure 2) depicts DuPont defect and failure model. It highlights some of the many processes where failure causing defects and errors come into a business.

**FIGURE 2: DUPONT DEFECT AND FAILURE MODEL**



**Failure:** Failure is the inability of equipment, a sub-system, or system to meet a set of predetermined performance standards.

**Failure Rate:** The total number of failures within an item population, divided by the total no of life units, during a particular measurement interval under stated conditions.

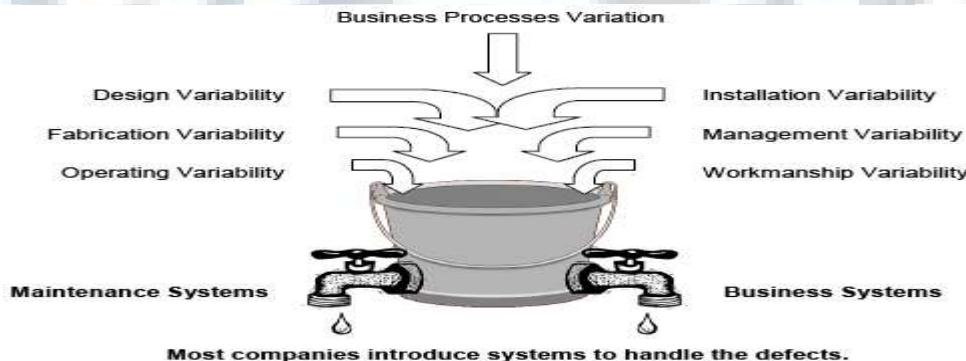
**Mean time between Failures (MTBF):** A basic measure of reliability for repairable items. Then mean number of life units during which all parts of the item perform within their specified limits, during a particular measurement interval under stated conditions.

**Mean Time to Failure (MTTF):** A basic measure of reliability for non-repairable items. The total number of life units of an item divided by the total no of failures within that population, during a particular measuring interval under stated condition.

**Reliability:** The probability that an item can perform its intended function for specified interval under stated condition.

The following figure (figure 3) depicts the general attitude of companies towards defects. They accept defects as normal and introduce maintenance and repair systems to manage the failures.

**FIGURE 3: DEFECT MANAGEMENT BY MOST COMPANIES**



**Maintenance:** As discussed in the introductory part in the past maintenance practices both in private and Government sectors would imply that maintenance is the actions associated with equipment repair after it is broken. No Sector in developing nation can afford this thinking or practice in the present scenario of globalization and competitiveness. The dictionary defines maintenance as follows "the work of keeping something in proper condition; upkeep." This would imply that maintenance should be actions taken to prevent a device or component from failing or to repair normal equipment degradation experienced with the operation of the device to keep it proper working condition. Maintenance is the combination of all technical and associated administrative actions intended to retain an item in or restore it to, a state in which it can perform its required function. Maintenance function as defined by Maintenance Engineering Society of Australia (MESA) is "The Engineering decisions and associated actions necessary and sufficient for optimization of specified capability". Where capability is the ability to perform a specified function within a range of performance levels that may relate to capacity, rate, quality and responsiveness. Maintenance concept is set of various maintenance interventions (Corrective, preventive, condition based, etc) and the general structure in which these interventions are brought together. Maintenance Management is "Activities of Management that determine the maintenance strategy, objectives, and responsibilities and implement them by means such as maintenance planning, maintenance control, and supervision, improvement of methods in the organization including economic aspects. Maintenance is not merely preventive maintenance, although this aspect is an important ingredient. Maintenance is not lubrication, although lubrication is one of the primary functions. Nor is maintenance simply a frenetic rush to repair a broken machine part or a building segment, although this is more often than not the dominant maintenance activity.

In a more positive vein, maintenance is a science since its execution relies, sooner or later on most or all of the sciences. It is an art because seemingly identical problems regularly demand and receive varying approaches and actions. An important element of Effective Asset Management is effective maintenance. Before we discuss Effective Maintenance in detail let us come back to Asset Management and important issues which prevent achievement of the purpose of effective asset management program.

a) **Variability in Business and operation processes:** Variability causes most operating and business problems. Any business with an aim of providing a product or services with consistent specifications and properties does not want its processes producing out-of-specification merchandise. Out of specification performance is waste of money, time and effort.

**Six Sigma:** Like all innovations, Six Sigma had the perspective of the great thinkers of manufacturing and production. Although the concept originated with a group of Motorola Engineers during the mid-1980s Six Sigma includes the theory and logic of quality pioneers such as W.E. Deming Joseph Juran and Philip Crosby to address the age old question: Is the effort to achieve quality dependent on detecting and fixing defects? Or can quality be achieved by preventing defects through manufacturing controls and product design?

Six Sigma is a problem solving Technology that uses human assets, data, measurements and statistics to identify the vital few factors to decrease waste and defects while increasing customer satisfaction, profit and shareholder value.

b) **Failure Prevention:** Proactive defect elimination and failure prevention is a most effective variability control methodology for reducing plant and equipment downtime. The best way to fix a problem is not to have it. Failure is an event or circumstance which prevents the accomplishment of an intended purpose. An unplanned machine stoppage or a customer getting their delivery a day late are both failures. Each has consequences on the organization. The equipment failure means lost production, unwanted repair and consequential knock on costs. Reliability Engineering plays a vital role in failure prevention.

c) **Risk control:** Risk exists in everything we do. Risk is the chance or possibility of loss. It is combination of two elements—the frequency, or probability of the occurrences of a specified event with the consequence should the event happen. The challenge is to develop methods to increase the likelihood of good outcomes while addressing and mitigating the bad. Equipment criticality is a risk indicator. (Equipment Criticality = Risk = Failure Frequency X cost consequence) and it is used to identify operating equipment in priority order of importance to the continued operation of a facility. Those equipments that stop operation or cause major costs if they fail are identified as critical. Higher quality engineering design, better materials selection and more demanding levels of maintenance and operator precision and care are given to those items to maximize their level of availability and benefits for production.

d) **Accuracy Control:** Great SOP's/SMP's are those that ensure work and workmanship quality, but do not necessarily need only qualified people to do them. They are written with more detail and guidance and include a target to hit. A tolerance on accuracy and regular proof-tests of compliance so that job quality is guaranteed. By this way of accuracy control, defects are prevented from arising and future failures are prevented.

e) **Value contribution:** Enterprise Asset Management is as much about the wise use of money as it is about the wise use of engineering, maintenance, and operational management to deliver top performance from production equipment and processes. A business should be viewed as a system for supplying the customer's requirements effectively and efficiently. This requires an ongoing commitment to continually improve and tune the organization to be more efficient and do its functions faster, better and cheaper.

The purpose of most equipment in a production process is to support the production of product destined to downstream customers. Equipment performance is associated with quality, availability, cost/unit, safety and environmental integrity. To achieve this performance there are three inputs to be managed.

- Process Technology—provides capable equipment "by design" to meet the equipment performance
- Operating Practices—make use of the inherent capability of process equipment
- Maintenance Practices—that maintain the inherent capability of the equipment

The objectives of an "Effective Maintenance" programme are

- Support operations by keeping production equipment in good condition so that production targets can be met.
- Maintain the plant facilities by keeping the plant site and its buildings, utilities and grounds in a functional attractive state.
- Perform quality work.
- Anticipate and prepare for future work
- Achieve continued improvement by evaluating performance, taking corrective actions and measuring progress.
- Ensure statutory regulations are met in addition to availability.

Effective Maintenance has its foundation in Best Maintenance Practices. Those practices include the following areas

- Leadership and Policy deployment
- Organizational Structure
- Inventory control
- Computerized Maintenance Management systems
- Preventive Maintenance
- Predictive Maintenance
- Corrective Maintenance
- Proactive Maintenance
- Reliability Centered Maintenance
- Planning and Scheduling
- Work Flow
- Financial Control
- Operational Involvement
- Staffing and Development
- Continuous Improvement

- Purchasing
- Accountability

**Leadership and Policy Deployment:** Effective Maintenance relies on leadership providing direction, focus and support. This involves management establishing a clear mission and vision supportive of the organization's direction and goals. Leadership also responsible for establishing the policies and expectations that serves to guide maintenance and the total organization in supporting maintenance activities.

**Organizational Structure:** Maintenance Organizations function at three major levels: organizational level (Functional and structural relationships), process level (Work activities) and job performer level (Individual worker). The ineffectiveness of one level could negatively impact another level. For example poorly defined work activities, such as the lack of planning and scheduling, can hinder an individual's performance and attitude.

**Inventory Control:** Maintenance is closely associated with materials and its management. The analysis of financial statements of large no of companies indicates that 60% of the total expenditure is on materials, any efforts made to optimize cost in this area go a long way in improving the profitability of the company. For a maintenance man inventory means spare parts, lubricants and other consumables. Maintenance managers along with material department in charge are responsible for necessary stock, re-ordering, receiving, inspection and storage.

**Computerized Maintenance Management Systems:** A computerized maintenance management system is a software which supports in managing maintenance activities like work order generation, prioritization, history capturing, PM Schedules, Inventory management etc.

**Preventive Maintenance:** Preventive Maintenance is often defined as "those timed or meter -based service activities used to extend the life of equipment and identify potential problems through inspection and early detection"

Preventive Maintenance includes work performed on selected equipments like inspection, cleaning, testing, lubrication efforts and scheduled shutdown services. PM is a major component in moving from reactive to proactive through early detection and correction.

**Predictive Maintenance:** Predictive Maintenance is the application of Technologies and early detection processes to monitor and detect changes in condition to allow more precise intervention. It includes vibration analysis, shock pulse methods, ultrasonic, thermographic analysis, electrical surge comparisons, coolant analysis, wear particle analysis and performance trending.

**Corrective Maintenance:** PM tasks are implemented before a problem is evident and corrective tasks are scheduled to correct specific problem that have been identified in plant system. The fundamental objective of this approach is to eliminate breakdowns, deviations from optimum operating condition and unnecessary repairs and to optimize the effectiveness of all critical plant systems..

**Proactive Maintenance:** Proactive Maintenance is a term to identify the enhancement of both the preventive and predictive maintenance technologies. It is absolutely necessary that managers identify and document data gained from both the PM and PdM programs so that they can develop the PAM portion of the equitation. The PAM will provide managers a vehicle to effectively create a reduction in total maintenance downtime while maximizing equipment production reliability and useful life.

**Reliability Centered Maintenance:** Reliability Centered Maintenance is a rigorous, highly structured approach to work identification. RCM can go beyond maintenance program development by including failure modes addressing causes of human error and design deficiencies. When these are included RCM produces the following outcomes:

- Maintenance programs evaluated on Technical feasibility and worth doing.
- Recommendations addressing changes to standard operating and Standard Maintenance Practices.
- Operational and Maintenance training recommendations.

The RCM process requires answers to the following seven questions:

- What are the functions of the asset in its present operating context?
- In what ways can it fail?
- What causes it to fail?
- What happens when it fails?
- Does it matter if it fails?
- What can be done to predict or prevent the failure?
- What can be done if you can't predict or prevent the failure?

**Planning and Scheduling:** Planning is devising a process for doing, making or arranging maintenance work. It involves preparing job plans and other resources to enable the craftsperson to perform the work quicker and more efficiently. It often deals with the "What" and "how"

Scheduling is creating a schedule for when the work is to be performed. Scheduling deals with the "When" and "Who".

The majority of maintenance work can be planned and for the most part, should be. Increasing productivity or value -added work of maintenance personnel depends a great deal on properly planned activities.

**Work Flow:** Work order is an integral part of an effective maintenance operation. It serves to the following

- Identify work
- Request work
- Prioritize work
- Schedule work
- Track work
- Analyze work

This process is to control and monitor activities and most significant purpose is to analyze work that has been performed, identify costs, losses, and trending problems.

**Financial Control:** This includes fiscal control procedures of the maintenance organization. It includes budget control, contractor cost monitoring, and overall labor and material cost control.

**Operational Involvement:** It is becoming rarer to find organizations that have not broadened their level of operator involvement in basic care type activities. This may be in the form of "Total Productive Maintenance" or some other structured process to encourage ownership, involvement and improve equipment reliability.

**Staffing and Development:** To support the "new" maintenance organization, jobs will have to be redefined to improve efficiency and effectiveness. Traditional views of restrictive job requirements and duties will have to be replaced with more flexibility and higher level skills.

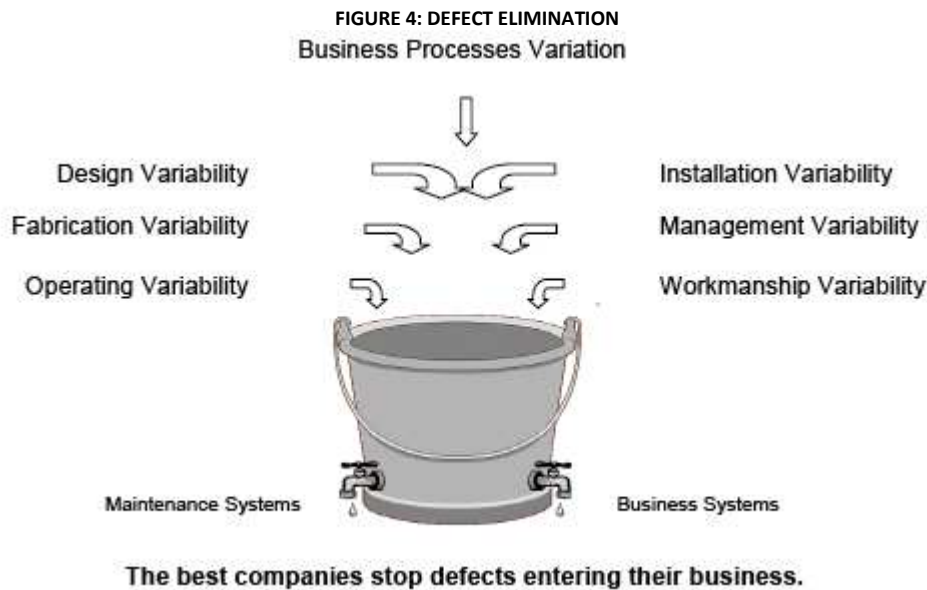
Training and skill development is a key component as it enables people to meet the expectations that face in their challenging jobs.

**Continuous Improvement:** Continuous Improvement is best described as constantly striving for better ways to do things. It is creating discomfort with the status quo and striving towards excellence through small incremental change.

**Purchasing:** Purchasing also plays an important role in integrated effective maintenance organization. Stock levels considering the consumption pattern, supply lead time and usage with adequate planning prevent stock outages. Automated system to trigger purchase request based on predefined reorder level makes the system more effective.

**Accountability:** Accountability is required and must be built in to the system. Individuals and groups assigned need to be specially challenged so that the drive is in the proper direction. Activities need to be charted along with the development of detailed plans and how they have impact on the key measures. The indicators are then used to highlight the success of the plan and serve to reinforce those actions taken.

Figure 4 depicts the best strategy to prevent defects entering the business. As a consequence, maintenance costs reduce, production downtime falls, and there is increase in equipment reliability, plant availability and productivity.



## CONCLUSION

The author is closely associated with maintenance field since last 27 years in Fiber and Petrochemical Industry. The need of the hour is effectiveness and definitely it can be achieved by following the best practices as discussed above. Risk identification, mitigation plan is very much essential to make a job safe and successful along with planning, scheduling and control. Poor planning, improperly trained staff, unclear goals and objectives, lack of leadership, poor historical records and inefficient manning can cause work to take longer, cost more, and produce poor results. This outcome is an organization that is inadequately postured to compete effectively.

Good Maintenance practices enable maintenance men to take care of the assets and to maintain them AGAN (As good as new).

## ABBREVIATIONS

PM	Preventive Maintenance
PdM	redictive Maintenance
PAM	Proactive Maintenance
MTBF	Mean Time Between Failures.
MTTF	Mean Time To failure
RCM	Reliability Centered Maintenance.

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**IMPACT OF BUSINESS TYPES ON THE PROBLEMS FACED BY SHG WOMEN ENTREPRENEURS**

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**ABSTRACT**

*The growing commercialization of rural economy, increasing dependence of agriculture on external inputs, mobilizations of savings towards construction and the growing education have opened up new vistas for the micro-enterprise development in India. The experience in promoting micro enterprises in the regions of poverty suggests that markets are dynamic and for enterprises to be sustainable, the entrepreneurs must be able to understand the behavior and character of markets and respond appropriately to the challenges of competition. Further, SHG as a system has infused certain synergy among its members to move up in the socio-economic ladders from passive onlooker into an active partner/stakeholder in the development process. Today, SHGs (Self Help Groups) in India have become a potential tool for the empowerment of women, social solidarity and socio-economic betterment of the poor in their own setting. The study shows that SHGs are still in a state of flux and their sustainable development depends on a number of factors, which are both internal and external to the group. No doubt, SHGs have set a new empowerment agenda to step into technology based sustainable development. The present study aimed at analyzing the impact of type of business on the problems faced by SHG women entrepreneurs, confirms the significant relationship between the factors taken for the study.*

**KEYWORDS**

Business Problems, Business types, Empowerment, SHG, Women Entrepreneurs.

**INTRODUCTION**

Women's empowerment is synonymous with the achievement of equality and equal mindedness in society. Women's empowerment will result in traditional female values being more respected in the society. The empowerment of women through SHGs would lead to benefits not only to the individual women and women groups but also for the family and community as a whole through collective action for development. They assume the role of decision makers in major and deciding aspects of the family and village. The SHGs or the thrift and credit groups are mostly informal groups whose members pool savings and re-lend within the group on rotational or need basis. SHGs are organized in selected villages for economic and social development of the rural poor particularly women. The SHG is a viable alternative to achieve the objectives of rural development and to get community participation in all rural development programmes. In all stages of economic and social activities involvement of women, become essential. SHG encourages women to take active part in the socio-economic progress of our nation. Hence streamlining the business opportunities and providing necessary support to SHG women entrepreneurs will knob their performance positively.

**WOMEN ENTREPRENEURSHIP THROUGH SELF-HELP GROUPS**

Self-Help Group (SHG) enables the rural poor to earn their own livelihood besides participating in the process of development. The SHG scheme has been extensively used by voluntary agencies for a long time but has been incorporated in the conventional development programmes only recently. A typical rural women's self-help group is a good example of capacity building for prospective entrepreneurs. Its aims include enabling members with no educational or industrial or entrepreneurial background to become self-dependent and self-reliant by developing and enhancing the decision-making capacity of members and instilling in them the strength and confidence for solving their problems. They provide poor people a forum where they can learn about collectively mobilizing and managing money and matters. Few other Central and State government schemes aimed at capacity building of women and others for entrepreneurship include the 'Stree Shakti' programme in the dairy cooperative sector in M.P., training-cum-employment programme for women called Swa-Shakti and Rashtriya Mahila Kosh Project –supported by the World Bank and International Fund for Agricultural Development (IFAD).

**REVIEW OF LITERATURE**

There are numerous studies that specifically concentrates on the issues and problems faced by Women entrepreneurs. Study on "Potential women entrepreneurs – Their Profile, Vision and Motivation" done by Singh & Gupta (1984) , revealed the major reasons for starting business by women entrepreneurs as economic gain followed by keeping oneself busy, fulfillment of one's ambition, wanted to become independent and a host of other reasons. Singh and his team (1985) in their research on "Successful women entrepreneurs their identity, expectation and problems", found out the motivational factors, which made the women entrepreneurs to enter into new ventures. Women entrepreneurs specified some factors like high demand, possessing right skills, ready market, and better future prospects influenced the product selection. They also identified problems like complicated procedures, lack of genuine help from the supporting institutions and excessive formalities as hindrances for availing the benefits of various schemes by women entrepreneurs. "Potential women entrepreneurs "A study by Rani (1986) found that the desire to do something independently was the prime motivating factor and entering into entrepreneurial venture was their own interest and not influenced by others. Brush and Hisrich (1988), found that those women entrepreneurs who possess previous work experience in the field stands a better chance of successfully establishing their venture than those who did not have any formal experience. One of the key reasons for business failure as found by them was inability to manage financial issues. Nelson (1991) in his work on "Small Business Opportunities for women in Jamaica" revealed that women were concentrating in businesses that required the least capital outlay, or which were an extension of household activities, for example small scale retail or dressmaking/garment manufacturing.

**OBJECTIVES OF THE STUDY**

- To identify and analyze constrains and barriers faced by SHG women entrepreneurs.
- To identify and analyze the relation between the problems faced by the women entrepreneurs and the type and nature of their business.

**METHODOLOGY**

The study has been undertaken to cover samples representing the members of Women SHGs, from 5 taluks, (excluding valparai) of Coimbatore District in TamilNadu State. 25 SHGs representing each taluks i.e., Coimbatore (North & South), Muttupalayam, Sulur and Pollachi were selected at random using Snow Ball

Sampling Method. From each group 4 members were selected i.e., 1 leader/ facilitator and 3 members, making a sample of 100 per taluk, constituting an overall sample size of 400. The data collected through questionnaire were analyzed by applying appropriate statistical tools using SPSS software. Percentage Analysis and cross tabulations were used for getting overall idea about the respondents and variables involved in the study. Chi-Square analysis, 't'-Test, Analysis of Variance (ANOVA) were used to identify the significant relationship between the dependent and independent. Regression model was derived to analyze the impact of business type on the problems faced by SHG women entrepreneurs.

## HYPOTHESIS

### i. Reliability of variables as reasons to start the business

Null Hypothesis (Ho): There exists no reliability between the variables as reasons stated by the respondents to start the business.

Alternative Hypothesis (H1): There exists reliability between the variables as reasons stated by the respondents to start the business

### ii. Impact of business types on problems faced by women entrepreneurs

Null Hypothesis (Ho): The problems faced by the women entrepreneurs are not directly related to the type of business they carry.

Alternative Hypothesis (H1): The problems faced by the women entrepreneurs are directly related to the type of business they carry.

## ANALYSIS AND INTERPRETATIONS

The spirit of entrepreneurship helps individuals to practice the art of innovating ideas, products and services out of their knowledge, skills, competencies and other resources available to them. Further entrepreneurship enables them to optimize the use of individual's resources to efficiently organize and manage innovations. For SHG women entrepreneurs' entrepreneurial opportunities are flooding through supporting institutions and governmental schemes. Right from the socio economic factors all other external and internal factors affect the entrepreneurial performance of SHG women entrepreneurs.

**TABLE 1: DEMOGRAPHIC DISTRIBUTION OF THE RESPONDENTS**

Age wise Distribution			Educational Qualification Based			Marital Status Based		
Age Group	Nos.	%	Qualification	Nos.	%	Marital Status	Nos.	%
< 30 years	86	22	Up to School Level	267	67	Married	365	91
30-40 years	195	49	Technical or Diploma level	54	14	Un married	35	9
41-50 years	82	21	Up to college level	24	6	-	-	-
>50 years	37	9	No formal Education	54	13	-	-	-
Total	400	100	Total	400	100	Total	400	100

Based on the analysis of data collected and interpretations made out of it, the demographic details of the respondents are given in table 1. It is observed from Table 1, that majority of the respondents are in the age group of 31-40 year. This age group represents the economically productive women folk in the study area. And majority of the respondents have completed their basic school education. A minimum level of education is absolute essential for the active participation of women in the development programmes. In fact, education is one of the most essential inputs of the rural development. Majority of the respondents have at least school level education. Out of the 400 sample respondents surveyed, 91.25 % of the respondents are married.

**TABLE 2: PREVIOUS ENTREPRENEURIAL EXPERIENCES OF THE RESPONDENTS**

Sl. No	Previous job	No. of the Respondents	Percentage
1.	Own Business	165	41.30
2.	Bakery	61	15.22
3.	Coolie	49	12.17
4.	Tailors	56	13.91
5.	Computer Centre	38	9.57
6.	Others	31	7.83
	Total	400	100.00

Source: Primary Data

Table 2 depicts that among the 400 sample respondents, most of the i.e., 41.30 per cent of the respondents have opined that they have previous entrepreneurial experiences before joining the SHGs. Rest of them have work experience in some skilled areas like in bakery, tailoring, computer operation, and general labours.. The remaining 7.83 per cent of the respondents have gained experiences in areas like soft toy making, catering etc., that are categorized as others. Thus, it is found that most of the i.e., 41.30 per cent of the respondents have previous entrepreneurial experience before joining in SHG.

**TABLE 3: OCCUPATIONAL BACKGROUND OF RESPONDENT'S FAMILY**

Sl. No	Occupations	No. of the Respondents	Percentage
1.	Bakery	49	12.24
2.	Business	144	35.92
3.	Artisans	70	17.55
4.	Employed	57	14.29
5.	Weavers	20	4.90
6.	Vegetable Vendors	8	2.04
7.	Others	52	13.06
	Total	400	100.00

Source: Primary Data

Table 3 explains that among the sample population surveyed, most of the i.e., 35.92 per cent of the respondents family profession is business. Followed by it, 17.55 per cent of the respondents' family members are Artisans. 14.29 per cent of their family members are employed. 13.06 per cent of their family is doing other occupations like seasonal businesses. 12.24 per cent of the respondent's family members are workers in bakeries. Moreover, 4.90 per cent of the respondents' families are weavers. Rests of the 2.04 per cent of their family members are vegetable vendors. Thus, it is found that primarily i.e., 35.92 per cent of the respondent's family members are in to business. Empirical evidence shows that women contribute significantly to family businesses mostly in the form of unpaid effort and skills. The value of their efforts is underestimated both by the families that take it for granted and by the societies.

**TABLE 4: NATURE OF BUSINESS PERFORMED BY SHGs**

Sl. No	Nature of Business	No. of the Respondents	Percentage
1.	Manufacture	79	19.75
2.	Service	116	28.75
3.	Retail	129	32.00
4.	Whole Sale	46	11.50
5.	Others	32	8.00
	Total	400	100.00

Source: Primary Data

The above table 4, presents that out of the 400 sample population surveyed; 32.00 per cent of the SHG members are doing retail business. Followed by it, 28.75 per cent of them are in service activities. 19.75 per cent of the respondents have expressed that their SHG is involved in manufacturing business. 11.50 per cent of the respondents are in wholesale business. The remaining 8 per cent of the respondents have opined that their SHGs are involved in other allied sector activities like fishery, dairy, piggery, poultry, cow, ship and goat rearing. Therefore, it is found that primarily 32 per cent of the respondents have opined that they are doing retail business through their SHGs.

TABLE 5: PROBLEM FACED BY THE RESPONDENTS

Sl. No	Problems	Total Score	Total Mean	Rank
1.	Inadequate Capital	2119	5.30	5
2.	Marketing / Sales Related Problems	1976	4.94	10
3.	Lack of Managerial Knowledge	2023	5.06	8
4.	Lack of time	2107	5.27	6
5.	Family Issues	2012	5.03	9
6.	Product quality related problems	2144	5.36	4
7.	Poor interpersonal relationship	2334	5.84	3
8.	Lack of knowledge gained through formal education	2107	5.27	6
9.	Poor awareness about policies and procedures	2418	6.05	2
10.	Others	2887	7.22	1

Source: Primary Data

Table 5 examines that the respondents have primarily expressed that they face other problems like high indebtedness, poverty and marriage disputes etc. The second most important factor expressed is the poor awareness about policies and procedures as stated by respondents. In the third order, the respondents have said that they have the problem of poor interpersonal relationship among themselves. Product quality related problems are ranked in the fourth order. Moreover, the study has analyzed the problem of inadequate capital for the respondents. In the sixth order, the respondents have viewed that they do not have sufficient time and knowledge gained through formal education to discuss the problems among the group members. Lack of managerial knowledge, family issues and the problems related to marketing/sales one grouped under eighth, ninth and tenth ranks respectively by the respondents.

RESULT OF THE CHI-SQUARE TEST

TABLE 6: RELIABILITY OF VARIABLES AS REASONS TO START THE BUSINESS

Chi-Square Value	DF	Level of Significance	Significance value	Reliability of Scale
612.468	53	5 per cent	0.000	0.660

Table 6 indicates that the calculated probability value of Chi-square test establishes significant relationship between the variables tested. Therefore the hypothesis framed is rejected and it is concluded that the women entrepreneurs have individual reasons to start a new business.

REGRESSION MODEL OF Y

TABLE 7: IMPACT OF BUSINESS TYPES ON THE PROBLEMS FACED BY SHG WOMEN ENTREPRENEURS

Variables	Regression Co-efficient	Standard Error	t-value (D.F = 136)	Significance	R <sup>2</sup>
Constant	3.655	2.266	1.613	.109	.106
Insufficient Capital	-.067	.053	-1.264	.208	
Marketing Issues	-.043	.054	-.807	.420	
Unaware of Business Admin procedures	-.068	.057	-1.200	.232	
Insufficient time	.015	.051	.293	.770	
Family issues	-.031	.054	-.573	.568	
Product Quality Issues	.023	.053	.436	.663	
Interpersonal Issues in group	.014	.050	.281	.779	
No formal Education	-.087	.052	-1.674	.096	
Unaware of Business Policy issues	-.013	.051	-.259	.796	
others	.033	.048	.701	.484	

Source: Primary Data, Level of Significance: 5 per cent

Table 7, gives the regression model of Y i.e, impact of Business type, on the problems faced by the SHG women entrepreneurs. Business type is dependent factor and Independent factors are X1: Interpersonal Issues in group, X2: Product Quality Issues, X3: Unaware of Business Policy issues, X4: Family issues, X5: Insufficient time, X6: No formal Education, X7: Insufficient Capital, X8: Marketing Issues, X9: Unaware of Business Admin procedures and X10: Others.

The regression equation takes the form  $Y = b_1x_1 + b_2x_2 + c + e$ , where Y is the true dependent, the b's are the regression coefficients for the corresponding x (independent) terms, where as c is the constant or intercept, and e is the error term reflected in the residuals. Sometimes this is expressed more simply as  $y = b_1x_1 + b_2x_2 + c$ , where y is the estimated dependent and c is the constant (which includes the error term). Regression fitted:  $y = -.067 X_1 + -.043 X_2 + -.068 X_3 + .015 X_4 + -.031 X_5 + .023 X_6 + .014 X_7 + -.087 X_8 + -.013 X_9 + .033 X_{10} + 3.655 + 2.266$

TABLE 8: ANALYSIS OF ANOVA VARIANCE FOR REGRESSION

Source	Sum of Square	DF	Mean Square	F	Significance
Regression	27.133	10	2.713	2.150	.023
Residual	229.706	182	1.262		
Total	256.839	192			

Level of Significance: 5 per cent

The multiple regression models indicate that 10 explanatory variables have significant contribution to Y- X<sub>1</sub>: Interpersonal Issues in group, X<sub>2</sub>: Product Quality Issues, X<sub>3</sub>: Unaware of Business Policy issues, X<sub>4</sub>: Family issues, X<sub>5</sub>: Insufficient time, X<sub>6</sub>: No formal Education, X<sub>7</sub>: Insufficient Capital, X<sub>8</sub>: Marketing Issues, X<sub>9</sub>: Unaware of Business Admin procedures and X<sub>10</sub>: Others. The analysis of variance of multiple regression models for Y indicates the overall significance of the model fitted. The coefficient of determination R<sup>2</sup> value showed that these variables put together explained the variations of Y to the extent of 10.60 per cent. It is further observed that probability value of F derived out of ANOVA as shown in Table 8, do not establish significant relationship between the variables tested; therefore the hypothesis framed is rejected. It has been concluded that the problems faced by the women entrepreneurs are directly related to the type/nature of business they carry. The factors tested were not mutually exclusively to each other.



## FINDINGS

Based on the analysis, it is inferred that most of the women SHG members are entering into business ventures in the age group of 30-40 years, and are having basic literacy to read and write regional language. Majority of them were daughters of entrepreneurial fathers and married to entrepreneurial husband. Majority have opined that their income increased after joining in SHGs. More than half of the respondents have expressed that they have developed thrift habit and attained social empowerment through entrepreneurial opportunities available in SHGs. Having started their business ventures with tiny investments, majority of them are possessing good asset values at present than the initial stages. Majority of the SHG women are in to retail, whole sales and service oriented business, meager number of women are involved in other allied sector activities like fishery, dairy, piggery, poultry, cow, sheep and goat rearing. While identifying the problems faced by the SHG women entrepreneurs, major issues they mentioned as they face are problems like high indebtedness, poverty and marriage disputes etc., which in turn affects their entrepreneurial performance. The second most important factor is the poor awareness about policies and procedures, poor interpersonal relationship among the group members. Product quality related problems are ranked in the fourth order. Moreover, the study has analyzed the problem of inadequate capital and poor business administration skills. In the sixth order, the respondents have viewed that they do not have sufficient time and knowledge gained through formal education to discuss the problems among the group members. Lack of managerial knowledge, family issues and the problems related to marketing/sales were mentioned by them. While analyzing the reason behind selecting a particular business type, using Chi-square test, results Chi-square test establishes significant relationship between the variables tested. Therefore the hypothesis framed is rejected and it is concluded that the women entrepreneurs have individual reasons to start a new business. The multiple regression models that the problems faced by SHG women entrepreneurs have significant contribution to their business nature and type. The analysis of variance of multiple regression models for Y indicates the overall significance of the model fitted. The coefficient of determination  $R^2$  value showed that these variables put together explained the variations of Y to the extent of 10.60 per cent. It has been concluded that the problems faced by the women entrepreneurs are directly related to the type / nature of business they carry. The factors tested were not mutually exclusively to each other. Regression analysis made to identify the impact of problems faced by the respondents over the nature of business they choose, shows that the variables are highly interdependent.

## SUGGESTIONS

From the above findings it is clearly visible that the entrepreneurial performance of SHG women entrepreneurs is strongly influenced by their personal and business related problems arises out of their business nature and type. To enhance their performance by overcoming their problems, the following suggestions are derived out of the respondent's personal suggestions, supporting institutions and expert's opinions. In addition to granting access to economic resources to SHGs, policies related to the empowerment of women through economic freedom need to be pragmatic. It should consider the means and modes of overcoming their business related issues either personal or professional. Further, integrated and multi-disciplinary developmental approaches need to be adopted along with a plan of action that will aim at the women entrepreneur's growth. Continuous mentoring and institutional and financial support as a composite package will act as an added advantage. Women entrepreneurs could also be linked to large industrial units for sharing their facilities and ED cells/ incubation Cells of academic institutions for additional supports. Entrepreneurship Development Programmes with women, particularly the new generation, should take cognizance of the entrepreneurial environment with a practical and theoretical understanding of entrepreneurship. Entrepreneurial inputs given through training should help in enhancing their Entrepreneurial competency to meet out the future challenges. Entrepreneurial competency enhancement trainings should focus on developing their KSAs in areas like business and market analysis skills, strategic management, policy decisions, inter personal relationships & team building skills, quality improvement, procedural knowledge about availing financial assistance and handling legal issues, which would determine their entrepreneurial success. Developing social networks can be considered as a suitable strategy, the culture of sharing and exchanging their experiences, views and innovative ideas will knob them to face the challenges of bigger players. Reorienting policies to focus on developing entrepreneurship among SHGs and providing support to improve their performance would be of vital necessity. Specific issues related to business nature and types should be identified and suitable unique strategies shall be designed as policies for SHG women entrepreneurs in general. Special trade policies to meet out the needs of SHG women entrepreneurs and legislative considerations, ensuring the reach of special schemes, insisting the affiliated and self financing educational institutions to share their expertise and entrust the responsibility of proper governance in supporting institutions in the hands of socially responsible authorities with more freedom and independence. All these steps shall be taken care of by the government to ensure the success and growth of entrepreneurship among women self help group members. Forming Counseling centers by the government with members from educational institutions, supporting institutions like banks, NGOs and successful senior business women, corporate members who are interested in social ventures would help in developing coping strategies and personal inputs to individual members based on their personal and familial issues could also strengthen the SHG women entrepreneurs in overcoming their personal and professional problems.

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## MORALE AND MOTIVATION OF PUBLIC SECTOR BANK EMPLOYEES (A CASE STUDY OF KURNOOL CITY IN A.P.)

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### ABSTRACT

*Banking is a prime mover in the economic development of any country and research is so essential to improve its working results. In India the banking industry becoming more competitive than ever, private and public sector banks are competing each other to perform well. The banks transformed from traditional human resource practices to innovative practices in order to meet the challenges from other competitive banks. Employees are crucial in the success or failure of any business. If employees work efficiently and effectively, getting success is a cake walk for any organization. The management without any right policy is like "building a house on sand". The secret of success of any organization simply depends on how they treat employees and keep them satisfied. For that they have design their human resource process to maintain morale and motivational levels of employees to enhance the performance of banks.*

### KEYWORDS

Morale of bank employees, Motivation of bank employees, Public Sector Banks, HR Practices in PSBs, PSB Employees.

### INTRODUCTION

Motivation is defined as an urge in an individual to perform goal directed behavior. Therefore, motivation cannot be inflicted from outside but it is an intrinsic desire in a man to achieve the target goal through performance or activity. The state of morale in any organization can be assessed by the attitude of its employees towards their work, while quality of performance of an employee is a function of his ability and motivation. Banking is a prime mover in the economic development of a nation and research is so essential to improve its working results. Employees form the back bone of any organization. The management without any right policy is like "building a house on sand".

### SIGNIFICANCE OF THE STUDY

The secret of success of any company simply depends on how they treat employees and keep them satisfied. For that they have design their human resource process like recruitment, selection, training and development, performance appraisal and other based on employee perspective in order to benefit them. In India the banking industry becoming more competitive than ever, private and public sector banks are competing each other to perform well. The executives of the bank are now in the position to modify their traditional human resources practice in to innovative human resources practices in order to meet the challenges from other competitive banks. This study is aimed to bring out the morale and motivational factors that enhances the performance of bank employees. Based on this perspective, an attempt has been made to analyse the factors that motivate and increases the morale of Public Sector Bank employees.

### REVIEW OF LITERATURE

Effective management always needs a thorough and continuous search into the nature of the reasons for, and the consequences of organisation. In line with this, some related earlier studies conducted by individuals and institutions are reviewed to have an in-depth insight into the problem and exploring the reformation of banking policy. An overall view of a few studies is presented below.

Indian Bank's Association (IBA) conducted an all India survey to rate the customer service provided by all the 27 public sector banks aimed at fostering healthy competitive spirit amongst banks to improve upon their customer service. The objective of this study is to evaluate quality of service as perceived by the customers of public sector banks and identify areas where the banks need to improve for achieving higher levels of customer satisfaction. The study has been a massive one covering about 2500 bank branches and about 85,000 customers (respondents) at the all India level. Sample branches in all categories have been randomly chosen by IBA in proportion to the business/the number of branches in a particular category. In addition to bank rating at regional level and all India level, the survey results will also be used for rating each region on the basis of the customer service of all sample branches of the banks' operating in the region.

Subrata Sarkar stated that "Present day corporate customers value efficiency highly rather than old connections and acquaintances. A well equipped and modern bank which functions smoothly and efficiently would be the first choice of a corporate customer. The bank should create an image of efficiency so as to attract good corporate customers."

In the words of P.B. Kulkarni, "Nationalisation of banks in 1969, no doubt produced a number of desired results but it also created a number of weaknesses and problem's for the banks and within the system as a whole. They are: (i) deterioration in customer service (ii) development of a culture to please people who mattered for one's career (iii) publishing of 'no fair view' balance sheets to avoid the stigma of showing losses and (iv) lack of transparency in overall operations."

S. Tarapore said "The second generation reforms should be implemented without any delay so as to energise the system." R.Anuradha stated that "the need for the change of Indian banks and the forces behind the change like globalisation, liberalisation, international trade, IT revolution etc., The study also highlights various consequences that are to be faced by the Indian banks if they remain unchanged."

Chowdary Prasad, "compared the 1991 economic reforms of India with that of china, that took place in 1978. He has stated " Reforms in India have just been a decade old but there have been numerous changes in political set up, industrialisation policies, legal reforms, privatisation, etc.,"

Mohd. Azmathullah Mobeen's study identified "various managerial skills to be possessed by the managers at different levels in Public sector banks based on Katz model of managerial skills and Keilty, Goldsmith and Boone's five key commitment model (Commitment to the customer, Organization, to self, to people, to the task)."

Aditya Puri said "Technology has enabled banks to target customers, and provide customized products and services to match their individual requirements. The winners will be those banks that make optimum utilization of available technology to innovate, offer customized products and services and make the most of the resources at their disposal."

Pramod Guptha said "Both public and private banks are spending large amounts of money on technology to provide innovative products and services to their customers with more convenience and satisfaction. Technology is reducing the cost of transaction and helping to increase customer base and enable wider reach."

Madhu Lincoln, Rama Krishna and Venu Gopal Rao, conducted a study on "HRM Practices in Public Sector and Private Sector Banks" and has suggested that HR policies of Public Sector Banks should be revised there by making them more competitive in this challenging era of globalisation".

### NEED FOR THE STUDY

The last decade, which marks the era of liberalization and reforms in the country, has been eventful one for the Banking industry changing the face of the industry far beyond recognition. Technology has brought in substantial changes in banking in terms of new human resource development practices and customer service. The introduction of New HR practices in public sector banks demonstrated the resolve of the Banking sector to take hard decisions to gear up themselves in terms of human resources for today's highly competitive environment. Employees are crucial in the success or failure of any business. If employees work with morale and have higher level of motivation, getting success is a cake walk for any organization. It is in this scenario that a study of Morale and Motivation of public sector bank employees is to be examined.

### OBJECTIVES OF THE STUDY

The following are the objectives of the study:

1. To analyse the career development opportunities available for public sector bank employees.
2. To assess the job responsibility and accountability of public sector bank employees.
3. To evaluate the levels of morale and motivation public sector bank employees.
4. To offer suitable suggestions for enhancing morale and motivation of private sector employees.

### METHODOLOGY

#### PUBLIC SECTOR BANKS IN KURNOOL CITY

TABLE NO. 1: DETAILS OF PUBLIC SECTOR BANKS IN KURNOOL CITY

S.No	Name of the Bank	No. of Branches in Kurnool city
1	State Bank of India	8
2	State Bank of Hyderabad	3
3	State Bank of Mysore	1
4	Syndicate Bank	4
5	Andhra Bank	10
6	Canara Bank	1
7	Indian Bank	1
8	Vijaya Bank	1
9	Central Bank of India	1
10	Corporation Bank	1
11	Indian Overseas Bank	1
12	Union Bank of India	1
13	Bank of India	1
14	Bank of Baroda	1
15	Punjab National Bank	1
16	United Bank of India	1
17	Oriental Bank of Commerce	1
18	UCO Bank	1
	<b>Total</b>	<b>39</b>

Source: Compiled from Lead bank annual credit plan 2008-09.

#### AREA SELECTION FOR PRIMARY DATA

Kurnool city of Rayalaseema region, Andhra Pradesh has been selected for the purpose of primary data collection. Kurnool city is selected for the study, as the district headquarters is located at Kurnool city, which was the Capital of Andhra state during 1953 to 1956. Kurnool city is the 'Gateway of Rayalaseema Region' in Andhra Pradesh. Out of 26 Public Sector Banks, 18 Public Sector Banks are having their branches in Kurnool city. So, it would be useful to study the concept of morale and motivation of Public sector banks located in Kurnool city.

#### PRIMARY AND SECONDARY DATA

To carry out the objectives, the researcher has used both primary and secondary data. The secondary data and information have been collected from various sources like business newspapers, journals, magazines, RBI Reports and publications, IBA publications, NIBM publications etc. Primary data has been collected through structured questionnaire from the employees of public sector banks located in Kurnool city by informal interview.

**SAMPLE OF THE STUDY**

A sample of 200 employees has been considered for the study. After collecting data, few partially unfilled questionnaires were eliminated. The resultant sample size is 180.

**SAMPLING TECHNIQUE**

Convenient sampling technique has been employed in this study.

**SCOPE OF THE STUDY**

While there are many categories of banks, as the study is aimed to evaluate the morale and motivational levels of public sector bank employees, hence the study has been confined to public sector banks located in Kurnool City only.

**DATA ANALYSIS AND INTERPRETATION**

The primary and secondary data collected from different sources have been tabulated and interpreted meaningfully. The information has been represented using bar charts, pie diagrams, graphical method etc.

**TABLE NO. 2: DETAILS OF SATISFACTION TOWARDS WORKING HOURS OF THE BANK BRANCH**

Satisfaction Level	Sample Size	Percentage
Highly Satisfied	19	10.56
Satisfied	53	29.44
Dissatisfied	102	56.67
Highly Dissatisfied	6	3.33
Total	180	100

Source: Field Survey

**INFERENCE:** It can be evident from table 2 that, a majority of 56.67% of the respondents are dissatisfied with the bank working hours, followed by 29.44% are satisfied, 10.56% are highly satisfied and a small segment of 3.33% of respondents are highly dissatisfied with the working hours of the bank branch.

**TABLE NO. 3: DETAILS OF OPINION TOWARDS WORKING HOURS ADDING EFFICIENCY IN THE BANK**

Satisfaction Level	Sample Size	Percentage
Yes, Considerably	6	3.33
To some extent	61	33.89
No	113	62.78
Total	180	100

Source: Field Survey

**INFERENCE:** It can be observed from table 2 that, a majority of 62.78% of the respondents opined that increased working hours has no relation to efficiency, followed by 33.89% said that efficiency can be increased to some extent and a small segment of 3.33% of respondents said that increased working hours add efficiency to a considerable extent.

**TABLE NO. 4: DETAILS OF WORKING HOURS ADD EFFICIENCY IN THE BANK**

Reasons	Sample Size	Percentage
Increase in number of customers / business	12	18.18
Decrease in work pressure and tension	49	74.24
All the above	5	7.58
Total	180	100

Source: Field Survey

**INFERENCE:** It can be seen from table 4 that, an overwhelming majority of 74.24% of the respondents opined that increased working hours decreases work pressure and tension, followed by 18.18% said that it brings more customers and business and 7.58% of respondents said that increased working hours makes both the factors possible.

**TABLE NO. 5: DETAILS OF IMPORTANCE OF QUALITY RELATIONSHIP WITH COLLEAGUES AT WORK PLACE**

Opinion	Sample Size	Percentage
Highly agree	119	66.11
Agree to some extent	61	33.89
Total	180	100

Source: Field Survey

**INFERENCE:** It could be evident from table 5 that, a majority of 66.11% of the respondents highly agreed that they require quality relationships with colleagues at work place and 33.89% of the respondents agreed only to some extent that quality relationships with colleagues are required at the work place.

**TABLE NO. 6: DETAILS OF SALARY MATCHING WITH AUTHORITY AND RESPONSIBILITY OF THE JOB**

Opinion	Sample Size	Percentage
Yes	87	48.33
No	74	41.11
No opinion	19	10.56
Total	180	100

Source: Field Survey

**INFERENCE:** It could be understood from table 6 that, 48.33% felt that their salary is according to the authority and responsibility of the job. Followed by 41.11% of the respondents felt that it is not according to the authority and responsibility of the job and 10.56% of the respondents said that they don't have any opinion.

**TABLE NO. 7: DETAILS OF OPINION THAT INCENTIVES WILL MOTIVATE EMPLOYEE PERFORMANCE**

Opinion	Sample Size	Percentage
Highly agree	45	25.00
Agree	82	45.56
To some extent	27	15.00
No	26	14.44
Total	180	100

Source: Field Survey

**INFERENCE:** It could be seen from table 7 that, 45.56% of the respondents agreed that incentives motivate better performance. Followed by 25.00% of the respondents highly agreed, 15.00% agreed to some extent and 14.44% said they don't have any opinion.

**TABLE NO. 8: DETAILS OF OPTION ABOUT LEVEL OF JOB DEFINITION**

Opinion	Sample Size	Percentage
Fully	21	15.22
Reasonably	87	63.04
Partly	30	21.74
Total	138	100

Source: Field Survey

**INFERENCE:** It could be analysed from table 8 that, a majority of 63.04% of the respondents opined that the job is fully well defined. Followed by 21.74% of the respondents opined that the job is partly well defined and 15.22% of the respondents opined that the job is reasonably well defined.

**TABLE NO. 9: DETAILS OF OPINION ABOUT AUTHORITY AND DECISION MAKING POWER**

Opinion	Sample Size	Percentage
Absolute	89	49.44
Limited	78	43.33
No	13	7.23
Total	180	100

Source: Field Survey

**INFERENCE:** It could be understood from table 9 that, 49.44% of the respondents opined that, their authority and decision making power is absolute. Followed by 43.33% of the respondents opined that, their authority and decision making power is limited and a small segment of 7.23% of the respondents opined that, they don't have any authority and decision making power.

**TABLE NO. 10: DETAILS OF AUTHORITY AND DECISION MAKING POWER GIVES SATISFACTION**

Opinion	Sample Size	Percentage
Highly agree	49	27.22
Agree to some extent	94	52.22
Disagree	25	13.89
Highly disagree	12	6.67
No opinion	10	5.56
Total	180	100

Source: Field Survey

**INFERENCE:** It could be interpreted from table 10 that, a majority of 52.22% of the respondents agreed to some extent that, authority and decision making power gives more job satisfaction. Followed by 27.22% of the respondents highly agreed that, authority and decision making power gives more job satisfaction, 13.89% of the respondents disagreed that, authority and decision making power gives more job satisfaction, 6.67% of the respondents highly disagreed that, authority and decision making power gives more job satisfaction and a small segment of 5.56% of the respondents said that they don't have any opinion.

**TABLE NO. 11: DETAILS ABOUT FACTORS THAT PROVIDE JOB SATISFACTION**

Factors	Sample Size	Percentage
Punctuality	4	7.27
Honesty	5	9.09
Sincerity	9	16.36
Discipline	13	23.66
Self satisfaction	6	10.90
Work environment	11	20.00
Relations with colleagues	4	7.27
Customer service	3	5.45
Total	55	100

Source: Field Survey

**INFERENCE:** It could be inferred from table 11 that, 23.66% of the respondents opined that discipline provides job satisfaction. Followed by 20.00% opined as work environment, 16.36% as sincerity, 10.90% as self satisfaction, 9.09% as honesty, 7.27% as punctuality, 7.27% as relations with colleagues and 5.45% as customer service.

**TABLE NO. 12: DETAILS ABOUT SUGGESTIONS TO IMPROVE THE MORALE AND EFFICIENCY OF EMPLOYEES**

Suggestions	Sample Size	Percentage
Proper training should be provided	8	47.06
Better facilities to be provided	5	29.41
Clarity in delegation of authority and responsibility	4	23.56
Total	17	100

Source: Field Survey

**INFERENCE:** It could be interpreted from table 12 that, 47.06% of the respondents opined that, proper training should be provided to improve the morale and efficiency of employees. Followed by 29.41% of the respondents opined that, better facilities is to be provided to improve the morale and efficiency of employees and 23.56% of the respondents opined that, clarity in delegation of authority and responsibility improves the morale and efficiency of employees.

**SUGGESTIONS**

The following are the suggestions to improve morale and motivation of public sector bank employees.

- ✓ It is suggested to optimize working hours to increase efficiency of employees.
- ✓ Measures to be taken to improve relations between colleagues.
- ✓ Incentives should be given regularly.
- ✓ Redefine career advancement activities.
- ✓ Create good work environment so that, the employees work interestingly and perform well.

- ✓ Better facilities are to be created so that, the employees work interestingly and perform well.
- ✓ Adequate training is to be provided for better superior subordinate relationship.
- ✓ Train employees in stress management and time management enabling them to have quality work life.
- ✓ There should be clarity in delegation of authority and responsibility for better relationship among colleagues.

#### LIMITATIONS OF THE STUDY

In a study of this magnitude though, meticulous care has been taken in each and every aspect of study. Certain limitations are likely to be there in the study.

1. Some respondents were not aware of certain procedures and aspects.
2. A few respondents were hesitant to give details.
3. There might be a sense of bias crept in answers given by the respondents.

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## HIDDEN MOTIVATORS OF TELECOM EMPLOYEES

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### ABSTRACT

*In this era of materialization where the best talents of IIT, IIM are joining private sectors and no more government services appeals Indian youth. But surprisingly ITS (Indian Telecom Services) officers of BSNL are saying no to nearly four to five times higher salary offered by private telecom organizations. At the face of it looks that either job security is the pulling factor or the satisfaction of working for government is more fascinating than working for an individual. This case-study of BSNL, intends to find the quality of their relationship with their superiors, the quality of physical environment in which they work, degree of fulfillment in their work, etc. which pulls them towards BSNL. As a result they are enjoying their job. To identify the attributes that are important to the BSNL-ITS officers and to study "Declared" versus "Derived" importance which may help BSNL to work on the "hidden motivators" of ITS officers and retain them.*

### KEYWORDS

Motivation, Telecom, HRM.

### INTRODUCTION

Today things are changing at the speed of light; everyone wants to achieve everything in short span. Gone are the days when people use to follow, "One life-one job", in present scenario it is, "One year-one job". Actually job-hopping has become so common that if you are in the same company for a longer period of time people start questioning your capability. With this mind set, job-hopping has become, "the fashion". Actually it has been observed that in some cases even if the employee is happy then also after some time he starts looking for the job, due to fear of being left out, but just reverse is happening in BSNL. ITS officers are saying no to nearly four to five time higher salaries. This study intends to find those factors which are leading to retention.

The flow of the study is as follows:

1. About BSNL and ITS officers
2. Literature Survey
3. Methodology adopted for study
4. Analysis
5. Conclusion

### ABOUT BSNL AND ITS OFFICERS

Bharat Sanchar Nigam Ltd. formed in October, 2000, is World's 7th largest Telecommunications Company providing comprehensive range of telecom services in India: Wireline, CDMA mobile, GSM Mobile, Internet, Broadband, Carrier service, MPLS-VPN, VSAT, VoIP services, IN Services etc. Today it has become one of the largest public sector unit in India.

BSNL has installed Quality Telecom Network in the country and now focusing on improving it, expanding the network, introducing new telecom services with ICT applications in villages and winning customer's confidence. Today, **it has about 47.3 million line basic telephone capacity, 4 million WLL capacity, 20.1 Million GSM Capacity, more than 37382 fixed exchanges, connecting 602 Districts, 7330 cities/towns and 5.5 Lakhs villages.**

BSNL is making focused efforts and planned initiatives to bridge the Rural-Urban Digital Divide ICT sector. In fact there is no telecom operator in the country to beat its reach with its wide network giving services in every nook & corner of country and operates across India except Delhi & Mumbai. Whether it is inaccessible areas of Siachen glacier and North-eastern region of the country. BSNL serves its customers with its wide bouquet of telecom services.

BSNL is number one operator of India in all services in its license area. The company offers wide ranging & most transparent tariff schemes designed to suite every customer. BSNL cellular service, CellOne, has more than 17.8 million cellular customers, garnering 24 percent of all mobile users as its subscribers. That means that almost every fourth mobile user in the country has a BSNL connection. In basic services, BSNL is miles ahead of its rivals, with **35.1 million Basic Phone subscribers** i.e. 85 per cent share of the subscriber base and 92 percent share in revenue terms. BSNL has more than 2.5 million WLL subscribers and 2.5 million Internet Customers who access Internet through various modes viz. Dial-up, Leased Line, DIAS, Account Less Internet (CLI). BSNL has been adjudged as the **NUMBER ONE ISP** in the country. BSNL has set up a world class multi-gigabit, multi-protocol convergent IP infrastructure that provides convergent services like voice, data and video through the same Backbone and Broadband Access Network. At present there are **1.5 million DataOne broadband customers.** The company has vast experience in Planning, Installation, network integration and Maintenance of Switching & Transmission Networks and also has a world class ISO 9000 certified Telecom Training Institute.

Including the top post CMD, BSNL is completely managed by technocrats, the Group A Cadre known as Indian Telecom Services (ITS) recruited by UPSC for serving in DOT. Recruited at the level of Divisional Engineer, with no lateral entries at higher level, all the technical, commercial and management functions are run by ITS. With the entry of Private operators in telecom services, BSNL had to face two challenges; one was to face competition from private operators who entered with efficient system and young, largely outsourced, work force. In contrast, BSNL had to live with large and aging workforce and inherited inefficiency. The second challenge was to retain the talent specially the ITS. For Private Operators who had no experienced manpower, BSNL was the only source. However, by and large BSNL has managed to overcome both the challenges. BSNL learnt very fast to keep pace with the change. Not only it is giving a tough fight to private players, it is still the major threat to most of the private operators.

In spite of attractive offers from Private Operators, the churn out of ITS officers, which are key role player in running the BSNL show, has been very low.

### LITERATURE SURVEY ON JOB-SATISFACTION

Locke and Lathan (1976) give a comprehensive definition of job satisfaction as pleasurable or positive emotional state resulting from the appraisal of ones job or job experience. Job satisfaction is a result of employee's perception of how well their job provides those things that are viewed as important. According to (Mitchell and Lasan, 1987), it is generally recognized in the organizational behaviour field that job satisfaction is the most important and frequently studied attitude. While Luthan (1998) posited that there are three important dimensions to job satisfaction:

- Job satisfaction is an emotional response to a job situation. As such it cannot be seen, it can only be inferred.
- Job satisfaction is often determined by how well outcome meet or exceed expectations. For instance, if organization participants feel that they are working much harder than others in the department but are receiving fewer rewards they will probably have a negative attitudes towards the work, the boss and or coworkers. On the other hand, if they feel they are being treated very well and are being paid equitably, they are likely to have positive attitudes towards the job.

- Job satisfaction represents several related attitudes which are most important characteristics of a job about which people have effective response. These to Luthans are: the work itself, pay, promotion opportunities, supervision and coworkers.

Job satisfaction is so important in that its absence often leads to lethargy and reduced organizational commitment (Levinson, 1997, Moser, 1997). Lack of job satisfaction is a predictor of quitting a job (Alexander, Litchtenstein and Hellmann, 1997; Jamal, 1997). Sometimes workers may quit from public to the private sector and vice versa. At the other times the movement is from one profession to another that is considered a greener pasture. This later is common in countries grappling with dwindling economy and its concomitant such as poor conditions of service and late payment of salaries (Nwagwu, 1997). In such countries, people tend to migrate to better and consistently paying jobs (Fafunwa, 1971). Explaining its nature some researcher (e.g. Armentor, Forsyth, 1995, Flanagan, Johnson and Berret, 1996; Kadushin, and Kulys, 1995) tend to agree that job satisfaction is essentially controlled by factors described in Adeyemo's (2000) perspectives as external to the worker. From this viewpoint satisfaction on a job might be motivated by the nature of the job, its pervasive social climate and extent to which workers peculiar needs are met. Working conditions that are similar to local and international standard (Osagbemi, 2000), and extent to which they resemble work conditions of other professions in the locality. Other inclusions are the availability of power and status, pay satisfaction, promotion opportunities, and task clarity (Bolarin, 1993; Gemenxhenandez, Max, Kosier, Paradiso and Robinson, 1997).

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Other researchers (e.g. MacDonald, 1996; O'Toole, 1980) argue in favour of the control of job satisfaction by factors intrinsic to the workers. Their arguments are based on the idea that workers deliberately decide to find satisfaction in

**METHODOLOGY USED FOR STUDY**

Following questionnaire was given to ITS officers. (out of fifty ITS officers, twenty eight officers responded)

**PART I**

**GENERAL INFORMATION**

Name: \_\_\_\_\_

How long have you worked for this company (BSNL)? \_\_\_\_\_ 1. 1- 3 years

2. 3-5 years

3. 5- 7 years.

4. > 7 years.

Briefly describe your work responsibilities (as you would on a resume): \_\_\_\_\_

**PART II**

**RATING YOUR JOB SATISFACTION**

Scale for rating the different aspects of Job

1-----Not satisfied at all

2 -----somewhat satisfied

3 -----satisfied

4 -----Extremely satisfied

Scale for rating the importance of the aspect

1----- Not at all important

2-----somewhat important

3-----important

4-----Extremely important

Using the scale shown above, rate your level of satisfaction and also its importance, with the following aspects of your job.

Satisfaction Level	Aspects of Job	Importance
<b>GENERAL WORKING CONDITIONS</b>		
	Hours worked each week	
	Flexibility in scheduling	
	Location of work	
	Amount of paid vacation time/sick leave offered	
<b>PAY AND PROMOTION POTENTIAL</b>		
	Salary	
	Opportunities for Promotion	
	Benefits (Health insurance, life insurance, etc.)	
	Job Security	
	Recognition for work accomplished	
<b>WORK RELATIONSHIPS</b>		
	Relationships with your co-workers	
	Relationship(s) with your supervisor(s)	
	Relationships with your subordinates (if applicable)	
<b>USE OF SKILLS AND ABILITIES</b>		
	Opportunity to utilize your skills and talents	
	Opportunity to learn new skills	
	Support for additional training and education	
<b>WORK ACTIVITIES</b>		
	Variety of job responsibilities	
	Degree of independence associated with your work roles	
	Adequate opportunity for periodic changes in duties	



**PART III**

**RATING YOUR JOB OFFER FROM OTHER COMPANIES**

Have you been offered jobs from other companies?

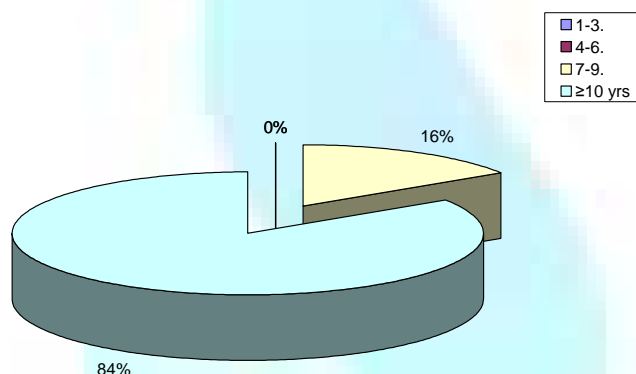
If Yes -----Please answer the following:

1. Salary offered
  - a) 12 lakhs to 15 lakhs
  - b) 15 to 20
  - c) 21 to 30
  - d) More than 30
2. Profile of the offer
3. Reasons for decline
  - a) Job satisfaction at BSNL.
  - b) Not happy with culture at pvt. Company
  - c) Salary hike was not significant
4. If you get an offer next time would you accept?
  - a) Yes
  - b) No
  - c) May Be

**ANALYSIS**

**PART I**

How Long Work For Company

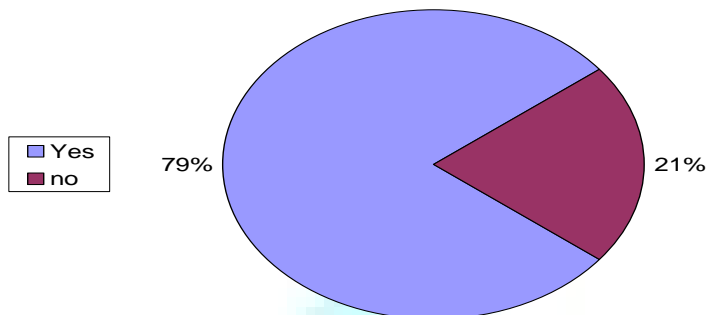


**PART II**

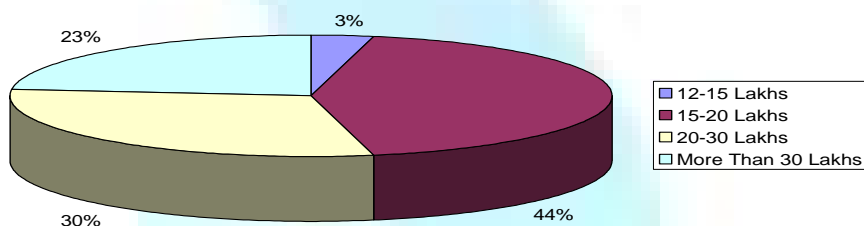
Average Satisfaction Level	Aspects of Job & correlation between Satisfaction level and its importance to the employee	Average Importance
<b>GENERAL WORKING CONDITIONS</b>		
2.86	Hours worked each week $r = 0.42$	3.39
2.79	Flexibility in scheduling $r = 0.09$	3.46
2.93	Location of work $r = 0.18$	3.21
2.93	Amount of paid vacation time/sick leave offered $r = 0.36$	3.14
<b>PAY AND PROMOTION POTENTIAL</b>		
1.89	Salary $r = -0.44$	3.50
2.43	Opportunities for Promotion $r = -0.15$	3.39
2.82	Benefits (Health insurance, life insurance, etc.) $r = -0.23$	3.11
3.54	Job Security $r = 0.26$	3.29
2.50	Recognition for work accomplished $r = 0.18$	3.46
<b>WORK RELATIONSHIPS</b>		
3.18	Relationships with your co-workers $r = 0.49$	3.39
2.89	Relationship(s) with your supervisor(s) $r = 0.33$	3.39
3.00	Relationships with your subordinates (if applicable) $r = 0.18$	3.36
<b>USE OF SKILLS AND ABILITIES</b>		
2.64	Opportunity to utilize your skills and talents $r = 0.11$	3.54
2.71	Opportunity to learn new skills $r = 0.12$	3.54
2.93	Support for additional training and education $r = 0.27$	3.50
<b>WORK ACTIVITIES</b>		
3.21	Variety of job responsibilities $r = 0.18$	3.36
3.18	Degree of independence associated with your work roles $r = 0.35$	3.36
2.96	Adequate opportunity for periodic changes in duties $r = -0.06$	3.14

PART III

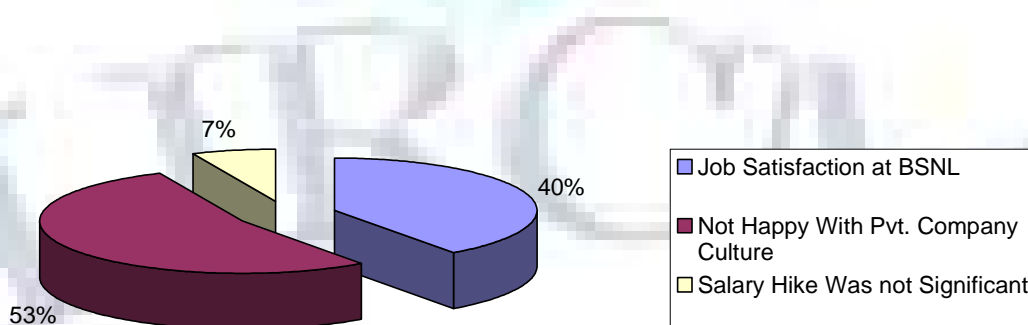
**Job Offered**



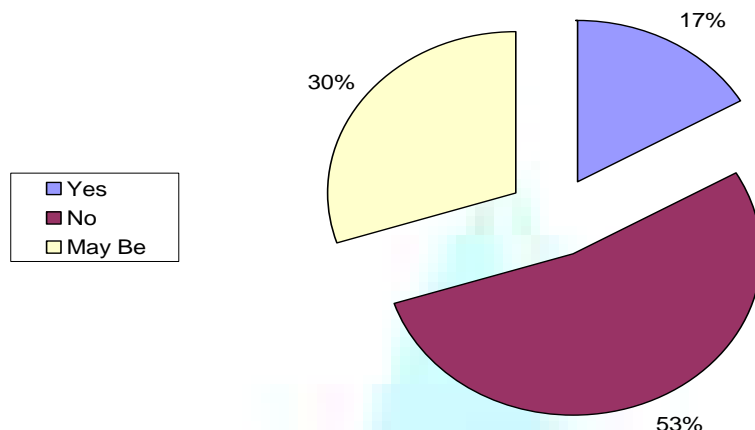
**Pay Offered**



**Reason For Decline**



## If You Get an Order Next Time Would You Accept



### CONCLUSION

- The positive value of coefficient of correlation for the factors: General conditions, work relationship, use of skills and abilities, variety of job responsibilities, degree of independence, job security, recognition of work, indicates that by and large the ITS officers in BSNL are getting what they expect.
  - Hours per week and relationship with co-workers are two dominating factor in job-satisfaction at BSNL
  - BSNL should work towards the flexibility in scheduling. It should provide opportunities to learn new skills so that officers are more contend at work place
- The negative value of coefficient of correlation indicates the inverse relation between importance of the aspect and the satisfaction level which shows that either BSNL is providing the facility which is not very important to the officers or not providing which is important to the officers.
  - Salary is the main factor for dissatisfaction.
  - As promotions are fixed and periodical officers don't find the process encouraging
  - Benefit policies are not playing a positive role in job satisfaction
- With problems like salary, promotion, benefits also majority of ITS officers are satisfied with the job.
- Majority officers are not comfortable with private-organization's culture.
- The study shows that except the 'salary' factor the satisfaction level is between 2.5 and 3.6. Officers have declared all the factors except salary important for job-satisfaction, but -ve value of  $r$  for factors like opportunity for promotion, benefits and opportunity for job change, takes these factors out from declared ones. The derived factors for job-satisfaction are: general working condition, recognition for work, work relationship, use of skills, variety of responsibility and degree of independence.
- On an average the officers are not very happy with the number of hours they work for BSNL but its correlation is highest, which shows that it the hidden motivator for the employees to retain in the organization.
- It is an eye opener for many organizations where attrition rate is increasing day by day. Money is not the only factor which can hold the employees, relation with colleagues, job security are also important in motivating the employees.

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**MICROFINANCE IN INDIA**

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**ABSTRACT**

*Microfinance once hailed as savior now turned into nightmare for not only the people who borrowed the money but also the Government and MF companies thanks to the inappropriate policies adopted by the companies. Coercive methods of collection of payment from the borrowers, high interest rates and commercialization were the reasons for the disaster of microfinance companies. Among that the commercialization has made the radical change in a way that the business operates. The failure in achieving the pre-determined objective of ensuring affordable credit to the poor and underprivileged people caused due to the profit motive of the company To contain the aftermath effect the commercialization, the RBI and Andhra Pradesh formulated the regulations for the MFIs as authors of this article considered that these regulations are not good and also have inflicted enough damages in the MFI business thus leads to complete collapse of the industry. This article deals with the issues arises because of a company went for IPO and the subsequent impact of that move and the remedial measures to be adopted to overcome the problems of MFI.*

**KEYWORDS**

MFI-Micro Finance Institutions, Reserve Bank of India, Initial Public Offering, Securities and Exchange Board of India.

**BACK GROUND**

**M**icrofinance once hailed as a savior for poor and underprivileged turns into horrendous for them thanks to ill-conceived policies of both the governments and MFI. I cannot rest the sole responsibility on the MFI Companies for the failure of the system as government claimed, the government policies are also the main culprits as so far, there is no steadfast approach in regulating this business.

The present problem was originated in the aftermath of a company went for the IPO. Despite knowing that the MF business is not for profit one and there is no scope for earning profit in the long run, none of the regulating agencies includes RBI, SEBI and Ministry of Finance nor the state governments opposed the move. Had any one of them prevented this move, subscriber's as well as borrowers interests would have been saved. An early advocate of the microfinance concept and founder of the highly successful Grameen Bank, Muhammad Yunus, expressed concern about the growing commercialization of microfinance institutions and how this would compromise the real mission of these institutions in the light of their new obligations to their shareholders.

He and others argue that an IPO of microfinance organization gives the message to the people that there is money to be made out of the poor. "This is pushing microfinance in the loansharking direction," says Yunus, who was awarded the Nobel Peace Prize for his work at Grameen Bank. "It's not mission drift. It's endangering the whole mission," he told *The Associated Press*. Despite this the company went through an initial public offering, fueling anger. The company raised more than \$350 million on the stock market in August and started to disburse the money. But the company failed to note the trend of borrowing that the people borrowed the money to repay their dept that had been bought from the local moneylenders at the higher interest rate compared to one charged by the Microfinance companies. Once the honeymoon is over, the company had tried to collect the money from the borrowers to only know that the borrowers were not in a position to repay the money along with interest rate of about 26%. The company had the fire at the belly as the money lent by it borrowed from not from the banks as well as other financial institutions that could be repaid by restructuring, but it had obtained from the high aspired people whose aspirations on profit must be met because they had invested in the company with lot of hopes. In this situation, any one will adopt such hard measures to collect the money. In that sense, with no way to escape from the pressure from the investors, this company might also have espoused the coercive methods of recovery and charged higher interest rate thus perhaps leads to suicide. Andhra Pradesh, where three-quarters of the 76 million people live in rural areas, suffered a total of 14,364 suicide cases in the first nine months of 2010, according to state police. A growing number of microfinance-related deaths spurred the state to clamp down on collection practices in mid-October.

**FAILURE OF FINANCIAL INCLUSION SCHEMES**

Who is responsible for this situation? If we analyzed the reasons, we could easily find fault on regulatory systems rather than the company. Though the Governments have been adopting various schemes to alleviate the poverty in the rural area, none of them have actually reached the beneficiaries. So called financial inclusion schemes of the government got failed thanks to unproductive implementation of them. This can be evident from the report of CAG. In the report, it has been mentioned that the 3.81 crore households had registered under the Act, out of these, while 2.12 crore households had demanded employment, 2.10 crore households were provided employment. The report noted that there were several cases of delayed payment of wages, for which no compensation was paid.

"While there was inadequate assurance that all demands for work were being captured, there were also instances of non-payment of unemployment allowance which became due to employment seekers even where the records indicated that employment was not provided within 15 days from date of demand. However, no one was fined for violation of the Act. Further the report said that the poor record maintenance further diluted the purpose of the Act, systems for financial management and tracking were deficient, as monthly squaring and reconciliation of accounts at different levels to maintain financial accountability and transparency was not being done.

The above report clearly states the sorry state of affairs on implementation of financial inclusion schemes, since the money intended for the poor has not been given, these people would have been left out with the option of borrowing money from the MFI and money lenders. By not curtailing this menace, the government had indirectly fed the unconventional lending methods thus leads to mushrooming of companies which have exploited the poor and underprivileged. Even after this, it has not making an attempt to put their house in order rather than, they have introduced the MFI which makes the matter worse to the extent no MF companies could collect the money lent to the borrowers. This created the mess in the industry that has not been solved so far.

While making regulations on recovery and interest being charged, the government should do due diligence with the stakeholders involved to ascertain the views from them. No borrower has repaid the money and even they don't have the thought of it thanks to these regulations, thus leads many small companies to

shut the business and left with the big companies crying for survival. This is absolutely unwarranted because the government only encouraged these companies to lend the money while its system of financial inclusion got failed. The Reserve Bank of India (RBI) and the Andhra Pradesh government seeking to regulate the sector in the state can be seen as an example of multiple regulators vying for control. Such instances would only lead to harmful consequences, the report said. "The experience of cooperative banks in India suggests multiple regulators may not be as effective as a single, strong regulator. MFIs may also find it difficult to comply with different sets of guidelines. A common and consistent set of regulations would add stability to MFIs' operations and enhance creditor comfort", said Ananda Bhoumik, senior director (financial institutions), Fitch.

MFI loans in Andhra Pradesh were the worst hit in the country, owing to uncertainty over regulation of the industry in the state. Collection efficiencies dropped from 99 per cent in September 2010 to below 50 per cent in December 2010. Andhra Pradesh accounts for about 29 per cent of the total MFI loans in the country, and the deterioration in portfolio delinquency in the state resulted in many large MFIs seeking to restructure their own borrowings from banks, the report said. Rising delinquencies in Andhra Pradesh could also spill over to the adjacent states of Karnataka and Tamil Nadu, it added.

Rather than implementing half-cooked measures to gain political mileage, the government should incorporate constructive measures to solve the issues of MFI and the borrowers as to ensure the win-win situation for both of them.

Following measures can be adopted to solve the current issues of MF

1) Formulation of separate regulatory body to regulate the MF

The government can appoint a separate and exclusive regulatory body like in the line of SEBI for share market, TRAI for telecom and IRDA for insurance industries that should be headed by an expert to formulate the policies and monitor the day to day operations of the MFI.

The institution can also be mandated to conduct the social audit to ensure the achievement of objectives i.e., providing fund to the under-privileged people for constructive purpose.

2) Microfinance banks can be established

In the selective places, where the need for loan is high, the government can establish MF banks as part of their financial inclusion programme to directly lend the money to the borrower at the lowest interest.

3) Offers loans at the lower interest rate

The government should offer the loan to the MF companies at the lowest interest rate (4%to5%) so that these companies in turn will lend the money to the borrower at the appropriate interest rate that ensure the smooth recovery

4) Fix maximum capital entry barrier

There should be higher capital to be fixed as entry fee for the MFI which wants to enter in to the business as to avoid the non serious players to enter in the micro lending. At present it is Rs 2crores and that should be increased to 10 crores.

5) Establishment of separate legal forum to short out the issues

Exclusive nodal centers should be established at the nearby towns of the villages where the lending is happening to facilitate the borrowers and the lenders to file the complaints, if any to expedite the arbitration process.

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## IDENTIFICATION OF IT GOVERNANCE PRACTICES & HUMAN RESOURCES IMPACTING BUSINESS - IT ALIGNMENT IN THE INDIAN IT CONTEXT

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### ABSTRACT

*In today's business environment, Information technology is playing a vital role. The role of IT is ranging from providing support to business to enabling the business strategy or part of Business strategy. As a result, lot of investment is being made in the area of IT and organizations are looking at how well Information technology is trying to address the needs of business thus focusing on the Business-IT alignment. The objective of this paper is to understand the IT Governance practices that impact the business-IT alignment in the Indian IT context and develop a research model/ framework to understand the relation between IT Governance practices and Business-IT alignment. In order to do this, we have performed the literature survey to understand IT Governance Practices that are impacting the Business-IT alignment, created a set of IT governance Practices from Indian IT perspective based on author's experience and Literature survey, surveyed the Subject matter experts in the area of IT in different segments Like System integrators, Product development organizations, captive IT organizations to validate if the articulated practices are relevant in the Indian IT context and applied the Statistical theory to see the validity of these results. The feedback from the Subject matter Experts (SMEs) is incorporated and a model was developed showing the relationship between various governance practices and Business-IT alignment. This model would be a basis to further research for quantifying the relationship between IT Governance factors and Business-IT alignment.*

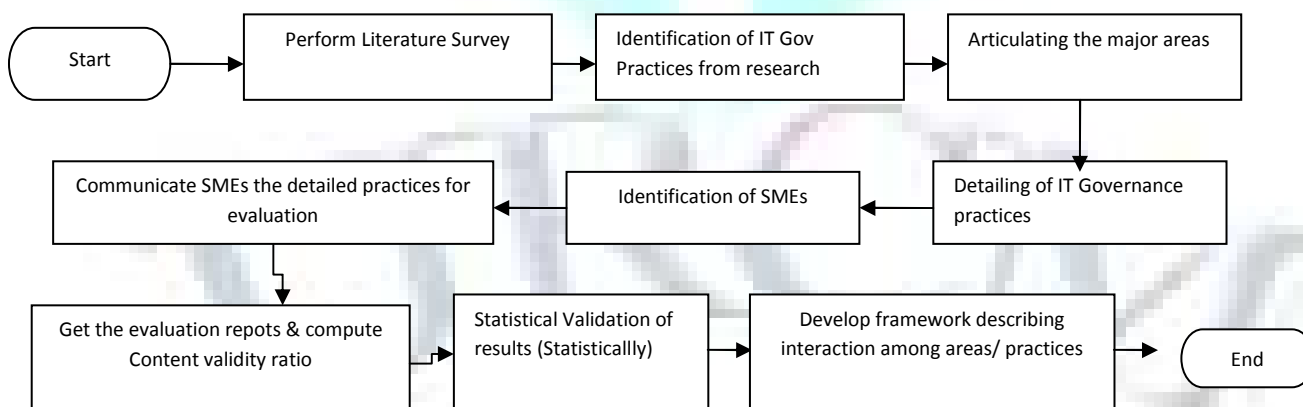
### KEYWORDS

Business-IT Alignment, Human Resources, IT Governance, IT Governance Framework.

### INTRODUCTION

Information technology (IT) alignment with business has been a significant management concern over the last two decades. Information systems (IS) strategic alignment is a nebulous concept that has engendered much debate and many definitions. In fact IT Governance is thought out in different organizations and High Level IT-Governance models were created. However developing the High Level IT Governance model to improve Business-IT alignment is only a first step. Much depends on the implementation of this model at the organization level. This paper is focusing on the identification of the IT Governance practices that impact the Business-IT alignment in the Indian context with different types of organizations like System integrators, Product development, Captive IT organizations.

### PROCESS APPROACH FOR THE STUDY



### LITERATURE SURVEY

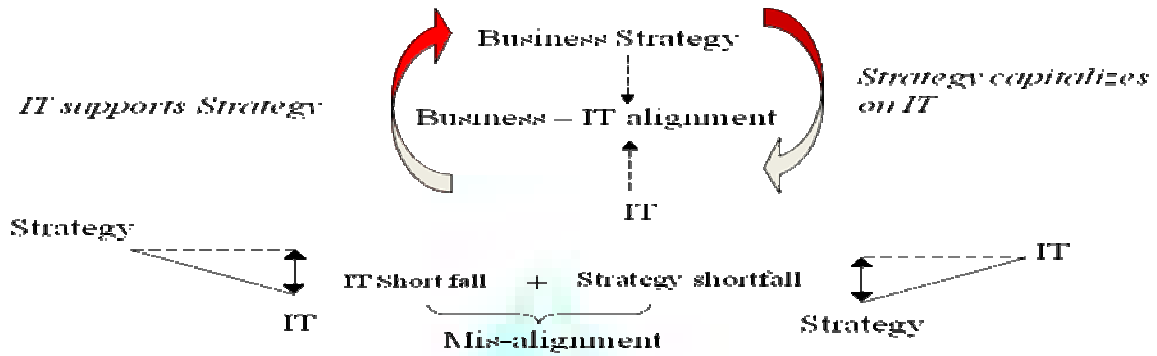
During the Literature survey phase, lot of Journals, on line databases have been referred to understand the IT Governance Practices that are impacting the Business IT alignment.

### DEFINITION OF IT GOVERNANCE AND BUSINESS – IT ALIGNMENT

IT Governance is the responsibility of the Board of Directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategy and Objectives. IT Governance Institute, [4]

IT governance is the organizational capacity exercised by the board, executive management and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT,(Van Grem- bergen, 2000)[10].

FIGURE-1: VISUAL REPRESENTATION OF BUSINESS - IT ALIGNMENT CONCEPT



*Strategic alignment is the extent to which the IT strategy supports, and is supported by, the business strategy*

**IDENTIFICATION OF IT GOVERNANCE PRACTICES FROM RESEARCH**

Name of the article	IT Governance practices
LUFTMAN J, 2000, Assessing Business-IT alignment Maturity, Communications of AIS, vol. 4 [5]	<b>Business Strategy:</b> Business Scope, distinctive competencies, Business governance <b>Organization Infrastructure &amp; Processes:</b> Administrative structure, Processes, Skills <b>IT Strategy:</b> Technology Scope, Systemic competencies, IT Governance
Dr. Gad J. Selig, PMP, Pete Waterhouse, (2006), IT Governance-an Integrated Framework and Roadmap: How to Plan, Deploy and Sustain for Competitive Advantage, Business Service Optimization, Computer Associates [2]	1. Leadership, Organization and Decision Rights 2. Flexible and Scalable Processes. 3. Enabling Technology
LUFTMAN J. AND BRIER T., 1999, Achieving and Sustaining Business-IT alignment, California Management Review, vol. 42, no. 1, pp. 109-122 [6]	Enablers of Business-IT alignment : Senior executive support for IT IT involved in strategy development IT understands the business Well-prioritised IT projects IT demonstrates leadership
Masa'deh, Ra'ed, Kuk, George,(2007), A CAUSAL MODEL OF STRATEGIC ALIGNMENT AND FIRM PERFORMANCE (2007)Nottingham University Business School [7]	Communication between business and IT executives. Connection between business and IT Planning. Shared domain knowledge between business and IT executive Prior IS success Environmental uncertainty Organizational size IT-business managerial resources Rationality and adaptation in the SISP process IT Flexibility
Eric Bartholet, Mark Budd and Fran Turisco, (2009), GETTING VALUE FROM IT BEGINS WITH AGILE, RESULTS-ORIENTED IT GOVERNANCE, Computer Science Corporation [1]	Governance starting at the top Business direction and IT initiative alignment IT resource alignment partnership and alignment between IT and the clinical communities, business communities and research Accountability Transparent project request and prioritization processes. Effective budget and project management Board-Level IT Executive Committee IT Steering Committee (ITSC)
Ivor Jonathan Farrell Dip.Tech., (2003) , Aligning IT to Corporate Objectives: Organisational Factors in Use [3]	1. Management & Planning: o CEO Attitude, CEO / CIO Relationship and Reporting Structure, CIO Management Style o Strategic Planning Quality, and o IT Planning Methodology 2. Business: o Standards & Policies, Information Management, IT Services Management, Sourcing Methodology, Program Management, Stakeholder Management 3. Technology: o IT Infrastructure Management, Intranet Usage, Integrated Information System, Data warehousing, Information Modelling , Reporting & Analysis Tools, E-Mail Usage, Standard Service Definitions, SLAs
Peter Weill, Jeanne W. Ross, (2004)IT Governance on one Page, ,Center for Information Management Research, Sloan School of Management. [8]	IT Principles : High level decisions about the strategic role of IT in the Business IT architecture : an integrated set of technical choices to guide the organization in satisfying the business needs IT infrastructure: Business application needs Prioritization and investment
Why business needs should shape IT architecture(2010) – Mekinsey on Business Technology [10]	<b>Business Model:</b> Business operations, Business capabilities <b>Application land scape:</b> Applications and data, IT integration platform <b>Infrastructure:</b> Infrastructure services, Information and communications technology

**ARTICULATING THE MAJOR AREAS**

The practices described in the above table were analyzed and 10 major areas were articulated. They are as follows:

1. Vision for IT department/understanding the Vision for IT
2. Build Enabling Mechanisms
3. Business Value Planning
4. Build and Implement Communication Strategy
5. Enabling Technology
6. Build Partnership
7. Develop Scope and Implement architecture
8. Develop & Implement Portfolio Management Practices
9. Develop and Implement IT (Project) Investment management
10. Human resource skills
11. Business – IT Alignment

**DETAILING OF THE AREAS INTO DETAILED GOVERNANCE PRACTICES**

These areas are further broken down and details of each area are described based on author’s 23 years of international and domestic experience in the area of IT in fortune 500 organizations.

Vision for IT department/understanding the Vision for IT		Section :2 -- Captive IT organization (for eg IT department of VODAFONE)	
<b>Section 1: For System Integration or Product development organization</b>		21	Having a IT strategic committee at the board level to assist the board in governing and overseeing the enterprise's IT-related matters.
1	Understanding the vision of our customer's Business/IT department/function	22	The Chief of IT Department (for eg CIO) is involved in the business strategy development
2	setting the direction for its Business based on the Vision of our Customer Business/IT department/function	23	Articulation of clear business strategy
3	involving the stakeholders in setting the direction	24	Understanding the Business processes that support the Business strategy
4	Communicates this direction to all the stakeholders	25	Understanding the critical business processes( including the parameters/value indicators that are needed for the success of these processes)
5	Ensures the understanding of this direction by all the stakeholders	26	Preparation of the Business case for the IT Applications / Software Products involving the relevant people from IT
<b>Section :2 -- Captive IT organization (for eg IT department of VODAFONE)</b>		27	Evaluation of the Business case involving appropriate stake holders and approval of the business case
6	Defining the vision for the IT	28	Creation of Service Level agreements (SLAs) with the system integrating organizations or product development organizations
7	Involving the stakeholders in defining the vision for IT	29	Building the approach for computing the the value indicators (the metrics that quantify the business expectations. For eg "billing accuracy" in case of telecom billing products)
8	Communicating this Vision to all the stakeholders	30	Assigning accountability to roles to ensure the success of the IT Applications/Software Product Initiatives
9	Ensuring the understanding of this vision by all the stakeholders	31	Tracking the success of the IT initiatives
<b>Business Value Planning</b>		32	Making the people accountable for the success/failure of IT applications/software products
<b>Section :1 -- System Integration or Product Development organization)</b>		<b>Build and Implement Communication Strategy</b>	
10	Understanding the strategy of my customer organization	33	Building a communication strategy that describes the elements of close interaction with the customers
11	Understanding of the Business processes that support the Business strategy of my customer organization	34	Tracking the effectiveness of the interaction with the customer on a periodic basis
12	Understanding the critical business processes( including the parameters that are needed for the success of these processes) of my customer organization	35	Addressing the corporate internal communication about IT application initiatives and their success on regular basis.
13	Understanding Business case (including the vlaue indicators )prepared for the IT Initiatives	<b>Enabling Technology</b>	
14	Establishing mechanisms or formal organizational roles to perform the above activities	36	The operating processes for supporting the delivery of IT initiatives are automated (e.g. planning and budgeting, portfolio investment management, project management, risk and change management, IT service management and delivery, etc.).
15	Understanding of the business expectations of the software products/ Applications to be delivered to the customer	37	Tools provide governance, communications and effectiveness metrics to facilitate decision support.
16	Creating Service Level agreements (SLAs)	<b>Build Partnership</b>	
17	Building approach for computing the value indicators (the metrics that quantify the business expectations. For eg "billing accuracy" in case of telecom billing products)	38	Establishing the Connection between people from business side and people involved in Planning of IT applications/ Software products
18	Assigning accountability to roles to ensure the success of the IT Applications/Software Product Initiatives	39	Ensuring sharing the domain knowledge between business and IT executive leading to understanding of business by people involved in IT application/software products planning and development
19	Tracking the success of the IT initiatives	40	Ensuring Close interaction between people involved in IT application planning & Dev and customers/end users to understand the expectations and issues
20	Making the people accountable for the success/failure of IT applications/software products	41	Having processes/practices in place for account Management (by customer)



	<b>Develop Scope and Implement architecture</b>	55	the metrics are consolidated at the Program level and are translated in to Program level metrics
42	Availability of Mapping between the business process architecture and technical architecture	56	The program level metrics are mapped to the business benefits
43	The Scope of IT architecture encompasses the entire organization wherever the Business strategy is applicable	57	Updating the business case and compares actual benefits with the planned benefits
	<b>Develop &amp; Implement Portfolio Management Practices</b>		<b>Human resource skills</b>
44	Collects the list of Projects related to each of IT Application Initiatives/software products	58	Having people who are working in the IT are Business Savvy
45	Classification of all projects related to each of IT project Initiatives/software products in to different Portfolios based on criteria (for eg. Transformational, operational and informational)	59	Having people who are on the business side are familiar with the aspects of IT
46	Assess the value add to the Business from each portfolio based on the value indicators (for eg dollars saved due to "billing accuracy" incase of Telecom billing products) identified during Business value Planning state	60	Having people working in both IT and business side have strong communication skills
47	Prioritization of Projects and allocation of resources is based on the business priorities	61	Having people who are good at working at local and virtual teams
48	Building the infrastructure needed for the portfolio management in terms of experienced human resources , tools and processes	62	Having people who have the adaptability to move between Business and Application/Product development requirements effectively
49	Assessing the risk with respect to each portfolio on a regular basis and takes appropriate course of actions		<b>Business- IT Alignment</b>
	<b>Develop and Implement IT (Project) Investment management</b>	63	the Business and IT are aligned
50	Building the required metrics (for eg based on balanced score card) based on the business objectives		
51	Collecting the metrics related to cost, Quality and schedule including the performance indicators (for eg Billing accuracy in case of telecom billing products)		
52	Building required governance processes for project/Program/Account Management and Software development based on the models like CMMI/ITIL/ISO 9001/ISMS/proprietary model		
53	Building the needed Operational level agreements (OLAs) with the appropriate stakeholders within the organization to meet the SLAs		
54	Periodical verification of process compliance through external and internal audits to see if the processes are implemented in the intended manner		

**IDENTIFICATION OF SUBJECT MATTER EXPERTS (SMEs)**

In IT industry, the core areas that are considered in this paper are System Integrating organizations (Eg. Infosys, WIPRO) , Product development organizations (eg Micorsoft, oracle etc) and captive IT organizations (eg. Inhouse IT of Vodafone) .The subject matter experts from these types of organizations have been identified for reviewing the above IT governance practices from Relevance to the Indian IT Industry perspective. After the identification, the detailed practices are communicated to SMEs for evaluation. The SMEs are asked rate the questions from 1-5 (1- being not relevant and 4/5 – highly relevant). The ratings are tabulated below for all the 63 practice listed above.

TABLE 1: RATINGS FROM SUBJECT MATTER EXPERTS (SMEs)

E	Practices																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
E1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
E2	3	5	4	4	4	4	4	5	3	3	5	5	4	5	5	5	4	5	4	3	3	5	4	4	4	5	4	4	5	5	5	3	
E3	5	5	5	5	4	4	4	3	5	5	5	5	5	5	5	5	5	4	5	4	5	5	5	5	4	5	5	5	5	5	5	5	
E4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
E5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
E6	4	4	2	2	2	4	2	2	2	5	5	5	5	5	4	4	4	3	4	5	5	5	5	5	4	4	4	4	3	4	4		
E7	5	4	4	4	3	2	4	4	4	5	5	5	5	4	5	3	5	5	5	5	4	5	5	5	4	4	4	4	4	4	4		
E8	5	5	4	4	4	4	4	4	4	4	5	5	4	4	4	4	3	3	3	4	3	3	3	3	3	3	3	3	3	3	3		
E9	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
E10	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
E11	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
E12	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
E13	5	5	5	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	5	4	5	4	4	4	4	4	4	4	4	4	4	
E14	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
E15	4	3	3	5	3	5	4	3	3	3	3	5	2	3	3	4	1	4	4	3	5	4	4	3	3	3	3	4	3	3	3		

TABLE 1: RATINGS FROM SUBJECT MATTER EXPERTS (SMEs)

E	Practices																																																														
	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63																																
E1	3	4	3	4	2	5	4	4	4	2	5	3	4	4	4	5	5	5	5	4	5	4	3	5	2	3	4	5	5	5	5	5																															
E2	5	5	5	4	4	5	5	4	4	4	4	4	4	4	5	5	5	5	5	4	5	5	4	4	4	4	3	4	4	4	5	4																															
E3	5	4	4	4	5	5	5	4	4	4	5	4	5	5	5	5	5	4	4	4	5	5	5	5	4	4	3	5	4	5	4																																
E4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5																															
E5	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5																															
E6	3	3	3	4	3	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	3	4	3	4	4																															
E7	4	4	4	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4																															
E8	3	3	3	3	4	3	3	3	3	4	4	3	4	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4																															
E9	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5																															
E10	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5																															
E11	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5																															
E12	4	4	4	4	4	4	4	4	4	4	3	3	4	4	3	5	4	4	3	4	3	4	4	3	3	4	3	4	4	4	4	4																															
E13			5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5																															
E14	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5																															
E15	3	5	4	4	5	5	4	5	5	4	5	4	5	3	4	4	4	4	4	4	5	5	5	4	3	5	5	5	5	5	4																																

**STATISTICAL VALIDATION OF RESULTS**

One widely used method of measuring content validity was developed by C. H. Lawshe. It is essentially a method for gauging agreement among raters or judges regarding how essential a particular item is. Lawshe (1975) proposed that each of the subject matter expert raters (SMEs) on the judging panel respond to the following question for each item: "Is the skill or knowledge measured by this item 'essential,' 'useful, but not essential,' or 'not necessary' to the performance of the construct?" According to Lawshe, if more than half the panelists indicate that an item is essential, that item has at least some content validity. Greater levels

of content validity exist as larger numbers of panelists agree that a particular item is essential. Using these assumptions, Lawshe developed a formula termed the content validity ratio:

Use the following formula, using the total number of experts (N) and the number who rated the object as essential (E):

$$CVR = [(E - (N / 2)) / (N / 2)] \quad [1]$$

Where CVR= content validity ratio, E= number of SME panelists indicating "essential" Where E = Number SMEs rated the practice at 4/5 (on a scale of 1-5) , , N= total number of SME panelists. This formula yields values which range from +1 to -1; positive values indicate that at least half the SMEs rated the item as essential. The mean CVR across items may be used as an indicator of overall test content validity.

The following is the table that describes the acceptable values for Content validity ratio and the number of SMEs

TABLE 2: NUMBER OF SMES VS THE ACCEPTABLE CONTENT VALIDITY RATIO (CVR)

NO OF SMES	5	6	7	8	9	10	11	12	13	14	15	20	25	30	35	40
CVR	1	1	1	0.9	0.8	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3

ACTUAL RESULTS & ANALYSIS

TABLE 3 - ACCEPTABLE CONTENT VALIDITY RATIO VS COMPUTED CONTENT VALIDITY RATIO

Practice (1-22)

Practice no	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Target value	0.49	0.49	0.49	0.49	0.49	0.62	0.59	0.54	0.54	0.54	0.51	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.51	0.56	0.59
No of participants	15	15	15	15	15	10	11	13	13	14	15	15	15	15	15	15	15	15	15	14	12	11
Actual Value	0.87	0.87	0.73	0.87	0.60	0.80	0.82	0.54	0.54	0.69	1.00	0.73	0.87	0.73	1.00	0.73	0.87	0.87	0.60	0.86	0.67	1.00

Practice (23-42)

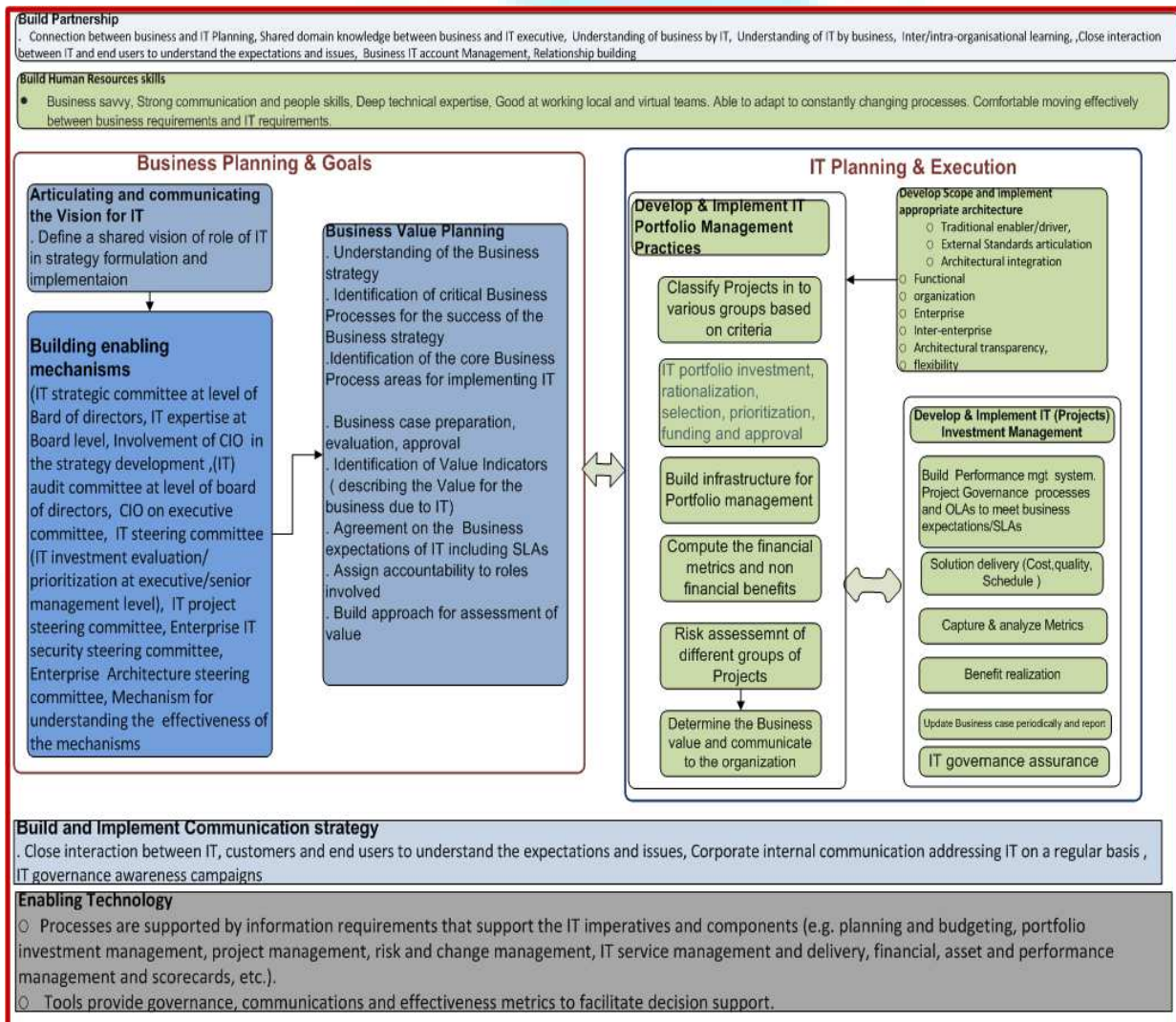
Practice no	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	
Target value	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.78	0.78	0.78	0.54	0.51	0.49	0.49	0.49	0.51	0.51	0.51	0.51	0.51	
No of participants	10	10	10	10	10	10	10	9	9	9	13	14	15	15	15	14	14	14	14	14	
Actual Value	0.80	0.80	0.80	0.80	1.00	1.00	1.00	0.80	0.78	1.00	0.78	0.54	0.71	0.60	0.87	0.60	1.00	0.86	0.86	0.71	0.86

Practice (43-63)

Practice no	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Target value	0.54	0.54	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.49	0.51	0.51	0.51	0.51	0.51
No of participants	13	13	14	14	14	14	14	14	14	14	14	14	14	14	14	15	14	14	14	14	14
Actual Value	0.69	0.85	1.00	0.57	0.86	0.86	0.86	0.71	1.00	0.86	0.86	1.00	0.71	0.57	0.86	0.73	0.57	0.86	0.71	0.86	1.00

Overall Content Validity Ratio = 0.80 as compared to the target value of 0.50.

IT GOVERNANCE - AN INTEGRATED FRAME WORK



## CONCLUSION AND FUTURE RESEARCH

The computed Content Validity Ratio (CVR) is equal to the target value or greater than the Target value for each of the practices. The over all Content validity ratio (CVR) is 0.8 as compared to the theoretical value of 0.50. This shows that the identified practices are inline with the Subject matter experts (SMEs) opinion. The relation among the areas/practices is described in the form of a frame work. This could become basis for further research to identify the quantitative relationship among the IT Governance Practices and Business-IT alignment.

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**CONSUMER'S PERCEPTION AND PURCHASE INTENTIONS TOWARDS GREEN PRODUCTS**

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**ABSTRACT**

*In recent times, the environment has emerged as a hot issue for societies, governments in addition to business organizations. It is observed that different activities of business organizations like sourcing, manufacturing, logistics and marketing have a negative impact on the environment and also considered to be the source of most of the environmental problems. However, current environmental dreadful conditions are ever more menacing consumer health and wellbeing globally. Therefore, consumers are becoming more sensitive in their environmental attitudes, preferences and purchases. At present, customers are ever more aware of the seriousness of environmental degradation, resulting more ecologically consciousness and desire to purchase eco-friendly products and services, favouring businesses that prefer environmental practices. The data and information are collected from 200 consumers in Prakasam district of Andhra Pradesh through pre-tested, structured interview schedule by adopting random sampling technique. The foregoing analysis shows that about 68.00 per cent of the consumers are males while the rest of 32.00 per cent of the consumers are females. The results also show that about 43.50 of the consumers are employed in private sector followed by government (35.50 per cent) and business (21.00 per cent). The majority of consumers are middle aged and the majority of the consumers (37.00 per cent) are postgraduates and more than half of the consumers belong to the monthly income of Rs. 5001-10000. The factor analysis indicates that there are five independent groups were extracted which account for a total of 69.85 per cent of variations on the 14 purchase intention variables and they are grouped in to quality, accessibility, affordability, familiarity and information. The multiple regression model shows that quality, accessibility, affordability and familiarity are positively influencing the purchase value of green products at one per cent level of significance. This study also reveals that if businesses offer environmentally friendly products to consumers with affordable price and higher quality as compared to traditional products, along these consumers have positive intentions to purchase green products, green products purchase will be high. Thus, businesses must ensure competitive pricing strategies along with strong quality controls to attract the prospective green customers.*

**KEYWORDS**

Factor Analysis, Green Products, Perception, Purchase Intention and Regression.

**INTRODUCTION**

 Our lifestyle has changed in this fast paced world as compared to few decades ago. Today, more and more people are caught up in an endless cycle of buying and throwing away, seeing consumption as a means of self-fulfilment. In recent times, the environment has emerged as a hot issue for societies, governments, in addition to business organizations. Its significance originates from escalating environmental degradation such as solid wastes, ozone depletion, global warming, and air pollution. It is observed that different activities of business organizations like sourcing, manufacturing, logistics, and marketing have a negative impact on the environment and also considered to be the source of most of the environmental problems (Eltayeb, *et.al.* 2010). Though, environmental destruction has always been part of the human story. All through time, people's health, both on the individual and the community level have been affected through environmental problems (Khwaja, 2008).

However, current environmental dreadful conditions are ever more menacing consumer health and wellbeing globally. Therefore, consumers are becoming more sensitive in their environmental attitudes, preferences, and purchases (Sarigollu, 2009). Over the past decades, environmental problems and issues have been extensively recognized and discussed. These days, a large number of respondents all over the world state that they are concerned or very concerned with environmental problems (Diekmann and Franzen, 1999; Dunlap and Mertig, 1995).

Concerns related to the environment are evident in the increasingly environmentally conscious market place. Over the years majority consumers have realized that their purchasing behaviour has a direct impact on many ecological problems. The growth of organic agriculture is seen as part of the emerging marketing trends where consumers demand to know what benefits a food could deliver before making a purchasing decision. Although the demand for organic food is still buoyant, there are signs that markets are maturing and growth rates over the last few years slowed to below 10 per cent. At present, customers are ever more aware of the seriousness of environmental degradation, resulting more ecologically consciousness and desire to purchase eco-friendly products and services, favoring businesses that prefer environmental practice (Laroche, *et. al.*, 2001; Roberts, 1996).

Over the years, people started demanding environmentally friendly products and services, and the organizations felt political and public pressure to go green. The necessity to increase consumers' awareness of corporate efforts to meet sustainable standards, the need to identify consumers' preferences for green products, the possibility of charging a premium price gave rise to a new trend in the marketing field, the so-called Green marketing. With this background, the present study was attempted to study the consumer's perception and purchase intentions towards Green products in Prakasam district of Andhra Pradesh.

**METHODOLOGY**

Among the different districts in Andhra Pradesh, the Prakasam district has been purposively selected for the present study. The consumers have been selected by adopting random sampling technique through pre-tested, structured interview schedule through direct interview method. The data and information have been collected from 200 consumers and pertain to the year 2011-2012.

**STATISTICAL TECHNIQUES**

The frequency and percentage analyses were carried out to understand the socio-economic characteristics consumers. In order to examine the consumer's perception on green products, the ANOVA test has been applied. In order to identify the factors affecting the purchase intention of the green products, the factor analysis has been employed with principal component extraction with varimax rotation. The factor analysis can be expressed as:

$$Z_{ij} = a_1 f_{1j} + a_2 f_{2j} + \dots + a_m f_{mj} + e_{ij}$$

Where as,

$Z^j$  = Purchase Intention Factors

a = Factor Loadings

f = Factor Score

e = Residual term accounting for Errors or other Source of Variation.

In order to assess the effect of purchase intentional factors which are obtained from the factor analysis, on purchase value of consumers of green products, the multiple linear regression analysis by Ordinary Least Square (OLS) estimation has been applied for identified factors. The functional form of multiple liner regression model are given below:

$$Y = \alpha + \beta_i X_i + e$$

Where,

Y = Purchase Value

$X_i$  = Purchase Intentional Factors

i = 1 to 5

$\alpha$  = Intercept

$\beta_i$  = Partial Regression Coefficients

e = Random Error or Stochastic Disturbance Term

The  $\alpha$  and  $\beta_i$  are the coefficients which are to be calculated through Ordinary Least Square (OLS) estimation.

The Likert five point scale (strongly agree to strongly disagree) was used to measure the variables of purchase intention of the consumers.

**RESULTS AND DISCUSSION**

**SOCIO-ECONOMIC CHARACTERISTICS OF CONSUMERS OF GREEN PRODUCTS**

The socio-economic characteristics of consumers of green products were analyzed and the results are presented in **Table 1**. The results indicate that about 68.00 per cent of the consumers are males while the rest of 32.00 per cent of the consumers are females. The results also show that about 43.50 of the consumers are employed in private sector followed by government (35.50 per cent) and business (21.00 per cent). From the table, it is clear that about 28.50 per cent of the employees belong to the age group of 18-24 years followed by 31-40 years (22.50 per cent), 25-30 years (21.00 per cent), 41-45 years (14.50 per cent), 46-50 years (8.50 per cent) and more than 50 years (5.00 per cent).

The majority of the consumers (37.00 per cent) are postgraduates followed by graduates (22.00 per cent), secondary education (21.00 per cent), higher secondary education (16.50 per cent) and diploma (3.50 per cent). The results also show that about 55.00 per cent of the consumers belong to the monthly income of Rs. 5001-10000 followed by Rs.10001-15000(22.00 per cent), Rs. 15001-20000(16.00 per cent) and more than Rs. 20000(7.00 per cent) and about 64.00 per cent of the consumers are married while the rest of 36.00 per cent of the consumers are unmarried.

**TABLE - 1: SOCIO-ECONOMIC CHARACTERISTICS OF CONSUMERS OF GREEN PRODUCTS**

Variables	Respondents(N=200)		Variables	Respondents(N=200)	
	Number	Per Cent		Number	Per Cent
<b>Gender</b>			<b>Educational Qualification</b>		
Male	136	68.00	Secondary	42	21.00
Female	64	32.00	Higher Secondary	33	16.50
<b>Occupation</b>			Graduates	44	22.00
Business	42	21.00	Post Graduates	74	37.00
Government	71	35.50	Diploma	7	3.50
Private	87	43.50			
<b>Age( Years)</b>			<b>Monthly Income(Rs.)</b>		
18-24	57	28.50	5001-10000	110	55.00
25-30	42	21.00	10001-15000	44	22.00
31-40	45	22.50	15001-20000	32	16.00
41-45	29	14.50	>20000	14	7.00
46-50	17	8.50	<b>Marital Status</b>		
>50	10	5.00	Married	128	64.00
			Unmarried	72	36.00

**CONSUMER'S PERCEPTION ON GREEN PRODUCTS**

The consumer's perception on green products was analyzed and the results are presented in **Table 2**.

**TABLE - 2: CONSUMER'S PERCEPTION OF GREEN PRODUCTS**

Perception	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	F-Value	Sig
Healthy	170 (85.00)	25 (12.50)	4 (2.00)	1 (0.50)	0 (0.00)	200 (100.00)	17.629	0.02
High nutritional value	130 (65.00)	60 (30.00)	10 (5.00)	0 (0.00)	0 (0.00)	200 (100.00)		
Products are grown in harmony with nature	82 (41.00)	69 (34.50)	33 (16.50)	12 (6.00)	4 (2.00)	200 (100.00)		
Free from chemical pesticides and fertilizers	44 (22.00)	85 (42.50)	41 (20.50)	22 (11.00)	8 (4.00)	200 (100.00)		
Products with environmentally /animal friendly techniques	68 (34.00)	92 (46.00)	30 (15.00)	6 (3.00)	4 (2.00)	200 (100.00)		
Free from Genetically Modified Organisms(GMO)	32 (16.00)	92 (46.00)	40 (20.00)	22 (11.00)	14 (7.00)	200 (100.00)		
All green products are properly checked and certified	59 (29.50)	91 (45.50)	38 (19.00)	10 (5.00)	2 (1.00)	200 (100.00)		

Note: The figures in the parentheses are per cent to total

The results show that about 85.00 per cent of the consumers are strongly agreed that the green products are healthy and about 65.00 per cent of the consumers are also strongly agreed that the green products have high nutritional value. The products are grown in harmony with nature is strongly agreed by 41.00 per cent of the consumers. The results further indicate that about 42.50 per cent of the consumers are agreed with green products are free from chemical pesticides and fertilizers and 46.00 per cent of the consumers are agreed that the green products are produced with environmentally/ animal friendly techniques and free from Genetically Modified Organisms (GMO). It is apparent that about 45.50 per cent of the consumers are agreed with all green products are properly checked and certified. The F-value of 17.629 is statistically significant at five per cent level of significance indicating that there is a significant difference in perception about green products among the consumers.

### FACTORS AFFECTING THE PURCHASE INTENTION OF GREEN PRODUCTS

In order to identify the factors affecting the purchase intention of green products, the factor analysis has been employed. The principal component method of factor analysis was carried out with Eigen value greater than one through varimax rotation and the results obtained through rotated component matrix are presented in **Table 3**.

There are five independent groups were extracted which account for a total of 69.85 per cent of variations on the 14 purchase intention variables. The each of five factors contributes 24.98 per cent, 12.82 per cent, 11.91 per cent, 10.16 per cent and 9.98 per cent respectively.

**TABLE - 3: FACTOR ANALYSIS FOR PURCHASE INTENTION OF GREEN PRODUCTS**

Purchase Intention	Rotated Factor Loadings on				
	Factor I	Factor II	Factor III	Factor IV	Factor V
More cheap prices			.763		
More income			.690		
More accessibility in the market		.762			
More assortment availability					.791
Better appearance and taste		.838			
More time to look green products				.932	
More recognizable label and products				.577	
More trust to origin / production		.665			
More seasonal products	.753				
More products from my local region	.767				
Longer shelf life	.840				
Less packing material	.734				
More information					-.570
Better/ shorter cooking conditions			.763		
Eigen Value	3.37	2.25	1.37	1.08	1.01
% of Variance	24.98	12.82	11.91	10.16	9.98
Cumulative % of Variance	24.98	37.80	49.71	59.87	69.85
Cronbach's alpha	0.85				

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 7 iterations.

Factor-I: From the table, it is inferred that out of 14 purchase intention variables, four variables have their high, relatively tightly grouped factor loadings on factor-I.

This factor consists of:

- More seasonal products (0.75)
- More products from my local region (0.77)
- Longer shelf life (0.84)
- Less packing material (0.73)

Hence, this factor is named as "QUALITY".

Factor-II: is formed with:

- More accessibility in the market (0.76)
- Better appearance and taste (0.84)
- More trust to origin / production (0.67)

These variables are named as "ACCESSABILITY".

Factor-III: This factor includes:

- More cheap prices (0.76)
- More income (0.69)

These three variables are named as "AFFORDABILITY".

Factor-IV: This factor is formed with:

- More time to look green products (0.93)
- More recognizable label and products (0.58)

This factor is named as "FAMILIARITY".

Factor-V: This factor includes:

- More assortment availability (0.79)
- More information (-0.57)

The factor is named as "INFORMATION".

The purchase intention variables are measured using a five point scale and the reliability coefficient of the (Cronbach's alpha) of the scale is 0.85 indicating that each measure demonstrates acceptable internal consistency.

### EFFECT OF PURCHASE INTENTIONAL FACTORS ON PURCHASE VALUE OF GREEN PRODUCTS -MULTIPLE REGRESSION ANALYSIS

In order to assess the effect of purchase intentional factors on purchase value of green products, the multiple linear regression by Ordinary Least Square (OLS) estimation and the results are presented in **Table 4**. The results indicate that the coefficient of multiple determination ( $R^2$ ) is 0.64 indicating the regression model is moderately fit. The results show that quality, accessibility, affordability and familiarity are positively influencing the purchase value of green products at one per cent level of significance.

TABLE - 4: EFFECT OF PURCHASE INTENTIONAL FACTORS ON PURCHASE VALUE OF GREEN PRODUCTS-MULTIPLE REGRESSION

Purchase Intentional Factors	Regression Coefficients	t-value	Sig
Intercept	2.184**	6.114	.001
Quality(X <sub>1</sub> )	.292 <sup>†</sup>	3.458	.001
Accessibility(X <sub>2</sub> )	.267**	4.626	.001
Affordability(X <sub>3</sub> )	.251**	4.513	.001
Familiarity(X <sub>4</sub> )	.175**	2.207	.001
Information(X <sub>5</sub> )	.014	0.794	.694
R <sup>2</sup>	0.64		
Adjusted R <sup>2</sup>	0.57		
F	2.986		0.02
N	200		

Note: \*\* Significance at one per cent level

#### POTENTIAL FOR GREEN PRODUCTS PURCHASE

The potential for green products purchase by the consumers was analyzed and the results are presented in Table 5.

TABLE – 5: POTENTIAL FOR GREEN PRODUCTS PURCHASE

Product Group	Per Cent
Fresh Vegetables	90.50
Fresh Fruits	86.50
Meat and Meat Products	52.00
Milk and Milk Products	85.00
Cereals	42.00
Pulses	46.00
Baby Products	55.50
Dried Fruits and Nuts	56.00
Beverages	29.00
Cooking Oils	51.50
Sugar Products	34.00
Herbs and Species	45.00
Bread and Bakery Products	36.00

The results indicate that about 90.50 per cent of the consumers are willing to purchase green products of fresh vegetables followed by fresh fruits (86.50 per cent), milk and milk products (85.00 per cent), dried fruits and nuts (56.00 per cent), baby products (55.50 per cent), meat and meat products (52.00 per cent) and cooking oils (51.50 per cent) in future. The consumer's future purchases for the other green products are varying from 46.00 per cent for pulses to 29.00 per cent for beverages.

#### CONCLUSION AND RECOMMENDATIONS

The foregoing analysis shows that about 68.00 per cent of the consumers are males while the rest of 32.00 per cent of the consumers are females. The results also show that about 43.50 of the consumers are employed in private sector followed by government (35.50 per cent) and business (21.00 per cent). The majority of consumers are middle aged and the majority of the consumers (37.00 per cent) are postgraduates and more than half of the consumers belong to the monthly income of Rs. 5001-10000.

The factor analysis indicates that there are five independent groups were extracted which account for a total of 69.85 per cent of variations on the 14 purchase intention variables and they are grouped in to quality, accessibility, affordability, familiarity and information. The multiple regression model shows that quality, accessibility, affordability and familiarity are positively influencing the purchase value of green products at one per cent level of significance.

The results also indicate that there is a great potential for green products of fresh vegetables, fresh fruits, milk and milk products and dried fruits and nuts. Hence, along with environmental aspects manufacturers should consider the prices and quality of green products to attract these consumers. This study also reveals that if businesses offer environmentally friendly products to consumers with affordable price and higher quality as compared to traditional products, along these consumers have positive intentions to purchase green products, green products purchase will be high. Thus, businesses must ensure competitive pricing strategies along with strong quality controls to attract the prospective green customers.

One more imperative facet that the marketers must consider is that the customers are often skeptical of the green claims; hence, organizations must guarantee that the offered environmentally friendly products perfectly meet the ecological values to define the customers' criticism. According to study findings that there are many customers who have positive and high intentions to purchase green products but due to higher prices and poorer quality as compare to non-green products, they do not buy them. Hence, along with environmental aspects manufacturers should consider the prices and quality of green products to attract these consumers.

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## ROUGH SET THEORY IN ANALYSING THE CONSUMER AWARENESS ABOUT FACE WASH PRODUCTS IN CHENNAI CITY

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### ABSTRACT

*One of our daily chores in the morning is washing our face. There are many face washes in the market of which some are herbal and would be very useful to safeguard you from any side effects. Face wash is an important part of facial care and could easily see the benefits if one should do it regularly. Many studies proved that the consumers have become more demanding and the knowledge about the products used by them is very high. Under this pretext an attempt was made by this study to know the consumers' expectation about the face wash products. A new mathematical tool, Rough Set Theory (RST), is used to analyse the data collected from the women respondents in Chennai city. Unlike other tools used for data mining, RST analyse the data and predicts the various patterns in the form of decision rules. Decision rules are used by the managers to understand the data pattern, as well as, customers' expectations about the face wash. ROSE2 is the software used for pruning the attributes and to generate the decision rules based on the data. In the out come the study, it was observed that 'Middle Income' group of Chennai city respondents feels that 'Natural Ingredients', 'Feel Fresh' and 'Brand Name' are important attributes in selecting a good face wash.*

### KEYWORDS

Consumer Expectation, Face Wash, ROSE2, Rough Set Theory.

### INTRODUCTION

Customers are value maximisers. They form an expectation of value and act on it. Now a days customers eagerness to know about the products they use as increased many folds. In the last few years, it is not only the urban consumers who wants to know about the products they use but also the rural consumers' awareness about the products they use have increased. As the awareness of the consumers increases it has become more difficult for the firm managers to understand and meet their expectations. Likewise customer awareness, change in customer expectations also grows day by day. Customers are more demanding and meeting their expectation is a real challenge for the firms.

### IMPORTANCE OF FACE WASH

Face speaks volumes about one's self image and a well looked after face can attract attention and build self confidence in a person. Therefore, cleansing your face properly is basic to a good body care routine. It is a daily routine chore for all of us to wash our face first thing in the morning. Face wash helps in clearing away all the dust particles as well as by the moisturizer in the face wash helps in keeping the skin smooth and supple. With the use of your face wash you could also do many other things which would help in keeping you fresh all time. Have a regular clean up which would help in lessening your black heads and white heads. Use morning cream after your bath to keep your skin tender. The use of sun screen is a must and should be applied everyday, even when you are at home. Just take necessary care according to the weather and your skin would be beautiful as always. With the increasing awareness on personality conscious, there are many face washes which has come into the market which would suit according to your skin texture. It not only give a face lift to ones personality but also helps in fighting the harshness provided by the sun and many other chemical pollutants which causes damage to our skin. Wrong selection of face wash may lead to skin allergies. A cleanser or face wash is a facial care product that is used to remove make-up, dead skin of the face. This helps to unclog pores and prevent skin conditions such as acne. Using a cleanser to remove dirt is considered to be a better alternative to bar soaps. Considering the market potential of skin care products, especially face wash market share, an attempt is made to study the current trend in the expectations and general awareness of the face wash users.

### INTRODUCTION TO ROUGH SET THEORY

Rough Set Theory (RST) can be approached as an extension of the Classical Set Theory, for use when representing incomplete knowledge. Rough Set Theory represents a different mathematical approach to vagueness and uncertainty. Definition of a set in the rough set theory is related to our information (knowledge about the domain) and perception about elements of the universe.

The rough set methodology is based on the premise that lowering the degree of precision in the data makes the data pattern more visible, whereas the central premise of the rough set philosophy is that the knowledge consists in the ability of classification. (R.Slowinski ,1992)[11] . In other words, the rough set approach can be considered as a formal framework for discovering facts from imperfect data. (Massart et al)[11].

Rough set theory has an overlap with many other theories dealing with imperfect knowledge, e.g., evidence theory, fuzzy sets, Bayesian inference and others. Nevertheless, the theory can be regarded as an independent, complementary - not competing discipline, in its own rights.

The main objective of this study is to explore the feasibility of applying the Rough Set Theory (RST) approach in understanding the consumer awareness and their expectations in face wash or cleanser usage. The result of this study can be helpful as a guiding tool for the marketing and sales managers in understanding their customers' expectations and to serve them better.

This research paper is organised as follows: section 2 reviews about the available literatures on face wash and about importance of Rough Set Theory (RST). In section 3, the mathematical model applied in the study is briefly explained with illustration. Study methodology is discussed in section 4. Study review and discussion is covered in the section 5. Conclusion is section 6.

### LITERATURE REVIEW

Data mining is widely used in many researches, and various soft computing methodologies have been applied to handle different challenges posed by the data mining. Current researches find conventional data mining methods still have weak points. Those methods, as per Shinya Imai et al,2008 [8], focus on discovering algorithm and visualizing techniques. But through data mining it is easy to find out a huge number of patterns in a database, where most of these patterns are actually useless or uninteresting to the user.

Rough set theory can be regarded as a new mathematical tool for imperfect data analysis. The theory has found applications in many domains, such as Decision Support, Engineering, Environment, Banking, Medicine and others. Pawlak, 2002 [3].

Rough set theory (RST), proposed by Zdzislaw Pawlak in 1982 to analyse the classification of uncertain or incomplete data, has a number of advantages. The RST is suitable for identifying relationships that might not be found using statistical methods.



This approach seems to be of fundamental importance to artificial intelligence and cognitive sciences, especially in the areas of machine learning, knowledge acquisition, decision analysis, decision support systems, inductive reasoning and knowledge discovery from databases, expert systems and pattern recognition (Pawlak & Slowinski, 1994)[4]. The Advantages of rough set theory is that it does not need any preliminary or additional information about data, such as probability distribution in statistics, basic probability assignment in the Dempster-Shafer theory, or grade of membership or the value of possibility in fuzzy set theory.

In real time studies, it is possible that inconsistency, defined by objects with the same conditional attribute values yet have opposite consequences (decision), exists. (Tung-Kuang Wu; et al 2011) [10]. Rough Set Theory can deal with inexact, uncertain, and vague datasets (Walczak & Massart, 1999) [11].

Both Fuzzy Set Theory and Rough Set Theory are used with the indiscernibility relation and perceptible knowledge. The major difference between them is that Rough Set Theory can avoid pre-assumption and one-sided information analysis. The rough sets theory is of fundamental importance in artificial intelligence (AI) and cognitive science, especially in the areas of machine learning, knowledge acquisition, and decision analysis, knowledge discovery inductive reasoning, and pattern recognition in databases, expert systems, decision support systems, Shinya Imai et al [8]. The RST is a model of approximate reasoning, which can be used to manage vague and uncertain data or problems related to information systems, indiscernibility relations and classification, attribute dependence and approximation accuracy, reduct and core attribute sets, and decision rules.

A special cleanser or face wash meant for face should be used for regular face wash in place of normal soap. A study by, Sauermaun et al,1986 [6], identified that the constant use of normal soaps as face wash leads to increase in permeability of skin as does the maintenance of both alkaline and strongly acid pH values at the skin surface. Therefore the assumption seems quite logical that the irritation potential of soap solutions applied in excess to the skin surface causes more damage to the skin.

A literature by Ejere et al 2009 [1], about the growth in awareness and importance of using face wash concludes that "We note with interest that the percentage of participants with clean faces increased in both intervention and control groups over 12 months, even though the increase was higher in the intervention group. However, a statistically significant difference in the percentage of clean faces between the intervention and control groups at 12 months suggests a benefit of face washing using face wash products.

To prove that better face look will improve ones self confidence, a study by Seyed Reza Mousavi 2010,[7] reveals that, to improve the compensation for fat atrophy and making the face look young, improves the mental and emotional conditions of patients. Though not many studies were available about the consumer expectations on face wash and in particular to Chennai city, an attempt was made to study about the awareness and expectations of the face wash users in Chennai.

## OVERVIEW OF THE ROUGH SET THEORY

Rough Set Theory is a mathematical approach to manage vague and uncertain data or problems related to information systems, indiscernibility relations and classification attribute dependence. Rough set philosophy is founded on the assumption that with every object of the universe of discourse some information (data, knowledge) is associated. Objects characterized by the same information are indiscernible (similar) in view of the available information about them. The indiscernibility relation generated in this way is the mathematical basis of rough set theory Pawlak, 2002 [3]. The goal of Rough set is to enumerate good attribute subsets that have high dependence, discriminating index and significance.

### BASIC DEFINITIONS

#### ELEMENTARY SET

Any set of all indiscernible (similar) objects is called an **elementary set**, and forms a basic granule (atom) of knowledge about the universe.

#### CRISP AND ROUGH SET

Any union of some elementary set is referred to as a **crisp set** (also called as precise set. Otherwise, the set is **rough set** (imprecise or vague set).

Each rough set has boundary-line cases, i.e., objects which cannot be certainly classified as crisp set, by employing the available knowledge, as members of the set or its complement. Hence rough sets, in contrast to precise sets, cannot be characterized in terms of information about their elements.

#### APPROXIMATIONS

Approximations are fundamental concepts of rough set theory. With any rough set a pair of precise sets, called the lower and the upper approximation of the rough set, is associated. The lower approximation consists of all objects which surely belong to the set and the upper approximation contains all objects which possibly belong to the set. The difference between the upper and the lower approximation constitutes the **boundary region** of the rough set.

The computation of accurate approximations is very important in decision rule extraction. The intersection of conditions and decision classes yields both the lower and upper approximations. (Jhieh-Yu Shyng et al 2007)[2]

#### DECISION TABLE

Rough set based data analysis starts from a data table called a **decision table**, columns of which are labelled by attributes, rows – by objects of interest and entries of the table are attribute values. Attributes of the decision table are divided into two disjoint groups called condition and decision attributes, respectively.

#### CORE AND REDUCT OF ATTRIBUTES

The concepts of core and reduct are two fundamental concepts of the rough sets theory. The reduct is the essential part of an Information System, which can discern all objects discernible by the original Information System. Reduct can minimize subset and make the object classification satisfy the full set of attributes. Reduct attributes can remove the superfluous attributes and give the decision maker a simple and easy information. There may be more than one reduct attributes. If the set of attributes is dependent, we are interested in finding all possible minimal subsets of attributes which have the same number of elementary sets. The reduct attribute set affects the process of decision making, and the core attribute is the most important attribute in decision-making (Walczak and Massart ,1999)[11].

The core is the common part of all reducts. To compute reducts and core, the discernibility matrix is used. The discernibility matrix has the dimension  $n \times n$ , where  $n$  denotes the number of elementary sets and its elements are defined as the set of all attributes which discern elementary sets. If the set of attributes is indispensable, the set is called the **core** (Walczak and Massart, 1999) [11].

#### DECISION RULES

Each row of a decision table induces a decision rule, which specifies decision (action, results, outcome, etc.) if some conditions are satisfied. If a decision rule uniquely determines decision in terms of conditions – the decision rule is certain. Otherwise the decision rule is uncertain. Decision rules are closely connected with approximations. Roughly speaking, certain decision rules describe lower approximation of decisions in terms of conditions, whereas uncertain decision rules refer to the boundary region of decisions.

#### CERTAINTY AND COVERAGE

With every decision rule two conditional probabilities, called the certainty and the coverage coefficient, are associated. The certainty coefficient expresses the conditional probability that an object belongs to the decision class specified by the decision rule, given it satisfies conditions of the rule. The coverage coefficient gives the conditional probability of reasons for a given decision.

#### DECISION-MAKING USING ROUGH SET ALGORITHM

Given an Information system model IM as,

$$IM = (U, A, V, \rho)$$

Where  $U = \{x_1, x_2, x_4, x_5, \dots, x_n\}$ ; the Universal set,

and  $A = \{a_1, a_2, \dots, D\}$ ; A is a finite set of attributes and D is the decision attribute.

AN ILLUSTRATION

TABLE 1: DECISION TABLE

U	a <sub>1</sub>	a <sub>2</sub>	a <sub>3</sub>	D
x <sub>1</sub>	1	3	1	1
x <sub>2</sub>	2	2	1	1
x <sub>3</sub>	1	2	2	1
.	.	.	.	.
.	.	.	.	.
x <sub>4</sub>	1	1	3	2
x <sub>5</sub>	1	1	3	1

Source: An Example

$V_{a_1} = \{1,2\}$  ,  $V_{a_2} = \{1,2,3\}$  ,  $V_{a_3} = \{1,2,3\}$  and  $D = \{1,2\}$  then  $V = \bigcup_{a \in A} V_a$

The information model function,  $\rho$ , is given by Table 1, where U is the universal object set of IM;

A represents the model attribute sets, consisting of attributes  $\{a_1, a_2, a_3\}$ ;

$V_{a_i}$  represents the domain (value sets) of attribute  $a_i$ ;

$V (= \bigcup_{a \in A} V_a)$  is a set of values of the attributes;

$Ds(x) = \{f(x, a_1), f(x, a_2), \dots, f(x, a_k)\}$  is the description of each object, x, of U (Greco et al., 2001)[9], and

$f(x, a) \in V_a$  is called the information model set of object x.

We call the above table the "Decision table", and attributes are divided into condition attributes and decision attributes (Pawlak, 2002)[3].

**INDISCERNIBILITY RELATION AND CLASSIFICATION**

Let objects  $x_1, x_2 \in U$  be indiscernible by the set of attributes B in A. Any subset B of A determines a binary relation, IND (B), on U, which we call an indiscernibility relation, and define it as  $x_1 \in B, \rho x_2(a) = \rho x_1(a)$  for every  $a \in B$ . The equivalence class of IND (B) is called an elementary set (atoms) in IM. Thus, any  $x_i$  of U can be induced so that the value sets of attributes represented in B are in the same class. Objects grouped in the same class are called elementary sets, and the process is called classification.

**INDEPENDENCE OF ATTRIBUTES**

It is possible that inconsistency, defined by objects with the same conditional attribute values yet have opposite consequences (decision), exists. (Tung-Kuang, 2011) [10]. For example, in the above illustration  $x_4 (1,1,3)$  and  $x_5 (1,1,3)$  have the same set of conditional attributes but their decisions are different. For  $x_4$  it is 2 and for  $x_5$  it is 1

In order to check, whether the set of attributes is independent or not, one checks for every attribute whether its removal increases the number of elementary sets in the IM or not. If  $IND(A) = IND(A-a)$  then the attribute  $a_i$  is called a superfluous attribute. Otherwise, the attribute  $a_i$  is indispensable in A.

This helps to identify the superfluous attributes and to reduce the number of unwanted attributes which do not have any impact on the data pattern. By reducing the number of unwanted attributes, the decision rules thus generated will be of less complex and more efficient.

**APPROXIMATION ACCURACY**

If X is U's subset,  $x_i$  expresses objects  $x_1, x_2, \dots, x_n$  where i is 1 to n, then

$L_{app}(x_i) = \{x_j \in U \mid x_j \subseteq X\}$  - represents the **lower approximation**.

$U_{app}(x_i) = \{x_j \in U \mid \{x_j \cap X \neq \emptyset\}$  - Object  $x_i$  may, or may not, belong to the elementary sets contained in X that have non-empty intersections. This is called the **upper approximation**.

$Bnd(x_i) = U_{app}(x_i) - L_{app}(x_i)$  - called the **boundary region** of X, indicating that the objects are inconsistent or vague.

To sum up, the objects of  $L_{app}(x_i) \subseteq$  Objects of  $U_{app}(x_i)$ .

The **approximation accuracy rate** is derived from the computation of the intersection rate between the lower and upper approximations, which are used to evaluate the classification's accuracy. In short,

**Approximation accuracy rate**  $H = \text{cardinal } L_{app}(x_i) / \text{cardinal } U_{app}(x_i)$ .

**REDUCT AND CORE ATTRIBUTE SETS**

Reducts are the most precise way of discerning object classes, which are the minimal subsets provided that the object classification is the same as with the full set of attributes. The core is common to all reducts. The reduct attribute set affects the process of decision-making, and the core attribute is the most important attribute in decision making.

$RED(B) \subseteq A$  and

$COR(C) = \bigcap RED(B)$

**METHODOLOGY**

The study is restricted to Chennai city only. All the respondents were female in the age group of 15 to 45 years. A questionnaire has been framed based on the parameters gathered from the oral interviews of female respondents of all age group having in mind about the consumers' expectations and their awareness about the face wash. 100 respondents were selected at random covering different parts of Chennai city and 82 valid respondents' questionnaire was taken for study. Respondents' options were collected through the nominal scale with numerals. Various parameters, with attribute name, attribute values and value sets, used to capture the respondents' awareness and expectation are listed in Table 3.

Approximations and accuracy were generated using the RST software. Table 2 shows the lower and upper approximations obtained by a rough set analysis. This result has accuracy 1.000. This means the target set is definable on the basis of an attribute set (Pawlak et al., 1994, 1998)[4].

TABLE 2: APPROXIMATIONS AND ACCURACY

Class	Number of Objects	Lower Approximation	Upper Approximation	Accuracy
1	16	16	16	1.00
2	37	37	37	1.00
3	19	19	19	1.00
4	8	8	8	1.00
5	2	2	2	1.00

Source: From the data collected (ROSE2)

TABLE 3: ATTRIBUTES BEFORE PRUNING

Sno	Attribute Name	Attribute Value	Value Set
1	Age	15 to 25, 26 to 35 and Above 36	[1,2,3]
2	Income	10000-20000 , 21000-30000 and 31000 and above	[1,2,3]
3	Clear face	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
4	Fresh feel	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
5	Natural ingredients	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
6	Fragrance	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
7	Pack look	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
8	Brand name	Yes and No	[1,2]
9	Expected price (Rs)	30-40, 41-50, 51-60, 61-70 and above 70	[1,2,3,4,5]
10	Performance	Highly satisfied, Satisfied, Neutral, Dissatisfied; Highly Dissatisfied	[1,2,3,4,5]

Source: Questionnaire

In the study, 10 attributes were identified based on the discussion, as shown in the Table 3. After the data was collected, the REDUCTS was generated using the Software ROSE2 and Heuristic Reduct Search algorithm, it was understood that some of the attributes are not necessary as per the concept of 'Independence of attribute'. Also having more attributes without its contribution in decision making will make the process of decision rule generation more complex.

It was found that out of ten attributes only 8 were having the actual impact on the decision making. So the superfluous attributes are pruned down and the process is repeated using the 8 attributes. The details of these attributes before and after pruning are shown in Table 3 and Table 4 respectively.

Based on the Heuristic Reduct Search, the following reducts were generated.

1: {Income, Fresh\_feel, Pack\_look}

2: {Income, Natural\_ingredients, Brand\_name}

3: {Fresh\_feel, Pack\_look, Expected\_price}

4: {Natural\_ingredients, Pack\_look, Expected\_price}

Core: No core is created. That is, there is no common attribute among the reducts.

From the above, it is clear that the attributes 'Fragrance' and 'Clear face', mentioned in the table 3, were not having any considerable impact on the decision attribute 'Performance'. In the second phase, these two attributes were removed and Reducts were generated again. It was observed that there was no difference in the Reducts. The pruned new set of attributes is shown in Table 4.

TABLE 4: ATTRIBUTES AFTER PRUNING

Sno	Attribute Name	Attribute Value	Value Set
1	Age	15 to 25, 26 to 35 and Above 36	[1,2,3]
2	Income	10000-20000 , 21000-30000 and 31000 and above	[1,2,3]
3	Fresh feel	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
4	Natural ingredients	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
5	Pack look	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
6	Expected price (Rs)	30-40, 41-50, 51-60, 61-70 and above 70	[1,2,3,4,5]
7	Brand name	Yes and No	[1,2]
8	Performance	Highly satisfied, Satisfied, Neutral, Dissatisfied; Highly Dissatisfied	[1,2,3,4,5]

Source: Questionnaire

## REVIEW AND DISCUSSION

Using the software ROSE2 and the LEM2 algorithm different possible decision rules were generated. Decision rules with a relative strength of 80 and above were selected for discussion. 17 Decision rules were generated. Out of 17 rules 12 are shown in the Table 5.

TABLE 5: DECISION RULES

Sno	Decision Rules	Decision	Number of respondents	Relative Strength
1	Natural_ingredients = 1	Performance = 1	16	100
2	Pack_look = 1	Performance = 1	16	100
3	Pack_look = 2	Performance = 2	37	100
4	Expected_price = 3	Performance = 3	17	94.74
5	(Income = 2) & (Fresh_feel = 2)	Performance = 3	18	100
6	(Income = 2) & (Natural_ingredients = 2)	Performance = 3	19	100
7	(Income = 2) & (Brand_name = 2)	Performance = 3	19	100
8	(Fresh_feel = 2) & (Expected_price = 3)	Performance = 3	16	84.21
9	(Natural_ingredients = 2) & (Expected_price = 3)	Performance = 3	16	84.21
10	(Age = 3) & (Fresh_feel = 2)	Performance = 4	7	87.50
11	(Age = 3) & (Natural_ingredients = 2)	Performance = 4	7	87.50
12	(Fresh_feel = 2) & (Expected_price = 4)	Performance = 4	8	100

Source: ROSE2 decision rules

## INTERPRETATIONS OF THE DECISION RULES

- From rules 1 and 2, it is observed that respondents with a relative strength of 100 and performance 'Highly Satisfied' opine that 'Natural ingredients' and 'Package look' are 'highly important' for the face wash cream.
- Respondents who feel that performance is 'Satisfied' with a relative strength of 100 opine that package look is just 'Important' from rule 3.
- With a relative strength of 94.74, whose performance level is 'Neutral' feels that price of the product should be in the range of 51-60, from rule 4.
- From rule 5 it is inferred that, respondents who feel that the performance is 'Neutral' are in the income level of Rs 21000-30000 and think that 'fresh feel' is 'Important'.
- Similarly, rules 6 and 7 depicts that 'Brand Name' and 'Natural Ingredients' are Important for respondents who are in the income band of Rs 21000-30000 and have 'Performance level' as 'Neutral'.
- Rules 8 and 9 suggests that with performance level has 'Neutral', respondents feel that 'Expected\_price' can be 'Rs 51- 60' whereas 'Fresh feel' and 'Natural Ingredient' are important.
- Respondents in the age group of above 35 years and 'Dissatisfied' with the performance feel that 'Fresh feel' and 'Natural Ingredient' are important, inferred from the rules 10 and 11.

- 8) From rule 12, 'Fresh feel' is 'Important' for the respondents who are ready to give a price in the range 61-70 opine that the performance level is 'Dissatisfied'.

## CONCLUSION

Respondents who feel that the performance is highly satisfactory expect that natural ingredients and pack look are very important in deciding the face wash. In general, women above 35 years in Chennai city are not much satisfied with the existing face washes. This may be because Chennai women above 35 years of age are not that much health conscious as compared with the younger generation. Also women are ready to spend an amount of Rs 50 to 60 for a face wash cream. This study may help managers to design their face wash accordingly and work out their future strategy to increase their sales. The simplicity in understanding the decision rules generated using the Rough set theory proves that this mathematical tool is more efficient in helping the managers to understand the voice of consumers in a simpler language as decision rules. Interpretation of the decision rules can be done according to the requirements of the managers.

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**A STUDY ON BRAND PREFERENCE OF MOBILE PHONE CUSTOMERS WITH REFERENCE TO ERODE CITY**

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**ABSTRACT**

*Economic development of a country is usually measured in terms of rise in standard of living of its people. An increase in standard of living revealed by an increase in consumptions of items of comforts and luxuries and not merely use of items meeting the base minimum necessities of life what was considered as luxuries a decade ago, has become necessity now- Television, two wheelers, refrigerators, washing machines and the like have become indispensable items in every house. Out of the listed domestic appliances, television releases the family member and their exertion. In this research paper, the Researcher made an attempt to analyse the mobile phone brand preference among the customers in Erode city of Tamil nadu, India.*

**KEYWORDS**

Economic development, Standard of living, Brand, Customer, Product.

**INTRODUCTION**

The study of any subject is made easier by examining it in an organized manner. Therefore, we should determine the general classes of variables influencing consumers behaviour understand the nature of these variables, and hear how to make inferences based on this knowledge. Knowledge of consumer behaviour would render immense help for planning and implementing marketing strategies. A modern marketer first tries to understand the consumers and their response, and then he studies the basic characteristic of their behaviour. It can be said that the consumer is the pivot around which the whole marketing system revolves. The selection on choice of products or services by consumers greatly – determine the fate of the producers. The marketer must know the consumer more and more in order to manufacture the products which give them satisfaction in the way consumers need. The marketer is always interest to know how consumer respond to various marketing stimuli, such as product price, place and promotion and other stimuli, i.e., buyer environment such as economic, technical, political and cultural. The factors that influence the consumer behaviour are internal and external, internals and need, motives, perception and attitude, external factors are family, social, groups, culture, business etc. “The whole behaviour of a person while making purchase may be termed as consumer behaviour”. “Consumer behaviour may be defined as that behaviours exhibited by people in planning, purchasing and using economic goods and services”.

According to Webster “Buying Behaviour is all psychological, social and physical behaviour of potential consumers as they become aware of evaluate, purchase, consumer and tell other people about products and services”. In today’s highly competitive environments, improving consumer’s brand preference permits marketers to maintain a comfortable and lasting position in the market place. The new millennium is not just a new beginning, it is a continuation of trends in human behaviour that have been following cyclical patterns throughout our country’s history. Just because we have entered a new era does not mean we have to start from scratch when it comes to interpreting why certain consumers are loyal to certain brands, and what type of factors influence these allegiances. Brand preference is the consumer’s taste to consume a particular product or service expressed through their intention or behaviour, to repurchase a brand continually. It occurs because the consumer perceives that the brand offers the right product features, image or level of quality at the right price. Consumer behaviour is habitual because habits are safe and familiar. It order to create brand preference the advertisers must meet consumers’ tastes and analyse their habits, help them to acquire new habits, and reinforce those habits by reminding consumers of the value of their purchase and encourage them to continue purchasing those products in future.

**OBJECTIVES OF THE STUDY**

- To analyse the brand preference of consumers towards Mobile products with special reference to Erode.
- To study the customer opinion and their level of satisfaction towards the usage of the company products.
- To identify the various factors influencing the purchase of Mobile products in the study area.
- To give few suggestions for the betterment of the product based on the major findings.

**RESEARCH METHODOLOGY****SAMPLING TECHNIQUE**

The sampling procedure adopted for this study is convenience sampling.

**TOOLS USED FOR ANALYSIS OF DATA**

- Simple percentage method
- Weighted average method
- Chi-square test

**SCOPE OF THE STUDY**

The most vital function of management in an organization is to minimize risk and uncertainty through systematic decision-making. Better decisions result from the effective and timely utilization of right information about the consumers, dealers, competitors and others. Marketing as a functional area of management is becoming increasingly important as compared to other fields viz. production, finance, personnel and others. A substantial proportion of all marketing research involves the direct study of people. The kinds of people studied are extremely varied including such individuals as housewife, children, and executive of large corporations and managers of small business. Consumer attitudes and preference from one of the foundation stones for research. Attitudes are among the most complex least understand, but most used social, psychological concepts in marketing. The researcher has made an attempt to study the consumer brand preference and how for the consumers using the old brand. Every business handles the goods and services. While producers are interested in heavy process and huge profit every producer is also a consumer.

**LIMITATIONS OF THE STUDY**

1. Sample size has been restricted to 300 samples due to time constraints and the researcher cannot do in-depth analysis.
2. The study is confined to the respondents at Erode alone, this is not applicable to other district.
3. The study was conducted with short span of time and therefore it was based on the available respondents.
4. The details given by the respondents are considered as true and the study results are based on this assumption.

## DATA ANALYSIS AND INTERPRETATION

TABLE NO.1: AGE OF THE RESPONDENTS

S. No.	Age (in Years)	No. of Respondents	Percentage (%)
1.	Less than 20	80	26.7
2.	20-30	104	34.7
3.	31-50	84	28.0
4.	Above 50	32	10.6
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It is identified from the analysis that 26.7% of the respondents fall in the age group of less than 20 years, 34.7% of the respondents fall in the age group of 20-30 years, 28.0% of the respondents fall in the age group of less than 20 years and 10.6% of the respondents fall in the age group of above 50 years. It is concluded from the above analysis that majority of the respondents fall in the age group of 20-30 years.

It is concluded that most of the respondents (104) respondents fall in the age group of between 20 – 30 years.

TABLE NO. 2: MARITAL STATUS OF THE RESPONDENTS

S. No.	Marital Status	No. of Respondents	Percentage (%)
1.	Married	198	66.0
2.	Single	102	34.0
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It is noted from the analysis that 66.0% of the respondents are married and 34.0% of the respondents are single. It is concluded from the above analysis that majority of the respondents are married.

It is concluded that most of the respondents (198) are married.

TABLE NO. 3: EDUCATIONAL QUALIFICATION OF THE RESPONDENTS

S. No.	Educational Qualification	No. of Respondents	Percentage (%)
1.	Illiterate	45	15.0
2.	School level	128	42.7
3.	Diploma or ITI	75	25.0
4.	Degree level	36	12.0
5.	Others	16	5.3
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It is identified from the analysis that 15.0% of the respondents are illiterates, 42.7% of the respondents are educated till school level, 25.0% of the respondents are educated till diploma (or) ITI, 12.0% of the respondents are educated till degree level and remaining 5.3% of the respondents are having some educational qualification. It is concluded from the above analysis that majority of the respondents are educated till school level.

It is concluded that most of the respondents (128) are illiterates.

TABLE NO. 4: FAMILY MEMBERS OF THE RESPONDENTS

S. No.	Family Members	No. of Respondents	Percentage (%)
1.	Upto 3	106	35.3
2.	4	82	27.3
3.	5	98	32.7
4.	Above 5	14	4.7
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It is highlighted from the analysis that 35.3% of the respondents are having upto three members, 27.3% of the respondents are having four members, 32.7% of the respondents are having upto five members and 4.7% of the respondents are having above five members. It is concluded from the above analysis that majority of the respondents are having upto three members.

It is concluded that most of the respondents (106) are having upto three members in their family.

TABLE NO. 5: SOURCES OF INFORMATION

S. No.	Sources	No. of Respondents	Percentage (%)
1.	Advertisement	129	43.0
2.	Friends & Relatives	102	34.0
3.	Shop owners and retailers	69	23.0
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It is observed from the analysis that 43.0% of the respondents are getting information about the Mobile products through advertisement, 34.0% of the respondents are getting information about the Mobile products through friends and relatives and 23.0% of the respondents are getting information about the Mobile products through shop owners and retailers. It is concluded from the above analysis that majority of the respondents are getting information about the Mobile products through advertisement.

It is concluded that most of the respondents (129) are getting information about the Mobile products through advertisement.

TABLE NO. 6: BUYING THE MOBILE PRODUCTS

S. No.	Opinion	No. of Respondents	Percentage (%)
1.	Showroom	223	74.3
2.	Retailers	55	18.3
3.	Traders	22	7.3
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It is analysed from the analysis that 74.3% of the respondents are buying Mobile products through showroom, 18.3% of the respondents are buying Mobile products through retailers and 7.3% of the respondents are buying Mobile products through traders. It is concluded from the above analysis that majority of the respondents are buying Mobile products through showroom.

It is concluded that most of the respondents (223) are buying Mobile products through showroom.

**TABLE NO. 7: OPINION ABOUT THE PRICE OF MOBILE PRODUCTS**

S. No.	Opinion	No.of Respondents	Percentage (%)
1.	Highly satisfied	112	37.3
2.	Satisfied	142	47.3
3.	Neutral	25	8.3
4.	Dissatisfied	16	5.3
5.	Highly dissatisfied	5	1.7
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It is analysed from the analysis that 37.3% of the respondents are highly satisfied with the price of the Mobile products, 47.3% of the respondents are satisfied with the price of the Mobile products, 8.3% of the respondents are neutrally satisfied with the price of the Mobile products, 5.3% of the respondents are dissatisfied with the price of the Mobile products and 1.7% of the respondents are highly dissatisfied with the price of the Mobile products. It is concluded from the above analysis that majority of the respondents are satisfied with the price of the Mobile products.

It is concluded that most of the respondents (142) respondents are highly satisfied with the price of the Mobile products.

**TABLE NO. 8: FACTORS AFFECTING TOWARDS SALES OF MOBILE**

S. No.	Factors	No.of Respondents	Percentage (%)
1.	Competitors	68	22.7
2.	Price	102	34.0
3.	Poor Advertisement	79	26.3
4.	Bad Quality	51	17.0
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It is observed from the analysis that 22.7% of the respondents are opined that the sales of Mobile products was affected by the competitors, 34.0% of the respondents are opined that the sales of Mobile products was affected by the price factor, 26.3% of the respondents are opined that the sales of Mobile products was affected by the poor advertisement and 17.0% of the respondents are opined that the sales of Mobile products was affected by the bad quality. It is concluded from the above analysis that majority of the respondents are opined that the sales of Mobile products was affected by the price factor.

It is concluded that most of the respondents (102) respondents are opined that the sales of Mobile products was affected by the competitors

**TABLE NO. 9: OPINION ABOUT THE AVAILABILITY OF MOBILE PRODUCT**

S. No.	Opinion	No.of Respondents	Percentage (%)
1.	Available	252	84.0
2.	Not available	48	16.0
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It reveals from the analysis that 84.0% of the respondents are opined that the Mobile products easily available in the market and remaining 16.0% of the respondents are opined that the Mobile products not easily available in the market. It is concluded from the above analysis that majority of the respondents are opined that the Mobile products easily available in the market.

It is concluded that most of the respondents (252) are opined that the Mobile products easily available in the market and remaining.

**TABLE NO. 10: CHOOSING THE PRICE LEVEL**

S. No.	Price	No. of Respondents	Percentage (%)
1	High price	70	23.3
2	Medium price	140	46.7
3	Low price	90	30.0
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It is noted from the analysis that 23.3% of the respondents are choosing high price level products, 46.7% of the respondents are choosing medium price level products and 30.0% of the respondents are choosing low price level products. It is concluded from the above analysis that majority of the respondents are choosing medium price level products.

It is concluded that most of the respondents (140) are choosing high price level products.

**TABLE NO. 11: OPINION ABOUT THE MOBILE ADVERTISEMENTS**

S. No.	Opinion	No. of Respondents	Percentage (%)
1.	Highly satisfied	33	11.0
2.	Satisfied	145	48.3
3.	Neutral	103	34.3
4.	Dissatisfied	12	4.0
5.	Highly dissatisfied	7	2.3
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It is identified from the analysis that 11.0% of the respondents are highly satisfied with the Mobile advertisement, 48.3% of the respondents are satisfied with the Mobile advertisement, 34.3% of the respondents are neutrally satisfied with the Mobile advertisement, 4.0% of the respondents are dissatisfied with the Mobile advertisement and 2.3% of the respondents are highly dissatisfied with the Mobile advertisement. It is concluded from the above analysis that majority of the respondents are satisfied with the Mobile advertisement.

It is concluded that most of the respondents (145) are highly satisfied with the Mobile advertisement.

**TABLE NO. 12: RESPONDENTS OPINION ON MEDIA OF ADVERTISEMENT**

S. No.	Media	No. of Respondents	Percentage (%)
1	Television	188	62.7
2	Newspaper	85	28.3
3	Radio	27	9.0
4	Others	0	0
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It is noted from the analysis that 62.7% of the respondents are preferred television media is best media for advertise Mobile products, 28.3% of the respondents are preferred newspaper media is best media for advertise Mobile products and 9.0% of the respondents are preferred radio media is best media for advertise

Mobile products. It is concluded from the above analysis that majority of the respondents are preferred television media is best media for advertise Mobile products.

It is concluded that most of the respondents (188) are preferred television media is best media for advertise Mobile products.

TABLE NO. 13: OPINION ABOUT THE SALESMAN RELATIONSHIP WITH CUSTOMERS

S. No.	Opinion	No. of Respondents	Percentage (%)
1.	Highly satisfied	123	41.0
2.	Satisfied	94	31.3
3.	Neutral	54	18.0
4.	Dissatisfied	21	7.0
5.	Highly dissatisfied	8	2.7
	<b>Total</b>	<b>300</b>	<b>100.0</b>

It shows from the analysis that 41.0% of the respondents are highly satisfied with the salesman relationship, 31.3% of the respondents are satisfied with the salesman relationship, 18.0% of the respondents are neutrally satisfied with the salesman relationship, 7.0% of the respondents are dissatisfied with the salesman relationship and 2.7% of the respondents are highly dissatisfied with the salesman relationship. It is concluded from the above analysis that majority of the respondents are highly satisfied with the salesman relationship.

It is concluded that most of the respondents (123) are highly satisfied with the salesman relationship.

II. WEIGHTED AVERAGE METHOD

TABLE NO. 14: REASON FOR SELECTING THE MOBILE PRODUCTS

S. No.	Factors	Weighted Score	Rank
1.	Price	1063	II
2.	Quality	1079	I
3.	Colour	1021	III
4.	Style	816	IV
5.	Availability	687	V

The above table shows the reasons for selecting the Mobile products. It is identified from the analysis that most of the respondents are selected the reason of its quality which influenced to select the products with scored as 1079 points. It is followed from the second and third reasons are 'price' and 'colour' with scored as 1063 points and 1021 points. The fourth and fifth reasons are 'Style' and 'Availability' with scored as 816 points and 687 points.

It is concluded from the above analysis that majority of the respondents are selecting the Mobile products for the reason of its 'high quality' and 'Price'.

III. CHI-SQUARE ANALYSIS

TABLE NO. 15: GENDER AND BUYING MODE OF THE MOBILE PRODUCTS

(TWO-WAY TABLE)

S.No.	Gender	Buying the Mobile products						Total	%
		Showroom	%	Retailers	%	Traders	%		
1	Male	104	47	33	160	16	73	153	551
2	Female	119	53	22	40	6	27	147	449
	<b>Total</b>	<b>223</b>	<b>100</b>	<b>55</b>	<b>100</b>	<b>22</b>	<b>100</b>	<b>300</b>	<b>1100</b>

From the above table it is observed that 153 (51%) respondents come under the male category among male with the medium and high level of satisfaction. 147 respondents come under the female category with the medium level of satisfaction.

Null Hypothesis (H<sub>0</sub>) : There is no significant relationship between gender of the respondents and buying factors mode of the Mobile products.

Alternative Hypothesis (H<sub>1</sub>) : There is a close significant relationship between gender of the respondents and buying factors of the Mobile products.

CHI-SQUARE RESULT :

Calculated  $\chi^2$  Value = 7.637  
 Degree of Freedom = 2  
 Table value = 5.991  
 Significant level = 5% level

It is identified from the above analysis that the calculated chi-square value is greater than the table value and the Null hypothesis rejected. Hence, there is a close significant relationship between gender of the respondents and buying mode the Mobile products.

TABLE NO. 16: OCCUPATION AND THE SALES FACTOR OF MOBILE PRODUCTS

(TWO-WAY TABLE)

S.No.	Occupation	Affecting sales factors								Total
		Competitors	%	Price	%	Poor Advertisement	%	Bad quality	%	
1.	Business Man	38	56	48	47	38	48	24	47	148
2.	Employee	22	22	31	30	21	27	15	29	89
3.	Students	7	7	7	7	15	6	1	2	20
4.	Professionals	1	1	16	16	12	15	7	14	36
5.	Others	0	0	0	0	3	4	4	8	7
	<b>Total</b>	<b>68</b>	<b>100</b>	<b>102</b>	<b>100</b>	<b>79</b>	<b>100</b>	<b>51</b>	<b>100</b>	<b>300</b>

From the above table it is observed that 148 respondents belong to the Business Man with the medium level of satisfaction. 89 respondents belong to the Employee with the high level of satisfaction. 36 respondents belong to the Professionals with the medium level of satisfaction. 20 respondents belong to the Students with the high level of satisfaction. 7 respondents belong to the others with the medium level of satisfaction.

Null Hypothesis (H<sub>0</sub>) : There is no significant relationship between occupation and affect the sales factor of Mobile products.

Alternative Hypothesis (H<sub>1</sub>) : There is a close significant relationship between occupation and affect the sales factor of Mobile products.

CHI-SQUARE RESULT

Calculated  $\chi^2$  Value = 23.831  
 Degree of Freedom = 12  
 Table value = 21.026  
 Significant level = 5% level



It is identified from the above analysis that the calculated chi-square value is greater than the table value and the Null hypothesis rejected. Hence, there is a close significant relationship between occupation and affect the sales factor of Mobile products.

**TABLE NO. 17: MONTHLY INCOME AND BUYING FACTORS OF THE MOBILE PRODUCTS (TWO-WAY TABLE)**

S.No.	Monthly income	Buying factors of the Mobile products						Total	%
		Showroom	%	Retailers	%	Traders	%		
1.	Upto 5000	49	22	12	22	1	5	62	21
2.	Between 5001-10000	100	44	20	36	6	27	126	42
3.	Between 10001-15000	55	25	18	33	7	32	80	27
4.	Above 15000	19	8	5	9	8	36	32	10
	<b>Total</b>	<b>223</b>	<b>100</b>	<b>55</b>	<b>100</b>	<b>22</b>	<b>100</b>	<b>300</b>	<b>100</b>

From the above table it is observed that 126 respondents buying factors of the Mobile products belong to the between 5001-10000 of monthly income with the medium level of satisfaction. 80 respondents buying factors of the Mobile products belong to the between 10001-15000 of monthly income with the medium level of satisfaction. 62 respondents buying factors of the Mobile products belong to the upto 5000 of monthly income with the high level of satisfaction. 32 respondents buying factors of the Mobile products belong to Above 15000 of monthly income with the medium level of satisfaction.

Null Hypothesis ( $H_0$ ) : There is no significant relationship between monthly income of the respondents and buying factors of the Mobile products.

Alternative Hypothesis ( $H_a$ ) : There is a close significant relationship between monthly income of the respondents and buying factors of the Mobile products.

#### CHI-SQUARE RESULT

Calculated $\chi^2$ Value	=	20.990
Degree of Freedom	=	6
Table value	=	12.592
Significant level	=	5% level

It is identified from the above analysis that the calculated chi-square value is greater than the table value and the Null hypothesis rejected. Hence, there is a close significant relationship between monthly income of the respondents and buying factors of the Mobile products.

## SUMMARY OF FINDINGS, SUGGESTIONS & CONCLUSION

### FINDINGS

1. It is revealed from the analysis that majority of the respondents are getting information about the Mobile products through advertisement.
2. It is obvious from the analysis that majority of the respondents are buying Mobile products through showroom.
3. It is noted from the analysis that majority of the respondents are opined that the sales of Mobile products was affected by the price factor.
4. It is identified from the analysis that majority of the respondents are opined that the Mobile products easily available in the market.
5. It is stated from the analysis that majority of the respondents are preferred television media is best media for advertise Mobile products.
6. It is noted from the analysis that majority of the respondents are highly satisfied with the salesman relationship.
7. There is a close significant relationship between gender of the respondents and buying factors of the Mobile products.
8. There is a close significant relationship between occupation and affect the sales factor of Mobile products.
9. There is a close significant relationship between monthly income of the respondents and buying factors of the Mobile products.

### SUGGESTIONS

1. The company also take promotional measures of festival offer like exchange offer, discount etc.
2. The respondents feel that the picture after few years is not satisfactory. So the company should concentrate on this feature.
3. Through the study it was suggested that the company should concentrate on the capture of dealers and canvas them to increase their sales.
4. In order to cover the middle income group people, the company should consider the power consumption factor in their products.

### CONCLUSION

Marketing plays an important role in the modern world. Therefore the development of marketing has always kept pace with economic growth of the country. Now, the consumer is the king of the market. Hence there is a need to fulfill the needs of the consumer by the marketer. Competition is to the order of the day. Businessmen have started realizing it. Earning profit is possible through consumer's satisfaction. In order to create a satisfaction, the marketer should give more quality products with apt price. That's why our modern marketing is a consumer oriented marketing. It begins with consumer and ends with consumer. The design of the study reveals about the consumers brand preference on Mobile products. Comparatively Mobile has a high brand preference among the consumer than other company products in respect of quality, price, technology and durability. Therefore the company which satisfies the consumer's need in the competitive market has high preference on brand among the consumers.

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**RELATIONSHIP BETWEEN WORKING CAPITAL AND PROFITABILITY: AN EMPIRICAL ANALYSIS****M. SUMAN KUMAR****ASST. PROFESSOR****ANNAMACHARYA P.G.COLLEGE OF MANAGEMENT STUDIES****RAJAMPET****S. MD. AZASH****ASSOCIATE PROFESSOR****ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES****RAJAMPET****N. VENKATA RAMANA****ASSOCIATE PROFESSOR****ANNAMACHARYA P.G.COLLEGE OF MANAGEMENT STUDIES****RAJAMPET****ABSTRACT**

In this paper an attempt is made to investigate the relationship between working capital and profitability. To achieve this objective the secondary data for analysis is retrieved from annual reports of Dr. REDDY'S LABORATORIES for the period from 2001 to 2010. The study aims to explore impact of working capital components i.e., current ratio (CR), acid test ratio (ATR), current ratio to total assets ratio (CTTR), current assets to sales ratio (CTSR), working capital turnover ratio (WTR), inventory turnover ratio (ITR), debtor turnover ratio (DTR), cash turnover ratio (CTR), Misc. current assets turnover ratio to the firms performance by looking at firm's profitability i.e. return on investment (ROI). Applying correlations and multiple regression analysis, the result shows that there are significant negative associations between working capital and firm's profitability. Thus it highlights the working capital components are having low and moderate influence on firm's profitability i.e. ROI.

**KEYWORDS**

Correlation, Multiple regressions, Profitability, Working capital.

**INTRODUCTION**

Working capital is essential for the day-to-day operations of a business, and hence it is the life-blood of any business. The basic theme of working capital management is to provide adequate support for smooth and efficient functioning of normal day-to-day business operations by striking a tradeoff between the three dimensions of working capital, i.e., liquidity, profitability and risk. In the present environment of cut-throat competition, business does not have any other option than cutting the cost of its operation in order to be competitive as well as financially healthy. It is in this connection that effective management of working capital plays a vital role. But a great deal of controversy exists over the issue as to whether the working capital of a firm, as determined by its financing and investment decisions, affects its profitability or not.

In this paper an attempt has been made to make an empirical study of Dr. REDDY'S LABORATORIES. A pharmaceutical multinational company in Andhra Pradesh for assessing the relationship between working capital and its profitability during the period 2001 to 2010.

Profitability has been defined as ability to earn profit. It is measured in relative terms of either size, past years. The most commonly used measure of profitability is in terms of size that is profit or loss divided by total assets. Profitability is the power of the firm to earn profits. Return on investment (ROI) is a basic measure of profitability of a firm. It is a common benchmark to measure the effectiveness of the resource generating capacity within the firm by sales and investment, it is well known that turnover of assets and earnings as a percentage of sales are two variables of the two tier structure of the Du Pont system used for finding out ROI. ROI is the product of these two variables, i.e.,

$$ROI = \frac{EARNINGS}{INVESTMENT} = \frac{EARNINGS}{SALES} \times \frac{SALES}{CAPITAL EMPLOYED}$$

Working capital represents that portion of the total capital of an enterprise which is invested to keep moving, without any stoppage, its operating cycle starting right from purchase of raw materials to the realization of cash through the sales of productions.

**LITERATURE REVIEW**

Many previous researches have indicated the relationship between working capital management and Profitability of firm in different environments. Shin and Soenen used a sample of 58,985 firm's years covering the period 1975-1994 in order to investigate the relationship between net-trade cycle that was used to measure efficiency of working capital management and corporate profitability. In all cases, they found a strong negative relationship between the length of the firm's net-trade cycle and its profitability (soenen, 1998).

The management of working capital is defined as the "management of current assets and current liabilities, and financing these current assets." Working capital management is important for creating value for shareholders. Management of working capital management was found to have a significant impact on both profitability and liquidity in studies in different countries.

The relationship between working capital management and corporate profitability was studied by Deloof on a sample of 1,009 large Belgian non-financial firms for a period of 1992-1996. By using correlation and regression tests, he found significant negative relationship between gross operating income and the number of days accounts receivable, inventories, and accounts payable of Belgian firms. Based on the study results, he suggests that managers can increase corporate profitability by reducing the number of day's accounts receivable and inventories (Deloof, 2003). Eljelly empirically examined the relationship between profitability and liquidity, as measured by current ratio and cash gap (cash conversion cycle) on a sample of 929 joint stock companies in Saudi Arabia. Using correlation and regression analysis, he found significant negative relationship between the firm's profitability and its liquidity level, as measured by current ratio. This relationship is more pronounced for firms with high current ratios and long cash conversion cycles. At the industry level, however, he found that the cash conversion cycle or the cash gap is of more importance as a measure of liquidity than current ratio that affects profitability. The firm size variable was also found to have significant effect on profitability at the industry level (Eljelly, 2004). Lazaridis and Tryfonidis [1, p. 26] conducted a cross sectional study by using a sample of 131 firms listed on the Athens Stock Exchange for the period of 2001 - 2004 and found statistically significant relationship between profitability,

measured through gross operating profit, and the cash conversion cycle and its components (accounts receivables, accounts payables, and inventory). Based on the results analysis of annual data by using correlation and regression tests, they suggest that managers can create profits for their companies by correctly handling the cash conversion cycle and by keeping each component of the conversion cycle (accounts receivables, accounts payables, and inventory) at an optimal level. (Lazaridis, 2006).

(Chakraboty, 2008) Evaluated the relationship between working capital and profitability of Indian pharmaceutical companies. He pointed out that there were two distinct schools of thought on this issue: according to one school of thought, working capital is not a factor of improving profitability and there may be a negative relationship between them, while according to the other school of thought, investment in working capital plays a vital role to improve corporate profitability, and unless there is a minimum level of investment of working capital, output and sales cannot be maintained - in fact, the inadequacy of working capital would keep fixed asset inoperative.

Finally (nazir, 2009) made an attempt in order to investigate the traditional relationship between working capital management policies and a firm's profitability for a sample of 204 non-financial firms listed on Karachi Stock Exchange (KSE) for the period 1998-2005. The study found significant difference among their working capital requirements and financing policies across different industries. Moreover, regression result found a negative relationship between the profitability of firms and degree of aggressiveness of working capital investment and financing policies. They suggested that managers could create value if they adopt a conservative approach towards working capital investment and working capital financing policies.

## METHODOLOGY

The study is based on secondary data collected from the annual reports of Dr.Reddy's laboratories. Survey reports, government publications etc. have been used for the purpose of the study. Journals, conference proceedings and other relevant documents have also been consulted to supplement data. The study covers period of 10 years (i.e. from 2001 to 2010). The available data have been analyzed by using various financial ratios as managerial tool as well as some statistical tools like co-efficient of correlation and regression etc. have been applied in this study.

### OBJECTIVES

- To examine the impact of working capital on profitability by computing simple correlation coefficients between ROI and each of some selected important ratios relating to working capital management.
- To assess the joint effect of the above ratios upon the profitability with the help of multiple correlation coefficient and multiple regression equation and to test the regression coefficients.
- To ascertain the working capital leverage for examining the sensitivity of ROI to changes in the level of working capital of the company.

For these objectives we formulate the following hypotheses and will attempt to find statistical evidences to support the hypotheses.

*Hypothesis H1:* There is negative impact of working capital management on profitability.

*Hypothesis H2:* There is no sensitivity between working capital management and profitability.

## ANALYSIS AND IMPLICATION

### SECTION 1: SIMPLE CORRELATION ANALYSIS BETWEEN SELECTED RATIOS RELATING TO WORKING CAPITAL MANAGEMENT AND RETURN ON INVESTMENT

It is evident from the table I Correlation Coefficient between ROI and CR is 0.923. It indicated that there is a high positive relation between profitability and current ratio of the company. The value of the correlation coefficient is found to be significant at 5 per cent level.

Secondly correlation between ROI and ATR is 0.922. It shows that there is positive relationship between the two variables. The result from these two ratios that the greater the company's margin of safety to the short-term creditors, and company is able to meet short term obligations, the higher is the profitability of the concern. Thirdly the coefficient of correlation between ROI and CTTR is 0.274. It reveals that there is a negligible positive association between the profitability of the company and the ratio of the current assets to total assets. At five percent level, the value of the correlation coefficient is found to be significant. This sound inconsistent with the earlier results. Fourthly the correlation between CTSR and ROI is 0.315 which is found to be significant at five per cent level. It reveals a positive association between the two variables. Generally speaking, the lower the current assets to sales ratio, the greater the efficiency of the employment of the working capital and the larger the scope of profitability. The calculated value of correlation coefficient between CTSR and ROI conforms to the principle.

Fifthly, the correlation coefficient between WCTR and ROI is (-) 0.116, which indicate a negative correlation between these two variables. This value is found to be significant at five percent level. It is an accepted principle that the faster the working capital turnover, the lower is the relative investment and greater is the profitability. The calculated value of the correlation coefficient between ROI and WCTR don't conform to the accepted principle.

Sixthly, the coefficient of correlation between ROI and ITR is found to be 0.433 it shows a low moderate degree of positive correlation between the variables. Seventhly, the coefficient correlation between ROI and DTR shows negative association of (-)0.37 it is found to be significant at 0.5 level.

Lastly, the coefficient of correlation between ROI and CTR and between ROI and MCTR viewing significant positive association. Hence, the study of the impact of working capital ratios on profitability viewed both negative and positive impacts.

### SECTION 2: RELATIONSHIP BETWEEN WORKING CAPITAL RATIOS ON PROFITABILITY –MULTIPLE REGRESSION ANALYSIS

In table III, Multiple correlation and multiple regression techniques have been applied in order to study the joint influence of selected ratios relating to working capital management of the profitability of the company and the regression coefficients have been tested with the help of the most popular T test. In this study, CTTR, ITR, DTR, CTR, and MCTR have been taken as the independent variables and ROI has been taken as the dependent variable.

For the purpose of selection of variables in this analysis, the correlation matrix representing the correlation between independent variables has been constructed in table. This table shows that there is high degree of correlation between CR and ATR is 0.988, between ATR and WTR (-0.408) and between CTTR and WCTR (-0.677). For this reason, CR, ATR, CTSR and WCTR have been taken into account while fitting the regression line. The regression model used in the analysis is:

$$ROI = b_0 + b_1 CTSR + b_2 ITR + b_3 DTR + b_4 CTR + b_5 MCTR$$

Where  $b_0, b_1, b_2, b_3, b_4,$  and  $b_5$  are the parameters of the ROI line.

Table III depicts the multiple correlation coefficients and regression coefficient of ROI on CTSR, ITR, DTR, CTR, and MCTR showing the strength of relationship between the dependent variable ROI and all the dependent variables taken together and the impact of independent variables on the profitability of the company. When CTSR increased by one unit the ROI increased by 53.7 units that was statistically significant at 10 percent level. However, for one unit increase in ITR, the profitability of the company decreased by 23.1 units which were statistically insignificant both at 0.5 percent level and 10 percent level. When DTR increased by one unit the ROI of the company increased by 22.9 units that were statistically insignificant both at 0.5 percent and 10 percent level. For one unit increase in CTR, the company's profitability decreased by 60.8 which was significant at 0.01 percent level. When MCTR increased by one unit, the ROI of the company increased 1.2 times which was statistically significant at both levels. The multiple correlations between ROI and CTSR, CTR and MCTR is 0.902. It signifies that the profitability of the company was highly influenced by CTSR, ITR, DTR, CTR, MCTR contributed 0.81 percent of variations in the profitability of the company.

In table IV it has been attempted to measure the sensitivity of ROI due to variability in the level of working capital (gross) with the help of computing the working capital leverage of the company during the study period from 2001 to 2010. The formula used for calculating the working capital leverage is:  $WCL = WC/TA + DWC$  where WCL = working capital leverage, WC = working capital investment, total asset investment and DWC = change in working capital investment. In computing

the WCL it has been assumed that the change in working capital investment in the previous years is also maintained in this year also . The higher the degree of WCL, the greater is the risk and vice versa. But at the same time, it increases the possibility of the higher ROI.

Table IV reveals that in 2002 the WCL of the company was the highest during the study period. Which was 0.35 representing the maximum sensitivity of ROI due to changes in the level of working capital investment. In the year 2009 and 2010 WCL concern is the lowest, which was the 0.032 showing the least sensitivity of ROI due to the variability in the level of working capital investment. Therefore variability in working capital investment was maximum helpful in the year 2002 and minimum helpful in 2010 in increasing the profitability of the company. In the remaining years of the study working capital investment made direct impact on profitability of the company. From the table it is understood that the values of WCL are less than one. It signifies that all the years of the study period increase in rate of return on investment was less than proportionate to decline working capital investment.

## CONCLUSION

The study on relationship between working capital and profitability revealed that both negative and positive association. Nine ratios selected for the study , two ratios namely WCTR and DTR registered negative association with ROI was found to be insignificant at both 5 percent and 10 percent levels. But there was significant association between remaining working capital ratios and profitability .MCTR was found to have significant association with the profitability.

The slopes of the ROI equation associated with CTSR, ITR, DTR, CTR and MCTR witnessed both positive and negative influence of variations in the independent variables on the profitability of the company of the five regression coefficients of the ROI line, there associated with ITR and CTR showed negative influence on the profitability. For a unit increase in the value of CTSR, DTR AND MCTR there was significant increment in the profitability of the company. The multiple coefficient determination r square makes it clear that 0.81 percent of the total variation in the profitability of the company was explained by five independent variables ,CTSR,ITR,DTR,CTR,MCTR.

The WCL of the company recorded a fluctuating trend during the study period. it is in between 0.032 in the year 2010 and 0.35 in the 2002.the WCL was always less than one .hence, the increase in the profitability of the company was less than the proportion to decrease in working capital.

The analysis was done to find statistical evidence to support the hypotheses. It is found that significant statistical evidence exists to reject the hypotheses (H1 and H2) that the working capital management is negatively associated to the profitability.

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## APPENDIX

Table –I SIMPLE CORRELATION ANALYSIS BETWEEN SELECTED RATIOS RELATING TO WORKING CAPITAL MANAGEMENT AND RETURN ON INVESTMENT

Year	CR	ATR	CTTR	CTSR	WCTR	ITR	DTR	CTR	MCTR	ROI
2001	4.19	2.75	0.45	2.16	2.92	5.83	3.22	48.36	11.64	28.31
2002	2.94	2.07	0.68	1.47	1.88	8.59	4.09	131.13	23.36	19.54
2003	2.19	1.31	0.62	1.33	1.73	7.13	3.89	75.03	9.79	12.64
2004	2.14	1.41	0.44	1.78	2.89	6.66	4.22	26.71	2.71	8.35
2005	1.68	1.01	0.58	1.13	1.69	5.51	3.59	35.44	4.32	3.69
2006	1.68	0.97	0.502	1.25	2.05	5.36	4.01	74.19	2.19	5.81
2007	2.31	1.64	0.58	1.36	1.85	8.13	4.62	24.56	3.91	14.62
2008	2.04	1.22	0.37	1.7	2.84	5.92	3.42	47.35	1.6	5.77
2009	1.92	1.29	0.4	1.65	3.2	5.81	3.45	45.14	2.14	6.79
2010	1.29	0.71	0.27	2.49	19.95	5.32	3.54	87.12	0.65	8.78
R-value	.923***	.922***	0.274	0.315	-0.116	0.433	-0.037	0.252	0.699	

Source: Annual reports of the company

Table –II CORRELATION MATRIX

	CR	ATR	CTTR	CTSR	WCTR	ITR	DTR	CTR	MCTR	ROI
CR	1									
ATR	.988**	1								
CTTR	0.285	0.334	1							
CTSR	0.179	0.141	-.765**	1						
WCTR	-0.384	-0.408	-.677*	.763*	1					
ITR	0.334	0.436	.699*	-0.32	-0.37	1				
DTR	-0.151	-0.052	0.526	-0.463	-0.264	.698*	1			
CTR	0.06	0.06	0.247	0.092	0.26	0.278	-0.025	1		
MCTR	.639*	.668*	.656*	-0.102	-0.268	.652*	0.1	.681*	1	
ROI	.923**	.922**	0.274	0.315	-0.116	0.433	-0.037	0.252	.699*	1

Source: Annual reports of the company

**TABLE –III MULTIPLE CORRELATIONS AND REGRESSION ANALYSIS**

Variable in the equation  $ROI=b_0+b_1 CTR+b_2 ITR+b_3 DTR+b_4 CTR+b_5 MCTR$

Model	Unstandardized Coefficients	Standardized Coefficients		T	Sig.
	B	Std. Error	Beta		
1(Constant)	-10.455	21.108		-.495	.646
CTSR	9.619	4.546	.537	2.116	.102
ITR	-1.512	3.710	-.231	-.408	.704
DTR	4.018	7.851	.229	.512	.636
CTR	-.141	.075	-.608	-1.873	.134
MCTR	1.426	.567	1.295	2.513	.066
R=0.902		R <sup>2</sup> =0.813		Adjust R <sup>2</sup> =0.580	

Source: Annual reports of the company

**TABLE –IV WORKING CAPITAL LEVERAGE ANALYSIS**

YEAR	WORKING CAPITAL INVESTMENT (Rs in lakhs)	TOTAL ASSETS INVESTMENT (Rs in lakhs)	WORKING CAPITAL LEVERAGE (WL=WC/WC+TA)
2001	314.19	928.69	0.252
2002	792.62	1471.79	0.35
2003	876.57	1835.69	0.323
2004	574.12	2105.24	0.214
2005	914.7	2347.33	0.28
2006	975.64	3186.02	0.234
2007	2041.66	4703.26	0.302
2008	1173.9	5274.09	0.182
2009	1249	5899.4	0.174
2010	220.3	6477.8	0.032

Source: Annual reports of the company

## FEMALE WORKFORCE - A MISSING PILLAR OF HUMAN RESOURCE DEVELOPMENT IN THE GLOBALIZATION ERA

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### ABSTRACT

*Globalization has put many challenges to the third world countries and one of the biggest challenges is to adopt the capitalism approach over the socialism ideology. This compelled the policy makers to align the national economic policies with the global policies. Further as a strategy to counter the influences of globalization policy makers in developing economies were compelled to invest on neglected strata of the human resource development-females working force. In the developing countries Women particularly are facing discrimination, oppression, violence, limited access to basic needs and employment and hence were without any choice but to become active member of workforce and real contributor to national income. The development of country is now dependent on development of both genders and in fact all the developing countries are investing heavily on female workforce. All of a sudden it was equally difficult for male to accept and give equitable role to women. The research paper tries to measure the changes in the psyche of women in India, ever since the wake of globalization. It explains the reasons for glass ceiling effect, although there has been a significant growth in their status.*

### KEYWORDS

Empowerment, Female workforce, Globalization, , Glass ceiling, Human Development.

### INTRODUCTION

No country or society can achieve its potential without adequately in developing the capabilities of women and encouraging the empowerment of women. India, though known for feminism- gender equality both in private and public sphere is still a distant dream as the issues of women are neglected. Women have a strategic position in human Resource Development (HRD) as they are the ones who are primarily involved in the upbringing of the young and managing households. The education of females brings benefits not only to individuals but also to the society in a number of ways. An educated mother tends to ensure that their children in turn are educated and become effective members of society. They safeguard children's health and nutrition and also tend to be better household managers, moreover, more informed producers, consumers and traders.

Though women play a key role in Social development of a country but still they are facing the challenges of coping with a male chauvinistic milieu. Despite global commitment from different global organizations including United Nations for the development of women folk, hardly any significant change in their status has been noticed in some member countries (table 1.1). It is ironical that in the 21<sup>st</sup> century, third world countries are still trying to tackle the basic minimum standard of living such as drinking water, shelter, sanitation and health. As per the Human Development Index (HDI) 2006, on gender-equity scale, Norway stands at the top, whereas India is still stagnant at position 127<sup>th</sup> rank and even shifted back to 134 rank in the recent HDI-2009 (Anonymous, 2006; 2009).

The statistics indicate that women are discriminated against in many spheres and in different societies. In developing countries they invariably work harder than men. They contribute to the economic activity and to the welfare of society through household jobs, child-rearing, educating children and working in the agri-fields. Most of this work is either undervalued or ignored altogether. They do not get compensated for their work. In most countries they do not have equal property rights. In developing countries, the discrimination extends to jobs, education, health care, food property rights, access to credit, income and power.

**TABLE 1.1: STATUS OF WOMEN WORLDWIDE.**

- |   |
|---|
| <ul style="list-style-type: none"> <li>• 70% of the 1.2 billion people living in poverty are female.</li> <li>• Women do 67% of the hours of work done in the world.</li> <li>• Earn only 10% of the world's income.</li> <li>• Own only 1% of the world's Property.</li> <li>• Women are paid 30-40% less than men for comparable work on an average.</li> <li>• 60-80% of the food in most developing countries is produced by women.</li> <li>• Women hold between 10-20% managerial and administrative jobs.</li> <li>• 60% of the 130 million children in the age group of 6-11 years, who do not go school, are girls.</li> </ul> |
|---|

Source: 1-7

Women in one or other way are considered to be an institutionalized commodity both in India as well as at global level. Even in developed societies, where women enjoy the maximum civil liberty, still they continue to face problems with the opposite dominating gender, be it in the form of husbands or men at the work place. In the underdeveloped or conservative society, the degree of exploitation is both diverse and intense. In its extreme form it takes the form of outright violence both physically and sexually. Even in US, women "opt out" of full time work at a higher rate than men, (Barbara & Pease, 2002) as many

researchers have attributed it to the glass ceiling problem existing in the organizations. A survey in Japan in the early 1990's showed increasing disagreement by both men and women with the traditional belief that man should hold jobs and women should stay at home to do house work. The disparity between men and women, can take many forms. Indeed, gender inequality is not one homogeneous phenomenon, but is incongruent and interlinked problem (Anonymous, 2002). There are about seven types of inequality reported all over the world in the form of mortality, inequality, natality inequality, basic facility inequality, special opportunity inequality, professional inequality, ownership inequality, educational disparity and household inequality (Amartya, 2001). In all and essential aspects of economic development, women have been left far behind.

## STATUS OF WOMEN IN INDIA

Even though the women form almost half of the population in India, yet their status in economic, political or social life leaves much to be desired. Despite concerted efforts by the government through the constitutions, legislation and various developmental plans, visible and invisible inequalities still continue (Mir Parvez et al, 2010). The expansion of liberalized global markets has been a refracted process. The main stream proponents of globalization focus on one side of the mirror, ignoring its opposite dimension. In the refracted mirror of globalization an analysis of its contradictory opposites is equally important to understanding the whole, especially from the standpoint of gender. Even after several years of planned development in India, the status of women in our country is low and their socio-economic conditions are much more depressed than that of men.

### GENDER RATIO

The declining level of sex ratio in India has been a cause of concern for decades (Anonymous, 2010). As gender ratio is falling continuously from 972 females per 1000 males in 1901 to 924 females per 1000 males in 2010, the preference for a son has been an established fact in Indian Society. The bias against females in India is related to the fact that "Male is called upon to provide the income; and is the ones who do most of the work in the fields. In this way male are looked upon as a type of security. With this perspective, it becomes clearer that the high value given to males decreases the value given to females". The sharp fall in the child sex ratio especially has pointed to much more alarming phenomena of modern medical technology. With the sex ratio dismally skewed towards males, changing India's ingrained gender bias against the girl child has already imbalanced the population distribution of gender in the Human Development Index (HDI).

### GENDER EQUALITY

The under developing countries are experiencing a one sided and distorted development process which has resulted in an uneven speed. Although the uneven nature of globalization and its unequal impact on developing countries is of the grave concern- the issues of gender-equality particularly in developing countries are ignored. Gender equality is an important issue of human rights and social justice. Women represent half the resources and half the potential in all societies -efforts to promote greater equality between men and women, can also contribute to the overall development of human society. It has been clear for decades that women workforce in many parts of the world make key contributions in areas of economic development such as agricultural, health, education and water resource management. The Gender Inequality Index in the Report shows that Indian women face greater gender inequality than their sisters in many of its less prosperous and more backward neighbours, including Pakistan and Srilanka.

### EDUCATION

A one year increase in women education is associated with a 9 per cent decrease in the mortality rate of children of five years age group hence a significant indicator for human resource development. Further improved education also encourages women to participate more in community development activities which often provide increased income-earning opportunities. As better educated women have better educated children, benefits are passed on from generation to generations (Anonymous, 1991). The Sarva Shiksha Abhiyan (SSA) is no doubt a step forward towards the Universalization of educational goal, but needs a lot for proper implementation and evaluation of the programme.

### WORKFORCE PARTICIPATION

The consequences of the global forces that go under the labels of 'globalization' and 'economic reform' have led to relative decline in the unskilled wages, increased risk, declining bargaining power of unskilled labor. Moreover, women are worst sufferers whose contribution in terms of unorganized sector is highest. Since big multinational Companies have taken over the global scenario, and the Indian SME sector is not able to compete in terms of quality. No matter how in the rear they are, right now the situation has changed in the wake of globalization. Once, women participated in the development process, they are providing their ability at par with men. The dismal skewed gender diversity ratio in Indian corporate is a reality and is more because of existing social system rather than anything else (Yasmin, 2011). There is no doubt that Indian companies now-a-days have broken the long slumber and are boosting the morale, reducing attrition level, providing certain benefits like Crèche's, Work From Home (WFH), yoga classes etc. especially to women workers. According to research report firms with female representation on the board garnered sustainable profits as opposed to the ones with none (Yasmin, 2011). For urban females, "services" sector accounted for the highest proportion (36 percent) of the total usually employed, followed by "manufacturing" (28 percent) and "agriculture" (18 percent) (Anonymous, 2008). Work opportunities for women in urban services and manufacturing sector probably exist (table 1.1) but there is need for facilitating and improving their Work Force Participation Rates (WFPR) through better education, skill development and removal of gender associated hurdles. Companies also prefer employing women because females have proved to be cheaper work force.

TABLE 1.1: WORK FORCE PARTICIPATION RATES (WFPR)

	1983	1993-94	1999-00	2004-05
Rural Male	48.2	50.4	47.8	48.8
Rural female	19.8	21.9	20.4	21.6
Urban Male	47.3	49.6	49	51.9
Urban female	10.6	12	11.1	13.3

Source: NSSO (2008) Survey on employment and unemployment/planning Commission

Labour force or economically active population is that segment of the population whose function is to produce goods and services demanded by the whole population. Usually, those aged 15-64 years considered to be productive age-group. However, not everyone in the productive age-group is effectively in the labour force. Labour force participation of women has been a topic of interest for labour market specialist as well as feminist economist for some time now. All over the world, to a large extent, pattern of work participation and education are different for men and women. Generally, male participation rates dominate over women's activities recognized to be 'economically productive' despite the longer hours of work women generally put in at home and outside in various activities. India is no exception. It is seen that there is a dearth of educated female population in India. Also, majority of rural and urban females are illiterate showing the discouragement of empowering women to contribute economically in a country.

The analysis of the latest data in global employment trends for women shows that in 2007, 1.2 billion women around the world worked, almost 200 million or 18.4 per cent work more than ten years ago (Anonymous, 2008). But, the number of unemployed women also grew from 70.2 to 81.6 million over the same period and in 2010, women at the global level still had a likelihood of being unemployed than men. The female unemployment rate stood at 6.4 per cent compared to the male rate of 5.7 per cent. The report shows clearly that most regions are making progress in increasing the number of women in decent employment but that full gender equality in terms of labor market access and conditions of employment has not yet been attained (ibid). In addition to the skewed ratios, there is evidence of an increasing informality of employment as well, viz home based, contract and casual labor. Research findings show that on the lower rungs of corporate career ladder, fully 41 per cent of highly qualified scientists, engineers and technologists are women. But the drop-out rates is huge, moreover, 52 per cent of these talented women quit their jobs (Hewlett, 2008) hence, women as a category of workers need special focus and analysis. In the current scenario, contribution of women is systematically undermined and relegated to subordinate roles and are concentrated in the lower end of the spectrum, where they are paid minimum and can be attributed to the fact that 96 per cent of the women workers are still in the informal sector (Anonymous,

2002). Further, their work is insecure, irregular and often unrecognized as they have to balance their children, home and work, but their income never commensurate with their work. In India the number of female executives occupying top positions across power corridors and corporate boardrooms is abysmally low-out of 1112 directorships of 100 companies listed on Bombay Stock Exchange (BSE) of India, only 59 or 5.3 percent are held by women which is lower than the percentage of women directors in countries like Canada (15 percent), the US (14.5 percent) Hong Kong (8.9 percent), Australia (8.3 percent) and UK (12.2 percent) (Yasmin, 2011). The number of women IAS officers in the country is 572 out of the total of 4671 (Dhall & Sharma, 2008). According to an International labor Organization (ILO) (2006) report, 75 per cent of the world's activities are executed by women, but they own mere 0.01 per cent of the total assets and earn only 10 per cent of world income (ibid). Significantly there are no women CEO in the 30 top companies According to a study of 149 Indian companies undertaken by the Confederation of Indian Industries (CII) in 2006, women constitute 16 per cent of junior level managers and only 4 per cent in senior managerial posts. Further, only 1 per cent of the organizations have women CEOs (ibid). It is clear from above discussion that women are lagging behind in all spheres life. They are less empowered section of society (Singh & Thapar, 2009). However, the countries that figure out how to fully unleash the untapped talent of women entrepreneurs will have a marketed competitive advantage (Danner, 2011). Coupled with this is the complete lack of access to skill training and technological know-how. Moreover, there is also an absence of any widespread system for social security, mass legal awareness, work place relaxation, and health and safety measures for women workers, which further cumulates to their vulnerability. India is rapidly being branded as an unsafe destination for women around the globe (Datta, 2010). The question of changing attitude towards women is a big challenge and needs a lot of conscious efforts to a deep seated cultural shift.

#### POLITICAL PARTICIPATION

The World's largest democracy has been one of the primary countries who witnesses a meager women participation in the political field and India felled in the lowest quartile with respect to the number of women in parliament with 9.1 percent in 14th Lok Sabha with respect to other countries like Rawanda (56.7 percent), South Africa (44.5 percent), (Anonymous, 2008) in politics. The Congress party, led by a woman and supposedly pushing for reservation for women, has only 10 per cent of women among the candidates announced so far. For the BJP the proportion of women candidates is even lower at 7 per cent. In other words, female officers in India's highest bureaucratic echelon constitute mere 12 per cent and as far as the cabinet ministers are concerned only two women find place, which in percentage terms works out to be a mere 6 per cent (Dhall & Sharma, 2008). Among the 30 chief ministers in the country, only four are female. Women's inability to reach to the top positions is a global phenomenon and India is no exception and most of the times it is because of glass ceiling effect and can easily understood with the help of diagram shown below. Although as per the statistics and number India lacks far behind in women participation in politics but still India has produced women politicians who has always able to snatch the limelight and grabbed the headlines from her male counterparts.



TABLE 1.2: STATUS OF WOMEN IN INDIA

- Female share of non-agricultural wage employment is 17%.
- Participation women workforce is 13.9% in urban sector.
- Participation women workforce is 29.9% in rural sector.
- Women's wage rates constitute only 25% of family income.
- In no Indian state do women & men equal wages in agriculture.
- Women occupy only 9% of parliamentary seat.
- Women occupy less than 4% seats in High courts & Supreme Court.
- Women are less than 3% administrators & managers.
- 245 million Indian women lack the basic capability to read & write.

Source: 1-7

#### GLOBALIZATION AND GLASS CEILING EFFECT

Friedman (2008) has rightly said that "Socialism collapsed because it did not allow the market to tell the economic truth. Capitalism is going to collapse because it does not allow the market to tell the ecological truth". Globalization has improved the lives of billions of people through capitalism mode but it has left out billions more. This has also increased economic interdependence to a great extent as no nation can exist in economic isolation. An improvement in Information, Communication Technology (ICT) the diminution of tariff and non tariff barriers has made the world a "global village". Though globalization brought many benefits to the third world countries in general and India in particular, but has also led to poverty, increased work-load stress in the labor force and global environmental destruction. People in developing world have great needs but cannot be expressed in ways that matter to market (Chawla, 2009). No doubt more than three fourth of the world population live in developing countries, but they enjoy only 16 per cent of the world's income while the richest 20 per cent have 85 per cent of global income (Mahajan, 2006; Anonymous, 1995). The third world countries being reactive rather than proactive were without any option but to adopt the new global compulsions of change so as to streamline their economies with the New World International Economic Order (NWIEO). The development of last three decades also indicate that remarkable progress has been made in a number of directions, but the fruits of development were not uniform and were not percolated down to needy and deserving strata of the society. In the recent The Global Competitiveness Report-(2009-10) India ranks 49<sup>th</sup> out of 134 countries (Anonymous, 2009). Even though some benefits have reached to the poor, but new problems emerged in the form of deteriorating social fabric, environmental degradation etc.. In adopting these changes, all the sections of the society in general and women in particular were sufferers.

The discussion on the topic revealed that the following factors are responsible for the low socio-economic status and poor political participation as well as less empowerment of women.

- Lack of education.
- Lack of awareness
- Lack of political will
- Lack of proper implementation of women related to laws and legislation.
- Lack of proper implementation of policies and programs initiated for the betterment of women.
- Lack of gender culture
- Lack of social and economic empowerment.
- Lack of community of people participation.



- Lack of gainful employment opportunities.
- Inefficient accountability mechanism relating to women's rights.

### SUGGESTIONS AND POLICY IMPLICATION

In India the improvement of human development indicators is not only the prime need (Matoo & Mir, 2006) but creation of congenial socio-economic and political environment is also equally important for the fullest possible utilization of vast, untapped reservoirs of human energy (Singh, 1999). Hence the issue revolves round long term sustainable policy for a human development and especially women folk cannot be inactive recipients of measures to improve their status. In the era of globalization the empowerment cannot be imposed from top, rather it is a bottom up process as women must empower themselves. However, they need assistance and facilitation from top which will promote women's inherent strength and positive image hence enables them to face any difficult situation. The female workforce which is the main pillar of Human Resource Development, their capabilities can be improved, only if equal opportunities are provided to them so as to become active participants in all aspects of society. Moreover equal opportunities should be not only pledge the equal access to education and employment opportunities but also the establishment of more facilitative structures.

Global competition has forced third world policy makers to think differently about their countries development as benefit of globalization are great, but are distributed unevenly and the worst sufferers are women. Further, the global forces have severely influenced the nature of work in the third world countries including India and at the same time growth in private and service sector have provided opportunities for qualified women to occupy lower and middle level management posts. These changes have paved the way for their taking up and aspiring to move more towards senior management positions. Still the glass ceiling continues to limit women's access to senior management (fig. 1.1) and to management positions in those sectors and areas which involve more responsibility and higher pay. A trend is moving towards a more workaholic culture which was a shock to the existing socialistic economic pattern. Though development started percolating down by adopting the capitalistic approach but much success has not been achieved on the poverty eradication front. Women which constitute almost half of the total population in the world, so is the case in India also, but their representation in gainful employment is comparatively low (Ramya, 2006) and their condition is still pathetic. Labour market inequalities between men and women explain many of the difficulties women face in pushing against the glass ceiling.

It is rightly said the "Nature gave women too much power, but the law gives them too little". The problem is not about the existence of laws that safeguard women's right, but about translating their *de-jure* rights into *de-facto* ones" (Anand, 2006). Unfortunately many Acts in various legislatures could not bring the expected social reform (Sivamurugan & Anbumani, 2006). In fact it was due to lack of awareness and literacy among the women section. Issue of gender equity and justice assumed added significance in the context of awareness movement organized for women (Ashappa & Sultana, 2009). With the women's concern gaining prominence in both governmental and non governmental organizations, women's issues became important on the agenda of all politically parties. The recently constituted commissions for women both at central and state levels are acting as platforms to ventilate the issues of women. India as such is a "mediated society" where our ideas, knowledge and, values about the world come from via media (Althusser, 1971). The media therefore have a very strong influence on us both as individuals and society (Patnaik, 2005). So the media which is right now representing just few million people of the 1.2 billion people should give voice to voiceless by adopting trickle-up rather than trickle-down approach (Tejpal, 2009).

The phenomenon of Individualism has set in and women want to be more independent and their expectations, desires have increased as the globalization has provoked women to leave their houses in search of work. In the emerging capitalism economy, a single person cannot support the whole joint family which in turn has given the emergence of nuclear families in the third world countries. Consequently, this has also impacted the population because parents cannot afford to have more than one child. Women in India have introduced themselves in careers and positions that were not even thought of as an option before the 1990's. They have a career in different job streams as in Defense sector, BPOs, Aviation Industry, Administration, Technical organizations, Engineering and many more. Hence, are equally successful in every field and proving to move forward. Female executives have gone up the ladder mostly in the services sector, especially in the banking sector (Ibarra H. & Obodaru O, 2009) as the first generation has taken off and more women will get into coveted positions soon. Initially the service sector was the most preferred destination for women, but in the coming years more and more women will excel in manufacturing sector too. There are already examples of famous names like Ms. Kiran Mazumdar Shaw of Biocon and Ms. Indira Nooyi of PepsiCo as the chiefs of branded manufacturing organizations. In general, information Technology (IT) offers many new possibilities that offer women in developing countries a lifeline for economic, social and political empowerment. IT can certainly contribute to finding solutions for fulfilling women's basic needs and access to resources (Dhanabalan, 2008), which will develop into the competitive edge (Porter, & Victor, 2000). Also the corporate sector should play a dominant role in terms of adopting "creative capitalism" approach in their business operation (Gates, 2009 & Yunus, 2009).

Further, for the women to reap the benefits of globalization there is tremendous need to provide quality education, better health facilities and mass awareness about the legal rights supported by good governance in the country. It is important to impart skills which will deal with both women's 'practical' interests (e.g. poor nutrition) and will at the same time rework the 'strategic' interests so that their long term opportunities should also be taken care of. The principle of equality between men and women should be more widely promoted through the news media to change the attitude. Macroeconomic policies should encourage employment of women, availability of information to women about employment or self employment opportunities and other incentives to increase their participation in productive activities. Strategies need to be evolved for facilitating productive work.

As the pace of economic growth becomes faster and as the demand for skill workers increased markedly, the mode of government intervention in the market becomes more direct and even crude.

India needs to reengineer its policies so that more opportunities are opened up for the female folk. The need of the hour is that large scale awareness of women's issues with active participation and involvement of all women and men supported by creating an enabling environment to enhance self-confidence and autonomy of women. Sufficient education and vocational skills and broaden the skill base of women workers are necessary conditions for women's attainment of professional and management jobs. Training programmes have to make women recognize clearly how society structures their perceptions and must promote critical analysis among the female folk (Deepti, 2006) and encourage them to think independently and challenge unequal gender relations and exploitations.

The World Bank has suggested that empowerment of women is the key agent of sustainable development (Anonymous, 2001). Denmark and Norway are considered the happiest nation of the world, is because of the equal status (Shekhawat, 2008) and equal opportunities enjoyed by the women. Empowering women is prerequisite for creating a good nation as their thoughts and value system leads the development of a good family, good society and ultimately a good nation. This is possible only when there is change in the mindset of the male counterpart so that they visualize the female as a 'human being' rather than a 'commodity' and also in day to day life the word "Housewife" should be replaced with "House maker" or "home maker" as it has developmental orientation rather than subordinate connotation.

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 Source: The Human Development Report-1995/2003  
 Source: UN Statistics  
 Source: India Census report-2001  
 Source: The Global Competitiveness Report-2009-2010  
 Source: UN's 2008 survey of women.  
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## AN ANALYSIS ON IMPACT OF MOBILE PHONES ON INDIAN CONSUMER - A COMPARATIVE STUDY

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### ABSTRACT

Mobile phones have the big impact on Indian Consumer. This paper empirically investigates the selection criteria of consumers for cellular phones. The samples were collected from consumers of Ludhiana & Sangrur District on the demographic profile basis i.e. on the basis of age, gender, income, occupation, education etc. Indian mobile market is one of the fastest growing markets and is forecasted to reach 868.47 million users by 2013. This paper investigates the important attributes for a consumer & its selection criteria for mobiles that increases their usage. By using chi square tests, T Tests, F Tests, my study is able to obtain the positive & negative impact on consumer mobile switching behavior. The availability of a number of subscriber options for consumers & varied tariff rates of each player, this leads the consumers to switch between service providers. The objectives of the study are to find the factors that influence the consumers in switching the service provider. The results include the reaction of consumers for mobiles when these are on silent/vibrating mode, missing phone at home means missing something in life or not, along with the usage of mobiles while driving by Ludhiana & Sangrur Consumers.

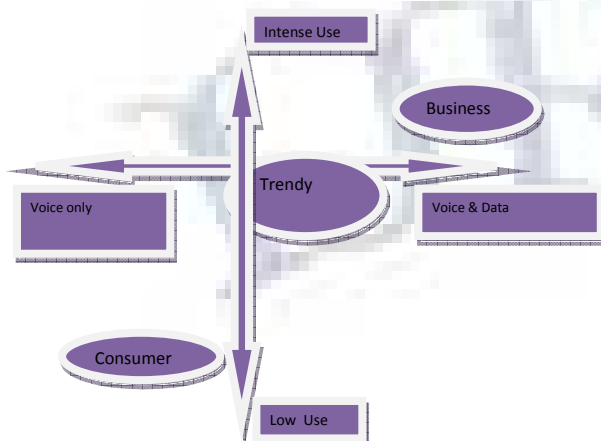
### KEYWORDS

Mobile Usage, Demographic Profile, Mobile Switching behavior.

### INTRODUCTION

In today's increasingly competitive environment, quality services and customer satisfaction are the most critical factors in telecom industry. Mobile telephone provides social interactions between and among people & organizations. In turn, the new demands of business have spurred many telecom based technological innovations. According to Lee et al. (2001) the mobile providers should build up customer commitment by providing good quality service to their customers. In the current marketplace, considerable attention has been paid to the concept of relationships between service providers and their customers (Barnes, 1997; Gwinner et al., 1998; Reynolds and Arnold, 2000). Today's development of communication technology ignores the global border and makes the world as "global village" (McLuhan, 1964). The telecommunication sector is experiencing global change with the liberalization and privatization in the economy. (Beard & Hartmann, 1999), which, in turn, widens a fierce competition. Telecom services have been recognized the world over as an important element in the socio-economic development of a country. The cellular phone is a natural extension of the basic telephone service with an added advantage of wireless technology coupled with ease of handling, usage, and mobility. Consumer behavior is becoming more relevant than technology when it comes to understanding future evolution in the mobile phone market. The Indian telecom sector, seen as providing the most affordable services in the world, has grown by leaps and bounds in the last decade. This remarkable journey to 100 million consumers is a testament to the vision and commitment of a company that benchmarks itself with the best in the world," Sunil Bharti Mittal, chairman and group chief executive officer of Bharti Enterprises said. (Times of India May 2009). This telecommunication sector contributed much to the nation's economic growth and development, which is consistent with the national vision 2020. Among the study on the potential consumers' intentions to adopt mobile data services is from Hong and Tam's (2006) study, which identified besides the dominant factor, perceived usefulness, other factors such as perceived enjoyment, perceived monetary value and social influence have strong effects on adoption intention. The effects of perceived services availability on perceived usefulness and perceived ease of use were also found to be significant. This paper would extend the study by Hong and Tam (2006) and other past studies on the adoption of new technologies.

### MOBILE PHONE USER SEGMENTATION

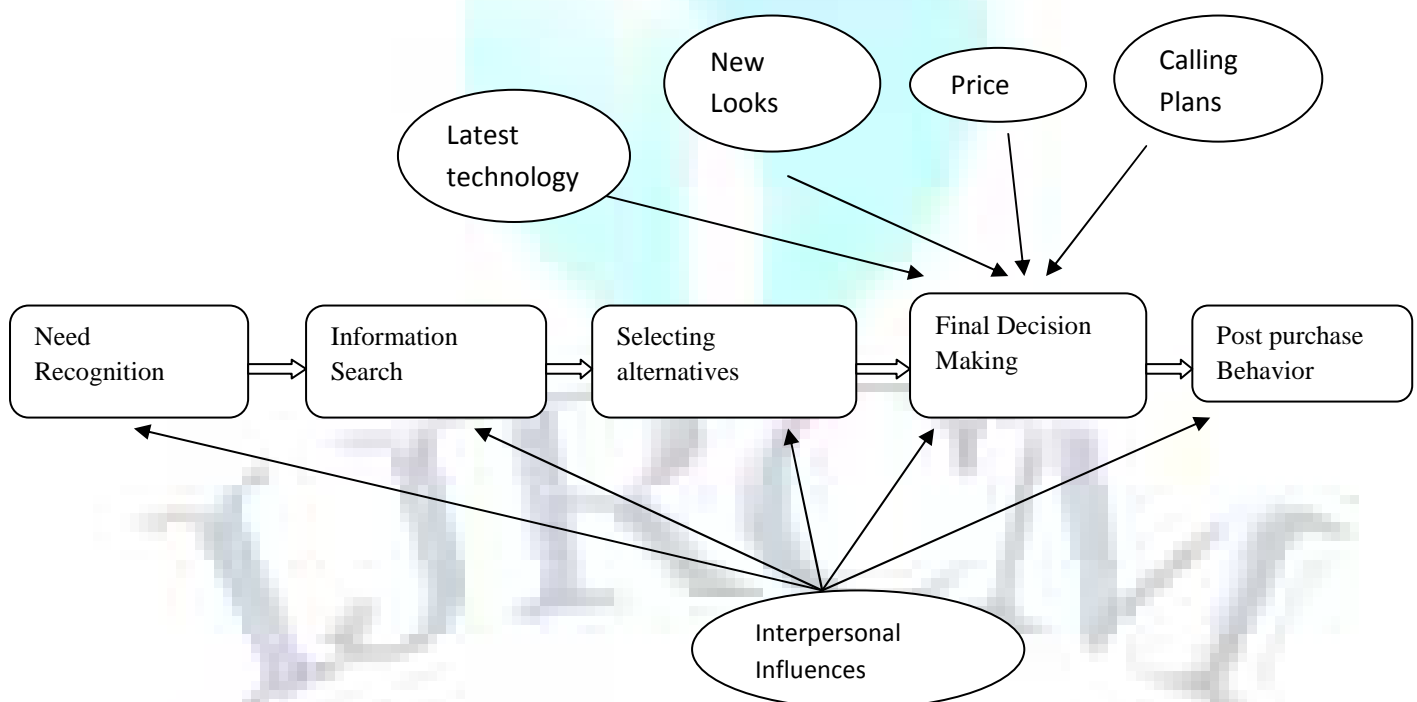


### LITERATURE REVIEW

A study done by Heinonen & Strandvik (2003) showed that mobile channels are perceived to be more personal than traditional and e mail channels. This creates high expectations for the relevance of marketing communication messages. A consumer expects messages to be personal and of high interest and this makes the disappointment greater when they get undesired messages. Mobile advertising may even step over the line of discretion and invade consumers' privacy

because of the personal nature of the mobile device. Li et al (2002) discusses how negative reactions like irritation arise through intrusion advertising. The channel influences consumer responsiveness to marketing communication by being perceived as either disturbing or acceptable (Abernethy 1991). If the consumer considers marketing communication via a channel as disturbing it may negatively affect the attention to and perception of the message. In contrast, the channel may also enhance the acceptance of the marketing communication if it is perceived as appropriate for the specific marketing communication. Also, some consumers may perceive the channels as neutral, i.e. it is neither disturbing nor accepted. Wang and Lo (2002) studied on comprehensive integrated framework for service quality, customer value, and customer satisfaction and behavioral intentions of customers in China's mobile phone sector. Customer perceptions of the quality of a service are traditionally measured immediately after the person has consumed the service. In fact, a consumer's perception of service quality at the time he or she next decides whether or not to buy the service may better explain repeats buying behavior (Plamer & O'Neill, 2003). Crosby et al. (2003) examined how perceptions of quality were created and maintained in the minds of consumers. The first thing the authors noted was that an understanding of quality was not necessarily something that was perceived, let alone established, in the mind of the consumer upon the first impression. The usage of mobile services in India has penetrated to almost all economic and social sectors. Penetration rate of mobile phones in India has reached a noteworthy level. According to the Department of Telecommunications of India, there were 346.9 million wireless telephones in India as of December 2008. India's mobile subscriber base is expected to grow at a compound annual growth rate (CAGR) of 18.3% from 2007 to 2013, reaching a penetration rate of 53.4% by the end of 2013. stream in the current literature addressing various issues related to mobile communication (*m-communication*) and mobile commerce (*m-commerce*) Barnes and Corbitt,( 2003). Anand & Hundal, B .S. (2007) stated examined the comparative buying behavior of rural & their urban counterparts towards the purchase of refrigerator. The factors considered by them, item of necessity, symbol of social status, advertising influence, brand reputation & time saving device (Punjab). Abraham (2007), who also looked at Kerala fishermen, found that the widespread use of mobile phones increased the efficiency of markets by decreasing risk and uncertainty, although it noted that realizing potential efficiencies depended on easy access to capital. Using mobile phones at sea, fishermen are able to respond quickly to market demand and prevent wastage from the catch – a common occurrence before the adoption of phones. Mobile phones help co-ordinate supply and demand, enabling traders and transporters to take advantage of the free flow of price information by catering to demand in undersupplied markets. Bhatt (2008), stated in his study titled "A Study of Mobile Phone Usage Among the Post Graduate Students" analyzed that it is important for mobile carriers, service providers, content developers, equipment manufacturers, as well as for parents and young people alike that the key characteristics of mobile technology is well understood so that the risks associated with it potentially damaging or disruptive aspects can be mitigated. This paper has tried to compare the usage difference by gender with respect to the difference manufacturing and service provider companies. Bismut (2006) in his study titled "Competition in European Telecom Markets" analyzed that in recent years the European telecommunications market has witnessed major developments, with rapid expansion in access to telecommunications networks and a surge in the number of available services and applications. While many factors have contributed to the transformation of the telecommunications industry, competition has played a key role in driving telecom players to invest in new technologies, to innovate and to offer new services. Chris (2003) has analyzed 'Telecom advertising in print media.' This research attempted to investigate why Telecom theme are used in advertisement, and the motives that lead companies and advertisers to use sport celebrities and sport concept in advertisements. From study it has been revealed that the appearance of sport celebrities in advertising endorsement occurred more often in Telecom magazines than in other magazines, because their target group is more acquainted with athletes. The sport celebrities that dominated each printed media are related with their target group characteristics.

FIGURE 1: MOBILE PHONE PURCHASER DECISION-MAKING PROCESS AND MAJOR INFLUENCING FACTORS FOR USAGE OF MOBILES



**OBJECTIVES**

- To gain an insight into the perception of consumers regarding mobile service providers.
- To broadly identify the most impacting factors enhancing the acceptability/ utility of mobile users.

My study has taken sample size of 796 respondents in Ludhiana & Sangrur city. Out of whole demographic profiles, I have taken gender wise analysis in this paper. So, for all the above mentioned objectives this paper categorized consumer with Male/Female category.

- To gain an insight into the perception of consumers regarding mobile service providers.

**SERVICE PROVIDER YOU USE**

Group/Sub Group	AIRTEL		BSNL		VODAFONE		RELIANCE		TATA Ind.		Other		AIRTEL+	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
City														
1.Ludhiana	115	28.82	57	14.29	71	17.79	21	5.26	26	6.52	55	13.78	54	13.53
2.Sangrur	137	34.60	42	10.61	72	18.18	20	5.05	15	3.79	49	12.37	61	15.40
Chi <sup>2</sup> =7.94(df:6)														
Gender														
1.Male	192	33.51	71	12.39	94	16.40	28	4.89	28	4.89	77	13.44	83	14.49
2.Female	60	27.03	28	12.61	49	22.07	13	5.86	13	5.86	27	12.16	32	14.41
Chi <sup>2</sup> =5.77(df:6)														
Education Level														
1.Primary	28	26.17	15	14.02	15	14.02	6	5.61	5	4.67	16	14.95	22	20.56
2.Under Grad.	71	35.15	20	9.90	33	16.34	10	4.95	9	4.46	27	13.37	32	15.84
3.Graduate	85	33.20	31	12.11	47	18.36	14	5.47	14	5.47	33	12.89	32	12.50
4.Post Grad.	68	29.57	33	14.35	48	20.87	11	4.78	13	5.65	28	12.17	29	12.61
Chi <sup>2</sup> =11.85(df:18)														
Occupation														
1.Service	96	32.00	33	11.00	51	17.00	13	4.33	15	5.00	43	14.33	49	16.33
2.Business	80	31.37	33	12.94	49	19.22	13	5.10	19	7.45	28	10.98	33	12.94
3.Student	25	35.21	7	9.86	13	18.31	2	2.82	3	4.23	14	19.72	7	9.86
4.Other	51	30.18	26	15.38	30	17.75	13	7.69	4	2.37	19	11.24	26	15.38
Chi <sup>2</sup> =17.77(df:18)														
Income Level														
1.Up to 10 Th.	43	26.54	20	12.35	36	22.22	10	6.17	5	3.09	21	12.96	27	16.67
2. 10-25	95	34.17	37	13.31	46	16.55	11	3.96	11	3.96	41	14.75	37	13.31
3. 25-50	57	31.32	22	12.09	32	17.58	9	4.95	12	6.59	21	11.54	29	15.93
4.Above 50	57	32.95	20	11.56	29	16.76	11	6.36	13	7.51	21	12.14	22	12.72
Chi <sup>2</sup> =13.17(df:18)														
All Data	252	31.70	99	12.45	143	17.99	41	5.16	41	5.16	104	13.08	115	14.47

**INTERPRETATION**

Location and service providers are the 2 attributes. In this task, this table shows that no value of X<sup>2</sup> is computable i.e. in case of location of customers reinterpret that in LDH, people mostly prefer to use the service of AIRTEL with (28.82%) maximum value among all, then Vodafone with(17.79%) of value, then BSNL, Tata, Reliance and others.

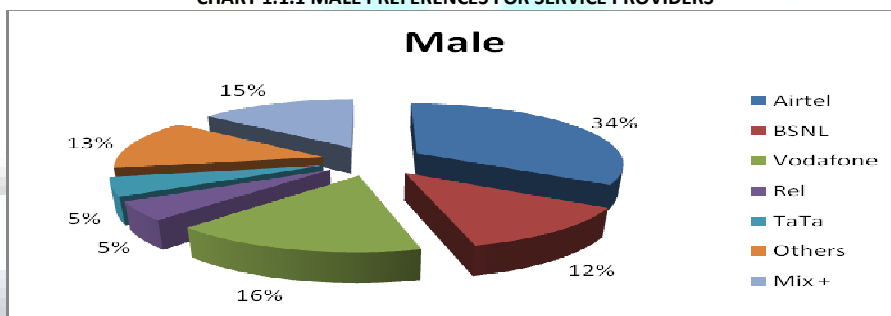
In SANGRUR also, first preference of service provider is AIRTEL, 2<sup>nd</sup> is Vodafone and then comes to BSNL, Tata, Reliance. Here DF=6 X<sup>2</sup>=7.94.

Gender wise, male mostly used services of AIRTEL with 34%, then Vodafone with 16.40% then others like BSNL, Tata etc. same is the case of females education level wise, reinterpret from the table that primary class, under graduate, graduates, post graduates also used maximum services of AIRTEL, then Vodafone, then others idea, then to BSNL, Tata etc.

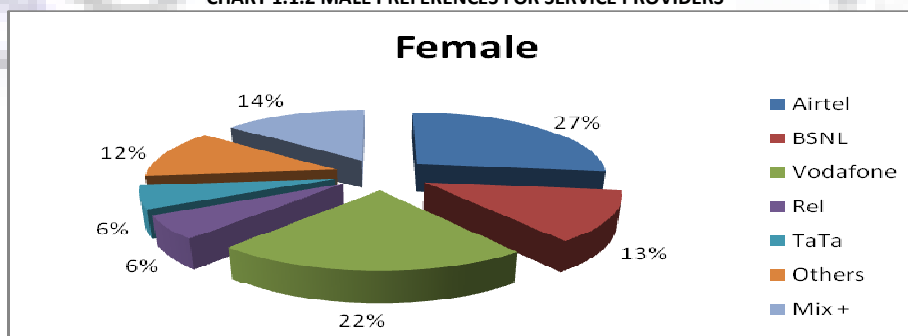
Occupation wise, income level wise also we are able to understand from the table that mostly people prefer to use AIRTEL services, others Vodafone, idea, BSNL, Tata and others etc.

	Airtel	BSNL	Vodafone	Rel	TaTa	Others	Mix +
<b>Male</b>	33.51	12.39	16.4	4.89	4.89	13.44	14.49
<b>Female</b>	27.03	12.61	22.07	5.86	5.86	12.16	14.41

**CHART 1.1.1 MALE PREFERENCES FOR SERVICE PROVIDERS**



**CHART 1.1.2 MALE PREFERENCES FOR SERVICE PROVIDERS**



**INFERENCES**

From the above charts it is understood that from the whole sample both males & females prefers first service provider as Airtel, 2nd preference is for Vodafone, 3<sup>rd</sup> goes to the number of mix means any service provider, then it is the turn of others, BSNL then Reliance& Tata are preferred same by both the genders equally.

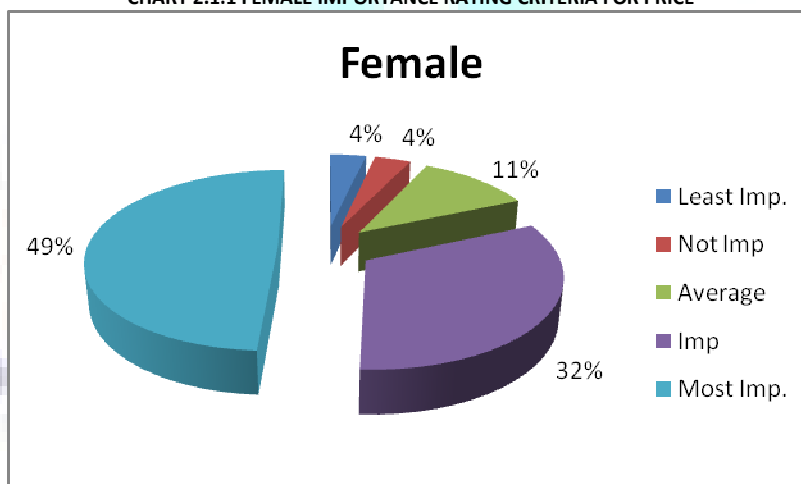
- To broadly identify the most impacting factors enhancing the acceptability/ utility of mobile users.

**Rate the importance: Price of mobile?**

Group/Sub Group	Summary				Least Imp.		Not Imp.		Average		Important		Most Imp.	
	WAS	Avg	SD	CV	N	%	N	%	N	%	N	%	N	%
City														
1.Ludhiana	1.29	4.29	0.96	22.38	13	3.26	7	1.75	43	10.78	123	30.83	213	53.38
2.Sangrur	1.31	4.31	0.95	22.04	10	2.53	14	3.54	36	9.09	121	30.56	215	54.29
Chi^2=3.36(df:4)														
t=0.182(df:793)														
Gender														
1.Male	1.34	4.34	0.93	21.43	15	2.62	13	2.27	54	9.42	172	30.02	319	55.67
2.Female	1.20	4.20	1.02	24.29	8	3.60	8	3.60	25	11.26	72	32.43	109	49.10
Chi^2=3.75(df:4)														
t=1.789(df:793)														
Education Level														
1.Primary	1.31	4.31	0.95	22.04	2	1.87	3	2.80	16	14.95	25	23.36	61	57.01
2.Under Grad.	1.27	4.27	1.03	24.12	8	3.96	7	3.47	18	8.91	59	29.21	110	54.46
3.Graduate	1.30	4.30	0.96	22.33	9	3.52	5	1.95	22	8.59	84	32.81	136	53.12
4.Post Grad.	1.32	4.32	0.89	20.60	4	1.74	6	2.61	23	10.00	76	33.04	121	52.61
Chi^2=10.07(df:12)														
F=0.12(df:3, 791)														
Occupation														
1.Service	1.30	4.30	0.99	23.02	10	3.33	10	3.33	25	8.33	90	30.00	165	55.00
2.Business	1.28	4.28	0.90	21.03	7	2.75	1	0.39	32	12.55	88	34.51	127	49.80
3.Student	1.30	4.30	1.04	24.19	3	4.23	3	4.23	4	5.63	21	29.58	40	56.34
4.Other	1.33	4.33	0.95	21.94	3	1.78	7	4.14	18	10.65	45	26.63	96	56.80
Chi^2=16.27(df:12)														
F=0.07(df:3, 791)														
Income Level														
1.Up to 10 Th.	1.38	4.38	0.90	20.55	4	2.47	1	0.62	19	11.73	43	26.54	95	58.64
2. 10-25	1.28	4.28	0.93	21.73	8	2.88	6	2.16	27	9.71	96	34.53	141	50.72
3. 25-50	1.25	4.25	1.06	24.94	8	4.40	7	3.85	16	8.79	51	28.02	100	54.95
4.Above 50	1.30	4.30	0.93	21.63	3	1.73	7	4.05	17	9.83	54	31.21	92	53.18
Chi^2=12.09(df:12)														
F=0.59(df:3, 791)														
All Data	1.30	4.30	0.96	22.33	23	2.89	21	2.64	79	9.94	244	30.69	428	53.84

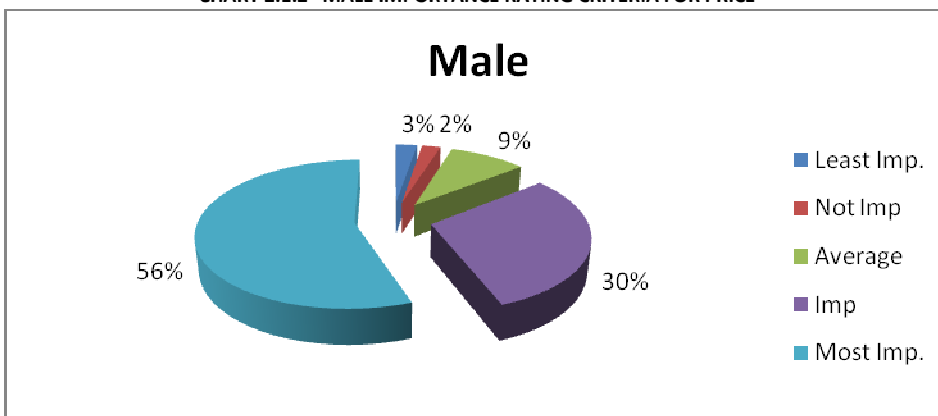
	Least Imp.	Not Imp	Average	Imp	Most Imp.
Male	2.62	2.27	9.42	30.02	55.67
Female	3.6	3.6	11.26	32.43	49.1

**CHART 2.1.1 FEMALE IMPORTANCE RATING CRITERIA FOR PRICE**



Among the females, 49% gives most important rating to the price of the mobile, 32% give only importance to the price feature in the mobile, 11% are average for price feature, then 4% to the least important & not important.

CHART 2.1.2 MALE IMPORTANCE RATING CRITERIA FOR PRICE



Among the Males, 56% gives most important rating to the price of the mobile, 30% give only importance to the price feature in the mobile, 9% are average for price feature, then 3% & 2% to the least important & not important.

So, from the male female category, it is clear that both gave more importance to price feature.

**Rate the importance: Quality of mobile?**

Group/Sub Group	Summary				Least Imp.		Not Imp.		Average		Important		Most.Imp.	
	WAS	Avg	SD	CV	N	%	N	%	N	%	N	%	N	%
City														
1.Ludhiana	1.40	4.40	0.83	18.86	5	1.25	8	2.01	35	8.77	125	31.33	226	56.64
2.Sangrur	1.37	4.37	0.89	20.37	9	2.27	9	2.27	31	7.83	124	31.31	223	56.31
Chi^2=1.46(df:4)														
t=0.487(df:793)														
Gender														
1.Male	1.38	4.38	0.89	20.32	11	1.92	14	2.44	52	9.08	167	29.14	329	57.42
2.Female	1.41	4.41	0.78	17.69	3	1.35	3	1.35	14	6.31	82	36.94	120	54.05
Chi^2=6.09(df:4)														
t=0.512(df:793)														
Education Level														
1.Primary	1.35	4.35	0.79	18.16	1	0.93	3	2.80	6	5.61	45	42.06	52	48.60
2.Under Grad.	1.37	4.37	0.89	20.37	3	1.49	7	3.47	18	8.91	59	29.21	115	56.93
3.Graduate	1.39	4.39	0.88	20.05	5	1.95	3	1.17	30	11.72	68	26.56	150	58.59
4.Post Grad.	1.42	4.42	0.84	19.00	5	2.17	4	1.74	12	5.22	77	33.48	132	57.39
Chi^2=19.05(df:12)														
F=0.24(df:3, 791)														
Occupation														
1.Service	1.42	4.42	0.86	19.46	6	2.00	7	2.33	17	5.67	95	31.67	175	58.33
2.Business	1.40	4.40	0.83	18.86	3	1.18	5	1.96	24	9.41	79	30.98	144	56.47
3.Student	1.14	4.14	0.98	23.67	2	2.82	3	4.23	9	12.68	26	36.62	31	43.66
4.Other	1.41	4.41	0.85	19.27	3	1.78	2	1.18	16	9.47	49	28.99	99	58.58
Chi^2=11.43(df:12)														
F=2.15(df:3, 791)														
Income Level														
1.Up to 10 Th.	1.33	4.33	0.94	21.71	4	2.47	6	3.70	12	7.41	51	31.48	89	54.94
2. 10-25	1.33	4.33	0.91	21.02	6	2.16	7	2.52	28	10.07	86	30.94	151	54.32
3. 25-50	1.46	4.46	0.76	17.04	2	1.10	2	1.10	12	6.59	61	33.52	105	57.69
4.Above 50	1.46	4.46	0.79	17.71	2	1.16	2	1.16	14	8.09	51	29.48	104	60.12
Chi^2=8.35(df:12)														
F=1.54(df:3, 791)														
All Data	1.39	4.39	0.86	19.59	14	1.76	17	2.14	66	8.30	249	31.32	449	56.48

	Least Imp.	Not Imp	Average	Imp	Most Imp.
Male	1.92	2.44	9.08	29.14	57.42
Female	1.35	1.35	6.31	36.94	54.05

CHART 3.3.1 MALE IMPORTANCE RATING CRITERIA FOR QUALITY

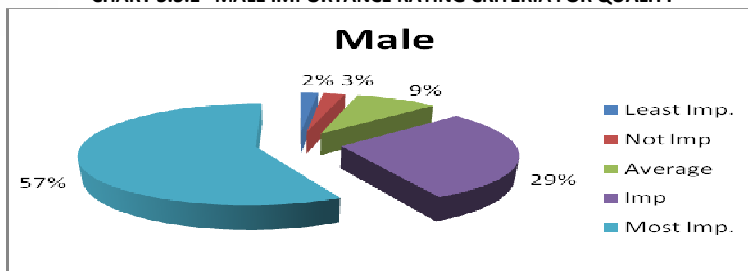
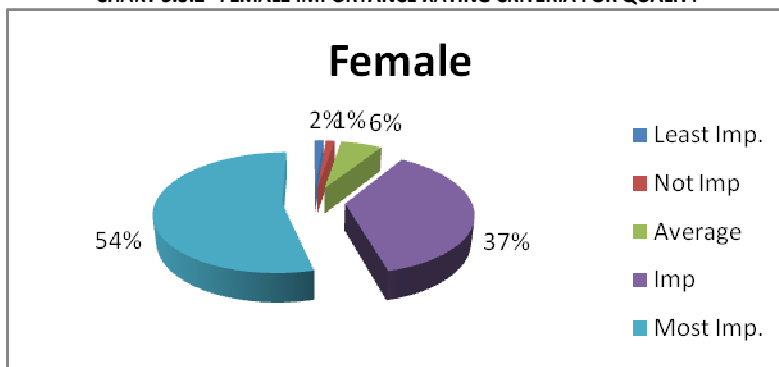


CHART 3.3.2 FEMALE IMPORTANCE RATING CRITERIA FOR QUALITY



It is clear from the above charts that both the males & females give importance to quality as 57% & 54 %.

Rate the importance: Style of mobile?

Group/Sub Group	Summary				Least Imp.		Not Imp.		Average		Important		Most Imp.	
	WAS	Avg	SD	CV	N	%	N	%	N	%	N	%	N	%
City														
1.Ludhiana	0.95	3.95	1.13	28.61	20	5.01	25	6.27	69	17.29	126	31.58	159	39.85
2.Sangrur	0.98	3.98	1.04	26.13	11	2.78	25	6.31	79	19.95	128	32.32	153	38.64
Chi^2=3.41(df:4)														
t=0.356(df:793)														
Gender														
1.Male	0.97	3.97	1.08	27.20	23	4.01	32	5.58	107	18.67	189	32.98	222	38.74
2.Female	0.95	3.95	1.11	28.10	8	3.60	18	8.11	41	18.47	65	29.28	90	40.54
Chi^2=2.51(df:4)														
t=0.208(df:793)														
Education Level														
1.Primary	0.92	3.92	1.02	26.02	3	2.80	5	4.67	28	26.17	33	30.84	38	35.51
2.Under Grad.	0.96	3.96	1.14	28.79	12	5.94	9	4.46	37	18.32	62	30.69	82	40.59
3.Graduate	0.92	3.92	1.13	28.83	11	4.30	23	8.98	39	15.23	85	33.20	98	38.28
4.Post Grad.	1.04	4.04	1.01	25.00	5	2.17	13	5.65	44	19.13	74	32.17	94	40.87
Chi^2=14.83(df:12)														
F=0.57(df:3, 791)														
Occupation														
1.Service	0.97	3.97	1.09	27.46	11	3.67	19	6.33	58	19.33	91	30.33	121	40.33
2.Business	0.95	3.95	1.08	27.34	8	3.14	20	7.84	47	18.43	83	32.55	97	38.04
3.Student	0.89	3.89	1.13	29.05	5	7.04	2	2.82	14	19.72	25	35.21	25	35.21
4.Other	1.01	4.01	1.08	26.93	7	4.14	9	5.33	29	17.16	55	32.54	69	40.83
Chi^2=6.28(df:12)														
F=0.23(df:3, 791)														
Income Level														
1.Up to 10 Th.	0.78	3.78	1.20	31.75	11	6.79	12	7.41	35	21.60	47	29.01	57	35.19
2. 10-25	1.05	4.05	1.03	25.43	8	2.88	16	5.76	44	15.83	96	34.53	114	41.01
3. 25-50	1.04	4.04	1.03	25.50	4	2.20	13	7.14	29	15.93	61	33.52	75	41.21
4.Above 50	0.91	3.91	1.11	28.39	8	4.62	9	5.20	40	23.12	50	28.90	66	38.15
Chi^2=14.11(df:12)														
F=2.57(df:3, 791)														
All Data	0.96	3.96	1.09	27.53	31	3.90	50	6.29	148	18.62	254	31.95	312	39.25

	Least Imp.	Not Imp.	Average	Imp.	Most Imp.
Male	1.92	2.44	9.08	29.14	57.42
Female	1.35	1.35	6.31	36.94	54.05

CHART 4.4.1 MALE IMPORTANCE RATING CRITERIA FOR STYLE

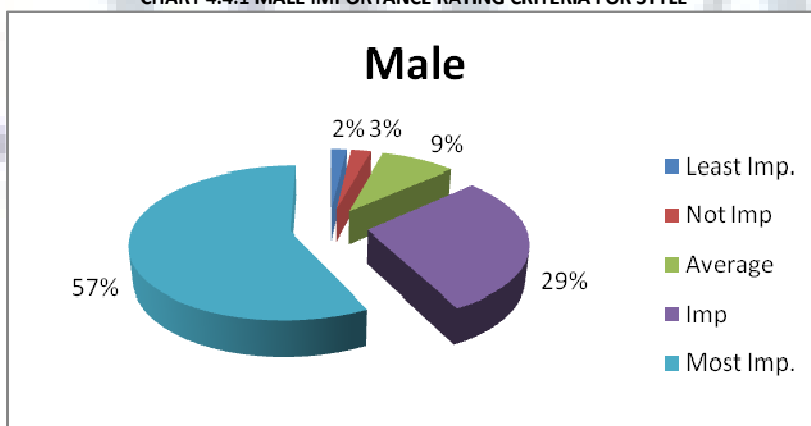
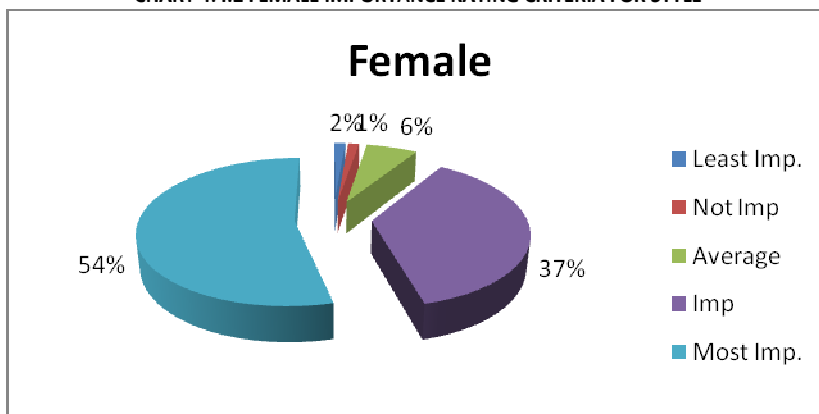




CHART 4.4.2 FEMALE IMPORTANCE RATING CRITERIA FOR STYLE



Rate the importance: Features of mobile?

Group/Sub Group	Summary				Least Imp.		Not Imp.		Average		Important		Most Imp.	
	WAS	Avg	SD	CV	N	%	N	%	N	%	N	%	N	%
City														
1.Ludhiana	1.11	4.11	1.13	27.49	12	3.01	37	9.27	52	13.03	93	23.31	205	51.38
2.Sangrur	1.18	4.18	1.08	25.84	11	2.78	29	7.32	48	12.12	96	24.24	212	53.54
Chi^2=1.33(df:4)														
t=0.978(df:793)														
Gender														
1.Male	1.11	4.11	1.11	27.01	17	2.97	48	8.38	80	13.96	138	24.08	290	50.61
2.Female	1.24	4.24	1.08	25.47	6	2.70	18	8.11	20	9.01	51	22.97	127	57.21
Chi^2=4.58(df:4)														
t=1.493(df:793)														
Education Level														
1.Primary	0.97	3.97	1.11	27.96	3	2.80	11	10.28	17	15.89	31	28.97	45	42.06
2.Under Grad.	1.09	4.09	1.17	28.61	8	3.96	20	9.90	23	11.39	46	22.77	105	51.98
3.Graduate	1.20	4.20	1.04	24.76	6	2.34	15	5.86	37	14.45	61	23.83	137	53.52
4.Post Grad.	1.21	4.21	1.10	26.13	6	2.61	20	8.70	23	10.00	51	22.17	130	56.52
Chi^2=11.77(df:12)														
F=1.57(df:3, 791)														
Occupation														
1.Service	1.16	4.16	1.10	26.44	9	3.00	22	7.33	40	13.33	69	23.00	160	53.33
2.Business	1.13	4.13	1.14	27.60	11	4.31	20	7.84	25	9.80	67	26.27	132	51.76
3.Student	0.99	3.99	1.19	29.82	2	2.82	8	11.27	15	21.13	10	14.08	36	50.70
4.Other	1.20	4.20	1.02	24.29	1	0.59	16	9.47	20	11.83	43	25.44	89	52.66
Chi^2=16.07(df:12)														
F=0.67(df:3, 791)														
Income Level														
1.Up to 10 Th.	0.96	3.96	1.22	30.81	5	3.09	24	14.81	22	13.58	32	19.75	79	48.77
2. 10-25	1.20	4.20	1.04	24.76	5	1.80	21	7.55	36	12.95	68	24.46	148	53.24
3. 25-50	1.20	4.20	1.02	24.29	5	2.75	9	4.95	23	12.64	52	28.57	93	51.10
4.Above 50	1.17	4.17	1.16	27.82	8	4.62	12	6.94	19	10.98	37	21.39	97	56.07
Chi^2=19.09(df:12)														
F=1.89(df:3, 791)														
All Data	1.15	4.15	1.11	26.75	23	2.89	66	8.30	100	12.58	189	23.77	417	52.45

	Least Imp.	Not Imp	Average	Imp	Most Imp.
Male	2.97	8.38	13.96	24.08	50.61
Female	2.7	8.11	9.01	22.97	57.21

CHART 5.5.1 MALE IMPORTANCE RATING CRITERIA FOR MOBILE FEATURES

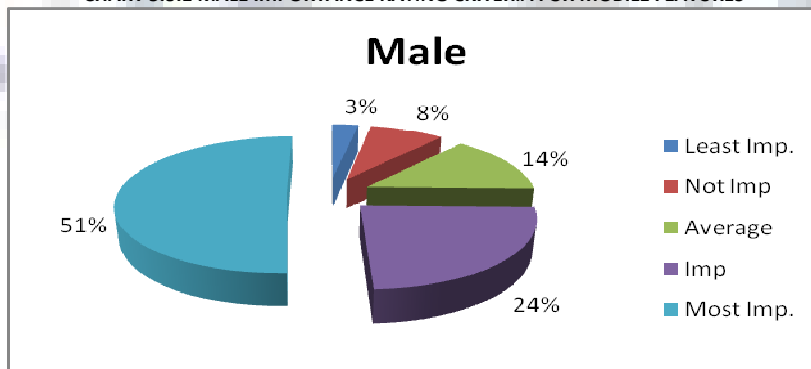
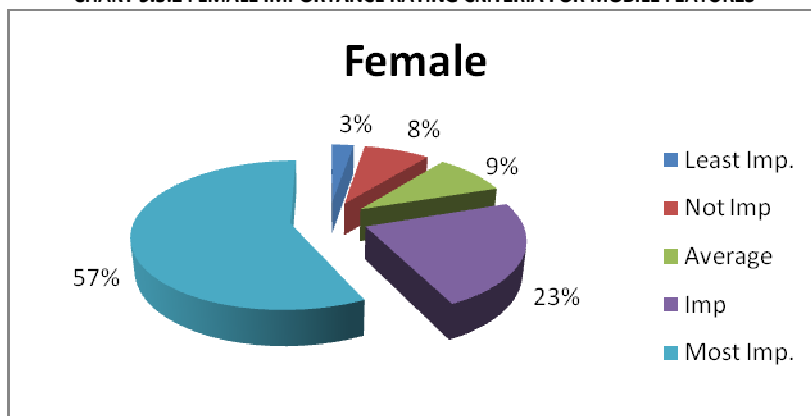


CHART 5.5.2 FEMALE IMPORTANCE RATING CRITERIA FOR MOBILE FEATURES



Rate the importance: Brand of mobile?

Group/Sub Group	Summary				Least Imp.		Not Imp.		Average		Important		Most Imp.	
	WAS	Avg	SD	CV	N	%	N	%	N	%	N	%	N	%
<b>City</b>														
1.Ludhiana	0.98	3.98	1.21	30.40	34	8.52	13	3.26	52	13.03	126	31.58	174	43.61
2.Sangrur	1.02	4.02	1.26	31.34	37	9.34	15	3.79	42	10.61	111	28.03	191	48.23
Chi^2=3.06(df:4)														
t=0.403(df:793)														
<b>Gender</b>														
1.Male	1.02	4.02	1.22	30.35	49	8.55	22	3.84	63	10.99	174	30.37	265	46.25
2.Female	0.96	3.96	1.26	31.82	22	9.91	6	2.70	31	13.96	63	28.38	100	45.05
Chi^2=2.37(df:4)														
t=0.605(df:793)														
<b>Education Level</b>														
1.Primary	0.79	3.79	1.36	35.88	15	14.02	4	3.74	10	9.35	37	34.58	41	38.32
2.Under Grad.	1.12	4.12	1.14	27.67	14	6.93	3	1.49	27	13.37	59	29.21	99	49.01
3.Graduate	1.06	4.06	1.22	30.05	22	8.59	7	2.73	29	11.33	74	28.91	124	48.44
4.Post Grad.	0.93	3.93	1.26	32.06	20	8.70	14	6.09	28	12.17	67	29.13	101	43.91
Chi^2=15.50(df:12)														
F=2.03(df:3, 791)														
<b>Occupation</b>														
1.Service	0.98	3.98	1.26	31.66	29	9.67	12	4.00	33	11.00	89	29.67	137	45.67
2.Business	1.04	4.04	1.21	29.95	23	9.02	4	1.57	30	11.76	80	31.37	118	46.27
3.Student	0.99	3.99	1.27	31.83	6	8.45	4	5.63	10	14.08	16	22.54	35	49.30
4.Other	0.99	3.99	1.20	30.08	13	7.69	8	4.73	21	12.43	52	30.77	75	44.38
Chi^2=7.38(df:12)														
F=0.14(df:3, 791)														
<b>Income Level</b>														
1.Up to 10 Th.	0.80	3.80	1.35	35.53	22	13.58	6	3.70	17	10.49	54	33.33	63	38.89
2. 10-25	1.12	4.12	1.18	28.64	19	6.83	12	4.32	29	10.43	76	27.34	142	51.08
3. 25-50	1.08	4.08	1.17	28.68	15	8.24	4	2.20	17	9.34	62	34.07	84	46.15
4.Above 50	0.93	3.93	1.24	31.55	15	8.67	6	3.47	31	17.92	45	26.01	76	43.93
Chi^2=20.60(df:12)														
F=2.62*(df:3, 791)														
All Data	1.00	4.00	1.23	30.75	71	8.93	28	3.52	94	11.82	237	29.81	365	45.91

	Least Imp.	Not Imp	Average	Imp	Most Imp.
Male	8.55	3.84	10.99	30.37	46.25
Female	9.91	2.7	13.96	28.38	45.05

CHART 6.6.1 MALE IMPORTANCE RATING CRITERIA FOR BRAND OF MOBILE

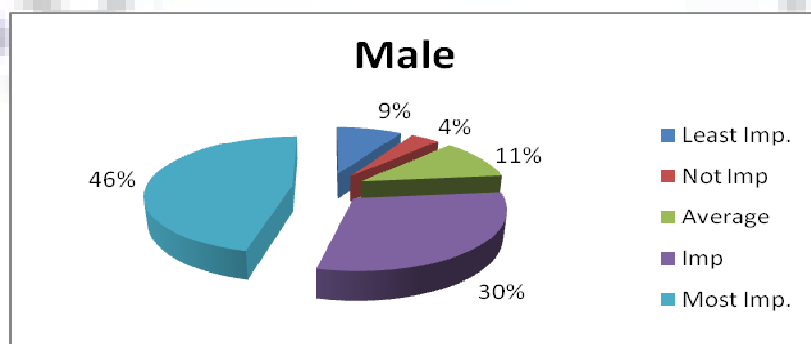
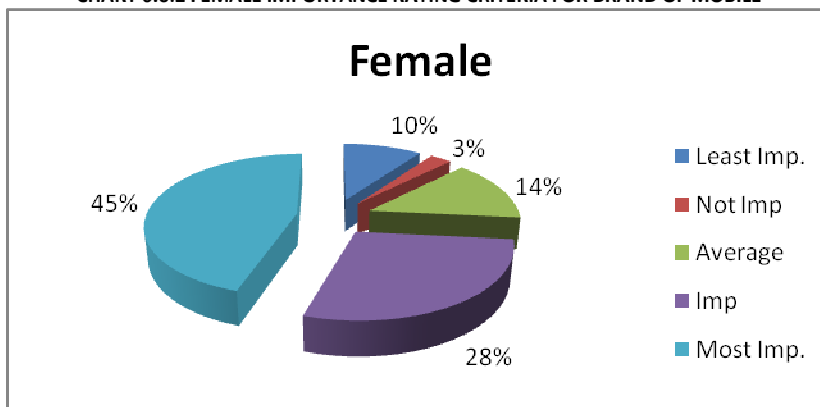


CHART 6.6.2 FEMALE IMPORTANCE RATING CRITERIA FOR BRAND OF MOBILE



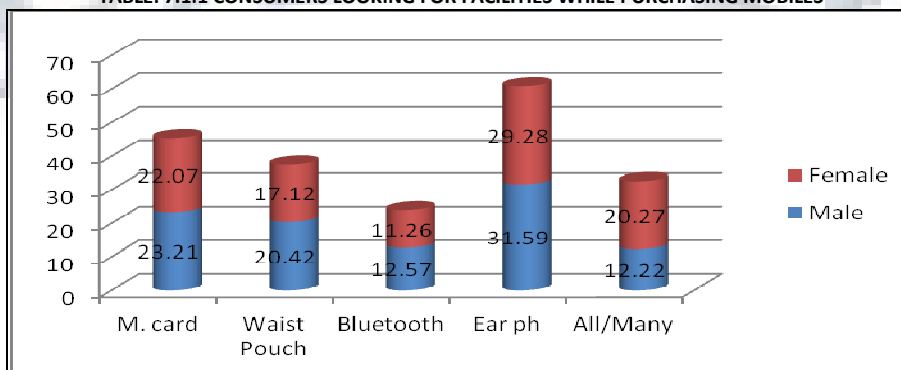
It is understood from the above charts of importance rating scales that mostly male prefers quality as no. 1 acceptable feature in handset with 57.42% & Female prefers new changes in the features of the mobile handsets as no. 1 with 57.21%. Females give 54.05% weightage to the quality of handset & Male gives 50.61% weightage to the features of the mobile handsets. Then it comes to the turn of price for the males with 55.67% & Females are least bothered with price as they give only 49% weightage to the price feature. Consideration to the Brand of the mobile is given equally by both with 46% & 45% by Males & Females both. Least important feature in mobile handset is its Style.

**FACILITIES YOU ARE LOOKING FOR IN THE MOBILE SET**

Group/Sub Group	Mem. Card		Waist pouch		Bluetooth		Ear phones		All/Many		
	N	%	N	%	N	%	N	%	N	%	
City											
1.Ludhiana	86	21.55	78	19.55	49	12.28	128	32.08	58	14.54	Chi <sup>2</sup> =0.97(df:4) C=0.03;
2.Sangrur	96	24.24	77	19.44	48	12.12	118	29.80	57	14.39	
Gender											
1.Male	133	23.21	117	20.42	72	12.57	181	31.59	70	12.22	Chi <sup>2</sup> =8.66(df:4) C=0.10;
2.Female	49	22.07	38	17.12	25	11.26	65	29.28	45	20.27	
Education Level											
1.Primary	27	25.23	23	21.50	11	10.28	32	29.91	14	13.08	Chi <sup>2</sup> =12.09(df:12) C=0.12;
2.Under Grad.	50	24.75	32	15.84	19	9.41	66	32.67	35	17.33	
3.Graduate	54	21.09	50	19.53	43	16.80	77	30.08	32	12.50	
4.Post Grad.	51	22.17	50	21.74	24	10.43	71	30.87	34	14.78	
Occupation											
1.Service	66	22.00	71	23.67	29	9.67	92	30.67	42	14.00	Chi <sup>2</sup> =14.00(df:12) C=0.13;
2.Business	64	25.10	44	17.25	33	12.94	79	30.98	35	13.73	
3.Student	11	15.49	10	14.08	12	16.90	22	30.99	16	22.54	
4.Other	41	24.26	30	17.75	23	13.61	53	31.36	22	13.02	
Income Level											
1.Up to 10 Th.	39	24.07	31	19.14	17	10.49	51	31.48	24	14.81	Chi <sup>2</sup> =9.39(df:12) C=0.11;
2. 10-25	55	19.78	54	19.42	39	14.03	82	29.50	48	17.27	
3. 25-50	50	27.47	33	18.13	19	10.44	61	33.52	19	10.44	
4.Above 50	38	21.97	37	21.39	22	12.72	52	30.06	24	13.87	
All Data	182	22.89	155	19.50	97	12.20	246	30.94	115	14.47	

Gender	M. card	Waist Pouch	Bluetooth	Ear ph	All/Many
Male	23.21	20.42	12.57	31.59	12.22
Female	22.07	17.12	11.26	29.28	20.27

TABLE: 7.1.1 CONSUMERS LOOKING FOR FACILITIES WHILE PURCHASING MOBILES



As in the above diagram it is clear that mostly Females like Ear phones more in the sets with 29.28%, memory cards with 23.21%, 3<sup>rd</sup> they need mixed features with 20.27%, and then comes to the turn of Waist pouch & Bluetooth with 17.12% & 11.26%.

### SUMMARY OF THE FINDINGS

- Indian mobile telephony may be called as “the sun-rise industry” of the Indian economy because of outstanding performance on various parameters.
- Rate of growth in mobile subscriber base has been substantially higher than growth in population, indicating a rapid proliferation of mobile telephone and adoption by non-users/first-time users.
- Lower prices has been witnessed across many industries & competition helped in lowering the prices.
- The deregulation in telecom industry gave birth to the greatest innovation period in the past 20 years. New technologies, standards, data services, new devices, CRM solutions and creative bundling have all been the result of competition in telecom industry.
- Telecom industry is services industry, hence the good quality services to the customer and the customer relationship management is the key and competition has totally changed the definition of service in Indian telecom industry. The quality of service has improved by leaps and bounds.
- Today, private players contribute to 64% of the total telecom network of the country, with a major contribution in the cellular segment. Out of the 62 million phones provided in the country for the period 2005-06, 50 million phones provided by private players alone.

### CONCLUSION

Mobile phones are especially powerful tools. As a result of the liberalization, privatization, and de-monopolization initiatives taken by the government of India, the telecom sector is experiencing a historical growth. The trend is expected to continue in the segment, as prices are falling as a result of competition in the segment. The beneficiaries of the competition are the consumers, who are given a wide variety of services. The future commitment of the customers to organization depends on perceived trust. The issue of trust is therefore increasingly recognized as a critical success factor in the emerging scenario. Mobile phones offer greater income from higher value to customers. Improved quality through better monitoring and staff retention. This study also attempts to broadly concretize some features or attributes, which will enhance the overall acceptance and utility of mobile marketing and advertising. Hence the mobile users are apparently seeking customization of mobile marketing messages as per their individual requirements, tastes and preferences. Thus the marketing firms need to combine Mass Customization and Customized marketing i.e. CUSTOMERIZATION

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**'SOFT SKILLS'- AN ESSENTIALITY IN TODAY'S BUSINESS ENGLISH**

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**ABSTRACT**

*These days, soft skills have become an essential part of today's business communication training for any professional and therefore in the areas of work-related language coaching, it has got a vital role of its own. Today, soft skills form not only a crucial and increasingly important topic in careers and career negotiations, but are also part and parcel of adult language tuition. However a large number of general principles and concrete examples of making Soft Skills 'work' in the class-room are discussed in this particular article. If applied, this will no doubt benefit the students of the Business English Communication in the present day scenario.*

**KEYWORDS**

Business Communication, Professional, Soft Skills, Training, Work-related Language.

**WHOM DO WE CALL SOFT SKILLS?**

Although usually not found on a CV, soft or social skills are those personal values and interpersonal skills that determine a person's ability to fit into a particular structure, such as a project team, a rock group, or a company. These skills include personality traits like emotional maturity, eagerness to learn, and willingness to share and embrace new ideas.

Now-a-days soft skills are fast becoming the deal breaker in many of today's hiring decisions. After all, executives, are rarely measured according to how well they can re-iterate the technical specifications of their products and services, but rather on their ability to motivate an organization, to assess the performance of their staff, to make clear and well-balanced decisions, and, first and foremost, their ability to develop and communicate ideas and visions. Let us have a look at the list of the most crucial skills which are something as the following:

**FIGURE 1: SOFT SKILLS IN FOUR CATEGORIES (1)**

<b>Interaction</b>	<b>Self-Management</b>
1. Attitude awareness	1. Compensation strategies
2. Conflict handling	2. Decision making
3. Co-operation	3. Learning willingness
4. Diversity tolerance	4. Self-assessment
5. Etiquette	5. Self-discipline
6. Interlocutor orientation	6. Self-marketing
7. Teamwork willingness	7. Stress resistance
<b>Communication</b>	<b>Organization</b>
1. Delegating skills	1. Problem solving
2. Listening skills	2. Systems thinking
3. Presentation skills	3. Troubleshooting

Although the total of 20 skills is grouped under four headings they are, of course, all closely interrelated: 'Learning willingness', e.g., is difficult to manifest if our 'time management' does not work. It is also true that soft skills are not exactly 'easy'; if they were, it would be easy to teach everybody to be a Managing Director. Next, I will try to show that soft skills are gaining in importance in two contexts which are relevant to English in Adult Education, in native, but even more in non-native contexts: DOING BUSINESS and DOING BUSINESS ENGLISH both feature soft or social skills as objects, effects, and prerequisites.

The soft skills are of growing importance in a world where business is marked by 'hot' buzzwords such as globalization; decentralization; and lean management. It is a true that in real life soft and hard skills (such as subject competence, resource handling, and market knowledge) go hand in hand. Thus, the selection instrument of an 'Assessment Centre' is gaining in significance especially for high potential recruitment. By means of its exercises in strategy development and strategy implementation, many companies and employment agencies argue, this two- to three-day intensive group performance session brings to light candidates' abilities in 'conflict handling', 'co-operation' and 'stress management'. We all admit that, a traditional job interview or an old-fashioned IQ-test hardly warrants these results.

Hence, though it is certainly helpful to know what technical terms such as benchmarking, 'B2B' vs. 'B2C', business process re-engineering, customization, downsizing, outsourcing, and empowerment stand for, a mere word-list knowledge ignores the complex interpersonal problems these terms carry. If it is required to teach learners of Business English how to deal with these problems interpersonally, soft skills handling is indispensable.

**HOW MUCH SOFT SKILLS CAN BE TAUGHT?**

This skill would be difficult if not impossible to teach 'straightforwardly' in any course; teaching can create contextualized tasks, and thus provide skills-related learning experience. Here actually collateral learning works where one learns more than merely the subject he or she studies at a given time. Since 'attitude awareness' and 'problem solving' are what count in the future, then, ideally, teaching should have a share in attitude formation and comparison.

A framework of soft skills should permit Business English to emphasize the interpersonal forces of language-use in a work-oriented context, and teachers should keep a sharp eye on the function of any language item which they want to highlight. Thus we can say that, they must teach the pragmatic force along with the words, evidenced, by textual (= structure-giving), propositional (= intention-determining) and interpersonal (= status-fixing) functions. Any sort of mismatch in linguistic form and speaker's intention leads to confusion, annoyance and misunderstanding, that is, causes havoc: 'I'm not prepared to show my homework', e.g., can be the signal unwillingness, inability, criticism of unclear homework assignment, simple forgetting, and other things.

Erving Goffman (1955), Social Theorist, made this very clear with his theory of 'FACE' and its twofold workings: Goffman argues, in human interaction, people strive for a positive social value, i.e. the approval of others (= a positive face, PF), while at the same time they also want to avoid other people's impediment (= a negative face, NF). Disapproval of an interlocutor's personality or performance, negative comments and criticism, usually endanger his/her PF; requests, offers and compliments may threaten his/her NF: Often an invitation to golf causes offence (for the inviting party) if refused, debt (for the invited party) if accepted. Therefore, what we normally tend to think of as plain and straightforward communicative exchange, in fact is a very thin layer of ice on which successful skating can be dangerous. So if we take some very ordinary English sentences like the ones in Figure 2, it is apparent that they are not harmless and ordinary at all if we consider what might be implied for the involved people's 'FACES': (2).

FIGURE 2: SENTENCES AS THREATS TO INTERLOCUTORS' 'FACE'

SITUATION	UTTERANCE
1. Pointing at a colleague's desk:	That mouse-pad does look funny!
2. On the way to the company car park:	Do you have your mobile phone with you?
3. On returning to your desk:	I thought I put a cup of tea here.
4. During a business meeting:	Is anybody else here cold?
5. Knocking on a colleague's office door:	Are you busy right now?
6. Asking a colleague in the canteen:	Isn't that Mr Lawson over there?
7. Sitting in a lecture theatre:	Sorry, there's a lot of noise at this end.

However, these sentences turn into downright traps if understood as a demand for action, an allegation of stealing tea, a request for assistance and so on and so forth. Teachers should be made to heighten the awareness of the inherent power of relationship, trust and intimacy levels of the interlocutors rather than teaching students only how to construct and employ phrases like these; in short, the sentences' challenges to the category of 'FACE'. Conversely, language coaching should adapt to the constantly changing 'face' of English, and keep in mind the cognition-based concept of 'KAL' (Knowledge About Language) which Ronald Carter has been promoting since the early 90s. This concept is flexible in character as it is meant to go beyond older ones, such as grammaticality, formal correctness and linguistic awareness. It is Carter who actually wants language learning and teaching to (re-) start from scratch, i.e. to acknowledge insight into the 'new view':

"A view which recognizes Englishes as well as English and which stress variable rules accords with a multilingual, culturally diverse view of society. [...] Critical language pedagogy does not so much aim simply to produce competence in use of a standard language, vitally important though that is, as to enable learners to reflect on the kind of English they use and how far it allows them to express their own personal voice as language users." (Carter. 1997: 9, 226)

The above mentioned notion is closely related to the new standard of "ISSE (International Standard Spoken English)" which David Crystal (2000: 57) forecasts to emerge as the result of the increasing global use of and diversified influence on the language. He was not far from the truth, as it so happens that English is an immensely (and increasingly?) flexible language, crammed with idiom and slang, unusually hospitable to new words. English is not only the language of business and international politics, but also that of travel, sports and science, computer software and the music industry. Today, in times of boundless globalization, the idea of 'FACE' is gaining particular importance in business contexts that involve cross-cultural aspects: In a business world where a German marketing officer is sent to Japan by her employer, a Finnish telecommunication corporate, in order to negotiate joint ventures for the emerging markets of Eastern Europe, it is certainly good to know about the main differences between British and American English, but what this person is very likely to encounter (and to use) herself, corresponds to neither variety.<sup>3</sup> Given these conditions, English tuition should ideally proceed from linguistic competence => linguistic awareness => cultural awareness => cultural competence.

## UNDERSTANDINGS FOR LEARNINGS

Phraseology, lexis and collocation are of primary importance. Here grammatical accuracy is no longer the be-all and end-all. The syllabus will have to pursue complex aims besides those of planting words and structures in students' heads. Thus this will of course remain the precondition of all attempts at soft and social skills. However, whichever way the 'basics' of structural grammar are brought to a learner, the techniques of drill patterning, total immersion or suggestopedia even, will not do when 'handling English aptly' rather than 'using English correctly' is at stake.

Ideologically, learners in the new position do not experience themselves as voiceless, and subject to external authority, not only as passive receivers, but rather as active discoverers, communicators and - most significant - creators of knowledge. Hence, the objectives of this idea of teaching become visible as improving learners' active and passive knowledge of styles, registers and functions of language items (4); furthering their knowledge of the working mechanisms of business; involving them as far as possible in tasks of teacher-guided learning; and encouraging them to set up, implement and realize their individual learning strategies. The objectives, in turn, ask for a learning process that is fundamentally social, interactive, and self-directed - if we want to encourage our learners to take home 'more than Business English' from 'a lesson in Business English', manifest in topics like Negotiating with Foreign Business Partners, Defying the Angry Customer or Serving International Markets, we must select, prepare and set tasks that involve reflective assessment and active training of one or more of the soft skills. Few of the general guidelines to make the upper-intermediate to advanced English class, more learner-orientation will be suggested now.

While venturing on a new topic, teachers might start with a brainstorming session and elicit what students already know. Therefore they will give the students a chance to start from their true personal vantage points; any accompanying material will then be taken not as a spoon- and force-fed medicine, not as the final word, but as one of many possible options. Room-allocation permitting and space, one could also ask students to write upon notice boards, flipcharts or whiteboards those aspects of a topic which they would most like to learn about. Works that are suitable for pairs or groups should tend to be open rather than closed, i.e. they should permit a variety of possible answers or solutions, or in any case, they should provide room for choice. Thus, they transport respect for any student's individual attitude, and ask them to balance rather than venture their arguments. However two short examples might help to outline possible ways of realizing insights from soft skills training in the class-room.

The first and foremost example is from the realm of 'Financial English' and could run like this: For the topic of 'Takeovers and Buy-Outs' we might begin with a list of relevant technical terms, strategies, model cases, pros and cons, etc. However students will only experience the position-dependent forms of emotional involvement (e.g., enthusiasm, greed, pride, low vs. high self-esteem, sense of failure, satisfaction of 'winning'), if we can get them to approximate the atmosphere in which talks about the takeover process are likely to be conducted. Thus any group of four advanced students could be assigned the roles of the CEO of a failed start-up-company under threat (also its founder and main shareholder); the potential buyer (i.e. the representative of the 'bigger fish' trying to 'swallow' the 'smaller' one); the 'white knight' (senior business expert or other company backing the threatened company's case); and, especially in the case of 'leveraged buy-outs', i.e. buy-outs financed by third parties, the bank expert or financial organizer who backs the buyer's interest. Next we could then ask students to prepare and simulate preliminary or final negotiations, arguing their individual cases, taking into account the other, 'hostile' viewpoints all the time.

The next example stems from the very crucial and frequently requested topic of 'The Job Market'/'The Application Process'. Often we find, teachers confront students with real job ads and ask them to sketch an application, a cover letter, or a CV. Although this is certainly good training, it seems a rather lonely task in class, apart from the exchange of technical terms. I think, these, should be pre-taught for a lesson which uses job ads as a trigger for more group-oriented exercises. Often referring to the well-known study *The Human Side of Enterprise* (1960) of American sociologist Douglas McGregor, we might outline his theory of two distinct types of work motivation and work performance: According to McGregor's THEORY X, people are considered 'lazy' by nature, disliking work, and in permanent need of supervision and control through a threats-and-rewards system. THEORY Y, by contrast, treats people as inherently self-motivated, committed to their workplace, willing to take responsibility and to make personal achievements; in short it assumes a psychological disposition to work within a framework of structures. No doubt, THEORY X provides a high degree of certainty and plannability, and is therefore easier to put into practice on the workshop floor, or in mass and largely automated production than THEORY Y. Therefore, it is good for managing staff promotions, salary negotiations, and for effective management. In class, we could then make further sub classifications by conceiving e.g. two representatives of each of McGregor's theories (Y1: 'The entrepreneur'; Y2: 'The leader'; X1: 'The team worker'; X2: 'The backroom worker'). Next, an authentic job ad could be scrutinized as to which of these types - the profiles of which should be established in class or in teams - best fit the job description. (5)

In the same manner, we could use the model which social psychologist Frederick Herzberg puts forward in his study *Work and the Nature of Man*, i.e. the crucial difference between SATISFIERS and MOTIVATORS as determining factors of people's job performance: SATISFIERS, as guards of AVERAGE POTENTIAL,

concern the working conditions and environment, the wages, the benefits, and the degree of job security; whereas MOTIVATORS, as stimulators of HIGH POTENTIAL, comprise challenging and creative tasks, recognition by peers and seniors, personal responsibility, possibilities for promotion, and the subjective feeling of forming part of corporate culture. So it is easy to see that some basic questions such as 'Which type do you think you are?', 'Which type is your boss/your spouse/your best friend?', 'Which type would you (not) hire?' etc., can lead to intense discussions or team listings and, especially, will put all of the soft skills to the test in unforeseen ways.

A model of lesson with the benefit of reducing TTT (Teacher Talking Time) and increasing STT (Student Talking Time) is shown in Figure 3. As we see, a lot has happened in teaching methodology since the days when PPP (Present, Practice, and Produce) was the answer to all questions (6):

#### TRADITIONAL

TEACHER'S ACTIONS	EFFECTS ON LEARNERS
1. Presentation of a pattern	Look, listen, memorize
2. Elicitation of a pattern	Repeat with whole class
3. Controlled practice (slight pattern variations)	Repeat and vary in pairs
4. Free practice (more expanded variations)	Repeat with more variation in groups
5. Written reinforcement	Repeat in writing

#### REVISED

FIGURE 3: TEACHER-CENTERED VS. STUDENT-CENTERED LESSON PLAN

LEARNERS' ACTIONS	EFFECTS ON TEACHER
1. Look, discuss and guess the point	Display pattern, stimulate discussion
2. Receive confirmation or correction	Give solution on board or to groups
3. Repeat, vary, discuss	Guide practice, encourage discussion
4. Invent questions/exercises for other groups	Monitor group work
5. Exchange questions; discuss and write answers	Encourage exchange, monitor writing
6. Discuss as a class with teacher	Guide discussion, summarize findings

#### SOFT SKILLS AND NEW MEDIA

In connection to the 'overkill' of media and new media development directed at the teaching professions, any teaching material's qualities in featuring any number of the soft skills is what should guide our selection, preparation and employment. Certainly it is true that a well-produced CD-ROM can work miracles for the beginner's faltering steps towards listening comprehension, and can make word learning less tedious. Even, e-mail-controlled homework - or even teamwork-tasks - solves a number of logistic and organizational problems. Often but most of the training forms that focus on 'attitude awareness' and 'conflict handling' are probably not really 'cyber worthy', not least because their teachers would not embody these skills themselves if they were only 'cyber-educators'.

Although NEWSWEEK recently painted a glorious picture of the future of online-learning, "[b]y the end of 2000, 75% of all U.S. universities will offer online course work to a logged-on student body of about 5.8 million, in most cases as supportive to personal teaching" (McGinn 2000: 60), I do not fear for the future of print-based and classroom-located teaching, if understood as a common enterprise of both the teaching and learning personalities involved.

In addition to this, if communication theorists are only halfway right in claiming that up to 70% of any information is communicated not via language, but by other systems, such as personal appearance and body language, we are still a long way from the moment when personal teaching can be fully discarded. Only machines can do the drilling and controlling of drilled patterns, but they do not reach beyond that stage. A number of the great benefits of training, after all, are unintentional. We often perform better when we come out of a training program. But is it the training that's critical or the interaction during the training?

Here it might be replied that with the growing significance of 'e-commerce', the use of internet and e-mail will become standard features of business that we cannot afford to ignore when teaching people who will go on to do, or are already using 'e-commerce' in their jobs. The learners in internet-related fields, however, I would like to hold, are in need of communicative, self-managing and problem-solving skills: Say for example, 20 years ago students learned the conventions of business writing through letters and telexes, this may now have changed to faxes and e-mails, yet the obstacles to 'winning' your addressee for your ideas, or the dangers of 'striking a false note' have remained very much the same. Thus, instead of saying: 'Here's a new piece of technology - let's see if we can think of some way of using it', in soft skills teaching we should steer a more relaxed course and begin with: 'Here is an educational need - let's see which technology we can best apply to it'.

#### UNDERSTANDINGS FOR TEACHING

An agenda in Business English which is soft skills-centered has to emphasize the personal, the subjective and the constructivist; it must challenge the expected, the usual, the traditional and the positivist. The authoritarian and teacher-dominated style of teaching will certainly not come to terms with the objective of conveying this armada of extra-linguistic skills through language teaching. But only a co-operative and learner-centered style, it appears, will do justice to the newly-defined roles of both teacher (who becomes more of a facilitator, and less of an instructor) and student (who is upgraded to a discussion partner and ideas generator, and by no means an empty vessel to be filled from outside): "Language is an immensely democratizing institution. To have learned a language is to have rights in it" (Crystal 2000: 56).

Thus it should not be taken to mean that teachers let go of their right and duty to monitor and organize the goings-on in the classroom. In fact, their 'interventions' especially in tasks of an open, multidimensional nature should be a careful, situation-adopted combination of facilitative and authoritative contributions. Rather they must hold the balance between releasing tension, encouraging self-exploration, and providing both challenges and strategies. We need competence and experience to do this job, but we need commitment, enthusiasm, patience and role-consciousness to do it well. In short, we need the soft skills; not only, but quite urgently if you would like to teach us to others. It is therefore to re-iterate the old saying that 'Teachers are the ones who understand, know, and can', is certainly not enough here. We need a healthy ego to teach, but we also need to be strong enough to check it at the door. Teaching 'interpersonal skills' is not about making our self more powerful. It is about making our students more powerful. And we will only earn their trust and respect when we know who we are, convey a strong sense of mission - and when we 'walk or talk' (7).

What actually count in soft-skills-framing, obviously, are the qualities of intellectual and interaction stimulation: Teachers should get students to use reasoning and evidence; they should encourage them to think about old problems in new ways, and to re-think ideas that they had not questioned before. Ideally, teachers are to trigger off conversations even among groups of students who do not normally interact with each other, e.g. in a class on Business Correspondence where future engineers and architects sit next to economists and IT specialists. Hence, teachers should see those patterns which allow innovations and improvements for both the teaching and the learning process.

#### CONCLUSION

The teacher's framework of soft skills confirms the ideas that 'good English teachers will always remain diligent English learners' and also that 'students learn best from what their teachers enjoy teaching'. These two qualities inherent to all of the abovementioned requirements of teachers, i.e. their essential soft skills, are the notion of holistic, situational problem solving, and the willingness to continuously revise one's own sense of meaning.

It is obviously not a closed shop we want to provide access to; it is not a finalized book we have to work through and press home on the learners. We rather should try to do our best in achieving two results simultaneously that are vital in view of the ever-changing 'face' of English: to enhance our students' linguistic competence; and to pave ways towards (inter)cultural competence, i.e. prepare them for the extra-linguistic demands that 'handling language aptly' via soft skills will undoubtedly put on them in their careers.

## NOTES

(1) This is a list comprising those skills that form the focus of a number of relevant recent sources, it is assimilated from Campbell 1996; Conrad 1997; Harrison et alii 1995; Leigh et alii. 1998; Murnane & Levy 1996. In addition, the listed skills are those that are named most often by my own adult students of Business English in Germany.

(2) My argument in this article owes a lot to Hollett (1998: 18), who first brought my intention to the integrability of Goffman's work into the more recent notion of soft skills training.

(3) This also surpasses older notions of a rudimentary and somehow simplified version of English as a means of international communication in business, such as CCE (Common Core English), ESP (English for Specific Purposes), PEL (Polyethnic Englishes), or Working English.

(4) Established frameworks in linguistics might be successfully integrated into these attempts, such as Speech Act Theory (J.L. Austin, J.R. Searle), Discourse Analysis (D. Burton, D. Schiffrin), Pragmatics (G. Brown, G. Leech, S.C. Levinson, G. Yule), or Relevance Theory (D. Blakemore, D. Sperber, D. Wilson).

(5) Some guidelines might be found in these rough, and deliberately stereotyped, characteristics: Y1: adventurous type who enjoys new challenges and is always 'on the go'; looks forward to taking risks, and actively seeks new paths and manners; wants success in fields that rate personal drive and 'congeniality' highly. (Examples: stock market dealing rooms, inventor, software marketing, ecommerce); Y2: confident in personal abilities, prefers to be in charge rather than to take orders and work to rule; sets objectives, develops and decides on strategies to achieve them; enjoys a big audience or 'following'. (Examples: selling, servicing, managerial and organizational work); X1: works well with others but dislikes shouldering responsibility alone; prefers to implement other people's plans rather than his/her own ones; does not bear disagreement easily, but strives for co-operative solutions. (Examples: civil service, clerical and secretarial work, military); X2: a little shy, or even timid, may have difficulty mixing with other people; does not like facing new challenges all too often, but is good at a behind-the-scenes-job marked by routine tasks and regular duties; might be tempted to 'pass the buck' to someone else in case of problems. (Examples: laboratory, research, library).

(6) This is taken, with minor alterations, from Rogers (1998: 29).

(7) Adopting the theory of the American educational psychologist Carl Rogers, we could argue that the teacher's primary tasks in this model would not be to instruct and control, but to permit the students to learn and to feed their curiosity in the subject and in people (Rogers 1983). For an interesting poll on recent images of teachers, ranging from 'actor' to 'sales rep.' and 'sports coach', cf. Weber and Mitchell (1996).

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## ROLE OF RFID TECHNOLOGY IN HOSPITALS

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### ABSTRACT

*The role of technology in hospitals has been increasing day by day due to the developments in technology and the advantages of using the same. RFID has a critical part to play in access control, tracking patients and various equipments in a hospital. Implementation of Radio Frequency Identification in hospitals will offer many benefits to the patients as well as to the hospital management. This paper briefly describes the role of RFID in hospitals. It also discusses the types of RFID, its applications in hospitals and cost of implementation of it. The study provides the recommendations for implementing RFID Technologies in hospitals in order to obtain its real benefits.*

### KEYWORDS

RFID, Hospital, equipments, technology

### INTRODUCTION

**R** RFID has a critical part to play in tracking various equipments in a hospital. A hospital even a medium sized has several thousand assets such as IV Pumps, pulse oximeters, ventilators Wheel Chairs, different type of stretchers, etc. These assets keep moving between different floors and wards of the hospital. Finding and retrieving these assets is often done manually. Often doctors and nurses send out the hospital boys in search of them. This process is highly unorganized and it reduces productivity of the staff. Moreover it consumes precious time and in a rare case may also affect the patient's treatment process. Moreover the staff engaged in this search and retrieve process is often unhappy to do such tasks. Also the equipment itself is used with poor efficiency. Frustrated medical staff and unsatisfied patients naturally bring down the revenues and hurt the reputation of the hospital.

RFID can provide an effective solution to the above problem. The equipments, which are usually always searched for can be tagged with a unique identification number embedded in a RFID tag microchip. Such a tagged equipment can now be tracked anywhere in the hospital. The tracking system would display on a desktop or handheld the current location of the equipment. It can also display the history of locations where the equipment was kept and also identify the staff, which handled it. The RFID system can also be used to generate various MIS reports whereby the senior staff can understand the usage patterns of particular equipment. Reports showing the maintenance record of any equipment can also be generated. Senior staff can detect any mishandling of the equipment. Tagged equipment is also difficult to steal from the premises. RFID readers can operate on frequencies different than those used by other medical telemetry systems. Hence any possibility of interference is ruled out. Since, RFID is a wireless technology; it's easy to re-configure it as per the new layouts.

Doctors, when they visit each patient's for regular examination, have to manually note down the patient conditions. This diagnosis information has to be then again re-entered in the system. This consumes considerable time and also often leads to errors. RFID can provide an effective solution to this. RFID enabled wrist bands can be used to patient's wristband. The band holds a unique identification number for each patient. The staff can be given a handheld band reader. Whenever the reader is waved over the band, the reader would instantly display key patient information such as patient's ailment detail, treatment history, and also insurance policy information. The staff can enter more updated information instantly after diagnosing the patients. RFID works through bedcovers or clothing, hence a patient doesn't have to physically move his/her hand or leg to get the tag read. The same wristband can also be used to track patients. Some treatments require patients to go through a series of sections in hospital. For example, a patient would be required to visit the laboratory for blood check up, then to the X-ray room and MRI scanner room and so on. In this case RFID system would capture patient's movement and update the system. If a patient is erroneously taken to a wrong section, then it can also alert the medical staff accompanying the patient. If a patient or staff tries to tamper with the band, then an alert can be sent to the respective authorities.

### OBJECTIVE OF THE STUDY

The broad objective of this study was to study the role of RFID in hospitals and explore the possible applications of RFID in the hospital. Since not many hospitals have ever deployed an RFID system and the technology itself being comparatively, the study would provide some valuable insight into the actual working and implications of RFID in the hospital.

### METHODS

The nature of study was descriptive and based on the secondary sources such as articles in journals and published books and internet material from the valid sources.

### ROLE OF RFID TECHNOLOGY IN HOSPITALS

Equally important as the tags are to the successful deployment of an RFID system is the reader, which energizes the passive tag and receive the information from it on demand. The reader, first and foremost activates the tags that are within its theatre of control, causing them to transmit their information to the reader. Second, it serves as the interface between the theatre of operations (where the tags live) and the system that collects, analyzes, and distributes the massive volumes of data generated by energized tags (Shepard, 2005).

The RFID reader sends a pulse of radio energy to the tag and listens for the tag's response. The tag detects this energy and sends back a response that contains the tag's serial number and possible other information as well (Simson Garfinkel, 2006). RFID readers are capable of automatically recognizing and distinguishing all the RF tags within their reading field (SATO Solutions, 2004). Since is a reader able to identify a particular tag, the system can claim to have identified the object to which the tag is attached (Bhatt, 2005). This capability allows the RFID reader to simultaneously process all the data and provide for efficient material handling, packaging, and sorting of inventory. Not only will these RFID readers be able to track tagged items and equipment, but they can also be used to track

patients (i.e. in hospitals) (SATO Solutions, 2004). The reader is often connected to some kind of a processor that collect the data before passing it on to the databases and applications that live behind it. There the applications analyze the data, process it, and generates the stuff of management reports and dashboard displays (Shepard, 2005). In simple RFID systems, the reader's pulse of energy functioned as an on-off switch, in more sophisticated systems, the reader's RF single can contain commands to the tag, instructions to read or write memory that the tag contains, and even passwords.

RFID readers are usually on, continuously transmitting radio energy and awaiting any tags that enter their field of operations. However for some operations, this is necessary and could be undesirable in battery – powered devices that need to conserve energy. Thus, it is possible to configure an RFID reader so that it sends the radio pulse only in response to an external event. Like the tags themselves, RFID readers come in many sizes. The largest reader might consist of a desk top personal computer with a special card and multiple antennas connected to the card through shielded cable. Such a reader would typically have a network connection as well so that it could report tags that it reads to other computers. The smallest readers are the size of a postage stamp and are designed to be embedded in mobile telephones (Simson Garfinkel, 2006).

**TYPES OF RFID  
INDUCTIVE COUPLING**

A very common type of RFID implementation is the “inductive coupling system”. This works in the HF (high - frequency) range at close distances. The system consists of a powered reader and a passive tag. The passive tag receives power from the reader by means of a scientific principle called inducting coupling. Basically, the principles states that power can be transmitted from one inductive circuit (the reader) to another inductive circuit (the un powered tag) if there is a shared magnetic field (coupling) between them. Once power is fed to the tag through this coupling, the integrated circuit in the tag can send data to the reader using the same waves of electromagnetic energy sent by the reader. Typical applications for inductive coupling RFID tags include: RFEAS (electronic article surveillance), smart cards, access control, apparel, baggage control, biometrics, item level tagging, libraries, and transport.

**TABLE-1**

Frequency area	HF 13.56 MHz
Distance	Within 120 cm vicinity
Data Carrier	Communication passive, Energy supply passive
Serial Number:	64 bit
Data capacity:	<1 kbit EEPROM

**BACKSCATTER TECHNOLOGY**

RFID tags that use back scatter technology reflect back to the reader a portion of the radio waves that reach them. Data can ride along the reflected signal through a process called modulation. Compared to the HF that is present in inductive coupling systems, the UHF (Ultra – High frequency) frequencies used here are capable of operating at a greater range. Both the communication and energy supply data carriers are passive and work similarly to two- way remote control units. The RF reader writer is transmitting the signal in which the transponder generates the necessary energy to bounce back a mirror signal which is modulated back to the RF reader- writer. Typical applications include: handling, and supply chain pallet and case tagging.

**TABLE-2**

Frequency area	UHF 860-950 MHz
Distance	Long range around 3 to 4m
Data Carrier	Communication passive, Energy supply passive
Serial Number:	96 bit
Data capacity:	<0 to 2K bytes information WORM

**PASSIVE SYSTEM**

The battery-assisted passive system relies on a battery located inside the tag as its energy supply. The communication data carrier is passive and the transponder functions similarly to a smaller “smart label” tag, but the energy supplied to the IC inside the tag is provided by the battery. Typical applications using back scatter semi-active RFID tags include: electronic toll collection.

**TABLE-3**

Frequency area	UHF 860-950 MHz, UHF 2.45 GHz
Distance	Long range around 4 to 8m
Data Carrier	Communication passive, Energy supply Active
Serial Number:	10 digit number ID

**OPERATING FREQUENCIES**

Similar to your radio tuning into different frequency channels to listen to different stations, RFID tags and readers must both be tuned to the same frequency in order to communicate (SATO Solution, 2004). The RFID tags and readers operate within several distinct frequency ranges, each of which is intended for specific application characteristics (Shepard, 2005). The most regularly used frequencies among RFID systems are low-(around 125 KHz), high-(13.56 MHz) and ultra-high frequency (860-950 MHz) Radio waves behave in a different way at different frequencies, so you must choose the best frequency for the correct application (SATO Solution, 2004). Low frequency devices (30 to 300 KHz) are typically found in passive tags and used in short range applications such as livestock identification and for antitheft systems in automobiles.

A typical device would operate between 125 and 134 KHz. High frequency devices (3-30 MHz) are used most commonly in smart card and smart label applications such as baggage tracking or small product labeling; typically systems operate in the range of 13.56 MHz. Very high frequency devices (300 MHz to 3GHz) are primarily used in highway toll – collection applications. In the United States, systems typically operate at 900MHz or 2.5GHz; in Europe, similar systems operate in the 5.8 GHz range (Shepard, 2005)

**TABLE-4**

	Low Frequency	High Frequency	Ultra High Frequency
<b>Operating Range</b>	125KHz	13.56MHz	860 – 950MHz
<b>Read Range</b>	10cm	1m	Up to 3 m
<b>Power Consumption</b>	Low	Moderate	High
<b>Data Transfer Rate</b>	Slow	Moderate	Fast
<b>Application</b>	<ul style="list-style-type: none"> <li>Point-of-Sale</li> <li>Small scale Retail application</li> </ul>	<ul style="list-style-type: none"> <li>Library systems</li> <li>Patient identification</li> </ul>	<ul style="list-style-type: none"> <li>Airline baggage tag</li> <li>Tracking of controlled drugs</li> <li>Pallets</li> <li>Cases</li> </ul>

**NETWORK**

Most RFID tags transmit a number or more, so what does a typical reader do with a typical 96-bit number in most cases, the reader sends it to a computer. What the computer does with the RFID code depends on the application. With an access-control system, the computer might look to see if the RFID number is present on a list of numbers that's allowed access to a particular door or location. If the number is present, the computer might energize a solenoid that would unlock the door. (Simson Garfinkel, 2006). An RFID network generates a continuous stream of data. Because of its sheer volume, this data needs to be handled very carefully. In the world of connected objects, the goal is to have efficient RFID networks that provide the right information to the right application at the right time (the "3 Rs") and make enterprise – management systems event-driven (Bhargava, 2007).

**NATURE OF RFID DATA**

RFID data has some similarities with other streaming data, such as stock trades, but it is still very different.

**HIGH VOLUME**

RFID interrogator read any tag within the read range, generating a huge amount of RFID events.

**NON – CONTEXTUAL**

An RFID tag is read as it events the vicinity of an RFID interrogator, and an RFID event is generated and routed over the network. At the lowest level, the event is just a tag ID, a reader ID and the time last seen. The broadcasting of each RFID event to all parties creates too much noise, however, and not every application needs a particular event. The result is more traffic on the network, and applications get bulkier and slower because they have to process every event.

**SPURIOUS READER**

Because of the wireless nature of RFID technology, RFID tags are read any time they come within the read range on an interrogator. If the receiving and shipping portals are close and a tag passes through the receiving portal, a spurious EPC read may occur at the shipping portal as well. Spurious reads can also happen due to human error. A forklift carrying RFID – tagged inventory may take a wrong path, for instance, resulting in spurious reads. From an application standpoint, such reads need to be discarded by putting business rules or appropriate checks and balances in place.

**NON TRANSACTIONAL READS**

If a forklift carrying tagged material passes through a reader's vicinity three times, three different events are generated for the same tag, even though only one is relevant to the application; this might happen if an operator were to overlook something and back up the forklift to correct the mistake. Two of the three resultant reads would be spurious and would need to be discarded, either by the network or by the applications consuming the data. The later choice would increase traffic on the RFID network. Applications need logic to sieve out such spurious events, making them bulky.

**SHORT READS**

RFID data becomes obsolete quickly as a tag moves to the next stage in a business process. If the finished product is shipped out of a factory, the complete history of that tag be moved to an archival database, or even discarded (as opposed to keeping it in the active database and increasing the cost). RFID technology leads us to a world of connected objects, enabling inventory to speak for its presence and drive processes, as opposed to processes driving inventory (Bhargava, 2007).

**CONVERTING RFID DATA INTO INFORMATION**

The volume of RFID data makes it imperative to handle that data very carefully, at the proper time and the right place in the RFID network. The main difference between data and information is that information has a context associated with it and is valuable to certain processes or applications with minimum interpretation.

Consider the example of receiving RFID – tagged goods at a receiving dock door. As an RFID interrogator receives inventory, many RFID read events are generated. Raw RFID data consists of individual RFID reads, stored as separate events in the repository. If all these EPS reads were collected and compared with an advance shipping notice (ASN), that would translate to more meaningful information. These multiple RFID reads could be stored as a single business event, called "receiving," would be transmitted to a receiving application, to send out notifications to the sender of those tagged goods. In a supply chain dealing with perishables, a business event called "state" would be very helpful, compared with just a raw RFID read. As an EPC was read in the supply chain, the RFID network could evaluate the freshness of the product using master data. If the EPC were read past the expiration date, then a business event called "state" would be stored in the RFID network. Anytime this EPC was read again in the supply chain, the RFID network would look for a state event and stop the product from going further without any additional evaluation. A single physical read may lead to multiple business events. To turn RFID data into meaningful information, one needs to convert and authenticate it into events using business rules, store business events (such as "receiving" or "state" ) and route them to the right application. (Bhargava, 2007)

**EVENT ROUTING**

An RFID network may generate high volumes of streaming RFID reads, while subscriber applications may receive RFID reads in two ways

- Every EPS (or auto – ID) read is sent to all subscribers of an RFID network.
- Subscribers receive only processed events they have requested

Comparing this with Internet Protocol (IP) networks, the first strategy is similar to a hub, where all IP packets are broadcast to every device connected to that hub. In an RFID network, this strategy creates unnecessary traffic and puts the burden on the application to sieve out the "interesting" events. In a smart RFID network, raw events are pre-processed and converted to business events before being passed to the subscriber applications. As information flows in a company's RFID network, it may change it's from and content. (Bhargava, 2007)

**APPLICATION – DRIVEN SMART RFID NETWORKS**

Data becomes valuable information if it is relevant to a recipient. In an application-driven RFID network, applications define the rules for processing RFID reads. The network layer executes those rules for organizing RFID data and then delivers quality information to its subscribers. The most common example would be an RFID network providing a location service. Anytime an application needed to know the last location of an EPC, it could query the RFID network to obtain it. The topology of RFID interrogator networks depends upon the tracking and tracing capabilities needed to achieve enhanced process efficiency, better inventory control and improved business intelligence. The middle step of converting RFID data information is vital for successful RFID network implementations, because of the sheer volume. (Bhargava, 2007)

**PRIVACY AND SECURITY CONCERNS**

In global context "privacy" is understood in different ways by different individuals, across many cultures and sectors. Privacy has traditionally been discussed along two vectors:

- As a fundamentals human right, including the right to be free from unreasonable search and seizure or intrusion.
- As protection of personal information (Simson Garfinkel, 2006).

A part from the technical concerns of RFID, there is a deeper concern brewing about the unauthorized security and invasion of privacy made possible by the widespread deployment of RFID tags (Shepard, 2005). Privacy activist have raised alarms over RFID technology. Indeed, given the fact that 915MHz tags can be read from a distance of 10 feet or more, these is serious public concern over the ability of an electronic intruder to activate the tag on an unsuspecting citizen and download the information contained in it = or worse, track the person's movements throughout the day (Shepard, 2005). Unlike most, other privacy – invasive technologies, it allows observes to learn where the subject is physically. Indeed, not only does the profile that RFID technology helps construct, contain information about where the subject is and has been, but RFID signifies travel with the subject in the physical world, conveying information to devices that otherwise wouldn't recognize her, and that can take actions based on that information.

How much should one worry about RFID privacy threats? One might say that RFID privacy problems are inconsequential because passive tags have a short read range, yet this doesn't seem reassuring. Theoretically, passive tag systems can be read a maximum distance of up to 20 meters. Moreover, readers can

effectively invade privacy even with much shorter reading ranges. One can embed an RFID reader, invisibly, in floor tiles, carpeting, or doorways. A read range of only a few feet is entirely adequate to track people coming through a door (Weinberg, 2006).

One characteristic of RFID will to some extent ameliorate the privacy threat: while strangers can collect RFID data from tags on goods or documents in a person's possession that data isn't necessarily linked to the name or other personally identifying information. In some situations through, giving rise to information privacy concerns, sensitive information is born already attached to the data subject's name or other personally identifying information. Think of credit-card purchase information. RFID tag information, by contrast, while attached to anyone's name or personally identifying information (Weinberg, 2006).

In order to understand RFID privacy threat, one need to distinguish situations in which some data collector has drawn a link between the name (and other personally identifying information) and data an RFID tag carry, from situations in which there is no such link (Bhargava, 2007). Further, accelerating the move to control RFID privacy is the drug industry, which has serious concerns about the customer protection due to Health Insurance Portability and Accountability Act (HIPAA) requirements as well as drug counterfeiting, both of which can be mitigated through the judicious use of RFID. Wal-Mart, clearly one of the most active proponents of RFID deployment, recently announced that it would require all drug manufacturers that supply prescription painkillers and other drugs subject to abuse and theft to mark the drug containers with RFID chips by April 2004 (Shepard, 2005).

Perhaps no signal application of RFID technology has generated more controversy than the implantation of RFID chips into people. Implantable RFID tags, VeriChip the most popular of them are typically small glass cylinders approximately 2 or 3 mm wide and between 1 and 1.5cm long. Inside the glass cylinder are a microchip, a coiled antenna and a capacitor for energy storage. Microchip are typically implanted under the skin of the arm (in human beings) or the back of the neck (in laboratory animals) with a 12-gauge needle. Implantable RFID chips are typically read through use of an intense magnetic field operating at radio frequency of 100 KHz to 15MHz. As it is promoted, the implanted chip is the ultimate security device: an unforgeable identification number that cannot be lost or stolen, each VeriChip has a unique serial number. The serial number is programmed into the computer that control access to a building or a set of confidential files, and if the person whose hands wave in front of a reader has an approved serial number, the computer grants access. A second application that is promoted by the VeriChip is for tracking patients and medical records, the serial number on the implanted chip can be used as an index into medical records. In October 2004, the food and Drug Administration (FDA) ruled that the serial number inside the VeriChip could be linked to healthcare information (Simson Garfinkel, 2006). RFID technology, in sum can present substantial privacy threat. It would be desirable to design RFID system so that they don't generate these threats. If the system fails to protect privacy through good technical design, these threats could be addressed through restraints on information use and sharing (Weinberg, 2006).

Ironically, even though RFID solutions are sometimes offered as an enhancement to security, the technology itself presents certain vulnerabilities. As in any enterprise system, security considerations of an RFID systems – ensuring the authenticity of the information stored on the tags themselves, securing the transmission of information between the tags and readers, and ensuring overall application and infrastructure security (Bhatt, 2005). The principal purposes of data security are twofold : to safe guard the privacy of the data that is being transmitted between communicating devices and ensure that the information travels from the transmitter to the receiver unchanged, and to verify that the sender really is who they say they are. The first of these responsibilities is handled through encryption and authentication procedures. Encryption is a technique that effectively scrambles the content of a transmitted message in such a way that it can be decoded only by someone with the appropriate key. The second is through non-repudiation is a technique that makes it possible for a receiver to be satisfied that the message claiming to have been transmitted by a specific source really did come from that source (Shepard, 2005). Physical security measures involve efforts to prevent both corruption of tag data and interception of communication between tags and readers. For instance, a malicious tag reader that is not a part of an RFID system can attempt to read tags in its vicinity. Wireless security focuses on securing the communication pipe between the readers and tags since this communication can be intercepted using wireless sniffing and spoofing devices. Any security-sensitive application must carefully weigh the risk of both interception or alteration of tag-to-reader and reader-to tag communications (Bhatt, 2005).

#### **RFID APPLICATIONS**

RFID applications fall into two principal categories. The first includes short range applications, which as the name implies, are characterized by the need for the tag and the reader to be in close proximity to one another, as in access control or secure-ID applications. The second major group of applications is the medium-to-distance application set, which allows the distance between the two to be significantly greater, as in tollbooth and some inventory – control applications (Shepard, 2005).

#### **SHORT RANGE APPLICATIONS**

##### **ACCESS CONTROL**

This typically involves the use of a credit – card –link device which is inserted in a card reader. The card contains information about the card holder and is used

##### **RFID FOR EQUIPMENT TRACKING**

Hospitals for long are facing the challenge of managing and tracking equipments and assets ranging from IV pumps, bedside equipments, surgical and other life supporting equipments. Knowledge of where any equipment is located at a given time will be of help to both the care givers and patients. In spite of well defined material processes, emergencies and unexpected events cause equipment to be misplaced, which leads to time-intensive searches, high replacements costs, poor utilization of the equipment itself and many undefined problem. RFID is known to address these problems through greater visibility of assets all along the hospital facility. Much of the manual activities carried out in the hospital can be eased by an RFID system and thus resulting in increased operational efficiency.

In the current system much of the equipment tracking and managing is done manually, each department or floor has been given certain equipments like, nebulizers, pulse oximeters, defibrillators alpha beds etc and are responsible for their availability and usage. The inventory of these equipments is done daily; condition of each if these equipments. This process is repeated every time the nurses change their shifts which means it is done at least three times a day!! Again before the nurse hands over the shift if any equipment is transferred to other department, the same has to be informed to the nurse taking over the shift.

Apart from just tracking the presence of equipments, there are certain other valuable things like crash carts, oxygen cylinders and fire extinguishers etc which might not be moved everyday but the importance of their presence in the given location assigned cannot be over emphasized. Also the workable condition of these have to be checked time to time for example, a crash cart which have important life saving drugs have to be checked and updated regularly. RFID can thus offer workable solutions leading to enhanced visibility if each equipments within the hospitals setting. Each equipment is affixed with an RFID tag which can store information such as the product code, the department to which it is allocated, and even the date it is due for any kind of maintenance. These tags are in turn read by RFID readers which can be either located at fixed positions or movable (handheld reader). The readers pass on the information they collect from the tags to a database which process this huge volume of data and present it to the end user according to the request. Each floor, ICU, and department have can have a computer with asset tracking software and connectivity to the database; can assess the location and user status of any equipment affixed with a tag. The asset tracking software has floor plans of the hospital and the list of equipments and codes. Thus when a hospital personnel logs on to the system and enters the equipment whose location has to be determined, the system looks up to the database where the readers deposit the information about each tagged equipment with their location in the hospital facility and conveys the same on the system screen. Thus RFID ensures greater visibility of equipments and help to make them available at critical times in patient care.

Also the RFID system can be programmed to raise alarms when equipments is moved out or not found at its given location such a function will be of use specifically for crash carts, fire extinguishers and oxygen cylinders. Certain RFID tags come with sensors which can detect in the equipment is in use or not or if require repairs and maintenance work and convey the same to the computer system.

The choice of the tag depend upon the kind of the equipment and their usage and movement pattern, some which move all along the facility and are shared with multiple departments will require active tags which can be read from a distance and store data up to

##### **RFID FOR PATIENT TRACKING**

Hospital environment inherently involve mobility, be it of critical medical equipment support personnel, medical staff and patients. With patients being the prime responsibility of the hospital, all its activities directly or indirectly involve patient care and with complex medical treatment procedure it has become

imperative for the hospitals to develop a fool proof system of patients tracking and identification. The hospital personnel are faced with multiple challenges of maintaining and updating patient records, managing their various treatments and diagnostic procedures etc. Knowledge of the patient's location within the hospital is another challenge as he has to undergo various procedures requiring him to move through the hospital. This particularly becomes a problem when a patient is shifted from one department another, for example a patient may be admitted in a ward, and later he might be moved to the operation theatre or ICU, thus creating a problem for the nurses and doctors to track their exact location, transfer of the medical record of the patient record is another important concern. Much of this activity is handled manually by the nurses, as depicted in the following processes.

It can be inferred that the patient's treatment and identification is a complex process involving many time-consuming and tiring activities. RFID for patient tracking is one of the most talked about applications of RFID in hospitals. The functioning of the RFID system for patient tracking is pretty much the same as for asset tracking with some variation in the amount of data stored on the tag and the connectivity of the readers to the database. A wristband embedded with an RFID tag is given to the patients, which provides storage and wireless read/write capability of patient information for positive patient identification and streamlined operation. These tags can be now read through the readers located in the hospital, and it will be more appropriate if these readers are connected to the electronic patient records. The currently used bar-coded wristband stores minimal information on it and it can be easily tampered or torn, the RFID wristband contains a tamper mechanism that will prevent from being removed, or emit a tamper signal if an attempt is made to remove it. This would be particularly helpful in case of neonatal care ward to ensure that babies go home with their rightful parents and to eliminate opportunities for baby abduction or kidnapping. For pediatrics, only staff or parents may be permitted to take infants or children from specific areas or boundaries of a ward.

Also the ability to track the patient's location will be of great advantage to the nurses who have to keep an account of many patients at a given time. A patient's location can be viewed on the computer screen with RFID patient tracking software. RFID-enabled Patient Identification and Information System uniquely provides hospitals with improved services and increased efficiencies by replacing time-consuming and error-prone manual processes with a seamless real-time wireless information system. Upon admission, patients are issued with RFID wristbands with patient's information and UHID number encoded on the RFID chip. RFID printer encodes the information on the RFID chip and hospital personnel can identify patients simply by waving their RFID readers which may be handheld pocket PCs over it and bring up detailed patient information – such as problems, past monitored information (E.G. Temperature, Blood pressure), lab results, medication list, allergy list...- from a central database over a wireless connection. Thus, it can change the way doctors and nurses interact with patients by empowering them to quickly identify a patient and, retrieve, review and update patients' medical information right from the bedside.

#### **RFID ENABLED POCKET PC WITH READER**

Medical staff do not have to return to nursing station to obtain patient data, which is of paramount importance in emergency treatment, because with the RFID-enabled patient information system medical staff can gain access to patient records more instantly. Nurses, equipped with mobile RFID terminals, can visit and identify patients with their RFID wristbands which can be scanned when the lights are turned off or through clothing and bedcovers, thereby causing no patient disruption. Upon identifying the patients, detailed patient information as well as the specific tasks and medication information for the current patient visit is retrieved and displayed from the central database over a wireless connection. When the nurse finishes her task such as giving the correct medicines or recording temperature of the patient as specified in her mobile terminal, she simply updates the corresponding screen and saves the information to the central database. These will be particularly helpful in case of patients which have to be transferred from one department to another like a patient from the ward taken to the operation theatre for surgery, the nurse can feed in the patient's brief history and also the reports of all the pre-operative tests and procedures, thus making the job of the OT personnel simple and error-free. The amount of immediately available information at each stage of what happened in the previous step; provide opportunity as to what will be next step.

Traditionally, while visiting patients, nurses take notes on paper and re-enter them using a computer at nursing station. RFID and wireless-enabled mobile terminals replace this error-prone and labor-intensive paper-bound system with a real-time, new-generation wireless system, thus doctors and nurses can monitor conditions of patients and treatment activities in real-time, equipped with RFID-enabled large tablet-PCs, they can quickly identify a patient, retrieve comprehensive medical records, review patient's recovery status, and check past medical logs which have been recorded by nurses via their RFID mobile terminals. It completely eliminates the chance of patient being given a drug to which he/she is allergic. The patient's medical histories stored in the database stored in the database will quickly alert if the patient is given any wrong medication.

#### **PATIENT'S DETAILS RETRIEVED FROM THE RFID ENABLED WRISTBAND**

The benefits that stem from RFID-enabled patient identification and tracking:

- Real-time and accurate medical data platform
- Prevented patient identify mix-up and medication errors
- Increased patient satisfaction
- Fast patient data gathering in emergency cases
- Seamless identification and matching of specimens or transfusion to correct patient
- Reduced surgical site errors-right patient, Right surgical site, Right procedure
- Increased productivity and enhanced healthcare workflow

Apart from patient and asset tracking RFID can be used for an array of other functions like inventory management, blood group verification etc. Some of the many benefits of RFID are:

- Point of care: Patient identification, medication delivery etc.
- People tracking: Patient tracking, staff tracking-real time location, boundary checking
- Process-Centric: Operating Room/Intensive care Unit Management, cleaning/disinfection/sterilization process
- Asset tracking: Medical equipment/Instruments, pharmaceutical inventory, blood product management
- Making newborns more secure
- Reducing drug and blood administration errors

#### **COSTS OF IMPLEMENTING RFID**

RFID undoubtedly offers huge benefits to hospitals, but like any other new technology it comes with a price. Through the potential ROI on RFID is becoming clearer in some applications, the cost of implementation nevertheless remains a major barrier to wider adoption of the technology. The cost of the tags (which would be required in large numbers) is one of the major causes of concern in implementation of RFID; also the cost of reader and the middleware for the integration of the software has to be considered. There are tags available for about 28 cents, but a question should not be ignored is "do they serve our purpose?" yes, they might in some areas, but there are other areas which require active tags with greater reading range and read-write capability and higher performance, the cost of which range from \$20-\$50. Passive tags are most popular where they serve the purpose of identification and security of the item it is affixed to, but here we are talking about an RFID system which would help us locate a critical medical equipment in a hospital facility of about three floors, of 40,000sqft, indicate if it is in use and store information about the product, naturally all this would make the price of the tag go up.

Also the tag of the price is negotiable depending on the number of tags purchased, for example Gillette Inc who ordered about 500 million tags from Alein Technology Corp said it costs them less than 10 cents per tag due to the economies of scale; however it would cost 40 cents for smaller orders. However a hospital of 500 beds has equipments running into thousands and it is not a viable proposition to tag all of them with a high price tag of about \$50, so we make a distinction in equipments which would require this and which can do away with it. Based on the observation in the hospital and discussions with manager from the biomedical department, a conclusion was made that at present it would suffice if the location of some critical equipments like ventilators, ultrasounds, ECHO machines and portable x-ray machine can be tracked which will come to a total of about 50. These equipments move around the hospitals and hence it would be beneficial if the knowledge of their location and use status is available at all times.

Other equipments like alpha beds, pulse oximeters, nebulizers, and defibrillators which are distributed to respective departments, a lower price tag which come for an average of \$1-\$2 would serve the purpose of ensuring that presence of equipment at its assigned place. The study involved, learning of the various hospitals process and working of departments like bio medicals, maintenance, nursing, ICU's and wards and it has been noticed all though they are not too many obvious loop holes in the current system of working still a lot needs to be done in order to ensure a smooth, easy and error free system for working. Due to the dependence on manual work there is always a scope for error and unpleasant experience for both patients and staff. In order to live up to the mission of providing quality healthcare to patients, hospitals need to continuously upgrade and adapt to newer technologies offering effective solution over the traditional method of doing things. One such technology is RFID system which provides tangible and intangible benefits. Especially to hospitals, enabling them to quickly identify and locate equipments or personnel. Although the understanding of RFID is more among retailers, distributors and manufacturers, many hospitals are beginning to adopt RFID, in view of the enormous benefits it offers. The amount of paper based and manual work revolved around patient care, consume a lot of time of the nurses and other hospital personnel which could be better utilized in patient care. RFID provides not only tangible benefits to the hospital by helping it better manage its equipments, with increased an intelligent utilization and preventing it from any kind of theft and pilferage, but also intangible benefits of patient and employee satisfaction. It reduces the work load of nurses, by helping them in correct identification of patients and streamlines their treatment process, the RFID tag which store data will help in quick retrieval of vital information about the patient as compared to the current system, where each page of the patient's record have to be scanned.

## CONCLUSION

No doubt RFID is a powerful innovative technology one should not get caught in the bills and whistles associated with it and rather look to tap its real potential. In order for RFID to deliver its real benefit the following recommendations are made:

- The hospital should clearly lay down what it seeks to benefit from the technology, the problem it wants to address; otherwise it will have a technology which is searching for problems to be solved. Here the main problem identified was to make available equipment at a given time without much delay and the patient care process involved a lot of running around by the nurses. Hence an RFID which will solve this has to be chosen.
- End user's (nurses, doctors, materials and bio medical management) operation is very important. As the level of awareness among hospital staff about RFID was found to be very low, it is extremely important to educate them about the working of the technology, how it can their day to day problems etc. their opinions and suggestion should not be overlooked in the implementation. It is advisable for the hospital to have a pilot test done to understand the practicality of the technology before full fledged tagging.
- Patients should also be involved. Their opinion a views should be kept in mind in choosing the shape and form of the tag cannot be ignored.
- The expected ROI from the investment should be calculated based on the cost annually in procuring equipments and maintenance of the existing ones, thefts, malfunctions etc. a clear ROI case can be established by comparing the cost associated with procuring additional biomedical devices versus saving money and time by knowing where critical assets are when they are needed most.
- An analysis into the existing IT structure should be done and consider the changes needed to support the RFID – items like cabling, cost of software its ability to merge with the current system should be carefully considered.
- Ultimately working with an unbiased and experienced vendor will make all the difference in the success of the technology. A vendor that has proficiency in the RF domain and offers professional services that can strengthen the hospital's resources with specialized RF expertise, while maximizing the value of the investment should be selected. It should understand the hospital's requirements, the frequency selected for the tags and readers should not interfere with the working of the devices in the hospitals. The technology selected should be dictated by the requirements and not the other way around.

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**A COMPARATIVE STUDY OF CORPORATE GOVERNANCE DISCLOSURE PRACTICE OF ELECON AND GMM**

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**ABSTRACT**

*This study provides focus on the practice followed by two engineering units (ELECON & GMM) of vitthal udhyognagar regarding corporate governance disclosure. The rationale of the study is that, to understand the corporate governance disclosure practice is too much important so far as investor's point of view is concerned. This study attempts to analyze the corporate disclosure practice and to identify which one is stronger so far as their economic condition is concerned during the period of study.*

**KEYWORDS**

Corporate governance, Elcon, GMM.

**INTRODUCTION**

The present epoch of globalization and liberalization followed by divesting corporate failure has led business enterprises to observe transparency and fairness in managing business activities and to work in socially responsible manner for which corporate governance practice is a quit essential need.

Adherence to better corporate governance has become the cry of the day to protect the diversified interests of different stakeholders and to augment a flourishing corporate ambience through the conduct of social responsibility performance.

The adequacy and the quality of corporate governance shape the growth and future of any capital market and economy.

Parties involved in corporate governance include are CEO, board of directors, management and shareholders etc. They have to give a fair view of business and provide proper information to the owners of the company.

**ELECON**

ELECON Established in 1951 as Pioneer manufacture of material handling equipment in India. During last four decades, ELECON has designed and implemented several landmark projects in India as well as abroad.

The founder of ELECON is Late Shri. B. I. Patel.

The ELECON was incorporated on the 11th day of January, 1960 as a Private company limited and converted into a public company on 28th November, 1961.

**GMM**

GMM Pfadler Limited, Formerly Gujarat Machinery manufacturers Limited, was incorporated in India on November 17, 1962 by Late Shri Jethabhai Patel as a private company and converted into a public company on 9th September 1963.

The company's principal activity is the manufacture of corrosion resistant glass lined equipment used primarily in chemical, pharmaceutical and allied industries.

**RESEARCH METHODOLOGY**

The present study is based on secondary data. The sample consists of two industrial units from Indian engineering industry, which are located on the campus of Vitthal Udyognagar. The easy access of data is one of the reasons for selecting these companies. The statistical analysis have been undertaken by mean and 't'-test. The study period is five years form 2003-04 to 2007-08. The objective of the study is to examine the corporate governance disclosure practices in selected engineering units and to study the financial performance of the selected engineering units.

**HYPOTHESIS OF THE STUDY**

Ho= There is significance difference between ratios relating to profitability of Elecon and GMM.

H1= There is no significance difference between ratios relating to profitability of Elecon and GMM

**STATISTICAL ANALYSIS AND INTERPRETATION**

**DESCRIPTIVE STATISTICS**

Ratios	Elecon				GMM			
	N	Mean	Std. Deviation	Kolmogorov-Smirnov Z	N	Mean	Std. Deviation	Kolmogorov-Smirnov Z
GROSS_PROFIT	5	9.53	4.94		0.514	5	18.02	
NET_PROFIT	5	5.90	3.28	0.515	5	9.00	4.23	0.87
ROCE	5	11.48	7.70	0.529	5	22.87	5.22	0.38
DEBT_EQUITY_RATIO	5	1.52	0.37	0.26	5	0.10	0.07	0.53
PROPRIETARY_RATIO	5	0.69	0.19	0.45	5	0.81	0.11	0.50
FIXED_ASSETS_RATIO	5	2.14	0.27	0.788	5	2.53	0.35	0.61
EPS	5	19.09	17.76	0.737	5	21.59	13.47	0.43
DPS	5	2.37	1.76	0.649	5	6.94	4.27	0.52

Independent Samples Test									
Ratio	Levene's Test for Equality of Variances	Sig.	t-test for Equality of Means	df	Sig. 2tailed	Mean Difference	Std. Error Difference	95% Confidence level of the Difference	
	F		t					Upper	Lower
GROSS_PROFIT	2.30	0.17	-3.56	8	0.007	-8.484	2.39	-13.99	-2.98
NET_PROFIT	0.05	0.83	-1.30	8	0.231	-3.1	2.39	-8.61	2.41
ROCE	1.75	0.22	-2.74	8	0.026	-11.386	4.16	-20.98	-1.79
DEBT_EQUITY_RATIO	5.94	0.04	8.52	8	0.000	1.424	0.17	1.04	1.81
PROPRIETARY_RATIO	1.42	0.27	-1.23	8	0.253	-0.12	0.10	-0.34	0.10
FIXED_ASSETS_RATIO	0.19	0.68	-1.98	8	0.084	-0.39	0.20	-0.85	0.07
EPS	0.11	0.75	-0.25	8	0.808	-2.502	9.97	-25.49	20.49
DPS	5.69	0.04	-2.21	8	0.058	-4.566	2.07	-9.33	0.20

- The independence samples 't' tests was conducted to check the significance level of the different ratio at 95% Confidence level.
- The significance level of at the 95% confidence level is more than 0.05 for Net Profit Ratio, Proprietary Ratio EPS and DPS indicate that there is no significance difference between ratios of Elecon and GMM for above ratios.
- But for other ratios like Gross Profit Ratio, ROCE, Debt-equity Ratio and Fixed Assets Ratio there is significant difference between Elecon and GMM.
- So, we accept the null hypothesis for Net Profit Ratio, Proprietary Ratio EPS and DPS and reject the alternative hypothesis for Gross Profit Ratio, ROCE, Debt-equity Ratio and Fixed Assets Ratio.

**INFERENCE**

**GROSS PROFIT RATIO**

The percentage of gross profit ratio was comparatively higher for GMM than ELECON during the period under study. The average gross profit of GMM is 18.02 per cent which is more than average gross profit ratio of ELECON, but comparison of intra firm suggests higher is better. In case of ELECON and GMM, This ratio is higher for GMM.

**NET PROFIT RATIO**

Net profit margin is indicator of overall profitability and efficiency of the business. It reveals that the net profit Ratio was higher for GMM with compared to ELECON. The average ratio was 5.09 per cent for ELECON and 9.00 per cent for GMM during the study period. It indicates that overall profitability and efficiency of GMM was good. For ELECON it can be said that return to the owners were not adequate.

**RETURN ON CAPITAL EMPLOYED**

The average return on capital employed of GMM is twice to the ELECON i.e. 22.87 per cent, while it was 11.48 per cent for the ELECON. The results indicate that GMM has shown better performance than ELECON. It finds that the performance of GMM was better than ELECON during the period under study.

**DEBT- EQUITY RATIO**



Debt-Equity Ratio shows long term solvency of a company. In case of ELECON & GMM the ratio was good for ELECON. The average of the ratio was 1.52 for ELECON and 0.10 for GMM. It means for ELECON claims of outsider are greater than GMM.

**PROPRIETARY RATIO**

This ratio highlights the general financial strength of the firm. The average for the ratio was 0.69 for ELECON and 0.81 for GMM. The higher ratio for GMM can be taken to mean that proportion of shareholders funds in total assets used in the business is high and position of creditors were more secured. For ELECON the average was nearer to satisfactory level 0.50.

**FIXED ASSETS RATIO**

Throughout the period used study of both the companies fixed assets ratio is more than one it means part of long term capital is always available for working capital, because part of working capital is permanently blocked in minimum stock, debtors etc. It is realized that the fixed asset, ratio was higher for GMM with compared to ELECON during the study period

**EARNING PER SHARE (EPS)**

EPS of ELECON and GMM was increased year after year till 2005-06 and declined in 2006-07 and 2007-08, there was no significant different between the ratio of ELECON and GMM. The average of EPS for ELECON was 19.09 while for GMM it was 21.59. Thus it can be said that GMM EPS was good than ELECON.

**DIVIDEND PER SHARE (DPS)**

Average DPS of GMM was higher than ELECON. The average DPS for ELECON was 2.37 while for GMM it was 6.94. There was wide gap between this two. The result of 't' test also interpret the same result i.e. there was significance difference between DPS of ELECON and GMM

**CONCLUSION**

An examination of the above stated paragraphs it reveals that the ELECON disclose more items of corporate governance with compared to GMM, but the financial performance of GMM was better than ELECON during the period of study.

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**A STUDY ON WORKING CAPITAL MANAGEMENT IN TAMILNADU SUGAR CORPORATION LIMITED (TASCO)**

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**ABSTRACT**

*Indian sugar industry, second agro-based processing industry after the cotton textile industry in India, has a lion's share in accelerating industrialization process and bringing socio economic changes in under developed rural areas. Sugar industry covers around 7.5% of total rural population and provides employment to 5 lakhs rural people. About 4.5 crore farmers are engaged in sugar cane cultivation in India. Sugar mills (co-operative, private and public sector) have been instrumental in initiating a number of entrepreneurial activities of rural India. Tamilnadu public sector sugar mills incurred losses because its two mills are under the heavy interest burden on funds borrowed from the government and other public sector undertakings. Sector sugar mills could reduce the working expenditure, the sugar mills should also be allowed to diversify their operations to increase the revenues.*

**KEYWORDS**

Capital management, Sugar industry, TASCO.

**INTRODUCTION**

Sugar industry in recent times has acquired great significance in India. It has been developing by leaps and bounds. The sugar industry is the second largest agro-based industry in India located in rural areas. The effective administration of working capital helps in understanding the survival and growth of sugar industry. Apart from this, many a times, problem arises as to how effectively the working capital be managed to obtain the results in terms of higher return on investment. Very often paucity of working capital is considered as the potent factor for the failure of the unit. About 50 million farmers, their dependants and a large number of agricultural labourers are involved in sugarcane cultivation, harvesting and ancillary activities, and constituting 7.5 per cent of the rural population. Besides, the industry provides employment to about 2 million skilled and semi skilled workers and others employed in ancillary activities are mostly from rural areas. India with around 4.25 million hectares of land on sugar cane produces around, 280 million tonnes of sugarcane. The production of sugar has witnessed a dramatic increase to around 27.00 million tonnes during 2006-2007 against 1.10 million tonnes during 1950-51. When we feel proud of the improvement in the production of sugar over the years, we are pained to note that this sector has not been nourished on sound lines.

**DEVELOPMENT OF SUGAR INDUSTRY IN INDIA**

The Portuguese first cultivated sugarcane in Brazil in 1532. Most cane-sugar from countries with warm climates, such as Brazil, India, China, Thailand, Mexico and Australia, the top Sugar producing countries in the world. Brazil over shadows most countries, with roughly 30 million tonnes of cane sugar produced in 2006, while India produced 21 million, China 11 million and Thailand and Mexico roughly 5 million each.

Out of 453 sugar mills in the county, 252 are in cooperative sector, 134 in the private sector and 67 are in the public sector. Besides 136 units in the private sector are in various stages of implementation. A few such units are under implementation in the cooperative sector as well. But no new units have been proposed in the public sector.

**DEVELOPMENT OF SUGAR INDUSTRY IN TAMIL NADU**

Sugar industry in Tamil Nadu is an important agro-based industry. It plays a vital role in the Economic development of the state and particularly in rural areas. The Sugar industry provides large scale direct employment of several thousands and indirect employment to several lakhs of farmers and agricultural labourers in the rural areas who are involved in cultivation of cane harvesting, transport and other services. There are 38 sugar mills in Tamil Nadu of which 16 are in co-operations sector and 19 in the private sector. Apart from this, the Tamil Nadu Sugar Co-operative Limited, a public sector company set up in 1974 under the Companies Act is running three public sector sugar mills namely, Arignar Anna Sugar Mills, Perambalur Sugar Mills and Madura Sugar Mills. The total crushing capacity of the 38 factories in Tamil Nadu is 1,04,550 tonnes crushing per day (TCD) and about 180 lakh tonnes per annum. Out of 16 co-operative Sugar Mills, two mills viz., Madurantakam Co-Operative Sugar Mills Ltd., and National Co-Operative Sugar Mills Ltd., are not working from the season 2001-2002 and 2002-2003 respectively. Madura sugar mill in public sector is not working from 2002-2003 season and Arunachalam Sugar Mill private sector is not working from 2003-2004 seasons.

**STATEMENT OF THE PROBLEM**

India ranks first in sugar consumption and second in sugar production in world but its share in global sugar trade is below 3%. Indian sugar industry has been facing raw material and resources as well as infrastructural problems. Globalization has brought a number of opportunities but at the same time posed certain challenges before sugar industry. Most of the sugar units utilize production capacity below 50%. Low capacities utilization and inadequacy of raw material led to closer of 100 sugar mills in India. Mounting losses and decreasing net worth of sugar mills have been responsible for sickness of sugar industry. Sickness in sugar industry has reached to an alarming proportion. Indian sugar industry has been cash striven for decades. Low cash inflow due to piling stocks leads to serious financial crisis and finally to closing sugar mills. Sugar prices have been a political issue and rather than economical issue many a time it worsens economy of sugar mills.

Tamil Nadu is one of the major producers of sugar in India next to Uttarpradesh and Maharashtra. Though the present scenario in Indian and global sugar industry is looks very good, returns gained by India Sugar Mills are very low compared with international level. The profits earned by sugar mill in Brazil, Thailand are very high due to the operating environment. But most of the sugar mills in India particularly in Tamil Nadu are incurring losses due to many reasons. Some of the reasons are increase in cost involved during production and recovery of sugar per tonne sugar cane crushed also not up to the international level.

The sugar industry in India has certain peculiar characteristics than other manufacturing industry. As far as the industry concerned the sugar mills have to go on purchasing sugar cane during session, crush and produce user only to stock it and waiting for the government orders to release for sale throughout the year bit by bit. The sales function in sugar industry differs from other industries. The release of sugar is fully under the control of union government currently sugar mills are required to surrender 10 percent of the sugar produced by them as levy for public distribution system. The remaining 90% free sale sugar can be sold in the open market, but even here it is the government (the sugar Directorate) that decides the quantum of sugar to be off loaded every month. Accordingly, mills are released a monthly Free Sale Quota (FSQ) beyond which they cannot sell in the open market.

In spite of this success the sugar industry in Tamilnadu is facing various problems and has become a centre of criticism due to several reasons. It has been common observations that sugar corporation limited in the state are lagging behind in management efficiency. They are not able to control their cost. Madura Sugars one of the mills under TASCO limited are carrying huge losses. The experts in this fields attributes these losses to several factors like short supply to

quality sugarcane, under utilization of capacity, low sugar recovery rate, shortage of funds and inefficient management. It should be noted that working capital deficit is stated as the common problem of all mills. The fact is adequate working capital finance is provided to every public sector sugar mills. State government do not hesitate in providing finance consider the role of sugar mills in rural economic development. Inspite of encouraging policy and strong financial support of the state government, public sector sugar mills in the state over carrying huge losses since several years. This implies that the problem lies in management. This reveals that not the shortage but the mismanagement of working capital is the real problem that led public sector sugar mills to losses.

### OBJECTIVES OF THE STUDY

The present study is designed to examine management of working capital in Sugar Corporation Limited in Tamil Nadu State. Following are the specific objectives of the study.

1. To examine the working capital trends and liquidity of working capital in Sugar Corporation Limited in Tamil Nadu state.
2. To evaluate inventory management in sugar corporation limited in Tamil Nadu state.
3. To analyse receivable management in sugar corporation limited in Tamil Nadu.
4. To examine the cash management practice, in Sugar Corporation Limited in Tamil Nadu state.

### PERIOD OF THE STUDY

To be more precise in analysis it was necessary to define the period of study. The study period is taken as ten years from 1997-98 to 2006-2007. These are the financial years, commencing 1<sup>st</sup> April and ending 31<sup>st</sup> March every year. The period of ten years is quite enough to determine the trend of working capital and to examine the problem of management working of capital.

### SAMPLE DESIGN

The present study pertains to only public sector sugar mills in Tamil Nadu state. Three public sector mills are selected for study are Arignar Anna Sugar Mill, Kurungulam, Thanjavur District, Madura Sugar Mill, Pandiarajapuram, Madurai District and Jawaharlal Nehru Sugar Mill, Erayur, Perambalur District, All public sector sugar mills are continuously in operation during the study period but, Madura Sugar Mill did not operate from 2002-2003 for reducing cane registration and some administration problems. Arignar Anna sugar Mill have crushing capacity 2500 TCD per day, Madura sugar Mill have crushing capacity 1250 TCD per day and Perambalur Sugar Mill have crushing capacity 3000 TCD per day.

### RESEARCH METHODOLOGY

The present study, management of working capital in Tamil Nadu Sugar Corporation Limited is based on secondary data. Three public sector sugar mills are selected as sample for the study. The data was collected from sample sugar mills mainly through annual reports for the study period of ten years i.e. from 1997-98 to 2006-07. Some data were also collected from the office. Data related to sugar mills are also collected from the books, journals and periodicals, such as India sugar, cooperative sugar and annual reports of Tamil Nadu Sugar Corporation Limited.

The data so collected were tabulated and comparisons were made on the basis of growth indices, average and percentage. Some ratios are used for analysis of working capital. The ratios mainly used are working capital, turnover ratio, current ratio, quick ratio, inventory turnover ratio and receivable turnover ratio.

The collected data is grouped, processed and presented in tables, diagrams and charts. The statistical tool like the simple average, percentage, correlation and 't' test are used to interpret the results of analysis and substantiate and establishes certain truth and facts.

### SCOPE AND LIMITATIONS OF THE STUDY

While considering research on a particular area of the vast field of financial management, a researcher has to face certain difficulties which put limitation on research work. Following are the limitations of the study.

1. The study is limited only public sector sugar mills in Tamil Nadu State. Sugar mills other than public sectors are not considered.
2. The public sector sugar mills chosen are those which were in operation during the study period. The mills which were not in regular operation during the study period were not considered.
3. The analysis is based on the data published in annual reports of the public sector sugar mills.

### WORKING CAPITAL TURN OVER RATIO ANALYSIS

Working capital turnover ratio is an important indicator of efficiency of working capital. It shows the movement of working capital. Working capital turnover ratios of the sugar mills studied, year wise, for the study period of ten years are shown in Table 1. Generally the formula used to compute this ratio is net sales divided by net working capital. Madura sugar mill is a negative working capital. That means current liabilities exceed current assets. Working capital turnover ratio is calculated by following formula.

$$\text{Working capital turnover ratio} = \frac{\text{Net Sales}}{\text{Gross Working Capital}}$$

TABLE 1: WORKING CAPITAL TURNOVER RATIO IN TASCO

Years	Arignar Anna Sugar Mill	Madura Sugars	Perambalur Sugar mill	Sugar Mills Average
1997-98	1.90	0.71	1.80	1.47
1998-99	1.68	0.68	1.59	1.31
1999-00	1.05	1.03	1.10	1.06
2000-01	0.63	0.92	0.91	0.82
2001-02	1.03	0.56	1.58	1.05
2002-03	1.05	No Operation	1.37	1.27
2003-04	0.85	No Operation	0.76	0.80
2004-05	1.24	No Operation	0.89	1.06
2005-06	1.27	No Operation	1.34	1.30
2006-07	1.71	No Operation	1.72	1.71
Average	1.24	0.78	1.30	1.18

Source: Annual Reports from TASCO

### MILL-WISE DISCUSSION OF WORKING CAPITAL TURNOVER RATIO

The interpretation of working capital turnover ratio can be made like higher the ratio higher the gross working capital turn over – higher the efficiency of working capital; and lower the ratio – lower the turnover – lower the efficiency of working capital. When interpretation is applied to the ratio of the mills

studied, it seems that the efficiency of working capital management of three sugar mills studied is very poor. This ratio is recommended as sales, 2 times of working capital (or) current assets. All mills have less than 2 times or working capital.

In Arignar Anna sugar mill the average working capital turnover ratio observed was 1.24, which is significantly lower than the standard of 2 times of sales. It was found that sales of mill registered a fluctuating trend during the study period. The same trend observed was in case of current assets. The lowest working capital turnover ratio was recorded 0.63 in 2000-01 due to considerable lower sales and highest ratio was registered 1.90 in 1997-98, due to higher amount of sales.

It is clear that the mill has maintained huge stock of finished goods blocking heavy amount. Thus higher portion of working capital as compared to sales shows the poor performance of the mill. It may be suggested that the mill must try to enhance the sales volume reducing the investment particularly in sugar stock.

Table 1 indicates that the average working capital turnover ratio of Madura Sugar mill 0.78:1, is significantly lower than the standard of 2 times of sales. The mill did not operate from 2002-03 not operate for reducing cane registration and some administration problem. The lowest ratio ascertained was 0.56 in 2001-02, due to lower sales volume. The highest ratio appeared was 1.03 in 1999-2000, which is slightly less than the standard ratio.

The average working capital turnover ratio of Perambalur sugar mill 1:30:1, is lower than the standard ratio. The lowest ratio was recorded 0.76 in 2003-04, due to little sales volume. The highest ratio was recorded 1:80:1 in 1997-98, which is slightly less than the standard ratio. It indicates good financial position of the mill.

It can be seen from the table 1 that the ratios are minimum in the year 2003-04 and maximum in the year 2006-07. The industry average of 2003-04 was 0.80 and that 2006-07 was 1.71. It can be seen from the same table that profit making mill have higher ratio and loss making mill have lower ratio. The general trends of working capital turnover ratio seem varied every year. No continuous increase or decrease were shown by any mills. There are ups and downs in the ratios over all the years in all the sugar mills studied

## SUGGESTIONS

The present study finds that public sector sugar mills under study are running in losses. Financial position of the sugar mills found very weak. The public sector sugar mills are facing various problems and has become a centre of criticism due to several reasons. It has been a common observation that public sector sugar mills are lagging behind in managerial efficiency. They are unable to control their cost. Hence, Tamil Nadu public sector sugar mills are carrying huge losses.

Considering the significant role of public sector sugar mills in the economic life of rural Tamilnadu, the present study recommends the following suggestions to improve the financial position of sugar mills and efficient control over working capital.

### 1. FINANCIAL MANAGEMENT

Public sector sugar mills have no permanent internal sources of working capital finance except a small amount of refundable and non refundable deposits and reserves. Hence, they have to depend upon the bank finance for working capital every year. Internal sources like, deposits, may be credited for sound financial position. This type of deposits and funds may be credited through the cane bills payable to the cane growers.

### 2. SALE OF SUGAR

It is observed that the government control over the sale of sugar slows down the speed of sales. Hence three mills have to hold huge stock of its production. This lengthens the duration of operating cycle which results in cash shortage. To overcome this problem the study recommends the mill should formulate very suitable sales policies and government should help the mills in augmenting the sales volume. Government should lift the levy quota in time and release the significant free sale quota to reduce the huge stock of sugar. It will help in uplifting the mills in all respect.

### 3. CONTROL RECEIVABLES

Regarding control over advances, it is found that strict control over receivables are not exercised by the mills. There is much interference of directors in policy making and disbursement of advances. But they show less interest in recovery of out standing advances. Sugar mills are lagging behind in formulating return-oriented policies, regarding receivables. So there is need to formulate return-oriented, effective and strict policy regarding receivables, so as to recover the loans and advances in time.

### 4. PROPER CASH MANAGEMENT

The nature of cash management in public sector sugar mills is entirely different from other industries. Government and bank regulate cash inflows and cash outflows of sugar mills. The mills always feel short of cash and their current liabilities exceeded current assets throughout the study period.

As cash inflows and cash outflows are regulated by government, adequate cash was not left in the hands of management of public sector sugar mills. To improve the liquidity position of public sector sugar mills, cash inflows and outflows are to be managed properly.

The sugar mills have maintained huge stock of sugar. Therefore, government should release appropriate quota, under free sale, to improve the cash position of the sugar mills.

### 5. NEED FOR MORE LIQUIDITY

Liquidity is the most alarming problem in public sector sugar mills. It is found that there is lack of liquidity in most of the sugar mills studied. The current assets are not found sufficient for the payment of current liabilities. The main reason for this is the government restrictions on sale of sugar. Another one is, all the public sector sugar mills are seasonal and this also affects the liquidity position of the mills. The sugar mills must pay the amount of the cane price to sugarcane grower in proper time. If mills could not pay the cane price in time, they do not believe in public sector sugar mills.

### 6. QUALITY MANAGEMENT SYSTEM

These regulations impact many aspects of operations, including cane production, construction of new equipments and facilities, workers safety, and the environment. If rationally conceived and implemented, such ordnances are desirable for the industry to be good citizen.

### 7. IMPROVE PROFITABILITY

Public sector sugar mills should reduce the working expenditure, the sugar units should also be allowed to diversify their operations to increase the revenue. By-products of the sugar mills viz, baggage, molasses and press mud should be gainfully utilized for increasing the revenue of the mills. At present many sugar mills home set up baggage based co-generation units for generating electricity.

### 8. EXPERT MANAGEMENT PERSONNEL

The very success of these public sector sugar mills depends upon the competence and caliber of the officers who are working management as well as technical level. The study indicates that almost all the mills have registered net losses around 5 to 8 years over period of time. It shows that there is a need to have a competent and efficient staffs at managerial level. The successful working of these mills can only be achieved if there is an expert management personnel.

## CONCLUSION

Indian sugar industry, second agro-based processing industry after the cotton textile industry in India, has a lion's share in accelerating industrialization process and bringing socio economic changes in under developed rural areas. Sugar industry covers around 7.5% of total rural population and provide employment to 5 lakhs rural people. About 4.5 crore farmers are engaged in sugar cane cultivation in India. Sugar mills (co-operative, private and public sector) have been instrumental in initiating a number entrepreneurial activities of rural India.

Tamilnadu public sector sugar mills incurred losses for the five years ended 31<sup>st</sup> March 2005 and their paid up capital as on that date had been completely eroded by the cumulative losses. Arignar Anna sugar mill has incurred a loss of Rs. 6.04 crores (provisional) in 2004-05, while Perambalur sugar mill incurred a loss of Rs. 5.80 crores. The main reason for the losses incurred by these two mills was the heavy interest burden on funds borrowed from the government and other public sector undertakings. These borrowed funds were utilized as working capital ie. to make payment for sugar cane procurement.

Public sector sugar mills could reduce the working expenditure, the sugar mills should also be allowed to diversify their operations to increase the revenues. By products of the sugar mill viz., baggage, molasses and press mud, should be gainfully utilized for increasing the revenue of the mills. At present many sugar mills

have set up baggage based co-generation unit for generating electricity. After meeting their needs, the mills supply the excess power to the TNEB grid. There is scope for increasing the power production thereby adding revenue to the mills.

In the era of globalization, sugar industry needs more competitive edge which can be given by way of modernization, enhancing productivity and manufacturing excellent quality sugar at competitive price. It needs quality management at every level of activity to enhance its performance. The need of the hour is to liberalize industry from clutches of unprofessional people. Most of the sugar mills do not have by-products utilization plants. Projects based on baggage and molasses should be initiated. Ethanol, alcohol and paper projects have tremendous scope for development in India. In future 10-15% ethanol may be allowed to be blended with petrol. Baggage based power NABARD should provide adequate timely re-finance to these projects at concessional interest rates. Sugarcane price should be fixed on the basis of sugar recovery. Attention is to be given on manufacturing quality sugar as per international standards of competitive prices. Tamil Nadu public sector sugar mills could be run successfully. i.e they diversify their operation without sticking to sugar production alone.

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## PERFORMANCE EVALUATION AND BARRIERS OF CRM PRACTICES IN HIGHER EDUCATION

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### ABSTRACT

*In today's scenario, most of the higher educational institutions want to compete with others. To compete with other institutions, some institutions are getting autonomous status, some of them are trying to get ISO certification, others are looking for accreditation status, deemed university status, and some others are tied-up with multinational companies and so on. The institutions, which are not ready to compete, will surely become as "Void and Vanish". It is essential that academic institutions have to concentrate about some strategies, techniques, or methods by which they can become "Brand". One such strategy which the higher educational institutes can follow is customer relationship management (CRM). At present academic institutions are eager to maintain a long-term relationship with the students rather than a relation which is related only to their course duration. Customer relationship management is all about satisfying and retaining the customer by providing the perquisites he/she desires for. Academic institutions are themselves not different from any other organizations. Whether they are government owned or self-financed private institutions; almost all educational institutions focus on not only to impart state-of-the-art education to their students, but also have to maintain relations with their working staff, administrators, companies, vendors and with their primary customers - students. CRM plays an increasingly important role in maintaining such relationships in these organizations. In the light of various benefits which CRM offers, the author has made an effort to evaluate the performance of CRM programme along with the barriers faced in the implementation process.*

### KEYWORDS

Benefits, Barriers, Customer, Higher education, Relationship.

### INTRODUCTION – CRM

Customer Relationship Management is a comprehensive strategy and process of acquiring, retaining, and partnering with selective customers to create superior value for the company and the customer. It involves the integration of marketing, sales, customer service, and the supply-chain functions of the organization to achieve greater efficiencies and effectiveness in delivering customer value. Dwyer, Schurr, and Oh (1987) have characterized such cooperative relationships as being interdependent and long-term orientated rather than being concerned with short-term discrete transactions. The long-term orientation is often emphasized because it is believed that marketing actors will not engage in opportunistic behavior if they have a long-term orientation and that such relationships will be anchored in mutual gains and cooperation (Ganesan, 1994). Another important facet of CRM is "customer selectivity." As several research studies have shown, not all customers are equally profitable for an individual company (Storbacka, 2000). The company therefore must be selective in tailoring its program and marketing efforts by segmenting and selecting appropriate customers for individual marketing programs. In some cases, the "outsourcing of some customers" could be called for so that a company allocates its resources to those customers it can serve the best in order to create mutual value. However, the objective of a company is not really to prune its customer base but to identify the programs and methods that would be the most profitable as it creates value for the firm and the customer.

As is implicit in the above definition, the purpose of CRM is to improve marketing productivity. Marketing productivity is achieved by increasing marketing efficiency and by enhancing marketing effectiveness (Sheth & Sisodia, 1995). In CRM, marketing efficiency is achieved because cooperative and collaborative processes help in reducing transaction costs and overall development costs for the company. Two important processes of CRM include proactive customer business development and building partnering relationships with the most important customers. These lead to superior mutual value creation. The core theme of all CRM and relationship marketing perspectives is its focus on a cooperative and collaborative relationship between the firm and its customers, and/or other marketing actors.

### CRM AND HIGHER EDUCATION

In today's competitive academic environment where students have many options available to them, factors that enable educational institutions to attract and retain students should be seriously studied. Higher education institutions, which want to gain competitive edge in the future, may need to begin searching for effective and creative ways to attract, retain and foster stronger relationships with students. As a private organization, it has to depend on the interaction and mechanism of the market. As a result, competition to woo as many students as possible or so-called "potential customer" may become more and more intense. To make the matter harder, as a private institution, it does not have the "privilege" to receive any subsidies or financial assistances from the government (Teo, 2001). An expectation that cannot be fulfilled on the institutions is the key factors for student's withdrawal (Alridge & Rowley, 2001). According to the study by Kanji, Abdul Malek and Wallace (1999) do give some insights on the real situation of the Higher Education Institutions. Most institutions do give a great deal of importance to meet customers' expectations which is similar to business organizations, but they still lack customer awareness among the staff and it has become a common drawback for many institutions.

Higher education is far enough behind the commercial sector to gain from the CRM and assume customer-centric approaches (Teo, 2001). Teaching departments and offices work as separate entities in many colleges and universities today. Faced with divisional boundaries, it is often very difficult for these different institutional functions to focus on their customers in a coordinated fashion. By providing a common platform for customer communication and interaction, customer relationship management practices are designed to increase the effectiveness of staff members who interact with customers or prospects. CRM approaches are going to drive the growth of new types of resources and services. Within the higher education enterprises, much of this is focused in the students' area and having an impact on students as well as on the administrative staff and management, companies, the faculty, media, and the institution as a whole. A look at each of these areas (Kotler, Fox, 1995):

**STUDENTS** – Today's system has little to offer students, particularly the new breed of technology-savvy students who want more of their involvement in the learning environment. Today's students demand a higher level of access to information about their options, their performance, and their future. They also demand the technology resources be an integral part of their learning experience. The standard for access to faculty and student services will change as students come to expect virtual access to faculty and student services resources. The old ways of interacting with students will become untenable – like expecting them to line up for hours when instead they can choose an institution that can meet their needs on their own terms, on their schedule, with virtual support system.

**COMPANIES** – Companies come to educational institutions for recruiting their students in campus selection procedures. They are so amongst the most important clients of such education organizations. Keeping continuous and direct contacts with these companies will enable institutes to maintain good and healthy relationships and improve contacts and service to them.

**ADMINISTRATORS** – A customer relationship management business strategy for a college or university administrative system would also introduce a true self-service system that empowers the administrative team to rethink the investment to administrative resources in institutional services.

**FACULTY MEMBERS** – Today's system provides little value for faculty members. In the new learning environment, faculty and student services are closely linked, dynamically sharing resources and strategies to enable student learning. Imagine a process whereby a faculty member can make immediate student referrals to key support programs on campus-even when working at home.

**INSTITUTION** – Customer relationship management delivers a new conceptual and structural framework for directing institutional activities to attract and retain its various customers. Most import is the ability of a truly robust set of institutional processes and tools to bring the entire institution together around its people.

**MEDIA** – Academic institutions are many times interested in advertising, publicizing, promoting, and marketing for them. In doing this they are required to maintain and be in contact with various media based service providers who help them for this purpose. CRM plays an important role in maintaining and making new such productive, profitable, rewarding, and fruitful relationships which benefit these organizations on short and long runs both.

## OBJECTIVES OF THE STUDY

The objectives of the study are to evaluate the performance of various customer relationship management strategies currently being practiced by different higher educational institutes and to find out the various obstacles in the way of implementing CRM strategies successfully in the field of higher education.

## RESEARCH METHODOLOGY

The research design of the study is exploratory cum descriptive. The research is exploratory due to the fact that the field of higher education has not been deeply touched by the earlier researcher. Therefore, in this case, extensive preliminary work needs to be done to gain familiarity with the phenomena in the situation to understand what is occurring, before developing a model and setting up a rigorous design for comprehensive investigation. The study is descriptive because the area of research that has been chosen by the researcher explains the attributes, which are associated with customer relationship management implication in the management education sector in India. The research is a two-tier study and seeks to explore the responses from director/administrator, who manages the various resources and activities within the institute and students, who avail education service form the management institutes. To fulfill the objective of the study two sets of questionnaires were prepared one for students and another one for directors/administrators. The questionnaires related to students (N=400) and director/administrators (N=40) were put forwarded to respondents of different higher educational institutes and observations are presented in the form of tables. The research has been carried out in the NCR region comprising the state of Haryana, UP, & Delhi as NCR has emerged as a prominent center higher education. Further, to solve the purpose of the study both descriptive as well as inferential statistical techniques were applied. In the descriptive, Means and Standard Deviation were calculated and to test the significance level of the difference between Means of the criterion variables Mann-Whitney Test and Karl Pearson's Coefficient of Correlation (r) were applied.

## RESULTS OF SURVEY

The benefits of customer relationship management strategies are abounding. CRM practices allow institutes not only to retain students, but enables more effective marketing, creates intelligent opportunities and opens up possibility of rapid introduction of new courses. To be able to deliver these benefits, institutes must be able to customize their offerings, deliver the service as promised and demanded by customer (students) base. Keeping the students satisfied is obviously one way of ensuring that they will stay with the institute. However, by maintaining an overall relationship with students, institutes are able to unlock potential of their customer base and maximize contribution to their business. Integration of customer relationship management practices in higher education offer many benefits. In the questionnaire respondents were asked to indicate their opinions about various benefits sought after the successful implementation of customer relationship management practices and the results are presented in the form of Tables.

### DIRECTOR'S/ADMINISTRATOR'S PERCEPTION ABOUT VARIOUS CRM BENEFITS

From the Table 1.1, it is evident that CRM practices make students more familiar to technological tools used in management institutes (Mean = 4.42, Std. Dev. = 0.5), helps in improving business intelligence to identify and target the students in a better way (Mean = 4.33, Std. Dev. = 0.806), up gradation of skills among students (Mean = 4.31, Std. Dev. = 0.648), increase the loyalty level among students (Mean = 4.27, Std. Dev. = 0.75), it helps in developing skills level of faculty members in an institute and students are benefited by the same faculty members (Mean = 4.26, Std. Dev. = 0.757), improve services and support level for students in the institute (Mean = 4.25, Std. Dev. = 0.776), it helps in increasing the response rate among students about faculty members and institute (Mean = 4.25, Std. Dev. = 0.98), customer relationship management practices make institute environment such that there is a focus on students on one-to-one basis (Mean = 4.22, Std. Dev. = 1.29), it can help in improving relationships with alumni (Mean = 4.22, Std. Dev. = 0.846), integrates the management of people and processes for the better functioning within the institute (Mean = 4.13, Std. Dev. = 0.607), helps in maximizing the life time value of the students (Mean = 4.12, Std. Dev. = 1.343), helps in making the performance appraisal system better and more transparent (Mean = 4.09, Std. Dev. = 0.987), helps in evaluating the profitability of a students in terms of his/her stay with the institute as a students and then as a alumni (Mean = 4.05, Std. Dev. = 1.131), improve service without having any increase in the administrative costs as customer retention is cheaper than customer acquisition (Mean = 4.00, Std. Dev. = 0.751), greater efficiency at work place (Mean = 3.95, Std. Dev. = 0.845), enhances students' total experience and retention with the institute (Mean = 3.95, Std. Dev. = 0.932), relationship management practices helps in identifying different customer/student segments (Mean = 3.95, Std. Dev. = 1.218), and CRM practices always ensure a better students satisfaction in the campus (Mean = 3.77, Std. Dev. = 1.349).

TABLE 1.1: DIRECTOR'S/ADMINISTRATOR'S PERCEPTION ABOUT VARIOUS CRM BENEFITS (Number of Respondents = 40)

S. No.	Variables	Mean Scores	Standard Deviation
1	Improve business intelligence	4.33	0.806
2	Helps in differentiating customer segments	3.95	1.218
3	Evaluate customer profitability	4.05	1.131
4	Maximize life time value of students	4.12	1.343
5	Focus on one to one marketing	4.22	1.29
6	Ensure better students' satisfaction	3.77	1.349
7	Integrates the mgt. of people and processes	4.13	0.607
8	Improve customer (students') service and support	4.25	0.776
9	Greater efficiency at work place	3.95	0.845
10	Improve service without increasing cost	4	0.751
11	Increased response rate among students	4.25	0.98
12	Up gradation of students' skills	4.31	0.648
13	Skills development of faculty to benefit students	4.26	0.757
14	Makes students familiar with technological tools	4.42	0.5
15	Helpful in improving relationships with alumni	4.21	0.846
16	Improves the loyalty level among students	4.27	0.75
17	Enhances students' experience & retention	3.95	0.932
18	Effective performance appraisal system	4.09	0.987

Source: Computed on the basis of Field Data

Results of the survey also indicated that the in cases of some of the variables standard deviation values are very consistent such as, make the students familiar with the technological tools (0.5), integrates the management of people and processes (0.607), up gradation of students skills (0.648), improvement the loyalty level among the students (0.75), improved service quality without increasing cost (0.751), skills development of faculty to benefit students (0.757), improve students' service and support (0.776), helps in improving business intelligence to identify and target students (0.806), greater efficiency at work place (0.845), improves relationships with the alumni (0.846), enhances students' total experience and retention (0.932), making the performance appraisal system more effective (0.987). It shows that the respondents are very much positive about the various benefits of relationship management practices in an institute. Where as in case of ensure better students' satisfaction (1.349), helps in maximizing the life time value of the students (1.343), focus on one-to-one marketing (1.29), helps in differentiating the various customer/student segment (1.218), helps in evaluating customer/students' profitability (1.131), the respondents have high divergence of opinions regarding these benefits of customer relationship management practices in an institute

Among respondents (N=40) majority are in an agreement that it improves business intelligence and marketing decision making capabilities along with differentiating students segments on the basis of their requirements. Now institutes are more able to identify ways to attract students such as, infrastructure, skills level of faculty, courses offered, facilities offered, technological resources, etc. Nearly 3/4 respondents stated that relationship management practices have helped management institutes in evaluating life-time value and profitability of students. CRM technology allows in assessing students lifetime value based on past transactional data. Marketing campaigns are designed accordingly to attract students with similar needs and characteristics. The value proposition enables an institute to calculate net present value of profits, the business will realize on a customer over a given period of time. It has helped in assessing the profitability of relationships with students. About 4/5<sup>th</sup> of the respondents are in agreement that now management institutes are focusing on interacting with students on one-to-one basis so that they feel more satisfied and thus helping institutes in maintaining and developing relationships with them. Institutes understand the requirements of its present and future students and engage in a carefully tailored one to one dialog with students and then customize communications and make offers according to student's preferences. Majority of respondents are in agreement that resources within management institutes are working to achieve common objectives. Therefore, relationship management strategies integrate the management of resources and thus improve students' services within management institutes. Nearly 85% of the respondents are in agreement that relationship management practices have increased efficiency at work place. This is due to the reason that now everybody is having assigned responsibilities and clear about what he/she is expected to do. Moreover required resources are provided to staff member to perform the job in prescribed way. Majority of the respondents stated that CRM practices have helped in improving customer (students) services without increasing cost. Institutes are aware that acquiring new students is a costly effort than retaining existing ones and if an institute is able to maintain its relationships with exiting students then, acquiring new students proved to be an easy and less costly effort. About 4/5 respondents have stated that CRM helped in increasing response rate among students and knowing their requirements. The services offered to students are now based on selected criteria. This results into up-gradation of students' conceptual, practical and behavioral skills. Furthermore, communications are tailored to individual's preferences and therefore, response rate is much higher than conventional campaigns. Introduction of relationship management practices within the institute helped in the career development of faculty members also. Management institutes are very well known to the fact that qualified and skilled faculty is the most valuable sources in establishing and developing relationships with students. As discussed earlier in the implementation of relationship management practices technological tools play an important role which makes the staff and students more familiar to these resources. 3/4 respondents have accepted the importance of strategic alliance with alumni. But during survey it has been observed that students are not satisfied with the management institutes about placement activities which prove that there is an immense need to focus on such activities which can help in developing relationships with the alumni and thus helping in better satisfaction among the students. During the survey it was noticed that majority of respondents are in agreement that relationship management practices improved loyalty level among students and staff and as a result established as a leading edge competitor. Respondents have said that such practices enhance employees' total experience and retention statistics. Employees' retention is one of the critical factors in the success of any organization as a retained employee understands the objectives of organization as well as the requirement of its customers and thus, helps in better implementation of such practices which satisfy customers, make them loyal to organization. About 3/4<sup>th</sup> respondents have mentioned that implementation of CRM practices have helped in enhancing the effectiveness of performance appraisal system in management institutes. This is due to the reason that students are involved in performance appraisal in concerned with activities such as, review of faculty performance, introduction of new courses, and overall institute's performance. Feedback and suggestions given by students are incorporated in the developing the further performance appraisal strategies. From the survey, it is evident that customer relationship management practices are very much beneficial for higher education.

#### STUDENT'S PERCEPTION ABOUT VARIOUS CRM BENEFITS

The responses of students about the various benefits of customer relationship management practices were also collected by the researcher so that differences and similarities between the responses of two respondents (director/administrator and students) can be identified. The students were asked to indicate their opinion about the various benefits on the same parameters on which the responses of directors/administrators have been collected and result of the survey are presented in Table 1.2.

TABLE 1.2: DIRECTOR'S/ADMINISTRATOR'S PERCEPTION ABOUT VARIOUS CRM BENEFITS (Number of Respondents = 400)

S. No.	Variables	Mean Scores	Standard Deviation
1	Improve business intelligence	4.28	0.798
2	Helps in differentiating customer segments	3.76	1.056
3	Evaluate customer profitability	3.87	1.089
4	Maximize life time value of students	4.01	1.297
5	Focus on one to one marketing	4.14	1.285
6	Ensure better students' satisfaction	3.83	1.361
7	Integrates the management of people and processes	3.55	0.599
8	Improve customer (students') service and support	4.27	0.801
9	Greater efficiency at work place	3.71	0.787
10	Improve service without increasing cost	3.30	1.012
11	Increased response rate among students	4.31	1.025
12	Up gradation of students' skills	4.33	0.591
13	Skills development of faculty to benefit students	4.29	0.733
14	Makes students familiar with technological tools	4.39	0.483
15	Helpful in improving relationships with alumni	4.11	0.906
16	Improves the loyalty level among students	4.22	0.670
17	Enhances students' experience and retention	3.80	1.041
18	Effective performance appraisal system	3.99	1.027

Source: Computed on the basis of Field Data

From the Table, it is evident that customer relationship management practices make students more familiar to technological tools used in management institutes (Mean = 4.39, Std. Dev. = 0.483), up gradation of skills among students (Mean = 4.33, Std. Dev. = 0.591), it helps in increasing the response rate among students about faculty members and institute (Mean = 4.31, Std. Dev. = 1.025), it helps in developing skills level of faculty members in an institute and students are benefited by the same faculty members (Mean = 4.29, Std. Dev. = 0.733), helps in improving business intelligence to identify and target the students in a better way (Mean = 4.28, Std. Dev. = 0.798), improve services and support level for students in the institute (Mean = 4.27, Std. Dev. = 0.801), increase the loyalty



level among students (Mean = 4.22, Std. Dev. = 0.670), customer relationship management practices make institute environment such that there is a focus on students on one-to-one basis (Mean = 4.14, Std. Dev. = 1.285), it can help in improving relationships with alumni (Mean = 4.11, Std. Dev. = 0.906), helps in making the performance appraisal system better and more transparent (Mean = 4.09, Std. Dev. = 0.987), helps in maximizing the life time value of the students (Mean = 4.01, Std. Dev. = 1.297), helps in evaluating the profitability of a students in terms of his/her stay with the institute as a students and then as a alumni (Mean = 3.99, Std. Dev. = 1.027), customer relationship management practices always ensure a better students satisfaction in the campus (Mean = 3.83, Std. Dev. = 1.361), enhances students' total experience and retention with the institute (Mean = 3.80, Std. Dev. = 1.041), CRM practices helps in identifying different customer/student segments (Mean = 3.76, Std. Dev. = 1.056), greater efficiency at work place (Mean = 3.71, Std. Dev. = 0.787), integrates the management of people and processes for the better functioning within the institute (Mean = 3.55, Std. Dev. = 0.599), and improve service without having any increase in the administrative costs as customer retention is cheaper than customer acquisition (Mean = 3.30, Std. Dev. = 1.012).

Results of the survey also indicated that the in cases of some of the variables standard deviation values are very consistent such as, make the students familiar with the technological tools (0.483), up gradation of students skills (0.591), integrates the management of people and processes (0.599), improvement the loyalty level among the students (0.670), skills development of faculty to benefit students (0.733), greater efficiency at work place (0.787), helps in improving business intelligence to identify and target students (0.798), improve students' service and support (0.801), improves relationships with the alumni (0.906). It shows that the respondents are very much positive about the various benefits of relationship management practices in an institute. Where as in case of ensure better students' satisfaction (1.361), helps in maximizing the life time value of the students (1.297), focus on one-to-one marketing (1.285), helps in evaluating customer/students' profitability (1.089), helps in differentiating the various customer/student segment (1.056), enhances students' total experience and retention (1.041), making the performance appraisal system more effective (1.027), and improved service quality without increasing cost (1.012), the respondents have high divergence of opinions regarding these benefits of customer relationship management practices in an institute

To ascertain level of difference among the responses of respondents (Director/Administrator and Students) Mann-Whitney Test was conducted. High value (Mann-Whitney Test Value closer to 1.000) indicates that there is not any significant difference between the opinions of both of the respondents (Students and Directors/Administrators) while less value indicates (Mann-Whitney Test Value closer to 0.000) that there is a significant difference between the opinions of respondents (Table 1.3).

TABLE 1.3: RELATIONSHIP AMONG THE RESPONSES OF RESPONDENTS ABOUT VARIOUS CRM BENEFITS

S. No.	Variables	Mean Scores (N=400)	Mean Scores (N=40)	Mann Whitney Test Value
1	Improve business intelligence	4.28	4.33	0.471**
2	Helps in differentiating customer segments	3.76	3.95	0.082*
3	Evaluate customer profitability	3.87	4.05	0.412**
4	Maximize life time value of students	4.01	4.12	0.524**
5	Focus on one to one marketing	4.14	4.22	0.507**
6	Ensure better students' satisfaction	3.83	3.77	0.331**
7	Integrates the management of people and processes	3.55	4.13	0.075*
8	Improve customer (students') service and support	4.27	4.25	0.629**
9	Greater efficiency at work place	3.71	3.95	0.396**
10	Improve service without increasing cost	3.30	4	0.088*
11	Increased response rate among students	4.31	4.25	0.541**
12	Up gradation of students' skills	4.33	4.31	0.760**
13	Skills development of faculty to benefit students	4.29	4.26	0.684**
14	Makes students familiar with technological tools	4.39	4.42	0.749**
15	Helpful in improving relationships with alumni	4.11	4.21	0.405**
16	Improves the loyalty level among students	4.22	4.27	0.568**
17	Enhances students' experience and retention	3.80	3.95	0.347**
18	Effective performance appraisal system	3.99	4.09	0.391**

Source: Computed on the basis of Field Data

Note: \*, \*\* indicate Mann-Whitney Test value is significant at 5% and 1% levels respectively.

The student's response (Mean 3.30) in case of improve service without increasing cost is less than the mean value (Mean 4) of directors which indicates that there is a significant difference in the opinion and the same is supported by Mann-Whitney Test Value (0.088). In response to help in differentiating customer segments (0.082), and integrate the management of people and processes within the management institutes (0.075), the responses of both of the respondents is different in case of these mentioned variables and it is well justified by Mann-Whitney Test Value. Responses of respondents in regard to other benefits of customer relationships management are very similar such as, up-gradation of students skill (0.760), make students more familiar with technological tools (0.749), skills development of faculty to benefit students (0.684), improve student service and support (0.629), improve loyalty level among students (0.568), increase response rate among students (0.541), etc., the responses of both of the respondents are similar.

**BARRIERS OF CUSTOMER RELATIONSHIP MANAGEMENT IN HIGHER EDUCATION**

Successful implementation of relationship management practices in management institutes entails certain barriers and an effective management of barriers would result in successful adoption and implementation of relationship management practices. The researcher has found that as the relationship management practices has benefited management institutes in many way but there are certain barriers also. Such barriers have been identified by researcher and presented before respondents (N=40) to know their opinions. The survey results of key barriers in the implementation of relationship management practices are presented in the Table 1.4.

TABLE 1.4: BARRIERS IN THE WAY OF SUCCESSFUL IMPLEMENTATION OF CRM PRACTICES IN HIGHER EDUCATION (Number of Respondents = 40)

S. No.	Variables	Mean Scores	Standard Deviation
1	Lack of commitment from top level management	3.15	1.685
2	Non-cooperation from the staff	2.77	1.522
3	Insufficient budget	2.63	1.643
4	Lack of infrastructural requirements	2.95	1.601
5	Lack of skills level	2.91	1.542
6	Resistance to change by staff and students	3.25	1.372
7	Inadequate strategic planning	3.08	1.362
8	Lack of integrated communication system	2.87	1.417
9	Lack of proper training & support	3.42	1.465
10	Inadequate knowledge of students' requirements	3.01	1.502

Source: Computed on the basis of Field Data

It may be noted that among different barriers, lack of proper support from top management to implement relationship management practices successfully (Mean = 3.42, Std. Dev. = 1.465), resistance to change by staff and students (Mean = 3.25, Std. Dev. = 1.372), lack of commitment from the top level

management (Mean = 3.15, Std. Dev. = 1.685), inadequate strategic planning (Mean = 3.08, Std. Dev. = 1.362), and inadequate knowledge of students' requirements (Mean = 3.01, Std. Dev. = 1.502), have emerged as the major barriers. Further, lack of infrastructural requirements (Mean = 2.95, Std. Dev. = 1.601), lack of skills at different levels (Mean = 2.91, Std. Dev. = 1.542), lack of integrated communication system within the institute (Mean = 2.87, Std. Dev. = 1.417), non-cooperation from the staff (Mean = 2.77, Std. Dev. = 1.522), and insufficient budget (Mean = 2.63, Std. Dev. = 1.643), are also the barriers worth taking note of. Standard deviation values of some of some of barriers such as, lack of commitment from the top management (1.685), insufficient budget (1.643), lack of infrastructural requirements (1.601), lack of skills at different levels (1.542), non-cooperation from the staff (1.522), inadequate knowledge of students' requirements (1.502), and lack of proper training and support from the top level management (1.467), indicate that there is divergence of opinion among the respondents.

As far as lack of commitment from top management is concerned 47% respondents stated that it is a barrier in the way of implementing relationship management practices successfully while the rest of respondents were not having same opinion or a different one. Researcher has observed that in some management institutes in spite of knowing the benefits of relationship management practices top management does not provide proper support which is needed for successful implementation. Nearly 3/4 respondents are in disagreement that there is non-cooperation from the staff in the way of implementation process. As the staff members are very well known that these practices also helping them in their career development as well. In case of lack of financial resources only 1/3<sup>rd</sup> of the respondents are in agreement that management lacks financial resources while the rest of the respondents were having a different opinion. In survey, researcher has noticed that majority of respondents agreed that management is having sufficient financial resources but lacked motivation to invest in required areas. Nearly 42% respondents are in agreement that institutes lack infrastructural requirements such as, building, labs, workshops, library, etc., which are priorities for students while seeking admission in an institute while other respondents were in the opinion that management institutes are having sufficient infrastructural facilities. During research, it has been noticed that in many institutes have made sufficient investments as far as infrastructural requirements are concerned as the institutes know that the way education is expanding infrastructure is one the basic requirements which is strongly considered by students and their parents during the admission time. Among respondents 3/5 are in disagreement that there is a lack of skills level in management institutes as far as faculty/staff is considered. During the survey, it was found that institutes know the importance of having qualified and experienced faculty/staff as this is most important factor which contributes in the way of maintaining relationships with students. In case of incorporating technological tools in education programs 55% of the respondents stated that there is a resistance from staff and students. Researcher has observed that initially, faculty members resist delivering lectures through LCD projector and interacting with students through e-mail. In the same way students also have shown some resistance such as, lack of initiative in case of presentations, submission of assignment through mail or visiting industries to make interaction with alumni. Nearly half of the respondents have mentioned that management institutes are having resources but there an inadequate strategic planning to use these resources. In some institutes, researcher has observed that there are sufficient books in library as far as the numbers are concerned but there is lack of sufficient title. In some cases, it has been identified that management institutes are having sufficient classrooms but there is no planning to arrange a space for group discussion or conducting seminars for students. About 65% respondents are in agreement that there is lack of proper training and support for the staff. There are some areas such as, interacting with students during admission time, solving problems of students, using technological tools, etc., where training should be provided for successful outcome. Nearly 1/2 respondents have stated that student's requirements have not been identified properly by management institutes and rest of the respondents were not having same opinion. For the success of any organization identifying the customer's requirements is the most important steps. And during research, researcher has noticed that while in some institutes this job has been done properly but in some others there is an immense need to do it properly.

In the study, an attempt has also been made to gain insight into the major obstacles in the way of successful implementation of customer relationship management practices in management institutes. To identify the relationship among the means values of the key barriers and average of barriers in the way of successful implementation of customer relationship management practices coefficient of correlation has been calculated. High value of 'r' (Towards +1.0) indicates barriers with high significant level and less value of 'r' (Towards 0.0) indicates barriers with less significant level in the way of successful implementation of customer relationship management strategies and the results are presented in Table 1.5.

**TABLE 1.5: RELATIONSHIP BETWEEN KEY BARRIERS AND AVERAGE OF BARRIERS IN SUCCESSFUL IMPLEMENTATION OF CRM PRACTICES IN HIGHER EDUCATION (Number of Respondents = 40)**

S. No.	Variables	Mean Scores	Standard Deviation	r value
1	Lack of commitment from top level management	3.15	1.685	0.942**
2	Non-cooperation from the staff	2.77	1.522	0.817*
3	Insufficient budget	2.63	1.643	0.823*
4	Resistance to change by staff and students	3.25	1.372	0.971**
5	Lack of proper training and support	3.42	1.465	0.937**
6	Inadequate knowledge of student's requirement	3.01	1.502	0.982**

**Notes:** r-value indicates value of Karl Pearson's Coefficient of Correlation.

\*, \*\* indicate Correlation is significant at 5% and 1% levels respectively.

Source: Computed on the basis of Field Data

The test results in the table indicate that among the different barriers which come in the way of successful implementation of customer relationship management strategies, lack of proper training for the staff (r = 0.937), resistance to change by staff and students (r = 0.971), lack of commitment from the top level management (r = 0.942), inadequate knowledge of students' requirements (r = 0.982), non-cooperation from the staff (r = 0.817), and insufficient budget as a barrier (r = 0.823), have been identified as key barriers and the same is support by the correlation results also as the values indicate significant and positive correlations.

**CONCLUSION**

In the research paper, an attempt has been made to evaluate the performance of customer relationship management practices used by the higher educational institutes. Institutions get various benefits by the use of customer relationship management strategies such as, improve business intelligence, maximize life time value of students, focus on one to one marketing, integrate management of people and processes, improve customer (students') service and support, increased response rate among students, skills development among faculty to benefit students, makes students familiar with technological tools, helpful in Improving relationships with the alumni, improves the loyalty level among students, and effective performance appraisal system etc. An attempt has also been made to identify some of the obstacles which come in the way of successful implementation of customer relationship management practices in management institutes such as, lack of commitment from top level management, non-cooperation from the staff, resistance to change by staff and students, lack of proper training, and inadequate knowledge of students' requirements. Furthermore, it is highly important to understand that implementation of customer relationship management practices do not enable a quick win. It is a long-term approach that has to be adopted at a strategic level. Whilst the value of customer relationship management has been identified by management institutes, they are yet to look at the bigger picture and understand all of associated benefits that would enable their business strategies to be successful. Those responsible for delivery are perhaps the most informed about these strategic benefits yet the transformation is long-drawn-out process.

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## SERVICE QUALITY GAP IN PRIVATE HOSPITALS

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### ABSTRACT

*This paper examines the customers' expectations and their perceptions related to various services offered by private hospitals. The study identifies the determinants of service quality and performance in private hospitals as customer satisfaction is the top priority in the hospitals. In service sector there may be a big difference between expected and perceived service quality. Expectations of the customers with regard to the service can vary based on a range of factors such as prior experience, personal needs and what other people may have told them. The quality of service is determined on five dimensions which are: Reliability, Responsiveness, Assurance, Empathy and Tangibles (Appearance of physical facilities, equipment etc.). SERVQUAL method is used to find the gap between expected and perceived service quality. Customers of private hospitals in Hyderabad are the target population for the research. To minimize the sampling error and bias all the demographic segments have been included in sample size. The findings and results of the paper may be useful for private hospitals to improve their service quality.*

### KEYWORDS

Customer, hospitals, expectations, perceptions, quality.

### INTRODUCTION

Service quality has become a popular area of academic investigation and has been recognized as a key factor in keeping competitive advantage and sustaining satisfying relationships with customers (Zeithmal et al., 2000). It is important to meet customers' expectations across all the sectors. Quality of the service plays vital role in this process. Meeting customers' expectations result in customers' satisfaction, while a quality beyond customers' expectations leads to customers' delight. Measurement of customers' expectations and their perception of quality are more difficult in service industry. Service quality can be defined as the difference between customer's expectations for service performance prior to the service encounter and their perceptions of the service received. (Asubonteng et al., 1996). A product can have specific specifications but a service can have numerous intangible or qualitative specifications. The globalisation and liberalisation policies have significantly changed the health care sector in India. With increasing awareness, the consumers expect quality in healthcare services. With competitive pressures and the increasing necessity to deliver patient satisfaction, the elements of quality control, quality of service, and effectiveness of medical treatment have become vitally important (Friedenberg, 1997). Different people may have different expectations based on their prior experience, personal needs and what other people may have told them. As perceptions are always considered relative to expectations and expectations are dynamic, perceptions may also differ over time, from person to person and from culture to culture. If expectations are greater than performance, then perceived quality is less than satisfactory and hence customer dissatisfaction occurs (Lewis and Mitchell, 1990). Understanding of the customers' expectations and their perception about private hospitals may easily determine the strategic determinants of service quality and performance in a hospital.

### OBJECTIVE

1. To measure the customers' expectations and their perception of service quality in private hospitals.
2. To determine the gap between expected and perceived service quality in the private hospitals.
3. To find out the strategic determinants of service quality and performance in private hospitals.

### LITERATURE REVIEW

Armistead (1991) classified the service dimensions as "soft" and "firm". The style (attribute of staff, accessibility of staff and ambience), steering (the degree to which customers feel in control of their own destiny) and safety (trust, security and confidentiality) are the soft dimensions, whereas time (availability, responsiveness and waiting), fault freeness (in physical good, intangible activities and information) and flexibility) recovery, customization and augmented services) are the firm dimensions.

Christopher Lovelock and Jochen Wirtz (2006) explained the relationship between service quality and service productivity. A key challenge for any service business is to deliver satisfactory outcomes to its customers in ways that are cost-effective for the company. If customers are dissatisfied with the quality of a service, they won't be willing to pay very much for it or even to buy it at all if competitors offer better quality. Low sales volumes and/or low prices mean less productive assets.

David Garvin (1988) identifies five perspectives on quality- (1) the transcendent view of quality which is synonymous with innate excellence: a mark of uncompromising standards and high achievement; (2) the product-based approach which sees quality as a precise and measurable variable; (3) used based approach which equates quality with maximum satisfaction; (4) manufacturing based approach which is supply based and is concerned primarily with engineering and manufacturing practices; (5) value-based approach which defines quality in terms of value and price.

James A. Fitzsimmons and Mona J. Fitzsimmons (2006) noted that measuring service quality is a challenge because customer satisfaction is determined by many intangible factors. Unlike a product with physical features that can be objectively measured, service quality contains many psychological features. In addition, service quality often extends beyond the immediate encounter because as in the case of health care, it has an impact on a person's future quality of life.

Jochen Wirtz (2003) identified that process factors include customers' feelings about the providers' personal style and satisfaction levels with those supplementary elements that they are competent to evaluate. As a result, customers' perceptions of core service quality may be strongly influenced by their evaluation of process attributes and tangible elements of the service-a halo effect.

Parasurman, Zeithaml and Berry (1985) however listed ten determinants of service quality-credibility, security, access, communication, understanding the customer, tangibles, reliability, responsiveness, competence and courtesy, which were further regrouped into five dimensions: reliability, responsiveness, tangibles, assurance and empathy.

Valarie A Zeithaml, Mary Jo Bitner, Dwayne D Gremler and Ajay Pandit (2008) customers hold different types of service expectations: (1) desired service, which reflects the customers want; (2) adequate service, what customers are willing to accept; and (3) predicted service, what customers believe they are likely to get. While service quality, the customer's perception of the service component of a product, is a critical determinant of customer satisfaction, in case of a pure service, service quality may be the most critical determinant of satisfaction. They mentioned the service encounters or "moments of truth" as the building blocks for both satisfaction and quality. Service encounter is an opportunity to build perceptions of quality and satisfaction. So it is important to manage the evidence of service in each and every encounter.

## METHODOLOGY

This study is based on survey conducted in Hyderabad (Andhra Pradesh) during June - September 2011. The Primary data was collected using Judgment (Purposive) sampling. The respondents were selected on the basis of judgment to include all demographic segments. The theoretical foundation of the study is based on various secondary sources such as texts on Service Quality, articles, quality magazines, article features and published papers. The questionnaire designed for this study was based on the widely accepted SERVQUAL model. A total of 22 attributes were categorized under five dimensions as follows:

- Tangibility (4 attributes)
- Reliability (5 attributes)
- Responsiveness (4 attributes)
- Assurance (4 attributes)
- Empathy (5 attributes)

The questionnaire was divided into four sections. Questionnaire consisted of 22 questions related to the five dimensions of service quality in which the customers of various private hospitals responded against their expectations and perceptions. A five-point Likert Scale ranging from strongly disagree = 1 to strongly agree = 5, was used to measure the 22 attributes under five dimensions mentioned above. Statistical Package for Social Science (SPSS) package will be used to analyse the data set. A frequency distribution was used to describe the sample. The mean and standard deviations of the attributes were also computed. Finally, paired *t*-tests were used to test the significant difference between sample means. To find some more facts related to service quality in private hospitals, the respondents were also asked to comment on the service quality of the private hospitals. Private Hospitals in Hyderabad form the sampling frame of the study. Four major recognized hospitals in Hyderabad – Apollo Hospital, Care Hospital, Kamineni Wockhardt Hospital and Global Hospital, were selected for the study.

## ANALYSIS

A total of 250 questionnaires were distributed and only 215 were useable for analysis. The demographic details of the 215 respondents are represented in table 1.

**TABLE 1: DEMOGRAPHIC PROFILE OF THE RESPONDENTS**

Factors	No. of respondents	Percentage
<b>Age</b>		
Under 30 yrs	56	26
30-40 yrs	69	32
41-50 yrs	52	24
Above 50 yrs	38	18
<b>Gender</b>		
Male	124	58
Female	91	42
<b>Marital Status</b>		
Single	82	38
Married	133	62
<b>Profession</b>		
Student	30	14
Services	60	28
Businessman	86	40
Housewife	39	18
<b>Annual Income</b>		
Below Rs 1,50,000	77	36
Rs1,50,001-Rs3,00,000	73	34
Rs 3,00,001-Rs5,00,000	48	22
More than 5,00,000	17	8

## SERVQUAL MEASURES

Service Quality Gap (Gap 5) analysis was done in order to measure the gap between the customers' expectations and their perceptions of the commercial banking industry, based on the 22 items or attributes pertaining to service quality. The response of the customers is represented in table 2.

**TABLE 2: GAP MEAN DIFFERENCES BETWEEN CUSTOMERS' EXPECTATIONS AND PERCEPTIONS OF SERVICE QUALITY IN THE PRIVATE HOSPITALS IN HYDERABAD**

Attributes	E (mean)	P (Mean)	Gap (P-E)	t-value	P- value
<b>Tangibility</b>					
1 Modern-looking equipments	4.02 (0.88)	3.99 (0.83)	-0.03	0.36	0.72
2 Appealing physical activities	3.75 (0.97)	3.58 (0.84)	-0.17	1.94	0.05
3 Neat appearance of staff	4.05 (0.93)	3.93 (0.83)	-0.12	1.41	0.16
4 Materials associated with the service are visually appealing	3.81 (0.89)	3.67 (0.85)	-0.14	1.67	0.10
<b>Reliability</b>					
5 Staff keeping promise	4.03 (0.99)	3.77 (0.95)	-0.26	2.78	0.01
6 Sincere interest in solving customers' problems	3.89 (0.97)	3.63 (0.96)	-0.26	2.79	0.01
7 Staff performing services right the first time	4.07 (0.98)	3.66 (0.95)	-0.41	4.40	<0.0001
8 Provide services at the time they promise to do so	4.13 (0.98)	3.66 (0.89)	-0.47	2.69	0.01
9 Insist on error-free records	3.84 (0.99)	3.78 (0.97)	-0.06	0.63	0.53
<b>Responsiveness</b>					
10 Staff telling customers exactly when services will be performed	3.98 (0.98)	3.64 (0.87)	-0.34	3.80	0.00
11 Prompt service	4.10 (0.95)	3.76 (0.87)	-0.34	3.87	0.00
12 Staff willingness to help	4.14 (0.88)	3.74 (0.91)	-0.40	4.63	<0.0001
13 Prompt response from staff	3.71 (0.98)	3.35 (0.88)	-0.36	4.01	<0.0001
<b>Assurance</b>					
14 Behaviors of staff instill confidence in customers	4.14 (0.88)	3.82 (0.85)	-0.32	3.84	0.00
15 Customers feel safe in their transactions	4.15 (0.98)	3.84 (0.93)	-0.31	3.36	0.00
16 Friendliness and courtesy of staff	4.13 (0.98)	3.80 (0.75)	-0.33	3.92	0.00
17 Staff having knowledge to answer questions	4.12 (0.92)	3.79 (0.79)	-0.33	3.99	<0.0001
<b>Empathy</b>					
18 Individual attention given by staff	3.73 (0.97)	3.46 (0.91)	-0.27	2.98	0.00
19 Convenient operating hours	3.99 (0.98)	3.82 (0.97)	-0.17	1.80	0.07
20 Staff giving customers best interest at heart	4.19 (0.92)	3.91 (0.79)	-0.28	3.39	0.00
21 Personal attention given	3.56 (0.99)	3.23 (0.88)	-0.33	3.65	0.00
22 Understanding the specific needs of customers	3.94 (0.87)	3.56 (0.91)	-0.38	4.43	<0.0001
<b>Overall combines scale of 22 attributes</b>	<b>3.98(0.41)</b>	<b>3.70(0.36)</b>	<b>-0.28</b>	<b>7.52</b>	<b>&lt;0.0001</b>

Notes: \*t-test two-tailed probability <0.05; standard deviations are in parentheses; a negative gap indicates that customers perceived that service delivery did not meet their expectations; a positive gap indicates that customers perceived that service delivery exceeded their expectations

In the table, a negative gap indicates that customers perceived that the level of service provided by private hospitals did not meet their expectations. On the other hand, a positive gap indicates that customers perceived that the level of service quality exceeded their expectations. A comparison of customers' actual perceptions of service quality with their expectations, using paired t-test, showed a statistically significant difference on all the attributes of reliability except for attribute related to insistence on error free records which has shown no significant difference in the expectation and the perception of the customers. The paired t-test shows statistically significant difference on all the attributes of responsiveness and assurance. The paired t-test also shows statistically significant difference on all the attributes of empathy except for the attribute related to convenient operating hours which shows no statistically significant difference in the expectation and perception of the customers. The biggest gaps ( $\geq 0.40$ ) were found in the following attributes; "Staff performing services right the first time" (-0.41 sig. <0.40), "Provide services at the time they promise to do so" (-0.47 sig. <0.40), and "staff willingness to help" (-0.40 sig. <0.40). These attributes in those dimensions were the most serious shortfalls and require serious attention by private hospitals in terms of making improvements. The bigger the gap, the serious the level of service quality is from the customers' point of view. The overall Gap 5 score was -0.28 (sig. <0.05), which indicated that, the overall service quality provided by the commercial banks was below customers' expectations.

**TABLE 3: AVERAGE GAP SCORE OF PRIVATE HOSPITALS**

No.	Dimensions	Gap Scores
1	Average score for Tangibility	-0.12
2	Average score for Reliability	-0.29
3	Average score for Responsiveness	-0.36
4	Average score for Assurance	-0.32
5	Average score for Empathy	-0.29

The above table shows the ranking of the dimensions according to gap scores. The biggest gap has been found pertaining to responsiveness (-0.36), followed by assurance (-0.32), reliability (-0.29), empathy (-0.29) and tangibility (-0.12).

## CONCLUSION

Customers' perceptions are very important especially in the service industry such as the hospitals since there is high customer involvement in the delivery of the service itself. The result of Gap 5 analyses showed that customers' perceptions for private hospitals were consistently lower than their expectations. These negative gaps especially pertaining to "providing services at the time they promise to do so", "staff performing services right the first time", and "staff willingness to help" were important to consider in terms of making improvement efforts. The bigger the gap, the serious the level of service quality that need to be improved, from the customers' point of view. Overall, the gap score was -0.28 which was considered low.

As the environment is very competitive and the customers are very cautious about the quality of service being provided, the management of the private hospitals needs to seriously examine their corporate quality programs and customer service system. Recognizing the safety and quality issues of patient care is the need of the hour. Management of healthcare institutions and healthcare professionals should work towards meeting the expectations and challenges of good patient care systems in the society. These measures and changes can be expensive in terms of employee time and effort, but the management of these hospitals needs to find ways to overcome these hurdles.

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**MEASURING IMPACT OF TRAINING ON DEVELOPMENT: A STATISTICAL APPROACH**

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**ABSTRACT**

*An organization can have the greatest business model in the world and the best systems, but if its people can't handle the growth its doomed. Managers need to develop competencies to deal with the turbulence of change. This study proposes employee training relationship with development at workplace. Relationships between training and development were empirically found. Few researchers have found consistence evidence of their effect on outcomes. Chi-square independence and nominal symmetric measures were adopted to test the model. The results shows that training is positively influence to develop of both employee and organization. To know the impact of training programs on employee's development, 105 employees are considered for analysis by using SPSS. Implications of the findings and conclusions for organizations are discussed.*

**KEYWORDS**

Employee development, Impact of training, SPSS, Training and development and Upgrading competencies.

**INTRODUCTION**

In the past human resources were considered a cost to be controlled. In the new economy it is an asset to be developed. Most companies now or in the near future will face a severe shortage of all types of labour, others indicate that the labour supply will be sufficient but that a rebounding economy will create pressures for companies to secure workers with the right skill sets. Much will depend on the balance between economic growth and technological innovation. External environment changes most often results in internal changes and every time more or less impact on employment skills. However it also creates new jobs that require higher levels of knowledge or skill than the old jobs it eliminated. Organizations are social units where individuals are conscious of their membership and legitimize their cooperative activities primarily by reference to the attainment of impersonal goal. The new competitive standards such as variety of products demanded by consumers, customization of products and services, affordability of convenience by consumers, and shorter product cycles times effect organizational structures, requiring a move away from top down systems towards more flexible networks and cohesive work teams. Technical Changes result in new work process and procedures require constant updating of employer specific technical knowledge. In a world of rapid change, obsolescence is an interminable danger and if skills don't enhance it is like hitting axe on our own feet. As technology replaces more of the hands on work, more employees will be dedicated to service functions where they will spend more time face to face with co-employees and customers. The belief in organizing development programs for workers has taken root after the growing realization by corporate that about 80% of the people or workers and they can make or break the organization and its impact can be measured at several levels of economy, the organization and the employees. Hence, most of the forward looking organizations have focused on developmental programs using the term training to also signify development programs. As training is being increasingly used as a major tool for developing competencies and improving performance in various fields all over the world and companies has begun investing time, money and efforts in exploring ways and means to improve its delivery. Considering the present practices in the corporate sector we may say that the term training is being used for all types of development programs. In addition to technical training with regard to there jobs and machines development programs are being conducted in attitudinal, behavioral and self development areas for employees. A whole set of skills and competencies and a wider range of knowledge is required in the new economy where as training and development has become a critical tool to enable organizations to survive and compete which makes demonstrable difference in the ability to meet the new competitive standards with improved agility to an organization by providing required or forecasted knowledge, skills, attitudes, behavior and competencies which enable them to effectively carry out the machine and objectives of the organization and also continuously gain returns on investment to satisfy needs of customers, stake holders and employees. Finally, there is the issue of attracting and retaining the best people in the industry, which is critical to the success of any organization and is also a very real problem in the pharmaceutical industry at the moment. Developing the skills of employees is now seen as one of the attractions of a good employer and ensuring good personal skills development acts as a retention tool.

**PERCEPTIONS OF TRAINING**

An organization can have the greatest business model in the world and the best systems, but if its people can't handle the growth its doomed. If the organization is not investing in training then it should think about all the organizations that are being admired as models for doing business right. They do business right because they have got not only good training programs but training is a part of their culture. Thus if the organization wants to breathe some life into its operation then it should start investing in its people by training and developing them. Organizations have begun to realize that training is tool not only for getting better job performance but also for creating organization-wide adaptability of good culture for healthy environment under the management roof. As the business environment has been and will continue to be changing rapidly these days and companies have to adapt so much faster than before to remain competitive along with increased diversity of the workforce, legal and organizational policy requirements and sanctions relating to discrimination and harassment. This will force companies in most industries to constantly realign their activities to meet new conditions. This requires people at all levels in the organization to be able to make day-to-day decisions that are linked to strategy. Likewise training activities will also need to be continually realigned to support the strategic direction of the company and the people who carry it out. The competitive environment even without technical innovation demands that organizations continuously upgrade the knowledge of their workforce. Consumer demands for higher quality products and services and the fiercely competitive global economy require employees at every level who are more knowledgeable, more committed to quality, show better judgment, and demonstrate more competencies than ever before. In today's competitive business environment most companies have minimized the time it takes to move a product from the idea stage to the marketplace. This however puts great strains on the ability of the knowledge workers to be up to speed on the new products. The smart companies are now making time to knowledge as important as time to market. One of they are accomplishing this is by getting the training department involved early in the product development stage. Innovative knowledge delivery systems and increased breadth of training opportunities are other ways in which companies are creating more knowledgeable workers more quickly. A more knowledgeable workforce is double-edged sword for management. It completes the work with high efficiency in a given time frame. Here, training must be seen as integral part of the organization's performance improvement system. If not it will continue to be seen as a cost center, providing less values contributions to the organizations. It helps to educate employees regarding mission, strategy, and objectives of the organization, and how these objectives translated to each employee's job behaviors. Today's generation of employees have different values, demanding a more balanced lifestyle and more focus on their needs, then their predecessors. The advancement of technology will assist in meeting the lifestyle needs of the current generation by allowing more employees to work outside company walls. These new work arrangements will require new workflow systems and management processes and training will be a key tool in this change process. Companies will need to figure out how to meet the different needs if their generational cohorts and fill the knowledge and leadership gaps. The fact is that one of the most powerful tools we have at our disposal to change the performance and help people to adapt more readily to that change is learning. Today's market preferences are changing with lightning fast speed and to

organizations does not have any other alternate except cope up along with change and management have to bring out the opportunities out of them and moreover they should come out with effective training structure as a continuous performance improved process that is integrated with other systems and business strategies. During the training programs employees learn new habits, refined skills and use of knowledge during the training that helps employees in improved output. The success of any organization lies in well trained and effective employees.

### PERCEPTIONS OF DEVELOPMENT

Human resources are the key resource which provides an organization its competitive advantage. Organization need continual up gradation of employees skills to maintain effective performance in order to realize their full potential so that the organization can sustain its competitive edge. The intent of development is to provide knowledge and understanding that will enable people to carry out their respective functions with more efficacies including problem solving, decision making and relating to people. As the development is flexible and continuous process linking an individual development to the goals of the job and organization as well as it provides the opportunity to acquire leadership qualities in a broad ways of core competencies that can be applied to many jobs in the organizations. Increasingly developing is seen more as the liability of individual employees rather than organization. Expanding employees core competencies will improve agility of the employees. The developed employees to be sure act as facilitators, guide to their own knowledge, to others and moreover they become mentor by themselves causes to reduced cost of supervision by handling the errors help them to become professional in their area. Development is relatively permanent change in the ability to exhibit behavior. This change occurs as a result of successful or unsuccessful experience content based intervention, leading to desired changes in behavior. It makes the employees usually know what goal they want to attain which causes to improve morale and accountability at workplace. These development attitudes increase the confidence levels and they show willingness to take additional risk to do new things. Systematic and planned effort, for more oriented towards broadening and individual skills for the future responsibilities. This is indispensable because in the success and the growth of an organization depends primarily on the managerial personnel which broadly covers technical knowledge along with proficiency in maintaining human skills concerned with employee relation skills for effective working and collaborative skills. Here conceptual skills are concerned with general management skills such as visioning, modeling, and in formulating strategic plans etc. The crucial requirement in the training in the modern organizations is the need to shift the emphasis from the delivery of content to the development of learning capability of employees. Continuous development of employees in today's highly competitive and complex business scenario is essential for the survival and success of an organization. Therefore, development is sound business proposition when aligned with organizational objectives and mission. Organization can capitalize on their technology, business strategies and physical and financial resources fully when their employees are capable and competent.

### NEED FOR THE STUDY

The company deals with pharmaceutical products, where a marginal or negligible mistake causes to wrong assumptions which spoil human lives sometimes even occurrence of death and here there is no chance of mistake. For products like medicines which give new life 99% is not enough to market the products, as company believes 100% confidence level. The employees should possess complete competencies and/or professional. Pollution, research and development, technology, new diseases and others demand to improve the competencies of employees otherwise, they will be doomed.

### OBJECTIVE

- To know and identify the impact of training programs on employees and organizational development.

### STATISTICS IN BUSINESS MANAGEMENT AND DEGREE OF ACCURACY:

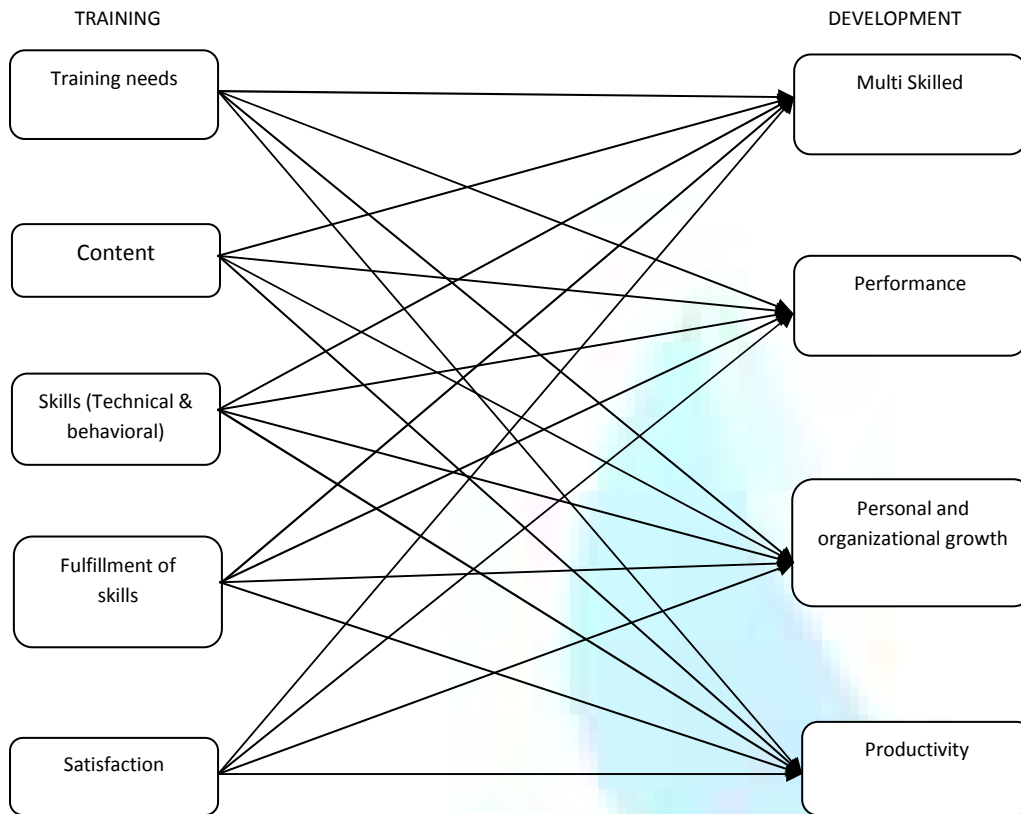
In any research degree of accuracy or precision desired by the investigator in his estimates or results is essential before starting any statistical enquiry. There is an increasing realization of the importance of statistics in various quarters. In any statistical enquiry perfect accuracy in final results is practically impossible to achieve because of the errors in measurement, collection of data, its analysis and interpretation of results. To be utilized in attaining it and a reasonable accuracy is enough to draw valid inferences. In planning the operations, setting the standards, and to control the functions etc. these are three main areas where statistics can be found useful in business enterprise.

After industrial revolution the developments in business activities have taken much unprecedented dimensions both in the size and the competition in the market that the activities of most of the business enterprises and firms are confined to not only to one particular locality, town or place but larger areas. Some of the leading houses have the network of their business activities in almost all the leading towns and cities of the country and even abroad. Accordingly it is impossible for an owner or concerned to look after its activities and management has become a specialized job. The manager and the team of management executives are imperative for efficient decisions of various operations in and out of business house. Modern business has its roots in the accuracy and precision of the estimates and statistical forecasting regarding the future demand for product, market, trends and so on. Business forecasting techniques which are based on complication of useful statistical information on lead and lag indicators are very useful for obtaining estimates which serve as a guide to future monetary events. Before embarking on any production process, the business house must have an idea about the quantum of the product to be manufactured, the amount of the raw material and labour needed for it, quality of the finished product, marketing avenues for the product, the competitive products in the market and so on. Thus the formation of business plan is must and this cannot be achieved without collecting the statistical information on the above items without resorting the powerful technique sample surveys. As such most of the leading business and industrial concerns have full-fledged statistical units with trained and efficient statisticians for formulating such plans and arriving at valid decisions in the face of uncertainty with calculated risk and even modern human resource managers are now responsible for both employee's productivity and organizational sustainability. This is the sphere in business where statistical methods were successful and even used for fixation of wage rates, incentive norms and performance appraisal of individual employees. For statistical calculations inputs are collected or observed values but employee is a combination of physical and psychological constituents who drives by central nerve system according to situation. Due to dynamism in response of the employees it increases the difficulty in understanding and data may or may not be normal. This limitation has led to the developments of a number of alternative techniques in statistics which are known as non-parametric tests. These tests provide us more accuracy or precision desired by the management in their estimates or results is essential before and after any enquiry.



**MODEL STUDY**

**FIG. 1: INFLUENCE OF TRAINING ON DEVELOPMENT**



**SURVEY METHOD AND TECHNIQUE**

150 questionnaires were supplied to the employees of various departments of Dr. Reddy's Lab, Hyderabad. However simple random sampling without replacement (srsWOR) and structured – non - disguised questionnaire methods were used. Out of 150 only 132 responses were collected and 105 (79.54) were found suitable for the purpose of further analysis.

**STATISTICAL TOOLS**

To draw valid conclusions and test them empirically, before starting the non parametric test the data was tested using mean, median, mode and skewness. Thus test represented the data is skewed. Thus an extensive statistical technique of Chi-square independence was used to examine the relationship between training and development variables. To further determine strength and significance of relationship, cramer's V and contingency coefficient tests were also determined. These statistical tests on data were made by using SPSS. Literature offers some guidelines i.e., When mean, median and mode do not have the same value in a distribution, then it is known as skewed distribution. The direction of skewness is determined by ascertaining whether the mean is greater than the mode or less than the mode. If it is greater than the mode, then skewness is positive. But when the mean is less than the mode, it is negative. The difference between the mean and mode indicates the extent of departure from symmetry. A low significance value of Chi-square independence test typically below 0.05 indicates that there may be some relationship exists but it does not indicate strength of the relationship. The nominal symmetric measures indicate both the strength and significance of the relationship and the value ranges from 0 to 1.

**TRAINING MEASURES**

**PERFECT SYSTEM FOLLOWED FOR IDENTIFICATION OF TRAINING NEEDS**

Every organization should follow appropriate methods and techniques to identify the training needs as the remaining planning wholly depends on this. The respondents were asked to rate the statement on a five - point scale ( Excellent, Very good, Good, Satisfactory, Poor) as to indicate their agreement to the statement to their feel and support from the organization. Mean = 2.62, Median = 3, Mode =2, Skewness = 0.835. As the test indicates the mean is greater than mode. Thus, it is positive skewness. The Cronbach's alpha value = 0.9382.

**TRAINING CONTENT MATCH THE SKILL REQUIREMENT**

The learned competencies will be implemented by the employees in the future. So, what organization wants to be performed by their employees depends on how you train them. The respondents were asked to rate the statement on a five - point scale (Strongly Agree, Agree, Cannot say, Disagree, Strongly disagree) as to indicate their agreement to the statement to their feel and support from the organization. Mean = 1.91, Median = 2, Mode =2, Skewness = -1.407. As the test indicates the mean is less than mode. Thus, it is negative skewness. The Cronbach's alpha value = 0.8963.

**COMBINATION OF SKILLS**

Trend analysis demands several set of behaviors at work place and it has become equally important to all employees, they should learn attitudinal skills to bring out the excellence at work place. The respondents were asked to rate the statement on a five - point scale (Equal combination, More technical, More behavioral, Depends on employees requirement, depends upon company's requirement) as to indicate their agreement to the statement to their feel and support from the organization. Mean = 2.73, Median = 2, Mode = 1, Skewness = 0.256. As the test indicates the mean is greater than mode. Thus, it is positive skewness. The Cronbach's alpha value =0.894.

**TRAINING FULFILL REQUIREMENT OF COMPETENCIES**

When the employee possess all competencies then, they will become an asset to organization otherwise vice-versa. The respondents were asked to rate the statement on a five - point scale (Strongly Agree, Agree, Cannot say, Dis Agree, Strongly disagree) as to indicate their agreement to the statement to their feel and support from the organization. Mean = 2.28, Median = 2, Mode =2, Skewness = 1.803. As the test indicates the mean is greater than mode. Thus, it is positive skewness. The Cronbach's alpha value = 0.938.

**OVERALL SATISFACTION WITH TRAINING PROGRAMS**

Every training program cannot accomplish all the requirements of trainees but, if they feel satisfied results towards positive attitudes at work place. The respondents were asked to rate the statement on a five - point scale (Highly Satisfied, Partially satisfied, Satisfied, Dissatisfied, highly dissatisfied) as to indicate

their agreement to the statement to their feel and support from the organization. Mean = 1.93, Median = 2, Mode =2, Skewness = 1.075. As the test indicates the mean is less than mode. Thus, it is negative skewness. The Cronbach's alpha value = 0.9323.

**DEVELOPMENT MEASURES**

**TRAINING MAKES THE EMPLOYEES MULTI SKILLED**

The environment demands the expertise at job along with managing the things according to situation is the other side of the coin expected by the organization. The respondents were asked to rate the statement on a five - point scale (Strongly agree, Agree, Cannot say, Disagree, Strongly dissatisfied) as to indicate their agreement to the statement to their feel and support from the organization. Mean = 1.85, Median = 2, Mode = 2, Skewness = 0.589. As the test indicates the mean is less than mode. Thus, it is negative skewness. The Cronbach's alpha value = 0.8742.

**IMPROVES THE PERFORMANCE:**

Every organization expects healthy performance which is to be converted in monetary and implements several strategies for it because performance is the ultimate motto. The respondents were asked to rate the statement on a five - point scale (Strongly agree, Agree, Cannot say, Disagree, Strongly dissatisfied) as to indicate their agreement to the statement to their feel and support from the organization. Mean = 2.46, Median = 2, Mode = 2, Skewness = 1.158. As the test indicates the mean is greater than mode. Thus, it is positive skewness. The Cronbach's alpha value = 0.8843.

**TRAINING CONTRIBUTES TO PERSONAL AND ORGANIZATIONAL GROWTH**

When the employee contributes either in monetary or non-monetary give benefits to organization directly or indirectly. The respondents were asked to rate the statement on a five - point scale (Strongly agree, Agree, Cannot say, Disagree, Strongly dissatisfied) as to indicate their agreement to the statement to their feel and support from the organization. Mean = 1.94, Median = 2, Mode = 2, Skewness = 1.226. As the test indicates the mean is less than mode. Thus, it is negative skewness. The Cronbach's alpha value = 0.8905.

**TRAINING PROGRAMS ADD VALUE TO PRODUCTIVITY**

Today's environment expecting not only completion of the work properly but getting the identify and values for it is most preferred. The respondents were asked to rate the statement on a five - point scale (Strongly agree, Agree, Cannot say, Disagree, Strongly disagree) as to indicate their agreement to the statement to their feel and support from the organization. Mean = 2, Median = 2, Mode = 2, Skewness = 1.278. As the test indicates the mean is equal mode. Thus it is considered as normal distribution. The Cronbach's alpha value = 0.8883.

**1) HYPOTHESIS**

H<sub>0</sub>: There is no relationship between impacts of Perfect system followed to identify training needs on development.  
 H<sub>1</sub>: Relationship is exists between impacts of Perfect system followed to identify training needs on development.

**TABLE 1: PERFECT SYSTEM FOLLOWED TO IDENTIFY TRAINING NEEDS**

Chi- Square							Symmetric Measures			
SL.NO	Variables	d.f	Table Value @ 5% Level of Significance	Calculated Value	Asymp. Sig. (2-sided)	Accept H <sub>1</sub>	Cramer's V		Contingency Coefficient	
							Value	Approx. Sign	Value	Approx. Sign
1	Improve performance	12	21.026	158.161	0.000	Yes	0.709	0.000	0.775	0.000
2	Multi skilled	12	21.026	161.945	0.000	Yes	0.717	0.000	0.779	0.000
3	Personal & organizational growth	16	26.296	163.854	0.000	Yes	0.625	0.000	0.781	0.000
4	Value addition in productivity	16	26.296	160.439	0.000	Yes	0.618	0.000	0.777	0.000

Source: Primary data

**INFERENCES**

For all the above variables Chi-square Asymp.sig values are less than 0.05 indicates there is an existence of relationship between perfect system followed to identify training needs for development and Chi-square calculated values are also greater than chi-square table values at 5% level of significance falls into rejection region there fore we accept alternative hypothesis (H<sub>1</sub>). The cramer's V and contingency coefficient values of symmetric measures of training make the employees multi skilled (0.717 and 0.779) which improve the efficiency of employees at workplace and it also improve performance (0.709 and 0.775) of the employees causes to higher productivity indicates strong strength and significance of relationship with perfect system followed to identify training needs than others. Symmetric measures for Personal & organizational growth (0.625 and 0.781) and Value addition in productivity (0.618 and 0.777) indicates the strength and significance of their relationship is fairly satisfactory.

**MANAGERIAL IMPLICATIONS**

Examining the organizational, operational and person analysis practices is more crucial to identify the training needs. Operational analysis provides the information about expected performance and person analysis provide the information about actual performance in the current environment. The specific gap enable the management to focus on skill requirement of current and future changes and verify the gap to identify specific reasons for KSA deficiency, reward/punishment incongruence, Inadequate feedback, obstacle in the system are needed to overcome. Results of above table : 1 indicate healthy strength of relationship between Perfect system followed to identify training needs for development. It means the methods and techniques which were implemented by the management for training need analysis was helpful in their further development at work place. The system identified to make their employees multi skilled and improve the performance of the work force. Secondarily needs are identified for personal and organizational growth and in adding the additional values to improve productivity at work place.

**2) HYPOTHESIS**

H<sub>0</sub>: There is no relationship between impacts of content of training program on development.  
 H<sub>1</sub>: Relationship is exists between impacts of content of training program on development.

TABLE 2: TRAINING CONTENT MATCH THE SKILL REQUIREMENT

Chi- Square							Symmetric Measures			
SL.NO	Variables	d.f	Table Value @ 5% Level of Significance	Calculated Value	Asymp. Sig. (2-sided)	Accept H <sub>1</sub>	Cramer's V		Contingency Coefficient	
							Value	Approx. Sign	Value	Approx. Sign
1	Improve performance	6	120592	137.035	0.000	Yes	0.808	0.000	0.752	0.000
2	Multi skilled	6	12.292	74.926	0.000	Yes	0.597	0.000	0.645	0.000
3	Personal & organizational growth	8	15.507	137.035	0.000	Yes	0.808	0.000	0.752	0.000
4	Value addition in productivity	8	15.507	148.667	0.000	Yes	0.841	0.000	0.766	0.000

Source: Primary data

**INFERENCES**

For all the above variables Chi-square Asymp.sig values are less than 0.05 indicates there is an existence of relationship between training content match the skill requirement for development and Chi-square calculated values are also greater than chi-square table values at 5% level of significance falls into rejection region there fore we accept alternative hypothesis (H<sub>1</sub>). The cramer's V and contingency coefficient values of symmetric measures for (0.841 and 0.766) value addition in productivity upgrade the efficiencies of the employees to match the current and future requirements of the environment is indicate strong strength and significance of relationship with training content match the skill requirement than others. Symmetric measures for Personal & organizational growth (0.808 and 0.752) and improve performance (0.808 and 0.752) indicates the strength and significance of their relationship is fairly satisfactory. A symmetric measures value for content is useful to become multi skilled is (0.597 and 0.645) indicate satisfactory relationship but when compared with other development variables in the table: 2 indicate the relationship is fairly weak one.

**MANAGERIAL IMPLICATIONS**

The content will be dependent on trainer and trainee. The trainer has to understand the organization culture and climate. The outcome of the employees completely depends on what and how best they were trained in the training sessions and any faulty assumptions after need analysis causes deviate the objectives along with wastage of time, money and other resources. The percentage of content match with the required competencies similar percentage of improvement will be expected. The primary responsibility of every training program is to match the content with its objectives. The above table: 2 results indicate the strong relationship between content of the training program with development variables it means the content of the training program is similar and match the required skills to increase to means of production. The content of the training program is primarily focused to improve value addition in productivity of the employees. Secondly the content is also helpful for personal and organization growth, to improve performance for better means of production and in making the employee's multi skilled.

**3) HYPOTHESIS**

H<sub>0</sub>: There is no relationship between impacts of combination of skills in the training programs on development.

H<sub>1</sub>: Relationship is exists between impacts of combination of skills in the training programs on development.

TABLE 3: COMBINATION OF SKILLS IN TRAINING PROGRAMS

Chi- Square							Symmetric Measures			
SL.NO	Variables	d.f	Table Value @ 5% Level of Significance	Calculated Value	Asymp. Sig. (2-sided)	Accept H <sub>1</sub>	Cramer's V		Contingency Coefficient	
							Value	Approx. Sign	Value	Approx. Sign
1	Improve performance	12	21.026	129.208	0.000	Yes	0.640	0.000	0.743	0.000
2	Multi skilled	12	21.026	98.924	0.000	Yes	0.560	0.000	0.696	0.000
3	Personal & organizational growth	16	26.296	161.206	0.000	Yes	0.620	0.000	0.778	0.000
4	Value addition in productivity	16	26.296	138.778	0.000	Yes	0.575	0.000	0.755	0.000

Source: Primary data

**INFERENCES**

For all the above variables Chi-square Asymp.sig values are less than 0.05 indicates there is an existence of relationship between Combination of skills in training programs for development and Chi-square calculated values are also greater than chi-square table values at 5% level of significance falls into rejection region there fore we accept alternative hypothesis (H<sub>1</sub>). The cramer's V and contingency coefficient values of symmetric measures for improve performance (0.640 and 0.743) indicate strong strength and significance of relationship with Combination of skills in training programs than others. Symmetric measures for Personal & organizational growth (0.620 and 0.778), Value addition in productivity (0.575 and 0.755) and multi skilled (0.560 and 0.696) indicates the strength and significance of their relationship is fairly satisfactory.

**MANAGERIAL IMPLICATIONS**

Pharmaceutical industry also requires team working skills within a project development setting. Prospective employees will need to be able to explore group dynamics and group development. They should also have some experience in team building. Furthermore, like in most industrial sectors and every work of life, effective communication and adequate presentation skills is an essential thing to have. Other skills that are necessary within the pharmaceutical industry include risk analysis, problem solving and decision making. Employee should also possess effective time management skills and delegation techniques. You might also have to work with team members in remote locations. Writing skills and having a comprehensive understanding of the regulatory issues within the pharmaceutical industry is also an important asset. The combination requirement changes due to internal and external many of the situations external only and it may vary based on the job, profile, department etc. In the current situation test shows the satisfactory results about strength of relationship which indicate the organization is followed necessary combination of technical/behavioral skills to upgrade their employees skills to match with environmental requirements. Trend analysis indicates regular improvement in technical along with behavioral skills is necessary for sustainability. The combination of skills has improved the employees performance. Secondly it was helpful to grow personally along with organizational growth by additions for improved value of productivity and to become multi skilled employee.

**4) HYPOTHESIS**

H<sub>0</sub>: There is no relationship between impacts of fulfillment of required competencies on development.

H<sub>1</sub>: Relationship is exists between impacts of fulfillment of required competencies on development.

TABLE 4: TRAINING FULFILLS REQUIREMENT OF COMPETENCIES

Chi- Square							Symmetric Measures			
SL.NO	Variables	d.f	Table Value @ 5% Level of Significance	Calculated Value	Asymp. Sig. (2-sided)	Accept H <sub>1</sub>	Cramer's V		Contingency Coefficient	
							Value	Approx. Sign	Value	Approx. Sign
1	Improve performance	12	21.026	194.117	0.000	Yes	0.785	0.000	0.806	0.000
2	Multi skilled	12	21.026	259.949	0.000	Yes	0.908	0.000	0.844	0.000
3	Personal & organizational growth	16	26.296	212.010	0.000	Yes	0.710	0.000	0.818	0.000
4	Value addition in productivity	16	26.296	215.512	0.000	Yes	0.716	0.000	0.820	0.000

Source: Primary data

**INFERENCES**

For all the above variables Chi-square Asymp.sig values are less than 0.05 indicates there is an existence of relationship between training fulfill the requirement of competencies for development and Chi-square calculated values are also greater than chi-square table values at 5% level of significance falls into rejection region there fore we accept alternative hypothesis (H<sub>1</sub>). The cramer's V and contingency coefficient values of symmetric measures for training make employees multi skilled (0.908 and 0.844) which improve the efficiency of the employee at workplace is indicate strong strength and significance of relationship with training fulfill the requirements of competencies than others. Symmetric measures for Improve performance (0.785 and 0.806), value addition in productivity (0.716 and 0.820) and Personal & organizational growth (0.710 and 0.818) indicates the strength and significance of their relationship is fairly healthy.

**MANAGERIAL IMPLICATIONS**

Causes for poor performance may vary between employees and content of training programs cannot satisfy all the requirements of every employee. The content will be decided based on the common problems faced by majority of the employees. New methods and techniques will be implemented in the pedagogy for fast and easy learning to trainees though; it will be unable to fulfill complete skill requirements of all employees. How much extent the content and pedagogy has match with individual trainee needs only the similar skill enhancement will be expected in future. The ultimate motto of the training programs is to fulfill the needed competencies of the employees. Accomplishing the needed competencies (Technical/Behavioral) results in improved output and vice-versa. The test results in table: 4 indicates the healthy relationship between training and development variables by which it may be stated that the management is almost succeeded in filling the required inputs. The training programs are majorly accomplished the competencies in making employees to perform multi skills. The information of training programs is also improved employees performance, by providing the additions in the values for improved productivity and for the growth of personal and organization.

**5) HYPOTHESIS**

H<sub>0</sub>: There is no relationship between impacts of overall satisfaction of training programs on development.

H<sub>1</sub>: Relationship is exists between impacts of overall satisfaction of training programs on development.

TABLE 5: OVERALL SATISFACTION WITH TRAINING PROGRAMS

Chi- Square							Symmetric Measures			
SL.NO	Variables	d.f	Table Value @ 5% Level of Significance	Calculated Value	Asymp. Sig. (2-sided)	Accept H <sub>1</sub>	Cramer's V		Contingency Coefficient	
							Value	Approx. Sign	Value	Approx. Sign
1	Improve performance	9	16.919	168.115	0.000	Yes	0.731	0.000	0.785	0.000
2	Multi skilled	9	16.919	127.384	0.000	Yes	0.636	0.000	0.740	0.000
3	Personal & organizational growth	12	21.206	193.553	0.000	Yes	0.784	0.000	0.805	0.000
4	Value addition in productivity	12	21.206	215.871	0.000	Yes	0.828	0.000	0.820	0.000

Source: Primary data

**INFERENCES**

For all the above variables Chi-square Asymp.sig values are less than 0.05 indicates there is an existence of relationship between overall satisfaction of employees on training programs for development and Chi-square calculated values are also greater than chi-square table values at 5% level of significance falls into rejection region there fore we accept alternative hypothesis (H<sub>1</sub>). The cramer's V and contingency coefficient values of symmetric measures for training improve Value addition in productivity (0.828 and 0.820) of the employee at workplace indicate strong strength and significance of relationship with overall satisfaction on training programs than others. Symmetric measures for Personal & organizational growth (0.784 and 0.805) and Improve performance (0.731 and 0.785) indicates the strength and significance of their relationship is fairly healthy. Symmetric measures value 0.636 and 0.740 of variable training makes the employee multi skilled indicates satisfactory relationship but when compared with other development variables indicate the relationship is fairly satisfactory one.

**MANAGERIAL IMPLICATION**

The satisfaction can be seen based on content, pedagogy, trainer, presentation skills, knowledge of resource person, environment and many others. It also depends on expectation and considerations of trainees for their satisfaction but in many of the situation satisfaction depends on the accomplishment of their needed skills. The test results in table: 5 indicates the healthy relationship between variables Overall Satisfaction in comparison with development which means most of the employees feel satisfied with the conducted training program at organization. The respondents are highly satisfied with the additions occurred by the training programs are more valued for improved productivity. The respondents are given satisfied response for their growth of personal and organizational by training programs and also for their improved performance. Respondents are also satisfied by becoming multi skilled but compared to others it was least preferred.

**FINDINGS AND CONCLUSIONS**

Need analysis has identified five needs to train employees. First identification is to make their employees multi skilled to match with the current and future scenarios of the environment. The content of the program has included with technical/behavioral skill though, it was moderately satisfied the employees but accomplished the required skills of the employees to perform multi tasks. Second identification is to improve the performance of the employees. The content of the training program was accomplished the requirement of employees by providing the combination skills for their improved performance and moderately satisfied response was given by the employees about their performance improvement. Thirdly, the growth of personal and organization is the next identification; technical/behavioral skills are focused in the content to achieve this need. Satisfactory feedback was given by the employees for accomplishing the required skills for their personal and organizational growth. Accomplishing the work in the way organization should be benefitted by employees productivity

and how much these outputs provide benefits to the organization in the form of monetary and/or non-monetary. The similar level of value will be received from organization for their skills and contributions. Finally, need analysis has identified how to improve the values for employee's productivity. The test results shows that content of the program majorly focused on this need but the combination of skills are not fully concentrate on this need. Employees are satisfied as the training programs have moderately accomplished the required competencies.

The need identification has properly identified, technical/behavioral combination of content is accepted (Moderately or highly) by the employees. Though fluctuations in the acceptance levels are observed but, the training programs has accomplished the needed competencies of the employees and also accepted that these training programs are useful and benefitted for development. There are some deviations are observed in the test results between training and development variables but finally the employees given satisfactory response. So, it can be assumed that these deviations in the statistical results may be due to fluctuations in sample data, individual perceptions and change in departmental needs.

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## IMPACT OF STRESS ON WORK-LIFE-BALANCE OF WOMEN EMPLOYEES WITH REFERENCE TO BPO AND EDUCATION SECTORS IN BANGALORE

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### ABSTRACT

Ever since India opened its doors to liberalization in the early 1990's there has been a steady transformation in India's economy. Self-reliance helped in building great institutions of learning and taking strides in various field of life in keeping pace with the rapidly changing world. Women who earlier stayed at home to attend their domestic duties now maintain both work and home simultaneously participating in the process on an equal footing with men in social and economic development. Women have moved away from their traditional roles of homemaker and child rearing to social and business solutions. Due to this today women is facing lot of stress both at home and also in the work. As such she has to balance at home and also at her workplace. The pressure is making her to imbalance her work life. As such the present article deals about impact of stress on women work life balance. The main objective of the article is to find out whether the impact of stress is equal or different in different sectors. Here two sectors BPO and Education are undertaken to analyse the impact of stress on women work life balance is equal or different. The testing of the hypothesis showed that there is a difference on impact of stress in two sectors i.e. BPO and Education. This is because of work environment existing in both the sectors. The current article show that what are the factors effecting the women work-life-balance like, are they facing the stress? How are they managing the stress? Type of diseases faced due to stress. What types of organisation policies are implemented to remove the stress?

### KEYWORDS

Women employees, Work-life balance, stress, organisation policies.

### INTRODUCTION

The great brilliant scientist Albert Einstein say's about life that "Life is like riding a bicycle. To keep our balance we must keep moving". This is true for all employees who are struggling with work life balance especially for women employees who are facing many challenges inspite of stress in their work and life. With the improved education and employment opportunities today, most homes became dual earners as such because of increase in expenses and necessities.

#### WOMEN-THEN AND NOW

Traditionally the role of women used to be of cooking, cleaning, raising children etc. They were looked upon as care giver of as home keeper and were denied access outside home. Today's women have made their mark in every field. Let it be any sphere women are ready to take up challenges. As the time changed that both husband and wife earns but, the wife still cooks and washes and runs the house. So how does she balance her work with life at home?

#### WHAT IS WORK-LIFE BALANCE?

##### WORK

Work is the activity or effort that we put to produce or accomplish something. We work to put food on our table and roofs on our hands. We work toward the prospect of children in college and ourselves. We work because we have to. People usually understand the world of work as it related to making money. However many reasons are often cited for wanting to work, besides money which includes productivity, ambition, esteem and contribution to society.

##### LIFE

Life is more than just our age count. It is a collage of our happiness, sadness, celebrations and peacefulness to name a few **work** is the part of **life**. Life is broadly related to certain aspects like ambition, acquisition, achievements etc., which may promote stress while part of life should be taken as stress releasing agent also.

#### WORK LIFE BALANCE

A self defined, self determined state of well being that a person can reach, or can set as a goal that allows them to manage effectively multiple responsibilities at work at home and community. It supports physical, emotional, family and health and does so without grief stress or negative support.

#### WOMEN AND WORK LIFE BALANCE

Times and changing from traditional where the husband earned, and the wife stayed at home to the modern when the husband earns and wife earns too. But still cooks, washes and runs the house. So, today's women are striving continuously for "WLB".

Today's women are mostly into full time services and are working 8 hours per day and 5 days in a week minimum and are confronted by increasing workload everyday. So, most of them carry work and responsibilities to home but balancing between these two complex situations in present day fast life requires life talent, tact, skill and caution.

#### STRESS AND WLB

Technically stress is the adverse reaction an individual has to excessive pressure or other types of demand placed on them. In the work place, thee negative effects of stress can arise at times when pressures are extremes, such as peak busy periods, but equally can be caused by continuous exposure to stressful condition, such as being in an unsuitable job or being treated unfairly. These individuals with greater control will tolerate and manage stress levels, or avoid them altogether, more successfully. This has been a first like at the links between workplace stress and WLB and has been specifically aimed to those professional who are adding to the pressures of workplace and home life by taking on professional development activities. The solution to avoiding thee negative effects of stress and maintaining an appropriate WLB.

### THE CHANGING EQUATIONS OF NEW ERA

	The machine age	The industrial age	The network age
<b>Stress</b>	High	Higher	Highest
<b>WLB</b>	You went to work . Life started only when you go home	Not only people are working at work but also at home	24 hours work days split into compartments dedicate for life.
<b>Women work</b>	The men worked and women tended the house	Both men and women worked, still women tended the house.	Both men and women work and tend to the house.

## REVIEW OF LITERATURE

Fan Weiland Fend Ying (2009) in their study on "The stressors in Professional women's work-family conflict investigated on 121 professional women on role conflict and analysed that the actuality of the professional women's work family conflict and their stress effect on women WLB. They showed that

1. Professional women self-role perceived and social-role perceived have conflicts.
2. Education, income ratio, professional experience can influence the stress.
3. Domesticity satisfaction, family activity, spouse stress, work devotion and work load are the stress factors of professional women.

Shahnaz Aziz (2008) in this article "Workalcoholism, stress and WLB" suggested that interventions as on-site child care, flexible work time and telecommuting may reduce stress for women.

Katherine.J.C.Sang, Andrew.R. J Dainty (2009) in their analysis on "a risk factor for occupational stress" explained about causes of stress are due to long working hours, job insecurity and poor WLB low professional worth and temporary teams. The current research utilized standardized measures of occupational health and well being can be maintained by good assess in job satisfaction and good physical health.

## OBJECTIVES

1. To analyse about impact of stress of WLB of women employees in Education and BPO.
2. To study about the effects of stress on work life balance in education and BPO.
3. To know about how BPO and Education sector are managing stress.
4. To study about what type of organisational policies are implemented to avoid stress for women employees in BPO and Education sectors.

## NEED OF THE STUDY

WLB for women employees has become a major problem. Due to this they are facing lot of stress both at home and also at workplace. The present study is to analyse that is the work life balance in education and BPO sector varies or equal. As such the impact of stress on work life balance for women employees is very high compared to male employees. Therefore there is need to study about the impact of stress levels in various sectors. With regard to this the present study is taken to analyse the impact of stress on work life balance of women employees in BPO and Education sectors

## SCOPE OF THE STUDY

The scope of the study is restricted to

- Women employees working in two sectors that are education and BPO at Bangalore.
- The study covers the stress levels of employees in both the sectors
- The study includes on what factors the stress levels depends and how they are managing their stress levels in both the sectors.
- Finally is the organisation undertaking any policies to over come stress of women employees.

## RESEARCH METHODOLOGY

The present study is mainly based on primary data collected from around 82 respondents from BPO and Education sector at Bangalore. Convenience sampling is use for the study. The respondents were interviewed through a well structured questionnaire which was administered personally. Ordinal and five point scale has been used for the said purpose ranging from strongly agree to strongly disagree and Yes and No. The survey was conducted during the period of January 2011 to April 2011. t-test was used to analyse the study of the respondents.

## SAMPLE OF THE STUDY

A total of 82 respondents were conveniently administered the questionnaire from among those who were present on the days of survey. Participation of study was on voluntary basis, and the respondents were provided with the assurance of confidentiality and anonymity.

## STATEMENT OF THE PROBLEM

Today women are playing a vital role in every sector. As such it is becoming compulsory that every family should have dual earners depending on increase of necessities. Balancing of work and life became difficult for women in any sector. One important factor influencing them in WLB is stress. The present problem is the study about the impact of stress factors in BPO and Education.

## WLB BALANCE STRATEGIES IN INDIAN BPO AND EDUCATION SECTOR

The number of women working in the BPO sector grew 60 percent in the last two years to 6.7 lakh in 2008, as per a survey on gender inclusivity conducted by HR consulting firm Mercer and IT association Nasscom. As per the survey done by them which covered over 45 leading technology companies in the country revealed that HR practices such as transportation policy of a company besides flexible working hours and leave policy play a major role in attracting women in an organisation. Other practices that women workers appreciate are anti- harassment policy, healthcare and awareness programs, women's lounge or recreational activities. "The Indian IT-BPO industry has set high standard in gender inclusivity. Women are a key and vital part of our workforce, and their participation in the workforce is seen as a critical enabling factor for continued growth of the industry," said Nasscom vice president Sangeeta Gupta. Experts has suggested upgrading the professional skills of women, setting up a mentorship program for women in an organisation, undertaking an internal study to identify where career paths for women reach a block, providing incentives in the form of tax benefits for organisations which fulfill certain criteria in empowerment of women. India has the largest number of working women in any single country in the world, which can be partly attributed to the growth of the IT-BPO industry. "Out of the 400 million workforce in India, around 30-35 percent are female, and only one-fifth of these women work in the urban areas,"

### WOMEN IN THE EDUCATION WORKFORCE PARTICIPATION RATES

Education is a feminised industry. There are over 15000 000 women working in Schools and other education sectors constituting just over two thirds of the workforce. In the year 2000, women made up 73 percent of the people who completed tertiary qualifications in education, and the vast majority of these people seek entry as beginning teachers to the schools sector. Many have the opinion that education has the less work life balance. But that is not true. Even there are many women employees who face stress because of working in the education sector also. There is nearly 60 percent of turnover in the education sector also due to the work life balance by many women employees.

**DATA PRESENTATION**

**Demographic profile of the respondents**

The questionnaire included a segment on the profile of women employees of BPO and education. Demographic features are useful in the formulation of impact of stress on WLB of women employees. The demographic profile of the respondents of BPO and Education are presented in Table1.

**TABLE 1: DEMOGRAPHIC PROFILE OF THE RESPONDENTS**

		Frequency	Percentage
Nature of organisation	Education	50	61.0
	BPO	32	31.0
Age of the person	20-30	59	72.0
	30-40	21	25.6
	40-50	0	0
	Above 50	2	2.4
Marital status	Married	49	59.8
	Unmarried	33	40.2
No.of. years of experience	0-5	50	61.0
	5-10	26	31.7
	10-20	5	6.1
	20-30	1	1.2
Annual income	below 1 lakh	23	28.0
	1-3 lakhs	50	61.0
	3-7 lakhs	9	11.0

As seen the table1, the respondents are mostly from the age group of 20-30 (72%). This may be due to the nature of the Indian knowledge industry which is young. It is evident from the table that 25.6% is between the age of 30-40, while remaining that is 2.4% is of the age 40 to 50 and above 50. It can also be seen that most of the respondents we married (59.8%) and rest of them that is 40.2% were unmarried. Majority of the respondents work experience is between 0 to 5 years (61%) and remaining were between 5 to 10 years of experience rest of them were between 10 to 30 years of experience. And with regard to annual income most of the respondents were earning between 1 to 3 lakhs (61%). And remaining were earning below one lakh (28%) and rest of them 11% were earning 3 to 7 lakhs.

**DATA ANALYSIS AND FINDINGS**

**IMPACT OF STRESS IN WORK LIFE BALANCE OF WOMEN EMPLOYEES IN BPO AND EDUCATION SECTOR**

The raw data was analysed using SPSS 19.0 in order to check the whether there is difference in the impact of stress in work life balance of women employees under BPO and Education sector is equal or not.

H<sub>0</sub>: Impact of stress is equal (level of significance) in education and BPO sector.

H<sub>a</sub>: Impact of stress is not equal in Education and BPO sector.

**TABLE 2: GROUP STATISTICS**

	nature of organisation	N	Mean	Std. Deviation	Std. Error Mean
are you experiencing stress	0	50	1.72	.882	.125
	2	32	1.53	.842	.149
Are you able to manage stress arising from your work	0	50	2.86	1.340	.190
	2	32	2.47	1.344	.238
do our ever feel tired or depressed because of work	0	49	1.71	.764	.109
	2	32	1.75	.916	.162

The group statistics in table 2 shows that impact of stress level that majority of respondents experiencing the stress is from BPO as per the details the standard deviation of BPO sector is .882 and Education is .842. It can be analysed that women employees of education sector are able to manage the stress arising from work as the mean and standard deviation is approximately more than the BPO. And with regard to women employees feeling depressed of work, it show that approximately both the sectors women employees are feeling depressed of work and unable to balance work life balance. The SD for BPO is .764 and Education is .916 and mean is 1.71 and 1.75.

**TABLE 3.1: GROUP STATISTICS (T-TEST) SHOWING IMPACT OF STRESS IN EDUCATION AND BPO SECTORS**

	nature of organisation	N	Mean	Std. Deviation	Std. Error Mean
are you experiencing stress	0	50	1.72	.882	.125
	2	32	1.53	.842	.149
suffering from stress related diseases	0	50	.64	.485	.069
	2	32	.66	.483	.085
does your organisation follow work life balance policies and practices to overcome stress	0	49	.65	.561	.080
	2	32	.81	1.203	.213
result of distressing event	0	47	2.34	1.464	.214
	2	32	3.00	1.918	.339
what would be your ideal way to de-stress from a long day at work	0	50	3.64	1.352	.191
	2	32	2.38	1.737	.307



TABLE 3.2: T-TEST TO MEASURE THE IMPACT OF STRESS ON EDUCATION AND BPO SECTORS

Measure/Item	Sig.	Sig. (2-tailed)	Std. Error Difference	t-score	p-value (5% los)
are you experiencing stress	.547	.339	.196	.579	Not Significant
suffering from stress related diseases	.765	.882	.110	.202	Not Significant
does your organisation follow work life balance policies and practices	.156	.423	.198	.235	Not Significant
result of distressing event	.002	.087	.381	.099	Not Significant
what would be your ideal way to de-stress from a long day at work	.034	.000	.342	1.946	Not Significant

A t-test has been conducted (table 3.1, table 3.2) to find out whether the impact of stress level is same in case of education and BPO sectors. Table 3.2 shows that the impact of stress level is different for both the sectors.

**TYPE OF STRESS RELATED DISEASES SUFFERED BY THE WOMEN EMPLOYEES IN EDUCATION AND BPO**

TABLE 4.1: SHOWING TYPE OF STRESS RELATED DISEASES SUFFERED BY THE WOMEN EMPLOYEES

If yes what type of stress related disease	Mean	N	Std. Deviation	Grouped Median	% of Total Sum	% of Total N
Hypertension	.33	18	.485	.33	60.0%	47.4%
Obesity	.44	9	.527	.44	40.0%	23.7%
Diabetes	.00	1	.	.00	.0%	2.6%
frequent headaches	.00	10	.000	.00	.0%	26.3%

Table 4.1 shows what are the different type of stress related diseases suffered by the women employees. The shows that many women employees suffer with frequent headaches (26.3%), hypertension (47.4%), obesity (23.75) and diabetes (2.6%). On an average in both the sectors women employees are suffering equivalently with all the diseases.

**RESULT OF DISTRESSING EVENT IN BPO AND EDUCATION**

TABLE-4.2: SHOWING THE RESULT OF DISTRESSING EVENT OF EDUCATION AND BPO SECTORS

Result of distressing event	Mean	N	Std. Deviation	Grouped Median	% of Total Sum	% of Total N
Thought of abruptly quitting	.67	6	.516	.67	7.5%	7.6%
been physically ill	.65	17	.493	.65	20.8%	21.5%
had sleep difficulties	.60	25	.500	.60	28.3%	31.6%
Taken a mental health day	1.00	3	.000	1.00	5.7%	3.8%
Taken your frustration out on a loved one	.58	12	.515	.58	13.2%	15.2%
any other	.86	14	.363	.86	22.6%	17.7%

Table 4.2 shows result of distressing event caused by stress in education and BPO sector. 7.5% of women employees thought of abruptly quitting the organisation. 20.8% of employees have been physically ill, 28.3% of employees had sleep difficulties, 13.2% of people have taken their frustration out on a loved one. And 22.6% of employees says that they had reflection on other personal matters like disputes with partner, lack of personal life and interest etc.

**WHAT WOULD BE YOUR IDEAL WAY TO DE-STRESS FROM A LONG DAY AT WORK**

TABLE 4.3: SHOWING IDEAL WAY TO DE-STRESS FORM A LONG DAY AT WORK OF WOMEN EMPLOYEES IN BOTH SECTORS

what would be your ideal way to de-stress from a long day at work	Mean	N	Std. Deviation	Grouped Median	% of Total Sum	% of Total N
Exercise	1.00	11	1.414	.70	19.0%	13.6%
Alcohol	2.50	2	3.536	2.50	8.6%	2.5%
having a massage or other spa	.50	2	.707	.50	1.7%	2.5%
watching TV	.66	35	.591	.64	39.7%	43.2%
going to nice restaurant with partner	.50	16	.516	.50	13.8%	19.8%
going home and having a healthy, organic prepared	.67	9	.500	.67	10.3%	11.1%
any other	.67	6	.516	.67	6.9%	7.4%

Table 4.3 shows about what would be their ideal way to de-stress form a long day at work. By this we can analyse that many of the women employees would like to watch TV (43.2%), 19.8% of women employees would like to a nice restaurant with partner, 13.6% of employees says that they spend time in yoga, exercise 11.1% says that they would go home and have a healthy and organic prepared and 7.4% says any other option like spending with children and going to parties and participating in cultural events or going to temple etc.

## ORGANISATION POLICIES FOLLOWED BY THE TWO SECTORS IN ORDER TO OVER-COME STRESS ARISING OUT OF WORK-LIFE BALANCE

TABLE 4.4: SHOWING WHAT TYPE OF POLICIES ARE FOLLOWED BY BOTH THE SECTORS FOR BALANCING THE WLB OF WOMEN EMPLOYEES IN BPO AND EDUCATION SECTORS

what type of policies does your organisation follows	Mean	N	Std. Deviation	Grouped Median	% of Total Sum	% of Total N
career break	2.33	3	2.517	2.00	36.8%	8.8%
right to request flexible working	1.00	8	1.773	.50	42.1%	23.5%
flexi time	.17	6	.408	.17	5.3%	17.6%
job sharing	.00	3	.000	.00	.0%	8.8%
maternity leave	.00	6	.000	.00	.0%	17.6%
child care facilities	1.00	1	.	1.00	5.3%	2.9%

Table 4.4 show that what types of policies are followed by both the sectors. As per the above table we can analyse that different type of policies followed by them right to request flexible working hours (23.5%), maternity leave 17.6%, job sharing(8.8%), career break (8.8%), child care facilities (2.9%).

## CONCLUSIONS

Based on the analysis and findings of the impact of work life balance of women employees in Education (0) and BPO (2) sectors we can draw conclusions that stress level between the women employees is different in different sectors. Though there is difference in their professions based on the work and life balance we can say that stress level in the work environment might be different but they say that at home they stress level is equal. As per the above t-test we say that stress level impact is different in both the sectors. And even organisations are implementing different policies in order to overcome the stress for women employees.

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