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From the Desk of Editor-in-Chief

Just few months ago, as job growth in India surpassed the supply of employees; most HR professionals were struggling with the grave challenge of recruiting talented employees to fill the required job positions. Retaining these workers in a hypercompetitive job market was a serious challenge. While the business scenario has almost become upside down, recruiting and retaining the right people is just as important as before. But the stakes are higher now as the margin between success and failure is very thin. Retention may seem counterintuitive when the news discloses "RECESSION" and firms have already started planning to lay off their staffs. Most companies cite attracting critical-skill employees (77 %) and retaining top-performing employees (60 %) as key workforce planning challenges. It is riskier to have a retention programme that is not followed than not having one at all, and in tough economic times, retention programmes are sometimes put as cost saving mechanisms. And history shows that companies which focus on keeping the best are more likely to come through an economic crisis.

Even as we face what promises to be a longer recovery than the last breakout, retention strategies need to be on the timetable of every company. Keeping top talent isn't easy. Managers don't give their companies high marks for keeping top talent. Just 49% of managers say top talent tends to stay at their companies, according to a survey of 10,000 employees by staffing company Hudson. In the economic downturn talent has become most critical and important factor in competitiveness; it must be managed at least as carefully as any physical asset. And retaining a key talent is very complex and difficult because every organization requires new skills to remain contemporary, competitive and to stay ahead of the times. The ability to gauge what those skills will be is a prerequisite for the success of any organization. That kind of crystal gazing is not always easy, and further it gets tougher when it comes to creating a culture where talent stays. A closer look at what business wants may provide some answers to the retention challenge.

Many of the expectations of the organizations reflect that the employees want a clear picture of the vision of the company so that the turbulent times may not let the employees to lose focus. A well planned coaching programme will be a successful strategy to uplift the morale of the employees and thus to stay with the firm. Another strategy which would help employees to decide on the ways to avoid future problems would be by providing them with consistent and vigorous feedback for their performance. And further a chance to express opinions and contribute towards decision making would help garnering loyalty form the employees in the uncertain times.

Building talent retention strategies on this list does more than keep staffers: It creates teams that are as committed to an organization's success as they are to their own.

Although the complete impact of financial crisis has not yet been felt and as the companies continue to experience the effects over the coming months, they will need to focus on accomplishing more with less. Additionally as the organizations succumb to the pressure of cost cutting it will become all the more important for them to see that the right people are at the right roles for long to support the business during these challenging times as also thereafter.

Prof (Dr) R C Sharma
Editor-in-Chief
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Transformational Leadership as a Predictor of Employee Performance through Organisational Communication

*Dr Soumendu Biswas

Studies pertaining to managerial topics in India, especially with reference to human resource (HR) management functions, have specified several factors that have had a direct impact upon individual and organizational effectiveness. In this connection, transformational leadership was found to have important bearings upon organizational communication processes and practices and ultimately upon the performance of individual employees of an organization. The current study explores the effect of transformational leadership on an individual's performance, and the role played by organizational communication between the predictors and the criteria variables. Data for this research were collected from 357 managers/executives of different organizations in India and were subject to multivariate data analysis procedures. The results confirmed the hypothesized model and also provided several pointers for theoreticians and practitioners in the field of HR management.

Introduction

The era of globalization has made the business environment increasingly challenging and unstable (Burke, 2004). In India, this era started with the introduction of the New Economic Policy (NEP) in 1991. In this connection, it is worth noting that India holds a prominent place among the new emergent economies and, as such, the forces of globalization have had a definitive impact on firm practices here (Biswas, Giri, & Srivastava, 2006; Budhwar & Boyne, 2004).

According to Ulrich (1997), some of the major challenges facing the emergent economies of today are globalization, changes in customer expectations, changing structures of revenues and costs, a greater concern for organizational capability development, capacity to keep pace with environmental changes, innovations in the technological arena, attracting, developing, and retaining skillful and knowledgeable human resource capital, and ensuring the sustainability of long-term changes. Among all these factors, organizations can duplicate technology, processes, products, and strategy. In connection to the discussion about the rapidly developing economies such as India, it is important to investigate the cultural facets that make up effective managerial behaviour within an organizational framework (Biswas, 2006). Earlier studies by Zurcher (1968) back up this point of view wherein it was mentioned

that with the worldwide growth in trade and commerce, it is necessary to study such behavioural aspects, especially in a cross-cultural situation.

With reference to India in particular, it may be noted that traditionally its national culture has been collectivist and underlines human actions within the broader social ambit (Hofstede, 2001). It is further emphasized that these aspects of national culture are deeply embedded in the individual psyche of the average Indian and are germane towards their affective and cognitive behaviour in a work-life context (Rao & Abraham, 2003). Paradoxically though, the nature and flexibility of the Indian culture and value system has been such that often it has absorbed alien customs and more and adapted it to indigenous norms and practices, thus maintaining the distinctive ethos of the Indian society while at the same time globalizing it (Biswas et al., 2006). This has placed the Indian society in a unique position in the oriental world whereby its culture is marked by a philosophy of crossvergence. In this connection, India plays the role of a leader in establishing the standards of cultural ideals in the contemporary boundary-less business environment (Ralston, Holt, Terpestra, Kai-Cheng, 1997). In as much, that Varma, Budhwar, Biswas, and Toh (2005) put the Indian traditional cultural system into perspective by terming it as the fulcrum of the South-East Asian business milieu.

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Transformational Leadership as a Predictor of Employee Performance through Organisational Communication

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With this background, the objective of the current study was to examine the interrelationship among three behavioural constructs, namely, transformational leadership, organizational communication, and employee performance. More precisely, the present study undertook the task of investigating the causal impact of transformational leadership on employee performance through organizational communication process. The following section reviews the literature related to the study variables.

Theoretical Background

A survey of the relevant literature showed that leadership style influenced organizational communication system because followers entrusted their compliance to leaders (Hermalin, 2001). This was because, the latter was assumed to have information about their future course of action. According to Anderson and King (1993), leadership style, in the contemporary business scenario, should comprise clear vision and mission, as well as foster innovativeness. Howell and Avolio (1989) suggested that leadership style should develop confidence among followers and enhance their creativity which, in turn, would facilitate management of change.

Furthermore, effective communication is an essential requirement to attain organization aims and objectives. Thus, organizational communication is an essential construct to maintain a sense of equilibrium in a dynamic business world (Luthans, 1992; Yukl & Tracey, 1992). In this connection, the flow of organizational communication and its direction play a role of vital importance as to how the construct connects leadership and culture to individual-level outcomes such as job performance within the ambits of his/her existing organization.

Past research studies have shown that top-down communication flow with regard to job

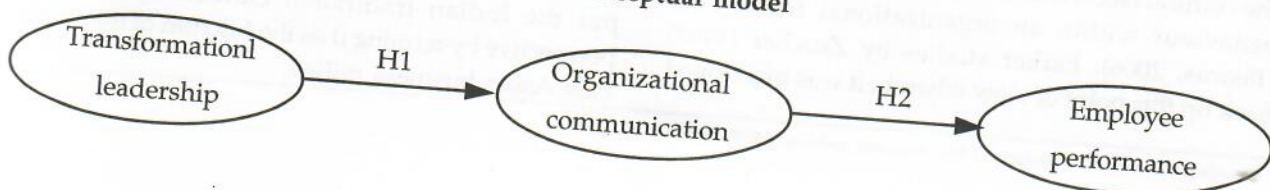
requirements, role clarity, and goal congruence have had a significant impact on employees' job performance (Katz & Kahn, 1966). Furthermore, Goldhaber (1990) found that information regarding job-related issues, when transmitted properly through channels of organizational communication, increased clarity regarding job expectations, thereby enhancing job performance levels. Moreover, organizational communication played a significant role in disseminating organizational values and missions emanating from the top management and also played an important role towards favourable relationship between subordinates and their supervisors (Gardner & Winder, 1999).

Literature also suggested that upward communication facilitates feedback as well as feed forward, thus ensuring that messages have been clearly conveyed, analyzed, and understood. This facilitates employee performance, thus leading to an overall enhancement of decision-making processes which in turn improves organizational effectiveness (Callan, 1993; Fietkau, 1990; Goldhaber, 1990). Gardner and Winder (1999) further observed that feedback led to assessment and reassessment of job goals which allowed for revised performance standards, ultimately leading to improved job performance. Literature also confirmed that the manner in which an employee perceives the communication styles, policies, and the overall system will determine to a great extent his/her morale and motivation which would be reflected in his/her performance outcomes (Pettit Jr., Goris, & Vaught, 1997; Pincus, 1986). This, in turn, would have a significant impact on his/her life in the organization.

On the basis of the above discussion, the following hypotheses were tested (Figure 1 presents the conjectured model):

H1: Transformational leadership will have a positive and significant impact on organizational communication;

Figure 1
The conceptual model



H2: Organizational communication will have a significantly positive consequence on employee performance.

Methodology

Sample

For the study, participants who were managerial level employees in their organization were selected. Three levels of managerial executives were considered, that is, those belonging to the senior, middle, and junior management cadres to fill the study questionnaire. It was found that the average age of the participants was thirty-seven years. Moreover, they had a mean work experience of eleven years. Out of these three hundred and fifty seven participants, 83.9 per cent were male, while 16.1 per cent were females. With respect to the designation of the participants, 7.3 per cent belonged to the senior level of management, 35.6 per cent to the middle managerial level, and 57.1 per cent belonged to the junior management cadre.

Measures

To measure the major variables of the study, items were selected from standardized questionnaires. The participants of the survey indicated their choice of response through a five-point scale. Furthermore, the respondents' demographic details were elicited

through five items.

Transformational Leadership: Transformational Leadership was measured using the multifactor leadership questionnaire (MLQ) form 5X (Bass & Avolio, 1995). Transformational leadership comprised five sub factors which were idealized influence (attributed), idealized influence (behavioral), inspirational motivation, intellectual stimulation, and individual consideration and was manifested by 21 items. The Cronbach's alpha of this scale was .92.

Organizational Communication: Organizational Communication was measured using a 7 item Organizational Communication Scale, capturing the entire underlying manifest variables of the construct. To measure organizational communication, the Organizational Communication Scale by Roberts and O'Reilly (1974) was used. The scale comprised 7 indices to measure organizational communication, namely, trust, influence, mobility, desire for interaction, accuracy, summarization, and gatekeeping. The Cronbach's alpha of this measure was found to be .73.

Employee Performance: Employee Performance was measured using Lynch, Eisenberger and Armeli's (1999) Employee Performance Scale. This scale comprised a total of 16 items, of which 9 measured in-role, and 7 measured extra-role performance.

Table 1
Descriptive Statistics, Correlations, and Reliability Indices (N=357)

	Mean	S.D.	1	2	3
1. Transformational leadership	3.39	.80	(.92)		
2. Organizational communication	3.59	.49	.48**	(.73)	
3. Employee Performance	3.56	.55	.53**	.44**	(.90)

** $p \leq .01$ (Values in parentheses represent Cronbach's alpha)

Participants had to indicate the most appropriate response within a range of 1=strongly disagree to 5=strongly agree. The reliability index as represented by the Cronbach's alpha was .90.

Results

In Table 1, the means, standard deviations, correlations, and the reliability indices of the key variables of the study are described. It was found that the correlations between transformational leadership and organizational communication ($r=.48$, $p<.01$) was significant. The correlation between organizational communication and employee performance ($r=.44$, $p<.01$) were also significant. These results are presented in Table 1.

Furthermore, the causal linkages between the variables were examined through regression analysis. Table 2 represents the standardized regression estimates between the key constructs. As shown in this table, transformational leadership significantly and positively predicted the organizational communication procedures (standardized $\beta = .30$, C.R. = 4.80). It was also found that organizational communication had a significant and positive effect on employee performance (standardized $\beta = .80$, C.R. = 8.81). These results are exhibited in Table 2 below.

Discussion and Conclusion

In the context of the current study, the present paper postulates that transformational leadership will have a significant and positive influence on organizational communication. As results showed, this was indeed the case. The theoretical fallout of this hypothesis is that since managerial functions, among others, include planning and control, it is the method in which plans and decisions are communicated and

subsequently accepted or rejected, that defines organizational efficacy. Theoretically speaking, transformational leaders are those who are able to inculcate organizational achievements in terms of followers' aspirations and thus enthruse the latter in achieving their individual goals and thereby realize person-organization goal congruence. Since this is achieved through mutual trust and non-verbal communication tactics (Greenbaum, 1973) which are factors that form the conceptual base of transformational leadership, it is implied that such a style of leadership will have a significant and positive impact on the style of organizational communication.

In terms of practical implications of the present study, it is felt that the findings are indicative of the top management's concerns of letting organizational members know about future directions and strategies, communicating to the employees about standards of performance, and letting others, especially at the peer-level, understand the execution of managerial functions. Barring the final implication as stated above, individualized consideration about employees' expectations and an idealized influence on employee perception goes a long way in deciding the mode of an organization's communication procedures. The discussion above provides theoretical and practical grounds on which the acceptance of the second hypothesis of the study is based.

The second hypothesis of this study stated that organizational communication would significantly and positively predict employee performance. The statistical analysis applied on the relevant data led to the acceptance of this hypothesis. In terms of theoretical implications, the above result stands justified because it is only a positive level of organizational communication which will lead to goal clarity and reduction of role conflict and role

Table 2
Regression Estimates

	Standardized β	C.R.
Transformational leadership \rightarrow Organizational communication	.30	4.80
Organizational communication \rightarrow Employee Performance	.80	8.81

ambiguity, thus enhancing employee efficiency and effectiveness. As Gardner and Winder (1999) pointed out that formal and informal communication channels in an organization are powerful tools to motivate and stimulate individual organizational members to display higher levels of in-role as well as extra-role activities.

Moreover, the practical implication of this hypothesis is that it underscores the fact that optimizing the efficiency of communication strategies improve individual efficacy. As Gwynne (1999) stated that an effective organizational communication strategy sets the benchmark for a 'learning' or a 'knowledge' organization. Since an organization is ultimately a sum total of its individual members, this would be a reflection of individual employees' enhanced capabilities and their performance. Moreover, accuracy of information and trustworthiness of the information received would set the job standards. Thus in this manner, communication activities clarify an individual's expected performance and contribute to his/her personal growth and development.

Future Scope of Research

Future research scope should include changes in leadership and its predictive outcomes in terms of changes in structure and processes of organizational communication. Follow-up research is also required to clarify the processes by which communication strategies would mediate the relationship between transformational leadership and individual's job responsibilities. Furthermore, in future, researchers may also focus upon variables that interact with communication strategies to forecast communication satisfaction and individual performance on-the-job.

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Military-Civilian Model of Mutual Respect: A Study of Blue and White Collar Employees in Chemical Industries

*Atul K Srivastava **Dr Mohd Nishat Faisal ***Mangesh Chickermane

Though each and every person in an organization is expected to perform his task to the best of his abilities, certain jobs are more critical than the others with respect to their impact on the operational productivity in a chemical process company. Under the scope of the research, operational productivity means an ability of plant-associated blue-collar personnel to give their best shot when they are motivated, cared for and respected by their white-collar peers on the other side of the (plant) fence. Production, Inspection and Maintenance (PIM) are the three blue-collar core operational group while 'Safety, Fire and Security' are the blue-collar support organization who understand and back up PIM very well and closely. All other departments /functions are normally white-collar support-type and based outside the fence of the plant. The plant-associated personnel and the soldiers on the border of a country have some kind of similarity in terms of their tough work-life and the respect they deserve during emergency as well as normal times. If soldiers do not get enough moral and physical support including encouragement from civilians, the war is lost. And thus, the plan of the government remains shelved in the offices. The blue-collar personnel toil to keep the plant producing, even if they have to compromise with their personal, family and social lives as do the soldiers. This keeps the 'enemies' (i.e. the competitors) at bay. Lower levels of these blue-collar personnel in the plant can be compared with the combatants while those at the higher levels with those at higher levels in the army such as brigadiers and generals. To win the war, the soldiers at all the levels on the frontier are important. So are the blue-collar personnel in the plant.

Introduction

Though each and every person in an organization is expected to perform his task to the best of his abilities, certain jobs are more critical than the others with respect to their impact on the operational productivity in a chemical process company. Under the scope of the research, 'Operation' means safe regular actions by blue-collar personnel in a producing plant, and 'Operational Productivity' means an ability of plant-associated blue-collar personnel to give their best shot when they are motivated, cared for and respected by their white-collar peers on the other side of the (plant) fence. Despite a well-designed plant, problems still occur which keep Production, Inspection and Maintenance (PIM) personnel on their toes 24/7/365.

Production personnel are like pilots of the aeroplanes. Any mistake committed by them in the operational process may end up in tripping ('shut-down') of the plant, resulting in huge financial losses.

Inspection personnel are like doctors to the plant who diagnose the problems with equipment and machinery. Maintenance personnel are like compounders-nurses who administer the medicine, minor surgery and therapy as recommended by the inspection personnel. Though the PIM personnel have been compared here with pilots, doctors and compounders-nurses respectively; their working life is much harder than that because of their outdoor activities in the harsh working environment of the plants round the year. They are more comparable with the soldiers at the border in terms of hardship and respect they deserve from their white-collar peers in support departments such as HR, Finance etc.

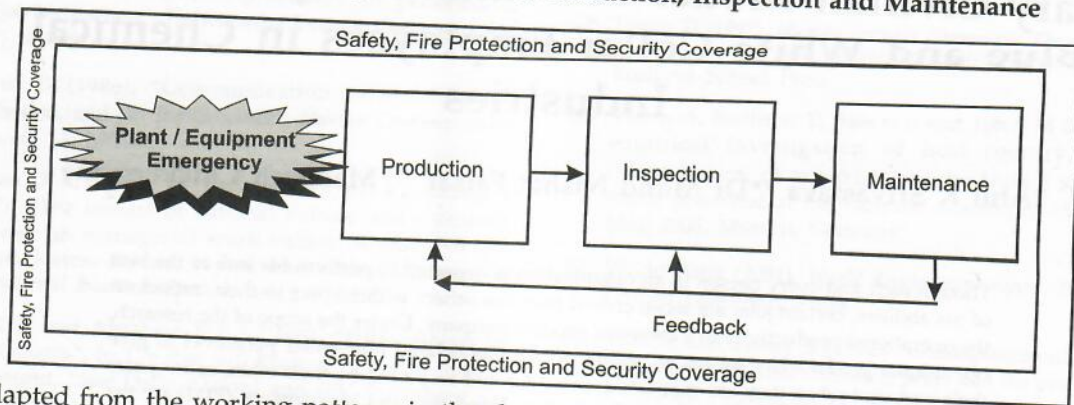
A block diagram for integrated network of four blue-collar human resource groups of 'PIM' and 'Safety, Fire and Security' is shown below in the the plant domain. PIM are the three core operational group while 'Safety, Fire and Security' are the blue-collar support organization who understand and back up

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Figure-1: A Closed-Loop Schematic of Production, Inspection and Maintenance



(Adapted from the working patterns in the chemical process plants as per the present research)

PIM very well and closely. All other departments / functions are normally white-collar support-type and based outside the fence of the plant.

Winsor (1996) explains that the military perspective has greatly influenced business thought and practice as the most common metaphor in organization literature. Talbot (2003) offers an alternative explanation for the development and creation of industrial and post-industrial organizational forms derived from military models. The metaphor of warfare pervades popular and academic portrayals of retailing (Whysall, 2001). Kolar et al. (2007) aim to encourage thinking beyond the limits of obsolete and superficial 'warfare marketing'. The management literature has not delineated any visibly significant 'military-respect' model specifically targeted at chemical process industries. The Analogy below, conceived by the researcher and substantiated by the co-authors, summarizes the research theme of 'soldier-civilian model of mutual respect' as a conceptual framework when applied to chemical process industries under the present research.

Research Methodology

A survey was carried out with 605 respondents (blue and white-collar ratio 2:1, having collective experience in 170 chemical process companies) and the underlying hypotheses accepted. It was found that the life of PIM personnel is very hard. They sacrifice their personal, family and social life to respond to the plant emergency even if it is in the middle of the night or in a stormy weather in a hazardous and toxic plant environment. They

sometimes have to cancel their leave to attend to the upset conditions of the plant.

One of the questions in the questionnaire related to agreement or disagreement with the research theme i.e. 'soldier-civilian model of mutual-respect' between the blue and white-collar personnel in the chemical process industries. Respondents agreed with this model with overwhelming score. All 605 respondents combined (blue + white collar) gave it a whopping score of 880 (46% above their straight agreement score of 605). While the blue-collar respondents gave an overwhelming score of 620 (56% above their 'straight agreement' score of 398), the white-collar respondents gave a score of 260 (26 % above their 'straight agreement' score of 207).

If a respondent agrees with the statement in a question, his score is + 1 (straight agreement). If he strongly agrees, the score is + 2 (strong agreement). Straight disagreement and strong disagreement yielded -1 and -2 scores respectively. The agreement with a hypothesis (consisting of similar questions on TQHRM aimed at enhancing operational productivity) depended upon the + ve average score per respondent per question. Similarly, if a random member of population agrees with hypothesis, his average score per question should be + ve. Thus, the Null Hypothesis was $H_0 : \mu = 0$ and Alternate Hypothesis $H_1 : \mu > 0$. Sample statistics and population statistics were correlated through Z-statistic at 95% confidence (one-tailed test) to test various hypotheses. Average scoring was resorted to because of subjective nature of human resource management.

Soldier-Civilian Model of Mutual Respect

The theme of the present research could be better understood through the use of an analogy. The plant-associated personnel and the soldiers on the border of a country have some kind of similarity in terms of their tough work-life and the respect they deserve during emergency as well as normal times.

If a plant stops producing due to any problem arising therein, it results in colossal financial losses. To avoid such a kind of situation, the problem is solved on a war footing by the blue-collar plant-associated PIM personnel. In the present era of general 'cut-throat' competition in the global market, the major 'enemies' of a company are its competitors. The blue-collar personnel toil to keep the plant producing, even if they have to compromise with their personal, family and social lives as do the soldiers. This keeps the 'enemies' (i.e. the competitors) at bay.

The soldiers on the border compromise with the comforts of their regular personal lives and work in odd hours and hazardous locations to defend the country as an 'operation'. Soldiers rely on the paramilitary forces, logistical support forces, the government and civilians. If soldiers do not get enough moral and physical support including encouragement from others as above, the war is lost. And thus, the plan of the government remains shelved in the offices! Why? Soldiers did not get the timely motivation and support!

In Figure-1, human resources of Production, Inspection and Maintenance (PIM) departments in a chemical plant can be compared to the soldiers on the frontier. Safety, Fire and Security are like the para-military forces, and Materials and Marketing are like the logistical forces for the soldiers close to the battleground. At a little more distance from the battleground--- Engineering (Change Support), Administration and Finance & Accounts in this order can be considered as the next line of logistical support for the soldiers. Top Management can be equated to the central government which prepares plans, carries out diplomacy and finally declares war as a critical operation against the enemy. Civilians elect and form the government.

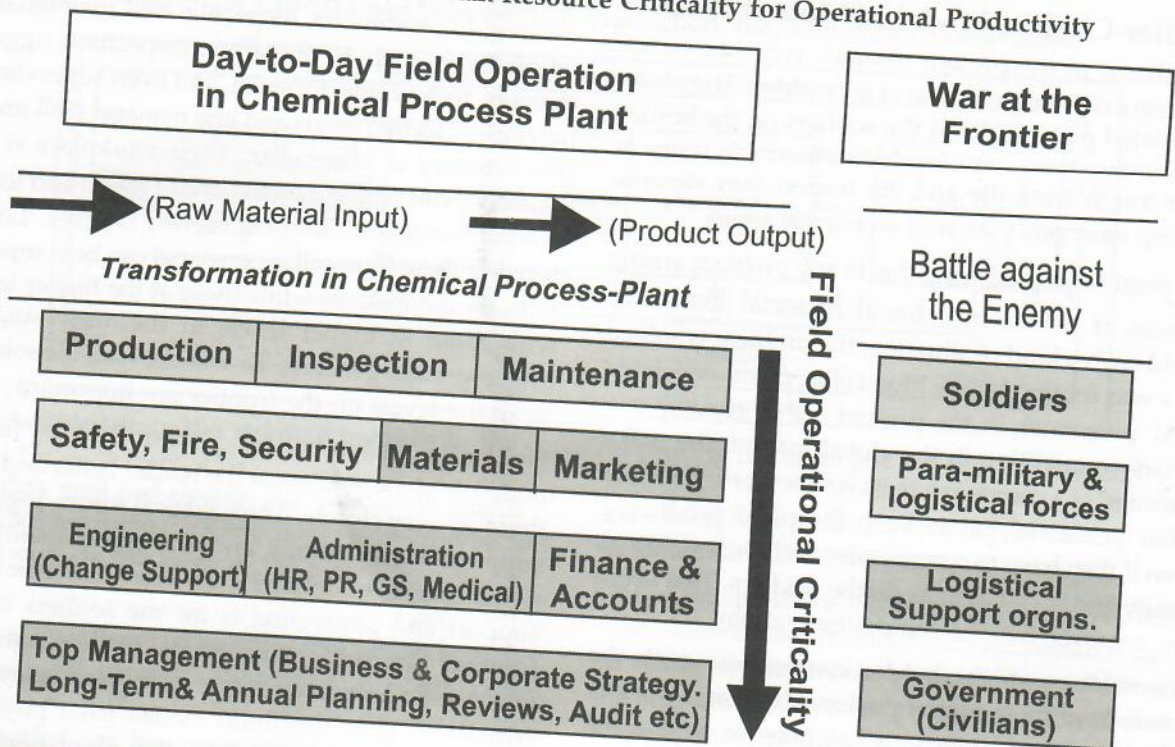
In a chemical process company (See Figure-2), the blue-collar PIM personnel (the 'soldiers') are the 'Criticality 1' human resources in terms of operational

productivity ('the war'). Normally, all personnel relating to production, inspection and maintenance at all levels such as operators, inspectors, riggers, helpers, technicians, foremen, and even supervisors, engineers, section heads and line managers fall under the category of blue-collar. Their workplace is the process-plant where they toil under rough and tough environmental conditions of varying degrees. Lower levels of these blue-collar personnel can be compared with the combatants while those at the higher levels with those at higher levels in the army such as brigadiers and generals. To win the war, the soldiers at all the levels on the frontier are important.

Normally, blue-collar para-military forces understand the soldiers at the border better and back them up very closely. The logistical forces, logistical support organizations and the government (i.e. civilians) must understand how important their moral support and motivation is for the soldiers on the frontier. Similarly, in a chemical process company, white-collar human resources with lower operational criticalities (2 to 4) should realize what physically stressful and complex jobs the plant-personnel (soldiers) are doing and what support and motivation they need and when. Soldiers, in return, express their gratitude to all those who lend support to them and their families financially, morally and socially. Thus, white-collar human resources in Materials and Marketing (Operational Criticality-2), Engineering (Change Support), Administration and Finance & Accounts (Operational Criticality-3) and the Top Management (Operational Criticality-4) should accept their respective responsibilities and understand the sensitivities involved towards human resources in Production, Inspection and Maintenance (Operational Criticality-1) so that the process-plant maintains production smoothly. This is an operational war against the competitors.

IMPORTANT NOTE: The criticality rating in Figure-2 is only in terms of the importance of field activities i.e. operational productivity associated with blue-collar personnel as per the limited scope of the research. This 'operational criticality' rating does not refer to and should not be misunderstood with the overall criticality of people in the company. All discussions on operational productivity in the thesis of the present research are solely guided by the scope of this study. No body can deny that the criticality

Figure-2: The Proposed Human Resource Criticality for Operational Productivity



of the top management is always number 1 in terms of overall productivity and utility for the company. Similarly, other functions and departments are equally important as the links of a chain called 'organization'. Figure-2 shows the different department functions as separate layers for simplicity only, however, they may be overlapping in practice.

Over the years, it has been observed by the blue-collar personnel that they have not been paid adequate attention and respect by the white-collar personnel. It is also thought that only those people go to the blue-collar jobs who are not well educated or who do not get white-collar jobs, whereas the reality is just contrary to it. Now, the process-plants are highly sophisticated and are run by high-tech state-of-the-art 'Production Control Systems'. They are inspected by highly trained inspection specialists and engineers, utilizing high-tech modern inspection gadgets and techniques such as online predictive, non-intrusive and non-destructive methods. Predictive and preventive maintenance practices, though complex, have become highly popular and inter-linked with knowledge-based databases.

Production, inspection and maintenance (PIM) practices are no longer muscle-based, rather they are mind-based. Now, these functions increasingly need

highly educated and experienced professionals of exceptional caliber. Thus, the age-old traditional concepts and negative attitude of some white-collar personnel towards blue-collar personnel, which can still be found in groups with lower operational criticality at all levels in Figure-2, become counter-productive and hindrance to the profitability of the company. This happens because it hurts the sentiments of those blue-collar personnel who struggle at the midnight and brave the adverse physical circumstances to keep the plant running to meet corporate objectives 24 hours/7 days/365 days a year.

There is a need to better understand the psyche, needs and expectations of the human resources working in different environments. The mankind has improved and refined themselves over ages. The fast changing era has shrunk the world, changed the life styles, equipped the people with more information about the external societal* environment (economic, technological, political-legal and socio-cultural forces), the external task* environment (macro/industry) and the internal company environment (micro) (*Wheelen et al., 2002). People now better understand the functional responsibilities of one group of people towards others within a company



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and also outside. But, these enlightened, well-educated, dynamic and intelligent blue-collar 'soldiers' remain powerless until a dynamic management tries to understand the sensitivities as explained in 'Analogy' above; and accordingly tries to develop and maintain a human resource culture of mutual respect, support and importance.

Well, the analogy and segregation of departments in Figure-2 may not be perfect but the idea behind this Applied Research is (i) to highlight the problems in the chemical process industries on the basis of interactive responses and opinions of blue-collar personnel over 2 decades, (ii) to appraise and convince the associated management fraternity and human resources about the operational problems and the realities in these industries, (iii) to motivate different layers of human resources as in Figure-2 to accept their relative roles, responsibilities and standings to help enhance the operational productivity ('the war'), and (iv) to highlight employee empowerment, involvement and work-culture aspects of TQHRM (Total Quality Human Resource Management) as applied to the 'soldiers'.

Therefore, the blue-collar PIM personnel might need a preferential motivational treatment based on different and innovative approaches:

- A treatment which would motivate them to continue to keep the plant running smoothly and producing with high-reliability conditions.
- A public commendation which would shrug off their repentance whenever their personal lives are disturbed while in the plant in odd hours.
- A different package and pattern of remuneration and compensation which would attract the best talents in the industry.
- A different respect and support which would give them a sense of pride and elation for belonging to a group which is directly responsible for operational productivity and profitability of the company.

Conclusions

The present research work has attempted to explore that the fulfilment of certain conditions with respect to the blue-collar personnel (the 'soldiers') will further enhance the operational productivity in chemical process industries and consequently their profitability. One of such conditions is better

appreciation of 'soldier-civilian model of mutual-respect' when applied to the human resources in chemical process industries.

The pivotal action recommended is that the plant-associated blue-collar personnel from Production, Inspection and Maintenance Departments deserve qualitatively the same respect and favourable treatment as is accorded to the 'soldiers'. Soldiers on the border and blue-collar personnel in the chemical process industries have some similarity in terms of their hardship and the respect they deserve. As the civilians in a country have a culture of respect and attention towards the soldiers who provide peace and security to the country, white-collar personnel in chemical process industries should also provide similar treatment to the blue-collar personnel in the plant who provide bread and butter to the whole company including white-collar personnel through their hard-core operational productivity.

The action implemented with the above attitude by the white-collar support personnel towards the plant-associated blue-collar personnel would boost the morale of blue-collar personnel at all levels, resulting in their higher operational productivity. This is based on the tested and the accepted hypotheses in the present research.

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Descriptive and Diagnostic Study about Customer Satisfaction in Retail Sector

*Dr Urvashi Makkar **Chander Prakash Yadav

The phenomenal growth in Retail Sector has a great impact on Indian population in rural & urban areas. The Indian retail market, which is the fifth largest retail destination globally, was ranked second after Vietnam as the most attractive emerging market for investment in the retail sector by AT Kearney's seventh annual Global Retail Development Index (GRDI), in 2008. Moreover, in the current competitive scenario when there are multiple players in the market & so many are planning to enter the market, it is not an option, but a necessity to find out the variables, which affect customer satisfaction. The present paper studies the various factors affecting Customer Satisfaction and, the choice and the preferences of Retail Players in NCR Region, with special reference to Pantaloon & Spencer.

A sample from Delhi, NCR region and Western UP has been chosen to explore all the factors regarding preferences of Retail Player in general. The primary data has been analyzed using statistical tools like Factor Analysis, Hypothesis Testing using Chi-Square, Scatter Plotting. American Customer Satisfaction Index (ACSI) Model has been adopted as Research Model, based on which inferences have been drawn.

Introduction

The Indian retail market, which is the fifth largest retail destination globally, was ranked second after Vietnam as the most attractive emerging market for investment in the retail sector by AT Kearney's seventh annual Global Retail Development Index (GRDI), in 2008. The share of retail trade in the country's gross domestic product (GDP) was between 8-10 per cent in 2007. It is currently around 12 per cent, and is likely to reach 22 per cent by 2010.

Commercial real estate services company, CB Richard Ellis' findings state that India's retail market is currently valued at US\$ 511 billion, and is poised to grow to US\$ 833 billion by 2013. The report further stated that organised retail that currently accounts for less than 5 per cent of the total retail market is expected to register a compound annual growth rate (CAGR) of 40 per cent and swell to US\$ 107 billion by 2013.

A report by global consultancy firm, AT Kearney said "The consumer spending in India has increased by an impressive 75 per cent in the last four years and will quadruple in the next 20 years." Moreover, India recently topped the Nielsen Global Consumer Confidence study, conducted by Nielsen, a market

research company. The biannual report revealed that Indians are "the most optimistic lot globally who think that their country will be out of the economic recession in the next twelve months."

According to the recent report by McKinsey & Company titled 'The Great Indian Bazaar, Organized Retail Comes of Age in India', India's overall retail sector is likely to grow to US\$ 450 billion by 2015. Another McKinsey report 'The rise of Indian Consumer Market', estimates that the Indian consumer market is likely to grow four times by 2025.

In a joint study recently conducted by ASSOCHAM and KPMG, the following findings were revealed:

- The total retail market size in India in 2008 was estimated at US\$ 353 billion.
- The annual growth of the retail market in India is expected to be around 8 per cent.
- The total retail market size in India is likely to touch US\$ 416 billion by 2010.
- The present share of organised retail sector is estimated at 7 per cent.
- The estimated annual growth of organised retail sector is 40 per cent.

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- The size of organised retail sector by 2010 is estimated to reach US\$ 51 billion.
- The estimated share of organised retail in total retail by 2010 is 12 per cent.
- The investment into modern retailing formats over the coming 4-5 years is expected to be around US\$ 25-30 billion.

In the light of above stated facts, the relevance & significance of current research paper is enhanced as its findings will help a retail sector player to know the factors, which have direct impact on customer. To get the above-expected result, it is necessary that we will have to win the confidence of customers. In this regard, it becomes necessary to find out those factors, which affect the customer satisfaction.

Brief Profile of Investigated Companies

Pantaloon

Pantaloon is the harbinger of the growth in the Indian organized retail sector. It is one of the largest among the latest format stores in India.

The largest retailer in the Indian organized retail sector, Pantaloon Retail (India) Limited is a chain of retail outlets all over the country. Pantaloon follows several formats of retail. Pantaloon engages in retail operations with 450 stores in 40 different locations in India. It is increasing its operations in India by opening more stores and employees around 18,000 people.

The retail formats followed by Pantaloon are Food Bazaar, Big Bazaar, Pantaloon, and Central. Pantaloon retail concentrates solely on apparels and accessories. Food Bazaar is an array of food products including fruits and vegetables, food grains, FMCGs, and packaged ready-to-cook products. Big Bazaar is a hyper mart which provides a variety of consumer goods at one place which include both apparel and non-apparel segments, while Central is a chain of stores that stock music, books, global fashion brands, lifestyle and leisure accessories, restaurants and lounges.

Pantaloon is a fashion leader in India which follows international standards. It goes by its latest ideology of "Fresh feeling, Fresh attitude, Fresh fashion", according to which it provides fresh stock to its customers every week! This is a unique method of

attraction. Previously modeled as a family store, Pantaloon went through a number of changes. Now it stands as a fashion depot, catering mainly to the younger generation.

Spencer

Spencer's Retail is one of India's fastest growing retail stores with multiple formats and retailing food, apparel, fashion, electronics, lifestyle products, music and books. Established in 1996, Spencer's has become a popular destination for shoppers in India with supermarkets, hypermarkets and daily spread all over India.

The organization believes in responding to a business opportunity, making optimum utilization of resources, and inspiring people to foster teamwork. Quality is another important parameter for the enterprise to improve continuously and satisfy customers in the best possible manner.

Spencer offers a complete array of products and durables. It is operating through 80 stores spread in 20 cities, and is still growing rapidly. Every month nearly 2.6 million people walk in its stores. The stores are located in Bangalore, Mumbai, Delhi, Chennai, Trivandrum, Hyderabad, Faridabad, Vizag, Aurangabad, Pune, Ghaziabad, Cochin, and many more. The music store of RPG Enterprises - MusicWorld delivers its products through 170 outlets spread in 21 cities. The enterprise has also set up a training institute for Front Line Staff and Staff Managers known as RPG Institute of Retail Management (RIRM).

Adopted Model- American Customer Satisfaction Index (ACSI)

The American Customer Satisfaction Index uses customer interviews as input to a multi-equation econometric model developed at the University of Michigan's Ross School of Business. The ACSI model is a cause-and-effect model with indices for drivers of satisfaction on the left side (customer expectations, perceived quality, and perceived value), satisfaction (ACSI) in the center, and outcomes of satisfaction on the right side (customer complaints and customer loyalty, including customer retention and price tolerance).

The indices (shown in Fig.1) are multivariable components measured by several questions that are

weighted within the model. The questions assess customer evaluations of the determinants of each index. Indices are reported on a 0 to 100 scale. The survey and modeling methodology quantifies the strength of the effect of the index on the left to the one to which the arrow points on the right. These arrows represent "impacts." The ACSI model is self-weighting to maximize the explanation of customer satisfaction (ACSI) on customer loyalty. Looking at the indices and impacts, users can determine which drivers of satisfaction, if improved, would have the most effect on customer loyalty.

Few highlights of American Customer Satisfaction Index (ACSI) are:

- Established in 1994, the only standardized measure of customer satisfaction in the U.S. economy, covering approximately 200 companies in 41 industries -roughly one-third of the total U.S. economy.
- A quarterly measure of the national economy's health; complementary to measures such as GDP, PCE, CPI, productivity and unemployment.
- Nearly 100 segments of departments/agencies of the U.S. Federal Government measured on an annual basis.

- Results from all surveys are published quarterly in various media and on the ACSI website (www.theacsi.org)

Significance of the Study

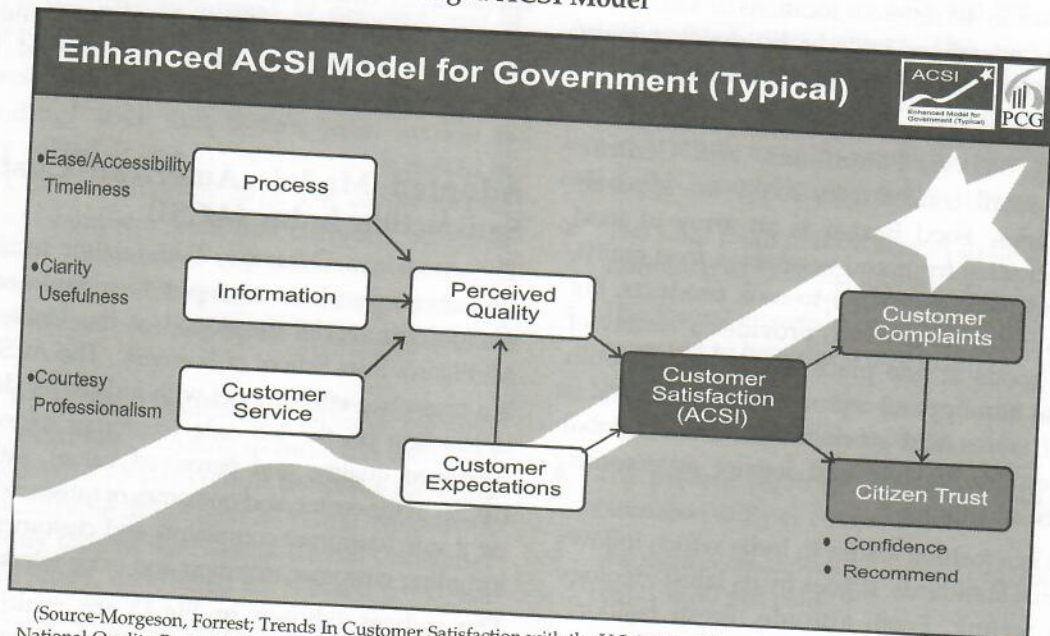
The significance of the current paper lies in the fact that it is expected to:

- help the marketers in Retail Sector to focus attention to the variables & factors like- Processes, Information and Customer service to enhance the Customer Satisfaction
- provide insight in formulation of the further marketing strategies by the marketers, enabling them to focus on right issues including- 'Merchandise Quality', 'Customer Dealing', 'Fast and Efficient Service', 'Competent Employees'etc.

Research Objectives

- To find out the factors affecting customer satisfaction in retail sector in NCR region, with special reference to Pantaloon and Spencer.
- To find out the factors affecting the choice and the preferences of retail players.

Fig-1: ACSI Model



(Source-Morgeson, Forrest; Trends In Customer Satisfaction with the U.S. Federal Government - Findings of the ACSI, National Quality Research Center Ross School of Business, University of Michigan Washington, D.C., December 15, 2005)

Table 2: Condensed Factor Analysis Table for "Processes"

Variables' Name	Factors' Name	Merchandise Quality	Customer Dealing service	Fast and efficient competent employees	Convenient store with	Communalities
The Store has excellent products (V1)		.812				.677
The store has and excellent variety of products (V2)		.635				.500
The products at this store are among the best(V3)		.615				.559
The Store provides plenty of convenient parking space (V5)						.419
The store doesn't have convenient operating hours(V6)			.764			.601
The store doesn't have modern-looking equipment and fixtures(V11)			.752			.619
The store doesn't have enough employees to meet customer needs (V8)			.688			.604
The store has an efficient queuing system (V14)				.775		.638
The checkout service is fast and saves time (V13)				.748		.680
The store has a manager to be able to resolve questions and problem of customers(V9)					.679	.600
I find plenty of store here competing for similar kind of products(V15)						.680
Eigen Value		1.871	1.812	1.260	.620	
Variance (%)		12.47	12.08	8.40	1.258	
Cumulative Variance (%)		12.47	24.55	32.95	41.33	

Factor Analysis for Variables Affecting the "Information"

Like the above way, factor analysis has been performed to identify the key dimensions affecting the "Information" for getting customer satisfaction about the stores in retail sector in India, basically in NCR region. The respondent ratings were subject to principal axis factoring with varimax rotation to reduce potential multicollinearity among the items

and to improve reliability on the data (Refer Table 3: Condensed Factor analysis table for "Information"). Varimax rotation (with Kaiser Normalization was converged in six iterations.)

Here, we applied the factor analysis on next 10 variables those define the "Information" (Ref. Annexure-1). These 10 variables reduced into 3 orthogonal factor dimensions which explained 47.325% of overall variance indicating that the

variance of original values was well captured by these three factors namely by 'Advertisement', 'Special offer', and 'Demonstration & Prices'.

From the table 3: Condensed Factor analysis table for "Information" it is clear that 10 variables have been condensed into 3 factors and these 3 factors explain the 47.325% of "Information" in which 'Advertisement' and 'Special Offer' explain 20.229% and 35.595% of the "Information" respectively while 'Demonstration & Prices' explain 11.73% of the "Information".

Factor Analysis for Variable Affecting the "Customer Services"

In the same way, factor analysis has been performed on "Customer Service" for getting customer satisfaction.

Now, we have applied the factor analysis on 35 variables those define the "Customer Satisfaction". 35 variables reduced to the 5 orthogonal factor dimensions which explained 45.41% of overall variance indicating that the variance of original values was well captured by these five factors name as 'Business Ethics Quality', 'Environmental Effect', 'Goodwill', 'Employees' behavior' and 'Friendly Atmosphere'.

Also 'Merchandise Quality', 'Customer Dealing', 'Fast and efficient Service', and 'Convenient Store with competent employees' explain the 'Customer Service' as 12.47%, 12.08%, 8.40% and 8.38% respectively.

Findings

- Processes, Information and Customer service are the three factors, which ensure the customer Satisfaction.

Table 3: Condensed Factor Analysis Table for "Information"

Variables' Name	Advertisement	Special offer & Prices	Demonstration	Communalities
The store widely advertised (V25)	.769			.617
The Display makes it easy to find what is needed(V22)	.740			.583
The store has strong visibility in the media (V24)	.668			.539
I can find the products advertised in the newspaper/magazine by the store (V18)	.567			.342
I always find discount prices here (V20)		.830		.695
I always find special offers/schemes in the store (V17)		.787		.656
I came to know about this store from my friends only and not through advertisements (V26)			.740	.617
The demonstration of the usage and benefits of the products provided by the store is helpful (V23)			.536	.547
Prices are not reasonable in comparison to other stores (V21)			.513	.449
Eigen Value	2.225	1.690	1.290	
Variance (%)	20.229	15.366	11.73	
Cumulative Variance (%)	20.229	35.595	47.325	

Table 4: Condensed Factor Analysis Table for "Customer Service"

Variables' Names	Factors' Name	Business Ethics	Environmental Effects	Goodwill	Employees' behavior	Friendly Atmosphere	Communa-lities
The store withholds information of an upcoming sale that will include the item the customer is buying (V60)		.735					614
This store makes excuses about the products when they are either not in the store or already sold out (V57)		.682					
The employees at the store do not assist those less likely to buy(V55)		.607					.559
There are a lot of shoppers in the store and it is inconvenient to move around (V27)		.531					.447
The employees at this store pressurize customer into a purchase (V58)		.521					.544
It is easier to move from one place to other as the store is very spacious and has a good design (V30)			.753				.547
The store feels very spacious and gives me an open airy feeling since the ceiling are high and light is bright (V28)			.715				.601
The layout makes it easy to find what is needed (V31)			.639				.584
I am satisfied with my shopping experience at the store because of store ambience (V29)			.567				.537
Materials associated with the store's service are visually attractive and easy to use (V51)				.697			.564
It is rather prestigious place (V36)				.665			.562
The employees at his store are able to answer my question(V45)				.554			.539
The employees at this store have my best interests at heart (V46)					.677		.483
I feel safe conducting business with the employees at this store(V43)					.593		.591
The employees are never too busy to respond to my requests (V41)					.711		.468
The behavior of the employees instills confidence in me (V42)					.625		.638
I can meet friends here with pleasure (V34)						.592	.470
I feel comfortable in this zone as if I am at home (V33)						.569	.600
Eigen Value	3.826		3.102	2.837	2.766	2.053	.603
Variance (%)	12.102		10.325	8.102	7.902	6.987	
Cumulative Variance (%)	12.102		22.42	30.52	38.43	45.41	

- For attaining the "Processes", we have to focus on, following factors name as 'Merchandise Quality', 'Customer Dealing', 'Fast and Efficient Service', and 'Convenient Store with competent employees'.

- 12.47 % of "Processes" are defined by the 'Merchandise Quality'
- 12.08 % of "Processes" are defined by the 'Customer Dealing'
- 8.40 % of "Processes" are defined by the 'Fast and Efficient Service'.
- 8.38 % of "Processes" are defined by the 'Convenient Store with competent employees'

Hence, 'Merchandise Quality' and 'Customer Dealing' are the important factors for improving the "Processes" and finally get the customer satisfaction.

- For attaining the "Information", we have to emphasis on the following factors namely; 'Advertisement', 'Special Offer', and 'Demonstration and Prices'.

- 20.29 % of "Information" is defined by the 'Advertisement'
- 15.36 % of "Information" is defined by the 'Special Offer'
- 11.72 % of "Information" is defined by the 'Demonstration and Prices'

Hence, 'Advertisement' is the most important factor for improving the "Information" and finally gets the customer satisfaction.

- For attaining the "Customer Service", we have to mainly consider the following variables namely; 'Business Ethics', 'Environmental Effect', 'Goodwill', 'Employees' behavior', and 'Friendly Atmosphere'.

- 20.102 % of "Customer Service" is defined by the 'Business Ethics'
- 10.325 % of "Customer Service" is defined by the 'Environmental Effect'
- 8.102 % of "Customer Service" is defined by the 'Goodwill'
- 7.902 % of "Customer Service" is defined by the 'Employees' behavior'
- 6.987 % of "Customer Service" is defined by the 'Friendly Atmosphere'

Hence, Retail store must maintain 'Business Ethics' for improving the 'Customer Service', and finally get the customer satisfaction.

Conclusions

The advent of Retail Sector is having a dramatic impact on the consumption patterns of the consumers, irrespective of their affiliation to certain geographical locations - rural or urban & their gender. Indeed, as per the current research, it is now widely recognized that the role of Information provided to customers in stores, customer service & processes is very important to attain customer satisfaction. This view can be the driving force behind efforts by the marketers in Retail Sector to develop rules regarding their marketing mix strategies.

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Annexure - I

Questionnary

Opinion survey on Retail Sector to Know factor affecting customer satisfaction

To indicate your response, please tick () the appropriate box that most closely represents your opinion. Please give your opinions based on your own view of the current situation. There is, of course, no right or wrong answers. For each question 'undecided' response is available if you cannot decide about a statement or if it does not apply to you.

Strongly agree=SA	Agree=A	Neutral=N	Disagree=DA	Strongly Disagree=SDA
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A. Processes

1.MERCHANDISE QUALITY

S.No.		SA	A	N	DA	SDA
1.	The store has excellent products					
2.	The store has an excellent variety of products					
3.	The products at this store are among the best					
4.	The store offers private labels of good quality					

2. RETAIL OPERATION QUALITY

S.No.		SA	A	N	DA	SDA
5.	The store provides plenty of convenient parking space					
6.	The store doesn't have convenient operating hours (opening and closing hours)					
7.	The store accepts major credit cards					
8.	The store doesn't have enough employees to meet customer needs					
9.	The store provides adequate training to its employees					
10.	The store has a manager to be able to resolve questions and problems					
11.	The store has a customer-friendly return-exchange policy					
12.	The store doesn't have modern-looking equipment and fixtures					
13.	The store/mall has good security even at night like well lit parking areas					
14.	The checkout service is fast and saves time					
15.	I find plenty of stores here competing for similar kind of products					
16.	The store has an efficient queuing system					

B. Information

1.IN-STORE PROMOTIONS

S.No.		SA	A	N	DA	SDA
17.	Free Samples are not provided by the store					
18.	I always find special offers/schemes in the store					
19.	I can find the products advertised in the newspaper/magazine by the store					

2. PRICING

S.No.		SA	A	N	DA	SDA
20.	I can get good bargains in this zone					
21.	I always find discount prices here					
22.	Prices are not reasonable in comparison to other stores					

3. INFORMATION

S.No.		SA	A	N	DA	SDA
23.	The display makes it easy to find what is needed					
24.	The demonstration of the usage and benefits of the products provided by the store is helpful					

C. Customer service**4. ENVIRONMENT**

S.No.		SA	A	N	DA	SDA
25.	There are a lot of shoppers in the store and is inconvenient to move around					
26.	The store feels very spacious and gives me an open airy feeling since the ceilings are high and light is bright					
27.	I am satisfied with my shopping experience at the store because of store ambience					
28.	It is easier to move from one place to other as the store is very spacious and has a good design					
29.	The layout makes it easy to find what is needed					
30.	It is convenient to move from one store to other as the mall has an interesting architecture					
31.	I feel comfortable in this zone as If I am at home					
32.	I can meet friends here with pleasure					
33.	I don't find here stores for all of my needs					
34.	It is a rather prestigious place					
35.	I don't have unpleasant encounters here as the store/mall is of good repute					
36.	Public spaces are not attractive					

5. SERVICE QUALITY

S.No.		SA	A	N	DA	SDA
37.	I can depend on receiving prompt service in the store					
38.	The employees do not offer the personal attention I need from them					
39.	The employees are never too busy to respond to my requests					
40.	The behavior of the employees instills confidence in me					
41.	I feel safe conducting business with the employees at this store					
42.	The employees are not courteous					
43.	The employees at this store are able to answer my questions					
44.	The employees at the store have my best interest at heart					

45. The employees at the store don't understand my specific needs					
46. The Free Home Delivery service is important for me					
47. The Layby service is important for me					
48. The online shopping is not important for me					

3.RETAIL FACILITY QUALITY

S.No.	SA	A	N	DA	SDA
49. Materials associated with the store's service (such as shopping bags, shopping carts, catalogs or statements) are visually attractive and easy to use					
50. The store has clean, attractive and convenient public areas (restrooms, fitting rooms and toilets)					
51. The store doesn't have handicap-friendly facilities					

4.BUSINESS ETHICS QUALITY

S.No.	SA	A	N	DA	SDA
52. The store gives preferential treatment to certain customers					
53. The employees at the store do not assist those less likely to buy					
54. The store takes the products back when returned, even though the products have been used by me					
55. This store makes excuses about the products when they are either not in the store or already sold out					
56. The employees at this store pressurize customer into a purchase					
57. The store sells a more expensive product when a less expensive one would be best for customers					
58. The store withholds information of an upcoming sale that will include the item the customer is buying					
59. The store does not display the free samples					

Competence Mapping Practices In Indian Industrial Organizations

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Pressures of international competition and market globalisation constrain Indian companies to match global standards of performance and corporate governance. To sustain the competition for efficiency and growth of the organization, it has become necessary to understand, evaluate and update the current competency level, as competencies influence all aspects of individual and organizational functioning. In the given context, tapping on the competencies and enhancing them for the industry does not remain just an issue for effectiveness rather is a necessity for the survival. It has become one of the most innovative developmental tools to enhance manager's performance on the individual level and the organisational as a whole. Competence mapping will be a major HRM practice in assisting organizations to shift and sustain this new paradigm and help to invent even more paradigms in the future. The future of competence mapping is bright, but only if the field continues to evolve further. The paper argues the needs, process and benefits of competence mapping as innovative HRM practice in Indian organizations.

Introduction

Organization today must be guided by innovative HRM practices like competence mapping to accomplish successfully the professional goals of the modern organization. Competencies, in the current competitive scenario are becoming an important issue to be dealt with, so that the organization can meet its present and future goals in a timely and cost effective manner. In today's competitive environment, it's the human resource effectiveness that makes the big difference. And thus building up the individual as well as organisational competencies has altogether become a critical element in the organisational development structure. All organizations today are talking about competencies and the issue of competence mapping is gaining momentum. A lot of resources are spent and consultants invited over to carry out competency mapping. Increased manpower costs, need for ensuring that competent people man critical positions and the need to be competitive along with the recognition of strategic advantages of having good human resources have compelled firms to be more competency driven. Competency mapping is an approach that has the objective of helping an organization align individual development with the strategic objectives of the company. Competency mapping basically demonstrates what type of knowledge and skills are required and/ or found within the human capital of the organization.

There's no doubt about the fact that an individual employee is the key unit in an organization. While working he learns new skills, which enable him to work effectively on a given role to ultimately achieve the organizational goals. Thus there are three important areas relevant to individual development. First, self-management, by learning to set realistic goals. Second aspect is competence building and third is advancement, which is the ability of an employee to realize his potential and take up. As a result of competency mapping, all the HRM processes like talent induction, management development, appraisals and training yield much better results. Competency mapping is an important exercise and every well-managed firm should have well-defined roles and list of competencies required for performing each role effectively. McClelland (1973), the famous Harvard Psychologist has pioneered the competency movement across the world. His classic books on "Talent and Society", "Achievement Motive", "Motivating Economic Achievement" and "Power the Inner Experience" brought out several new dimensions of the competencies.

Objectives and Methodology

The present study examines the need, process and benefits of competence mapping as innovative HRM practice in industrial organizations. The study is

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based on primary and secondary data. Secondary data has been collected from standard textbooks, journals, internet, published and unpublished papers. The primary data has been collected with the help of structured questionnaire. To achieve these objectives, a sample of 120 HR professionals have been taken from 120 companies covering (Engineering, Manufacturing, Process and Infrastructure Vertical), (Consumer, Services and Retail Vertical), (Telecom, Media and Entertainment Vertical), (Information Technology and Information Technology Enables Services Vertical), (Banking,

Financial, Services and Insurance Vertical). The purpose of the questionnaire was to collect information about the need, process and relevance of competence mapping as Innovative HRM practice. In general five-point scale was used in the questionnaire, but a few open-ended questions were also included in the questionnaire. The five-point scale ranged from strongly agree, agree, neutral, disagree, strongly disagree. The factor analytical model has been applied on the 15 statements. The name of the statements and their labels have been given in Table 1.

Table 1 . Name of statements and their label

X1	HR team members understand the importance and application of Competence Mapping.
X2	Line managers also recognize the importance and application of Competence Mapping
X3	Top management assures faith to the Competence Mapping concept and its application.
X4	Competence is a combination of knowledge, attitude and skills and is a key element in measuring human performance.
X5	It helps to identify and describe competencies that are the most critical to success in a work situation or work role.
X6	Procedure is being adopted to find and locate relevant competent resources.
X7	Competence framework is established dividing the competence at core level, business level, team level, role level etc.
X8	Systematic process is being adopted for competence identification, assessment and development.
X9	Competence assessment is done through psychometric tools, 360 degree assessments etc.
X10	Competence based job descriptions are being prepared to map the competencies and conduct further performance evaluation.
X11	Process is there to map the future development needs of the employees
X12	It has helped the employees to map their competencies that are important to their career passion and success.
X13	It has helped the organization to identify and retain employees.
X14	Implementation of Competence Mapping was a challenging assignment.
X15	Competence Mapping as an HRM practice will benefit the future organizations.

The analysis has been made by using factor analysis technique. Factor analysis is basically a data reduction and summarization technique applied in behavioural studies to discover variables which form coherent clusters independent of one another. To identify the factors that explain the need and relevance of competence mapping as HRM practice in industrial organizations, data collected from the respondents on 15 variables have been analysed with the help of SPSS. The factor analysis yielded five factors which explain the need, process and benefit of competence mapping as Innovative HRM practice. The process of extraction have stopped

where the seize of eigen value has gone less than 1.0 and at that level it explained 63.677 of total variance. The method of Principal component Analysis has been applied to draw the results of factor analysis

Results and Discussion

The 15 statements relating to need, relevance benefits of corporate mentoring as Innovative HRM practice has been subjected to factor analysis. Principal component analysis has been used for extracting the factors. The results of varimax rotated matrix are presented in Table 2.

Table 2. Varimax Rotated Matrix

Label	Name of statement	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
X1	HR team members understand the importance and application of Competence Mapping.	-0.015	0.084	-0.097	0.856	0.057
X2	Line managers also recognize the importance and application of Competence Mapping	0.088	-0.041	0.087	-0.048	0.911
X3	Top management assures faith to the Competence Mapping concept and its application.	0.018	0.235	0.175	0.557	0.632
X4	Competence is a combination of knowledge, attitude and skills and is a key element in measuring human performance.	0.199	0.026	0.757	0.131	0
X5	It helps to identify and describe competences that are the most critical to success in a work situation or work role.	-0.078	0.196	0.774	-0.093	0.129
X6	Procedure is being adopted to find and locate relevant competent resources.	0	0.69	0.079	0.056	0.012
X7	Competence framework is established dividing the competence at core level, business level, team level, role level etc.	0.058	0.61	0.171	-0.185	0.009
X8	Systematic process is being adopted for competence identification, assessment and development.	0.37	0.686	-0.086	0.187	0.095
X9	Competence assessment is done through psychometric tools,360 degree assessments etc.	0.544	0.633	0.019	0.144	-0.029
X10	Competence based job descriptions are being prepared to map the competencies and conduct further performance evaluation.	0.608	0.406	-0.095	-0.08	0.153
X11	Process is there to map the future development needs of the employees	0.462	0.424	0.066	0.078	-0.293

X12	It has helped the employees to map their competencies that are important to their career passion and success.	0.838	0.136	0.068	0.065	0.009
X13	It has helped the organization to identify and retain employees.	0.827	0.086	0.087	0.091	0.002
X14	Implementation of Competence Mapping was a challenging assignment.	0.545	-0.06	0.428	-0.065	0.14
X15	Competence Mapping as a HRM practice will benefit the future organizations.	0.313	-0.276	0.264	0.496	-0.189
Eigen value		3.982	1.68	1.487	1.35	1.051
Percentage of variance		26.547	11.202	9.919	9	7
Cumulative percentage of variance		26.547	37.75	47.669	56.669	63.677
Extraction Method: Principal Component Analysis.						
Rotation method: Varimax with Kaiser normalization						
Rotation converged in 9 iterations.						

Five factors were extracted, which accounted for 63.667 per cent of variance. It shows that 63.667 per cent of total variance is explained by information contained in the factor matrix. The percentage of variance explained by factors 1 to 5 are 26.547, 11.202, 9.919, 9, 7 per cent respectively. The communalities have been shown at the right side of the Table 2, which explain the amount of variance

in the variable that is accounted by the factors taken together. Large communalities indicate that a large amount of variance in a variable has been extracted by the factors solution. A factor loading represents a correlation between an original variable and its factors. Factor loading is nothing but coefficient of correlation. The name of the factor statements and factor loadings have been summarized in Table 3.

Table 3. Naming of factors

Name of dimensions	Label Loadings	Name of statement	Factor
Employee Benefits	X 9	Competence assessment is done through psychometric tools, 360 degree assessments etc.	0.544
	X 10	Competence based job descriptions are being prepared to map the competences and conduct further performance evaluation.	0.608
	X 11	Process is there to map the future development needs of the employees	0.463
	X12	It has helped the employees to map their competencies that are important to their career passion and success.	0.838
	X13	It has helped the organization to identify and retain employees.	0.827
Structured Process	X14	Implementation of Competence Mapping was a challenging assignment.	0.546
	X 6	Procedure is being adopted to find and locate relevant competent resources.	0.691

	X 7	Competence framework is established dividing the competence at core level, business level, team level, role level etc.	0.611
	X8	Systematic process is being adopted for competence identification, assessment and development.	0.687
	X9	Competence assessment is done through psychometric tools, 360 degree assessments etc.	0.633
Critical to Success	X4	Competence is a combination of knowledge, attitude and skills and is a key element in measuring human performance.	0.757
	X 5	It helps to identify and describe competences that are the most critical to success in a work situation or work role.	0.774
Management Support	X 1	HR team members understand the importance and application of Competence Mapping.	0.857
	X 3	Top management assures faith to the Competence Mapping concept and its application.	0.558
	X15	Competence Mapping as a HRM practice will benefit the future organizations.	0.497
Line Managers Encourage Competence Mapping	X 2	Line managers also recognize the importance and application of Competence Mapping	0.911
	X 3	Top management assures faith to the Competence Mapping concept and its application.	0.632

The explanation of these factors has been discussed as under:

1. Employee Benefits (F1): This is an important factor, which account for maximum percentage of variations equal to 26.547. Six out of 15 variables have loaded on this factor. The eigen value more than 3 also highlights that it is an important factor in respect to need, process and benefits of competence mapping as innovative HRM practice in industrial organizations.

It is through competency mapping that the employees realize map their competencies that are important to their career passion and success. It also makes them comprehend their potential & areas in which they need improvement. A common framework of competencies provides the means for integrating all aspects of the HRM system so that employees are selected, evaluated, developed, promoted and rewarded based on competencies that support organizational success. By communicating these competencies, organisation empower employees to take charge of their careers, direct their own personal

development, and continually self-evaluate and improve. At the same time, the framework allows the organisation to pro-actively plan for its human resource needs both in immediate and long term, and to establish programs that support employees in acquiring the competencies needed for organizational success.

We observed that in certain organizations mainly in Engineering, Manufacturing, Telecom, Information Technology and Fast Moving Consumer Goods, Consumer Durables vertical, HRM managers have successfully enabled an organization to have well defined roles and a comprehensive list of competencies required to perform each role effectively. HRM professionals from Engineering, Telecom, Fast Moving Consumer Goods, Information Technology Vertical have prepared a structured Job Analysis manual which has a job description and job specification for each position and also the competencies have been defined, documented and classified mainly into core, functional and management categories. Competence based job

descriptions are being prepared to map the competencies and conduct further performance evaluation.

We observed that almost all HRM professionals believed in competency mapping as a foundation to HRM functions such as Recruitment, Training Needs Identification, Performance Management, Career & Succession Planning and so on. Being able to identify suitable individuals early in their careers, training them and grooming them into professionals in a short period of time will add significant value to the organisation. Organizations have transited from just focusing on the achievement of goals/objectives (the "what") to encompassing the "how" (the exhibition of desired behaviors) in their performance management process. Competence assessment is done through Interviews, Psychometric Tools, Group Work, Task Forces, Task Analysis Workshops, Questionnaire, Use of Job Descriptions, Performance Appraisal Formats, Critical Incident Analysis, Repertory Grid, Behavioural Event Interview, Expert systems, Benchmarking etc. We found that psychometric tools and 360 degree assessments have been most popular tools to undertake competence mapping exercise. Few organizations mainly in manufacturing and consumer durables sector have also executed Assessment centres to undertake competence mapping exercise. Most of the HRM professional felt that implementation of competence mapping was a challenging assignment.

Organizations mainly in Telecom, Information Technology, Consumer Durables, Fast Moving Consumer Goods verticals have linked competencies with rewards. To attract and retain talents, many organizations in these industrial verticals have competitive reward systems in place. A competency based reward system encompasses a base pay structure that is typically "broadband" to emphasize employee development against the core competencies. A broadband structure consists of large salary ranges spanning pay opportunities that were previously covered by several separate salary ranges. Such a structure facilitates movement of employees among jobs and focuses on career development and skills attainment for the employees.

2. Structured Process (F2): The second factor, which accounts for 11.202 per cent of variations, has been named as structured process. Many organizations

are following an annual competency cycle which aims to the continuous development of individual and organization's competencies. We observed that positions that are to be mapped are identified. Information is gathered to identify the attributes and competencies required for each position. We also found that HRM managers work very closely with line managers to determine the skills, abilities and personal traits required for success in the position being mapped for competency development. Competence based job descriptions are being prepared to map the competencies and conduct further performance evaluation. We observed that such job descriptions are written statements of what a job holder does, how it is done and why it is done. It comprises of the purpose of job, scope of job, essential job responsibilities, qualifications, job factors like knowledge, responsibilities etc. Hence, all information gathered in the data collection phase is analysed. As a result attributes and competencies are identified and behavioural descriptions are created for each position. Besides that additional optimal areas of performance are identified according to organizational requirements.

Psychometric tools and 360 degree assessments have been most popular tools to undertake competence mapping exercise. This gives the organization the list of competencies for various positions. Competence framework is established by dividing the competence at core level, business level, team level and role level etc. As a result, in certain organizations we found that there is a structured process to map the future development needs of the employees. Besides that there is also continuous check on the effects carried out by the development process and restart of the competency cycle.

3. Critical to Success (F3): This factor accounts for 9.919 per cent of variations and has been designated as critical to success. A competency is defined as a behavior or set of behaviors that describes excellent performance in a particular work context (e.g., job, role or group of jobs, function, or whole organization). We observed that these characteristics are applied more and more by organizations because they provide significant help with key problems such as clarifying workforce standards and expectations, aligning individuals, teams, and managers with the organization's business

strategies, creating empowerment, accountability, developing equitable focused appraisal and compensation decisions etc. While defining competency mapping, we cannot ignore the aspect of "Performance Management". We found it as a key element in measuring human performance. It has been defined as a process for establishing a shared understanding about what is to be achieved and how it is to be achieved.

Competency measurement should not be confused with performance measurement. Competencies are all about being qualified to do the work in a particular position. Performance, on the other hand, is the result of the actual work. Being a competency based approach, performance management sets out to link people and jobs at every level & stage to the strategy and goals of the enterprise. We observed that a competency based HRM system captures the differing worth of individual contributors, facilitates multiple career paths and allows flexibility in reward-related decisions, which are important to address with the changing nature of organizations. Many HRM managers shared that it provides a "road map" for the range of behaviours that produce excellent performance. It really helps to identify and describe competencies that are the most critical to success in a work situation or work role. It has helped the organization to "raise the bar" of performance expectations to align the behaviour of teams and individuals with key organizational strategies.

4. Management Support (F4): The fourth factor that emerges from the factor model has been designated as management support. Eigen value more than one further corroborated the significance of this factor. HRM department is trying hard to integrate itself with the business development strategy and is working hard on innovative HRM practices like competence mapping, management by care, corporate mentoring etc. We found in many organizations mainly in Telecom, Information Technology, Consumer Durables, Fast Moving Consumer Goods Vertical, top management along with HRM department have initially taken the help of external consultants to conduct a series of training sessions to decide on well defined roles and a comprehensive list of competencies required to perform each role effectively.

In such industrial verticals HRM team members thoroughly understand the importance and application of competence mapping. Mainly in Telecom, Consumer Durables and Information Technology vertical the competence mapping interventions are a very integral part of their strategic human resource functions. Most of the HRM professionals are convinced that competence mapping has great relevance in today's competitive business context and as a HRM practice will benefit the future organizations

5. Line Managers Encourage Competence Mapping (F5): The last factor, which emerges from the factor model, has been stated as line manager's support competence mapping. Top management along with line managers have experienced definite tangible benefits of competence mapping like it ensures that competent people occupy critical positions in the organization, it also helps the employees with a desire to outshine and support them to accept higher responsibilities and challenging jobs.

It is evident that it is through competency mapping that the employees apprehend their prospects & areas in which they need improvement. Besides this, competency mapping also acts as a base to most of the HRM functional such as recruitment, performance management, training needs identification, career and succession planning and so on.

Conclusion

From the above analysis it may be concluded that competence mapping is the significant need of the time and is a process to identify key competencies for an organization and/or a job and incorporating those competencies through the various processes (i.e. job evaluation, training, recruitment) of the organization. Over the past couple of years, human resource and organizational development professionals have generated a lot of interest in the notion of competencies as a key element and measure of human performance. We found that organizations mainly in Engineering, Manufacturing, Telecom, Information Technology, Fast Moving Consumer Goods, and Consumer Durables Vertical, have extensively worked in the area of competence

mapping by adopting structured process. It effectively helps the overall HRM process of an organization by defining the factors for success in jobs and work roles within the organization, assessing the current performance and future development needs of persons holding jobs and roles, mapping succession possibilities for employees within the organization, assigning compensation grades and levels to particular jobs and roles, selecting applicants for open positions, using competency-based interviewing techniques etc.

We realized that a problem with competency mapping, especially when conducted by an organization is that there may be no room for an individual to work in a field that would best make use of his or her competencies. If the company does not respond to competency mapping by reorganizing its employees, then it can be of little short-term benefit and may actually result in greater unhappiness on the part of individual employees. A person requiring to learn new things in order to remain happy might find himself or herself in a position where no new training is ever required. If the employer cannot provide a position for an employee that fits him or her better, competency mapping may be of little use. Competency mapping can ultimately serve the individual who decides to seek employment in an environment where he or she perhaps can learn new things and be more intellectually challenged. Applying competencies appropriately endows an

excellent engine for raising the slab, endorsing common standards, and assimilating HRM processes.

It serves as a means to ascertain that an organization's knowledge and capabilities are in alignment with its strategy. Increasing recognition of the importance of competency mapping and alignment has led many management systems to include support for this in their systems. But of course it is evident that this is applicable only to learning organisations. In a nut shell "Competency-based HR is considered the best HR".

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Young Professional's Behavior towards Gen-X Mobile Phones

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Mobile phones have become a part and parcel of modern life whether it is applicable for the common family man to a student, a bus conductor or to the working professionals who obviously need to get in touch with their customers and business heads on a regular basis. Mobile phones today are no longer regarded as a gadget signifying status and fashion, they have become a genuine necessity in our day to day life and the best way to stay connected wherever we are. Now in this context with the evolution of mobile phones from 1st generation (1G) to second generation (2G) and subsequently from 2G to third generation (3G), there has been a change in the customer taste and preferences in terms of selecting the handsets, according to their needs. Multimedia and Internet compatibility, GPRS, GPS etc are no longer costly investments, they have been considered to be important attributes for satisfying daily needs of modern customers. Keeping this into consideration, there is a real need for academic studies in the field so as to identify consumer's buying behaviors with respect to 3G mobile phones. The rise of the next generation network and its consumer acceptance is said to be one of the toughest marketing challenges in the recent history. The present study is an attempt to examine the motives that affect consumer behavior, particularly those of the young professionals working in and around the city of Bangalore.

Introduction

Mobile phone markets have emerged as one of the most promising ones due to increased competition and change. With rapid consumerism sweeping the nation, India has emerged as the second largest mobile handset market, poised for explosive growth by 2008. Recent studies, as indicated by market research report "India Mobile Handset Market (2005)", has revealed that Indian mobile subscribers are willing to pay for upgrades, Value-added-services (VAS), advanced models that provides better services. Industry observers are of the view that market in the 1st quarter of 2009 could well become a "Global Hub" for the mobile handset manufacturers.

Over the years, simplistic mobile communication & SMS had gradually shifted to content driven VAS, like music, video, multimedia capabilities, browsing through internet connectivity, in-built camera & photography processing/editing facilities, interactive gaming etc, which had particularly attracted more and more customers for purchasing mobile phones containing these features & facilities. Apart from these, with the evolution of a strong demand of VAS- the mobile phone industry along with the cellular operators, aggregators and even the media has created a Rs 2,300 crore market with an objective of

entertaining customers through a wide range of services that are provided by the use of 3G (Third Generation) Mobile phones.

On the basis of the aforesaid arguments, it can be said that it is of growing concern to look at the consumer buying decision process and highlight on the various variables that influence customer choices between different 3G mobile brands, that are provided with Value Added Services (VAS) and features.

The present study aims to examine various factors influencing the buying decision of 3G mobile phones with VAS and features, particularly amongst the young professionals working in and around the city of Bangalore.

Review of Literature

Mobile phones, mobile internet access and mobile commerce are growing much faster than their fixed counterparts (Massaud, S., Gupta, O.K., 2003). The shift from 2G or 2nd generation (referring to GMS network) to the 3rd generation (3G) mobile phones, have changed the way people communicate, by allowing users a whole new way to interact with each other via mobile phones (Karjuluoto, H., Karvonen, J., Pakola, J., Pietila, M., Salo, J., Svento, R.,

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2005). The success of 3G phones depends primarily on how the real benefits of the technology are marketed to consumers on one hand and also on the pricing policy referring to the consumers' willingness to pay for new services on the other (Benady, 2002). Consumer shift from 2G to 3G means that in order to be able to use the services offered by the new network, consumers need to acquire mobile handsets equipped with internet access and multimedia compatibility. Although quite many instances have challenged the need for high end mobile services and features (Bradner, 2002; Wagstaff, 2002), the current trend in the mobile phone industry is that customers are experiencing a shift from conventional mobile services to those enjoyed in 3G mobiles. This implicates that in today's perspectives mobile phones would no longer be just devices used for speaking but allow consumers a variety of new services that had never been expected on mobile phones. A recent consumer survey of 470 early adopters conducted by the 3G portal.com website on behalf Tarifica (Jones, 2002) showed that 3G mobiles have the potential to be successful if they are launched and marketed to the right audience with the focus on real consumer needs. The initial success of 3G phones depends on the services provided by the mobile operator in terms of MMS services, gaming, music and content downloads etc. As the mobile phone market is

typically technology driven market (Brown, 1991; Hamel and Prahalad, 1991; Kumar, 1997; Nagel, 2003) where products are created ahead of the recognition of existing recognized consumers needs (Gerstheimer and Lupp, 2004), mobile phone development is based on consumers' possible future needs and thus companies that best hunch the technologies and services of future would emerge as the leaders in the discipline. Hence the rise of 3G network and services and its consumer acceptance is said to be one of the toughest marketing challenges (Benady, 2002). As a result of the 3G popularity, mobile phone manufacturers had been rapid to introduce new models into the markets almost on a weekly basis. Especially 3G networks and smart phones are expected to affect the evolution of better mobiles in the short future (Slawsby, Leibovitch and Giusto, 2003).

Figure 1 illustrates the evolution of the mobile phones moving up to the smart phone era. Although there had been much research on mobile phones in the International perspective, very little literature had been found with respect to Indian consumers. This is particularly evident when "value added services (VAS)" are taken into consideration. Some research with respect to Finland in the year 2003 had shown that mobile phones with color displays have become very popular in the year 2003 with sales over 50%

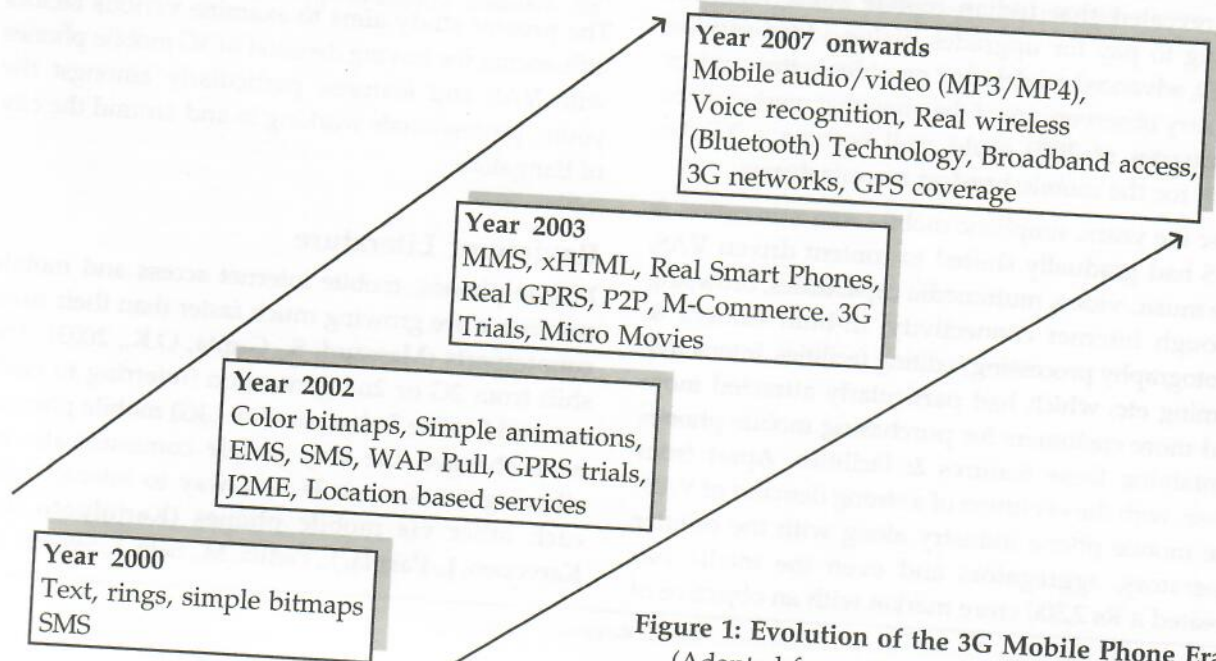


Figure 1: Evolution of the 3G Mobile Phone Era
(Adapted from : Karjaluoto, H., et al, 2005)

(Porpudas, 2003), phones with in-built cameras reached globally below 15% of the total sales in the last quarter in 2003 (Gartner Dataquest, 2004; Strategy Analytics, 2003).

Rationale of the Study

The contemporary time is one of the most fascinating times to study mobile phones purchasing motives and perceptions of new mobile phone services. The shift from 2nd generation (2G) to the 3rd generation (3G) mobile phones is expected to change the way people communicate by allowing users a whole new way to interact & enjoy the new world of infotainment via mobile phones. Hence, there is a real need for academic studies in the field. The rise of the next generation network and its consumer acceptance is

said to be one of the toughest marketing challenges in the recent history. Recent studies, as indicated by market research report "India Mobile Handset Market (2005)", has revealed that Indian mobile subscribers are willing to pay for upgrades, Value-Added-Services (VAS), advanced mobile phone models that provide better services.

With limited research data available in the Indian perspective particularly with respect to consumer behavior in terms of purchasing 3G mobile phones, the present study had been considered to be important. One very recently conducted study in China (Liu, Huang, A., Nai-Chi-Chen, 2008) showed that technology cluster was significantly important for consumers in China, while other factors in predicting users' intention to adopt 3G mobile phones

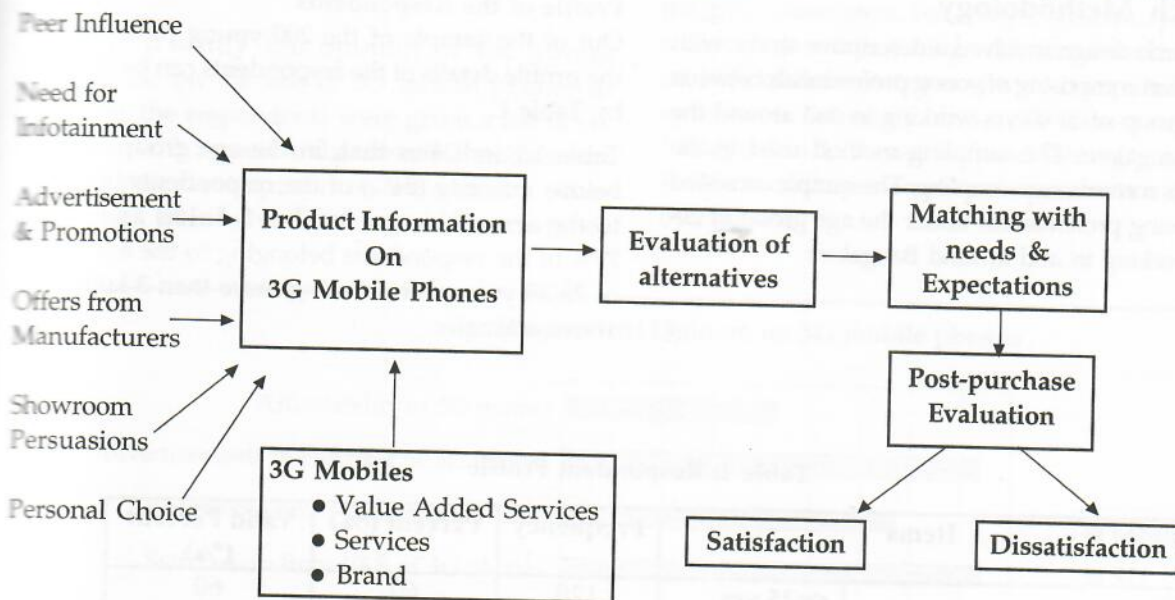


Figure 2: Model Depicting 3G Mobile Phone Purchase Decision Making Process

were not significant. For a study like this, consumer (young professionals working in and around the city of Bangalore) behavior in terms of purchasing 3G mobiles would depend on the sequential steps indicated in the above figure (Figure 2):

The present study has been designed on the basis of the above model. It can be mentioned here that, a similar approach had been suggested by Dorsch, Grove, and Darden (2000).

Objectives of the Study

The primary objective of this study was to examine the motives that affect consumer behavior towards 3G mobile phones, particularly those of the young professionals working in and around the city of Bangalore.

The study was also intended to provide insights on the use of the 3G mobile phone, including those of the perceived "Value-Added-Services" (VAS), and to

collect general information about the nature of the users of these advanced mobile phones & understand the peculiarity of their buying behavior.

Scope of the Study

The targeted group of young professionals between the age group of 20-40yrs for this study included, IT company professionals, BPO & Call-Center executives and other corporate executives in and around the city of Bangalore.

The study provides an understanding of various factors that seem to influence the choice of a 3G mobile phone in order to get a better understanding of their buying behavior & motives.

Research Methodology

The research design involved a descriptive study, with a population comprising of young professionals between the age group of 20-40 yrs working in and around the city of Bangalore. The sampling method used in the study was convenience sampling. The sample consisted of 200 young professionals under the age group of 20-40 yrs working in and around Bangalore

The primary data was collected from the responses of the young professionals of the age group of 20-40 yrs. The sources of secondary data included web-resources, journals, magazines and books.

The respondents were interviewed taking into consideration the motives underlying 3G mobile phone purchasing behavior on one hand and also to investigate the factors that seem to influence their choices. The responses were subsequently recorded by questionnaire administration.

The data collected has been analyzed by using average and percentage methods, correlation analysis and chi-square tests.

Findings of the Study

Profile of the Respondents

Out of the sample of the 200 young professionals, the profile details of the respondents can be depicted by Table 1.

Table 1.1 indicates that, in the age group of 25 & below, majority (84%) of the respondents belonged to the annual income level of 3 Lakhs and above. 77% of the respondents belonging to the age group of 25-35 years were earning more than 3 lakhs and above annually.

Table 1: Respondent Profile

Items	Frequency	Percent (%)	Valid Percent (%)
Age Group	<=25 yrs	120	60
	25-35 yrs	65	32.5
	>35 yrs	15	7.5
	Total	200	100
Gender	Male	160	80
	Female	40	20
	Total	200	100
Annual Income	<1 Lakh	0	0
	1-2 Lakhs	10	5
	2-3 Lakhs	30	15
	>3 Lakhs	160	80
	Total	200	100

Table 1.1: Age-Group & Annual Income Cross-tabulation Count

Items		Annual Income				Total
		<=1lakh	1-2Lakhs	2-3Lakhs	>3Lakhs	
Age Group	<=25	0	10	10	100	120
	25-35	0	0	15	50	65
	>35	0	0	5	10	15
Total		0	10	30	160	200

Respondents' Opinion on 3G Mobile Phones

In order to study the opinion of the young professionals on the use of 3G mobile phones in Bangalore, the respondents were given a list of six statements with respect to the use of 3G mobiles and asked to state their opinion on the same by either "Agreeing" (Strongly Agreeing / Agreeing) or

"Disagreeing" (Strongly Disagreeing/ Disagreeing) the given statements. For analysis and interpretation, the average scores (along with standard deviation) on each of these statements were computed, where opinion as "strongly disagree" were rated as 1, "disagree" as 2, "Agree" as 3 and "Strongly Agree" as 4. The overall opinion of the respondents is depicted by Figure 3.

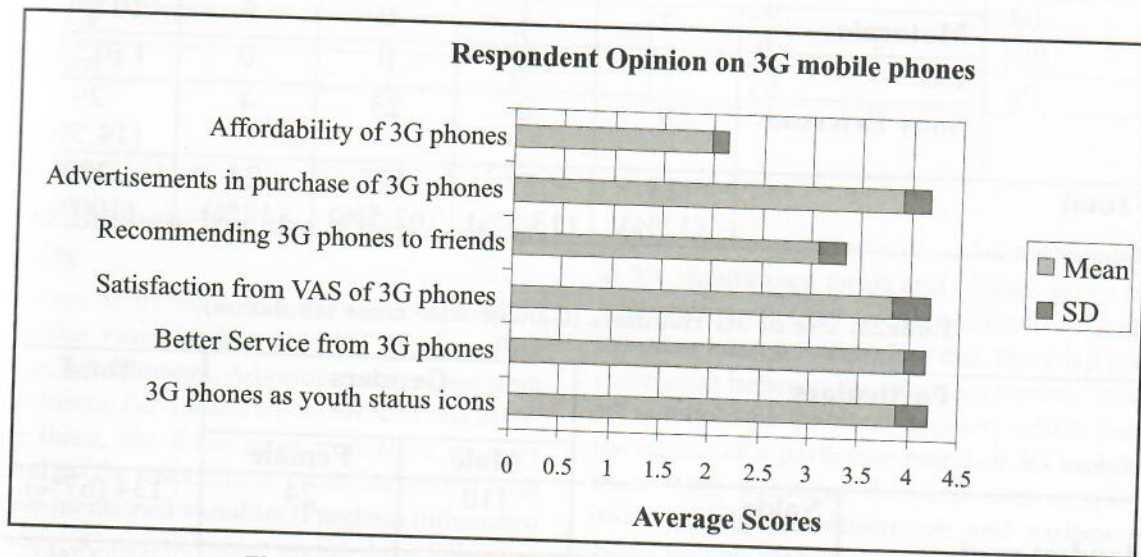


Figure 3: Respondent Opinion on 3G Mobile Phones

It is evident that the respondents clearly were of the opinion that 3G handsets were less affordable (Mean score: 1.97 ± 0.171) for the common man. The purchase of such phones were favored by advertisements (Mean score: 3.92 ± 0.264) made by their manufacturers. The respondents also perceived

that better services (Mean Score: 3.95 ± 0.218) were enjoyed from 3G phones and this has been contributed by the Value-added-Services (VAS) provided by 3G handsets (Mean score: 3.83 ± 0.372). Respondents were of the opinion that 3G handsets were also perceived as "Status Icons" (Mean Score:

3.88 ± 0.331) for the younger generation. With respect to suggesting friends or relatives purchasing 3G handsets, respondents were of mixed opinion, having a mean score of 3.07 ± 0.282.

Purchase Decisions of 3G Handsets Compared to Income of the Respondents

Income level of the respondents had significant association with purchase decisions on 3G mobile phones (χ^2 Calculated = 0.002, P value = 0.002 < 0.05; Hence H_0 is rejected at 5% level of significance).

H_0 : There is no significant association of income level of respondents with purchase decisions of 3G mobiles

H_1 : There is significant association of income level of respondents with purchase decisions of 3G mobiles

It is clear that higher the income levels, the working professionals were more inclined to the use of 3G mobile phones.

Use of 3G Handsets

With respect to the use of 3G handsets as revealed by table 2A, it is clear that majority of the respondents (67%) were using Nokia handsets. In total 62.5% were using 3G handsets for a period of 1-2 years.

Table2A: Use of 3G Handsets

Particulars		Use of Handsets				Total
		<6mnth	6mnth-1yr	1-2yr	>2yr	
Handset used	Nokia	0	14	100	20	134 (67%)
	Samsung	16	10	0	0	26 (13%)
	Motorola	7	3	0	0	10 (5%)
	LG	1	0	0	0	1 (0.5%)
	Sony Ericsson	0	0	25	4	29 (14.5%)
Total		24 (12%)	27 (13.5%)	125 (62.5%)	24 (12%)	200 (100%)

Table2B: Use of 3G Handsets (Gender wise cross tabulation)

Particulars		Genders		Total
		Male	Female	
Handset used	Nokia	110	24	134 (67%)
	Samsung	20	6	26 (13%)
	Motorola	10	0	10 (5%)
	LG	1	0	1 (0.5%)
	Sony Ericsson	19	10	29 (14.5%)
Total		160	40	200

Table 2B clearly shows that out of 134 respondents purchasing Nokia handsets, 82% were males and 18% were females. Out of 26 respondents purchasing Samsung handsets, 77% were males and 23% were females.

Motives Influencing the Purchase of 3G Mobiles

Respondents were asked to rate factors influencing the purchase of 3G handsets on a scale of 1 to 5, where 1 meant very low importance, 2 meant low importance, 3 meant average importance, 4 meant

high importance and 5 meant very high importance. For ease of analysis, responses regarding low and very low importance were collectively analyzed as "Little Importance (Total)" and high and very high importance were represented as "High Importance (Total)". As revealed in Table 3, it is clear that, brand name of the 3G handsets, Value Added Services (VAS), and services were rated to have "High Importance" in terms of purchasing a 3G mobile phone. Technology, Reliability and Design were rated to be of average importance (20% respectively) followed by status and glamour (10%).

Table 3: Motives Influencing 3G Handset Purchase Decisions

Motives	Little Importance (Total) %	Average Importance %	High Importance (Total) %
VAS	0	5	95
Status & Glamour	5	10	85
Service	0	5	95
Technology	0	20	80
Reliability	0	20	80
Brand	0	0	100
Design	0	20	80

Factors Influencing the Choice of 3G Handsets

The motives analyzed above were then correlated with various variables like personal decision, Peer influence, Infotainment, Advertisement, offers from manufacturers, Persuasion by showroom executive. Among these, the three most important motives identified by the respondents when correlated with the above mentioned variables (Purchase Influences) influencing 3G mobile choice revealed the following results (Table 4).

It is evident from table 4 that, infotainment (information and entertainment) had correlation with "Value Added Services (VAS)" of 3G mobile phones (.179 at 5% significance level). Similarly the purchase motive "service" had a positive correlation with "Infotainment" (.171 at 5% significance level). On the other hand the purchase motive "Brand" of 3G mobile

phones had correlation with "advertisements" (.223 at 5% significance level) and "Offers given by the manufacturers" (.189 at 5% significance level). On the other hand it is also clear that, there is a positive correlation between the purchase motive "Brand of 3G mobile" and "personal decision" which indicates the choice of a particular brand of 3G mobile was more of a personal decision and it was also influenced by advertisements and various offers given by the manufacturers. Infotainment on the other hand facilitated "value added services (VAS)" and "services" of the 3G mobile phones.

Importance of Various Value Added Services (VAS) in 3G Mobiles

The following table (Table 5) summarizes the various "Value-Added-Service (VAS)" features preferred by the respondents in their 3G handsets.

Table 4: Correlation Matrix of Purchase Motives & Purchase Influences (variables)

Items		Personal Decision	Peer influence	Infotainment	Ads	Offers	Showroom Persuasions
VAS	Pearson Correlation	-.021	-.154	.179 Correlation is significant at the 0.05 level (1-tailed).	-.055	.039	-.065
	Sig. (2-tailed)	.833	.121	.034	.549	.687	.677
Service	Pearson Correlation	-.064	-.122	.171 Correlation is significant at the 0.05 level (1-tailed).	-.055	-.050	-.035
	Sig. (2-tailed)	.528	.189	.037	.6	.593	.739
Brand	Pearson Correlation	.276 Correlation is significant at the 0.01 level (2-tailed)	.147	.139	.223 Correlation is significant at the 0.05 level (2-tailed).	.189 Correlation is significant at the 0.05 level (2-tailed).	-.019
	Sig. (2-tailed)	.005	.143	.193	.021	.043	.883

Table 5: VAS Preferred in 3G Mobiles

Attributes of VAS	Very Important (%)	Somewhat Important (%)	Not Important (%)
External Memory Card	100	0	0
Mobile Music	85	15	0
In-Built camera	95	5	0
Browsing Features	80	20	0
MMS	90	10	0
Gaming	75	10	15
TFT Screen	95	5	0
Bluetooth Connectivity	80	15	5
Compatibility to Enhancements	100	0	0

As revealed above, External memory card, Compatibility to mobile enhancements, In-built camera and TFT screen and MMS received highest preference from the respondents. 15% of the respondents said that gaming was not important. 15% respondents perceived that gaming was not a preferred attribute of a 3G mobile.

Conclusion

The findings from the study have attempted to explore the buying behavior of young professionals

related to 3G mobile phones. The study had indicated that higher the income levels, the working professionals were more inclined to the use of 3G mobile phones. Majority of the respondents were using Nokia 3G handsets followed by Samsung. The users were of the opinion that they had been using 3G handsets for one to two years, which depicts high levels of popularity of 3G mobiles amongst young working professionals in Bangalore. Most of the respondents opined high importance on "3G Mobile Brands" "Value Added Services (VAS)", and "Services" provided by these mobiles. Status,

Glamour, Technology, Reliability and Design received comparatively lesser importance. Choice of 3G mobiles for "Infotainment" had correlation with purchase motives such as Value Added Services (VAS) and services available from 3G mobile handsets. Purchase motive with respect to the "brand" of the 3G mobile had correlation with choice through personal decisions as well that through advertisements and offers given by the manufacturers. The respondents had also indicated that among the various value-added services, they gave high importance on attributes like those of external memory card, compatibility to enhancements, TFT screens, in-built cameras, MMS and mobile music. 15% respondents perceived that gaming was not a preferred attribute of a 3G mobile.

One aspect has been made very clear from the study that most young working professionals have opined that they tend to give most importance on value added features of 3G phones and their purchase decisions had been influenced by advertisements, offers given by the manufacturers and the brand of the handset. These findings could appear to be too general in terms practical perspectives and applicability. Infact, further and in-depth research would be required to have conclusive remarks for organizations and manufactures of 3G mobiles.

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Impact of Select Factors on the Buying of Writing Instruments- An Empirical Study of Select Consumer Groups

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Indian Pen industry has remained unorganized over a longer period of time and it has suffered from the lack of adequate information regarding market size, market potential and market needs. Now the market has shown tremendous growth. But simultaneously the competition has been intensified with the entry of new players. Therefore, it has become increasingly important for the marketers of pens to understand the latent needs of the market. The study has been carried out with the help of a questionnaire in Ludhiana and Amritsar cities of Punjab State. The respondents have been broadly classified on the basis of their occupational group and gender. Based on their occupation, they have been classified into college-going students, small business owners and professionals. The respondents were asked to rate on a five point scale the select factors that they consider most while buying pens. Two-way ANOVA has been applied for the data analysis and drawing conclusions. No interaction has been observed between two variables - occupation of the consumer and gender for any of the factors studied. There were significant differences between different occupational groups for all the factors studied. The differences were highest for 'quality of writing', followed by 'ease of writing', 'appearance', 'brand' and 'price'. The differences have been significantly higher because of significant differences among the three occupational groups in terms of usage of the product. No significant differences have been observed between two gender groups in terms of their consideration of select factors.

Introduction

Writing Instrument (Pen) is a product that is used by people of all walks of life and it is being used throughout the life of the individual. Many people have the tendencies to use good quality pens as it raises their level of confidence and they feel better. Some people believe that a pen of a particular make or type is lucky for them. As per AC Nielsen Retail Audit (2006), ball pens form the biggest portion of the pen market in India and accounts for 72 percent of the total pen market followed by gel pen at 28 percent. The brand leaders in this market are Cello, GM pens and Jigneshwar. Besides these, there are large numbers of small players. Pen market earlier has suffered from lack of organized and credible information relating to market needs, market size, and market opportunities. The entry of Reynolds through GM Pens in 1990 stimulated the organized sector to take note of the vast potential of the domestic market. Now organized sector holds the share of 60 percent. Majority of this share has been gained at the expense of unorganized sector.

The audit report further reveals that there are about 11 lac stores across urban India those take the

product in the stock. The financial year 2005-2006 witnessed a growth of 23 percent. The market is growing at the tremendous pace. The industry has also experienced product innovation and competitive pricing and therefore, has offered better choice to the consumers. According to Mitra (2004), many leading manufacturers of other fast moving consumer goods have offered pens as a free gift with their products. It has given a stupendous boost to the pen industry. Several foreign companies, including Wal-Mart, Office Depot and Staples of the US, which have so far been procuring pens from China, have visited India for outsourcing their pen requirements. China has the market share of 10 percent in the 50,000-crore global writing instruments industry.

Most of the pens are priced below Rs. 10/ and these are sold through distributors. The premium category pens are also sold by other stores such as gift centers. Most of the domestic players have alliances with the domestic players. For instance Rotomac India has the alliance with Mitsubshi of Japan. The major players of Gel pen category are Add Gel, Montex and Flair brands. The high-end brands like Mont Blanc, Senator, Cartier, Pierre Cardin have share of

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only 1 percent. Some of the writing instrument companies such as Camlin Limited, Today's Writing Products Limited and Linc Pen & Plastics Limited are publicly listed.

Literature Review

Men and women purchase and relate products for varying reasons (Dittmar et al, 1996). They face different types of social pressures (Darley and Smith, 1995). Rocha et al (2005) had also experienced different requirements for clothing and fashion products based upon age and gender. Laroche et al (2000) had found gender differences in relation to acquisition of in-store information for buying Christmas clothing gifts. Vankatesh and Morris (2000) studied the moderating role of gender in the adoption of a new software system. However Goldsmith (2002) has observed consistency for both men and women while examining personal characteristics of frequent clothing buyers. Kwon (2007) observed significant differences in the consumers' demographic variables inclusive of occupation on their perception of web site attributes. McKechnie et al (2007) found associations between respondents' age, occupation, nationality and religion and the purchase of various equipments like treadmills, workout equipment, stationary cycles and abdominal machines. Wu (2003) in his study found that the people of occupations - have favorable attitude towards online shopping.

Methodology

The study has been carried out by interviewing 190 consumers based on convenience sampling during June, 2008 to August, 2008 with the help of a questionnaire in Ludhiana and Amritsar cities of Punjab State. The respondents have been broadly

classified on the basis of their occupational group and gender. Based on their occupation, they have been classified into college-going students, small business owners and professionals. The respondents were asked to rate the select factors on a five point scale (1 for lowest consideration and 5 for highest consideration) that they consider most while buying pens. The select factors are as follows:

Brand name

Appearance (looks/design)

Quality of writing

Ease of writing

Price

Out of total 190 consumers 62 were students (30 Male and 32 Female), 65 were small businessmen/workmen (31 Male and 34 Female) and 63 were professionals such as Doctors, Professors, Corporate Managers etc. (31 Male and 32 Female). Two-way ANOVA has been applied for the data analysis and drawing conclusions. The approach was chosen to understand both main independent impacts as well as interaction effects of variables - occupation and gender.

Limitations of the Study

The study has been carried out with two variables - occupation and gender. However consumer buying is a complex process in which number of factors like social status, economic factors and psychographic factors influence the buying of the consumer.

Data Analysis and Results

The distribution of respondents of different occupations has been summarized in Table 1.

It can be further inferred from Table 3 regarding the differences in three occupational and two gender

Table1. Distribution of Respondents According to Occupation and Gender

User Group	Frequency			Per cent (Total)
	Male	Female	Total	
Students	30	32	62	33
Small Business Owners	31	34	65	34
Professionals	31	32	63	33
Total	92	98	190	100

The frequency distribution of types of pens being used by the different types of respondents at the time of study has been summarized in Table 2.

Table 2. Frequency Distribution of Types of Pens used by Different Users

Brand	Frequency									Grand Total	Per cent (Grand Total)
	Students			Small Business Owners			Professionals				
	M	F	T	M	F	T	M	F	T		
Ball Pens	20	22	42	24	28	52	15	12	27	121	64
Gel Pens	10	10	20	07	06	13	16	20	36	069	36
Total	30	32	62	31	34	65	31	32	33	190	100

M=Male, F=Female and T=Total

Table 3: Comparative Importance of Occupation and Gender for Factors Influencing Buying Decision

Factors	Users	Consumer Groups						Overall	
		Students		Small Business Owners		Professionals			
Brand	Gender	Mean	S D	Mean	S D	Mean	S D	Mean	S D
		Male	4.20	0.71	2.75	1.03	4.13	0.76	3.68
	Female	4.03	0.78	2.82	1.06	4.13	0.75	3.64	1.06
	Total	4.11	0.75	2.78	1.04	4.13	0.75	3.66	1.07
Appearance	Male	4.07	0.52	2.74	1.00	3.97	0.66	3.59	0.96
	Female	4.31	0.78	2.71	0.97	4.03	0.65	3.66	1.07
	Total	4.19	0.67	2.72	0.98	4.00	0.65	3.62	1.02
Quality of Writing	Male	4.07	0.64	2.77	0.67	3.94	0.51	3.59	0.84
	Female	4.13	0.42	2.79	0.69	4.06	0.62	3.64	0.85
	Total	4.10	0.53	2.78	0.67	4.00	0.57	3.62	0.85
Ease of Writing	Male	4.00	0.59	2.68	0.75	3.94	0.63	3.53	0.90
	Female	4.03	0.59	2.76	0.78	4.03	0.62	3.59	0.88
	Total	4.02	0.59	2.72	0.76	3.98	0.58	3.56	0.89
Price	Male	2.60	0.93	3.19	0.87	2.06	0.68	2.62	0.95
	Female	2.65	0.97	2.97	0.83	1.97	0.59	2.54	0.91
	Total	2.63	0.94	3.08	0.85	2.02	0.63	2.59	0.93

SD= Standard Deviation

groups about the importance of factors influencing buying decision of pens. It has been observed from the data that the factors like 'appearance' (4.19), 'quality of writing' (4.10), and 'ease of writing' (4.02)

influence students more than any other occupational group. 'Brand' (4.13) of the pen is the factor that has influenced the professionals most than any other occupational group. Small businessmen/workmen

have been found to be more price sensitive (3.08) than both students (2.63) and professionals (2.02). Professionals have been found to be the least price sensitive in terms of buying of pens. Overall 'brand' (3.68) has been highest rated by the male respondents, while the female has rated 'appearance' (3.66) the highest. 'Price' (male 2.62 and female 2.54) has been rated the least by both the gender groups. Overall the factors - 'appearance' (3.66), quality of writing' (3.64) and 'ease of writing' (3.59) have been rated high by female consumers as compared to male consumers. The factors - 'quality of writing' and 'ease of writing' are the two such factors that have been rated high by female respondents than their male counterparts in all the occupational groups. The male

consumers have been found more price-concerned than their female counterparts in all other occupations except students. Male consumers have further been found more brand conscious than their female counterparts except in small business owner category. Female consumers have been found more appearance-conscious than male consumers except in small business owner category. 'Appearance' (4.31) and 'price' (1.97) are the highest and lowest rated factors respectively; by female respondents in students group and professionals group respectively, among all the factors studied across three different occupational and two gender groups.

The difference in three occupational and two gender

Table 4: Importance of Factors Influencing Buying Decision among Occupational and Gender Groups

Factors	Source	SS	DF	MS	F
Brand	Gender (g)	0.04	1	0.04	0.06
	User Groups (u)	75.54	2	37.77	50.5*
	g x u	0.51	2	0.26	0.34
	Error	137.63	184	0.75	
	Total	214.44	189		
Appearance	Gender (g)	0.39	1	0.39	0.43
	User Groups (u)	80.34	2	40.17	65.03*
	g x u	0.65	2	0.32	0.52
	Error	113.67	184	0.62	
	Total	196.47	189		
Quality of Writing	Gender (g)	0.22	1	0.22	0.62
	User Groups (u)	67.57	2	33.79	94.06*
	g x u	0.09	2	0.05	0.13
	Error	66.09	184	0.36	
	Total	134.95	189		
Ease of Writing	Gender (g)	0.24	1	0.24	0.57
	User Groups (u)	68.94	2	34.47	80.59*
	g x u	0.04	2	0.02	0.05
	Error	78.70	184	0.43	
	Total	148.74	189		
Price	Gender (g)	0.36	1	0.36	0.53
	User Groups (u)	36.15	2	18.18	26.59*
	g x u	0.62	2	0.31	0.45
	Error	125.07	184	0.68	
	Total	162.32	189		

SS=Sum of Squares, DF= Degrees of Freedom, MS=Mean Square

*significant at both 0.01 and 0.05 significance levels

groups about the importance of factors that influence the buying decision of a pen has been summarized in Table 4. No interaction has been observed between two variables - occupation of the consumer and gender for any of the factors studied. This implies that the effect of each variable was independent of each other. There were significant differences between different occupational groups for all the factors studied. The differences were highest for 'quality of writing', followed by 'ease of writing', 'appearance', 'brand' and 'price'. The differences have been significantly higher because of significant differences among the three occupational groups in terms of usage of the product. No significant differences have been observed between two gender groups in terms of their consideration of select factors. This is in contrary to many studies that showed gender differences in terms of significance of different factors that they consider while buying goods and services. This shows that no factor is gender specific.

Discussion and Conclusions

Pen is a product that is being widely used by people of all categories except small kids and those who are completely illiterate. Students use pens more frequently and for greater duration than any other occupational group. Therefore, they have greater tendencies to select a pen that provide them better quality and convenience in writing their manuscripts. Many studies have revealed that the younger generation particularly of India is more brand conscious than any other age groups. But in the present study the professionals have shown greater brand consciousness than students. Professionals use pens though for less duration than students yet they are careful in selecting their pen. This is so because the pen probably has become the part of their personality. They probably reveal something about their personality through their selection and use of pens. But they are not ready to sacrifice other features at the benefit of only brand value. No one denies that pen is primarily a writing instrument. Any thing over and above revealed by the pen is meaningful to the consumers who frequently use this product. Small business owners use pen only for the limited purposes. Therefore, they do not bother about all other factors except price. Every consumer has a tendency to be little

more price sensitive for the product which for him/her is not of significant use. Most of the pens offered by the manufacturers are not expensive. The intensified competition has further forced manufacturers to lower their prices. Therefore, price is not an important factor of consideration for majority of respondents interviewed.

Scope for Future Research

There is a tremendous scope for the future research in this area. The study can be extended to more number of variables such as different income groups, different age groups and consumers with different psychological characteristics. Moreover a study can be carried out by comparing the behavior of the consumers' pen buying with that of other fast moving consumer goods.

Managerial Implications

Pen is an integral part of life for majority of the individuals. No doubt, the market for pen manufacturers has shown growth, but at the same time, the competition in this sector has been intensified with the emergence of new players in this sector. The marketers have to think of innovative practices both for emerging as a winner in this market and generating revenues. In order to do so, they have to probe the preferences and expectations of their different consumer segments. The most frequent user class of this product is the student community. They are widely and uniformly spread across the country. For these consumers, pen is not more only a writing instrument. They are also 'appearance' conscious. But simultaneously they also seek 'quality of writing' and 'ease of use'. The brands that have yet to establish their credibility in the market must emphasize on these features in their products. The study is of great importance for the survival of small manufacturers who are being engulfed by the large scale organized manufacturers. Based on their strengths and weaknesses, they can identify their profitable niche, which they can serve with excellence. It will also immune themselves from the competition. The small manufacturers instead of brand building should focus on other features. It will help them to combat the competition from organized sector at a low cost. The manufacturers, who can offer pens with all these features to the

moderate level, should adopt low cost business strategy and target small business owners. The study is also important for the manufacturers of reputed brands. They can not stay longer in the market just on the basis of their brand equity earned in the past. They have to show consistency in meeting the varying expectations of the consumers. The new millennium consumer particularly women; is also looking for style in every product he/she uses. Therefore, the pen manufacturers should also think in terms of producing pens of with innovative looks, designs, colors and appearance. As professionals relate this product to their self-image, the companies must think innovatively both in producing pens and communicating messages to this segment.

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Six-sigma: The Best Way to Demonstrate Technological Leadership and Corporate Excellence

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The term 'Six-Sigma' is a reference to a particular goal of reducing defects to near zero. Statistically speaking, the concept of Six-Sigma broadly implies the processes involved in a system that are working nearly perfectly, delivering only 3.4 defects per million opportunities (DPMO). The central idea of 'Six Sigma' principle-based management is to be able to measure the extent and nature of defects in a process fairly accurately so as to systematically find the way-outs to eliminate them with a view to approach a quality level of virtual zero defects. A more rational approach to determine the Sigma level would be to calculate how many defects occur compared to the number of opportunities there are in the product or service for things to go wrong. Design for Six-Sigma (DFSS) involves a business process focused mainly on improving profitability. When properly applied, DFSS generates the right kind and mix of products and services at right time at right cost. Using Six-Sigma, organizations can significantly improve their core processes together with core competency, which, in turn, will improve their product and service delivery. To be consistent, and deliver quality product and services is what ultimately translates into organizational credibility. It also facilitates its transformation to strategic partners at every step with the customer - thus enhancing long-term value in a sustainable manner.

The paper highlights some of the cardinal features and characteristics of six-sigma with focus on its basic ingredients, tools to measure, implementation framework, tools for process optimization, process design/ redesign- amply complemented by illustrative case studies in electronics, energy, power, automobiles, software ,chemicals, defense and healthcare sector.

Introduction

Six-Sigma originated as a quality improvement methodology in manufacturing, but any process can easily adopt it for the purpose of optimization. Using Six-Sigma, organizations can significantly improve their core processes, which, in turn, will improve their product and service delivery. Consistent quality product and service is what ultimately buys organizational credibility. It also facilitates its transformation to strategic partner at every step with the customers enhancing value over a period of time.

Statistical modelling and analysis is a core element of world class Quality process management. It is a fundamental tenant of Six-Sigma and is a regular part of management in the world's top organizations. The ability to understand business inputs, internal attributes, outputs, customers, and partners through meaningful and usable statistical analysis enable organizations to reach the highest levels of effectiveness and efficiency. Effective quantification of business processes provides major benefits in terms of: (i) the ability to predict the Quality of outputs, (ii) ability to quickly identify "real" root causes, (iii) ability to identify issues before they become problems,

(iv) ability to identify special cases, and (v) ability to improve processes and their outputs. From simple percentages to complex regression modelling of multiple processes, six-sigma helps organizations define and implement analysis systems that deliver meaningful and useable information. These statistical methods are implemented to meet several key criteria such as: (i) appropriate level of complexity; (ii) actionable information; (iii) systemic data collection and reporting; and (iv) horizontal and vertical relationships identified and reported upon.

What is Six-Sigma?

The term 'Six-Sigma' is a reference to a particular goal of reducing defects to near zero. The basis of 'Six Sigma' is primarily the measuring a process in terms of magnitude of defects. Sigma is a Greek letter that statisticians use to represent the 'standard deviation' of a population". In statistical terms, therefore, the purpose of six-sigma is to reduce variation to achieve very small standard deviation so that all the products or services meet or exceed customer satisfaction. Statistically speaking, the concept of Six Sigma means the processes involved

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in a system that are working nearly perfectly, delivering only 3.4 defects per million opportunities (DPMO). The central idea of 'Six-Sigma' principle-based management is that if we are able to measure the extent and nature of defects in a process fairly accurately, we can systematically find the way-outs to eliminate them with a view to approach a quality level of zero defects¹.

Six-Sigma is a set of practices originally developed by Motorola to systematically improve processes by eliminating defects. A defect is defined as nonconformity of a product or service to its specifications. While the particulars of the methodology were originally formulated by Bill Smith at Motorola in 1986, Six-Sigma was heavily inspired by six preceding decades of quality improvement methodologies such as quality control, TQM, and Zero- Defects. Like its predecessors, Six Sigma asserts the following: ^{2, 3}

- Continuous efforts to reduce variation in process outputs is key to business success.
- Manufacturing and business processes can be measured, analyzed, improved and controlled.
- Succeeding at achieving sustained quality improvement requires commitment from the entire organization, particularly from top-level management.

The term "Six-Sigma" refers to the ability of highly capable processes to produce output within specification. In particular, processes that operate with six sigma quality produce at defect levels below 3.4 defects per (one) million opportunities (DPMO). Six-Sigma's implicit goal is to improve all processes to that level of quality or better ^{4, 5}. Six-Sigma is a registered service mark and trademark of Motorola, Inc. Motorola has reported over US\$17 billion in savings from Six-Sigma as of 2006. In addition to Motorola, companies that also adopted Six-Sigma methodologies early-on and continue to practice it today include Bank of America, Caterpillar, Honeywell International (previously known as Allied Signal), Raytheon, Merrill Lynch, 3M and General Electric (introduced by Jack Welch)⁶⁻¹¹.

Six-Sigma Methodology

Six-sigma is a systematic approach used by organizations in order to enhance business

profitability, overall business performance, productivity, reduce company's operational cost and improve customer satisfaction. Six-sigma is a rigorous analytical methodology and uses business data and statistical analysis, follows disciplined techniques in order to help company reduce operational cost, achieve high profitability and eliminate problems (defects/errors/bugs) in any possible area. Six-sigma is a proven and very efficient approach in order to help organizations improve business processes and establish correct and disciplined strategies to improve business processes predictability. Statistical thinking in six-sigma methodology is process driven i.e. it marks everything as a process and suggests that the processes needs to be understood and studied in depth in order to improve them, hence contributing towards reduction of defects and enhancement in profitability.

Six-sigma methodology was first derived/implemented by Motorola in early 80s during the quest to formulate/find out processes which can help in reduction of failure at all level in production. The challenge needed in depth and accurate study and analysis of various processes used, and understanding the root-cause of failures in order to minimize the defects and increase profit.

Johnson & Johnson determined that the DMAIC cycle, with the addition of 'innovative' could provide a strategy framework on which to build a process excellence organization. Before J&J started using six-sigma, motorola and GE were the middle managers' initial examples of six-sigma success. The CEOs of these corporations made six-sigma a top priority and pushed the methodology down through the organization. They established six-sigma as the management framework by which their organizations would run. Employees were encouraged to take six-sigma champion, black belt and green-belt trainings. They were expected to produce results based on six-sigma projects ¹².

It's very important to understand the six sigma methodology and its application for any industry/organization. Six sigma methodologies not only emphasizes on reduction of defects i.e. only 3.4 per million, it also gives a significant importance to customer satisfaction and customer voice.

Advantages of using Six-Sigma approach

The following are perceived to be the main advantages of using Six-Sigma approach in an organization¹³:

- Generates sustained success demonstrated by double-digit growth and strong market share.
- Sets a common performance goal for the entire organization-near perfect quality
- Executes strategic change demonstrated by new products, launching new ventures, entering new markets, etc,
- Increased revenue by satisfying customers;
- Focuses on improving quality by reducing errors, thus inspiring employees, instilling a particular culture and attribute into the company, creating an image in the market and community, and attracting investors.

Design for Six-Sigma

Design for Six-Sigma (DFSS)¹⁴ involves a business process focused on improving profitability. When properly applied, DFSS generates the right kind and mix of products and services at right time at right cost. A well-documented, well understood and useful product development process is fundamental to a successful DFSS Programme. Hence DFSS is known and widely acknowledged to be a rigorous approach to designing products, services, and/ or processes to reduce delivery time, development cost, increase effectiveness and better satisfying ability for the customers. Design for Six-Sigma (DFSS) is a highly disciplined approach to embedding the principles of six-sigma as early as possible in the design and development process. Design for Six-Sigma (DFSS) is a separate and emerging business-process management methodology related to traditional six sigma. While the tools and order used in six-sigma require a process to be in place and functioning, DFSS has the objective of determining the needs of customers and the business, and driving those needs into the product solution so created. DFSS is relevant to the complex system/product synthesis phase, especially in the context of unprecedented system development. It is process generation in contrast with process improvement.

Define - Measure - Analyze - Design - Verify (DMADV), is sometimes synonymously referred to as DFSS. The traditional DMAIC implies: Define - Measure - Analyze - Improve - Control. Six-Sigma process, as it is usually practiced, which is focused on evolutionary and continuous improvement manufacturing or service process development, usually occurs after initial system or product design and development have been largely completed. DMAIC Six-Sigma as practiced is usually concerned with solving existing manufacturing or service process problems and removal of the defects and variations associated with defects.

DFSS in Software Engineering acts as a glue to blend the classical modelling techniques of software engineering such as OOD ERD with statistical, predictive models and simulation techniques. The methodology provides Software Engineers with practical tools for measuring and predicting the quality attributes of the software product and also enables them to include software in system reliability models. It Introduces techniques and measurements from different stages of the life cycle: Requirements, Design, Implementation, Verification and Validation¹⁵.

DMAIC

Basic methodology consists of the following five steps:

- Define the process improvement goals that are consistent with customer demands and enterprise strategy.
- Measure the current process and collect relevant data for future comparison.
- Analyze to verify relationship and causality of factors. Determine what the relationship is, and attempt to ensure that all factors have been considered.
- Improve or optimize the process based upon the analysis using techniques like Design of Experiments.
- Control to ensure that any variances are corrected before they result in defects. Set up pilot runs to establish process capability, transition to production and thereafter continuously measure the process and institute control mechanisms.

DMADV

Basic methodology consists of the following five steps:

- Define the goals of the design activity that are consistent with customer demands and enterprise strategy.
- Measure and identify CTQs (critical to qualities), product capabilities, production process capability, and risk assessments.
- Analyze to develop and design alternatives, create high-level design and evaluate design capability to select the best design.
- Design details, optimize the design, and plan for design verification. This phase may require simulations.
- Verify the design, set up pilot runs, implement production process and handover to process owners.

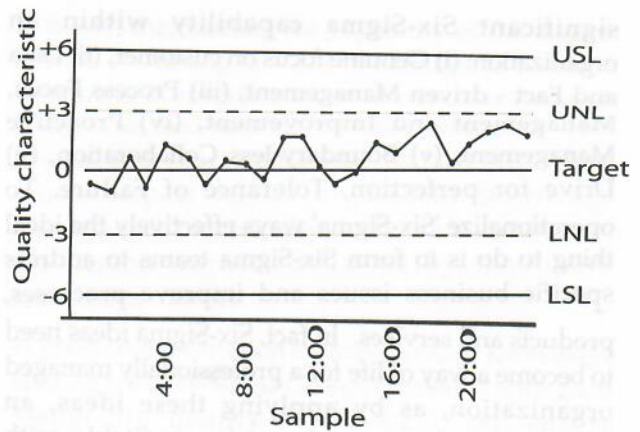
Some people have used DMAICR (Realize). Others contend that focusing on the financial gains realized through six-sigma is counter-productive and that said financial gains are simply byproducts of a good process improvement.

The $\pm 1.5\sigma$ Sigma Drift:

The $\pm 1.5\sigma$ drift is the drift of a process mean, which is assumed to occur in all processes 16. If a product is manufactured to a target of 100 mm using a process capable of delivering $\sigma = 1$ mm performance, over time a $\pm 1.5\sigma$ drift may cause the long term process mean to range from 98.5 to 101.5 mm. This could be of significance to customers.

The $\pm 1.5\sigma$ shift was introduced by Mikel Harry¹⁷. Harry refers to Evan's paper (1975) titled, "Statistical Tolerancing: The State of the Art. Part3. Shifts and Drifts", about tolerancing and the overall error in an assembly is affected by the errors in components. Evan refers to Bender's paper (1962) titled, "Benderizing Tolerances - A Simple Practical Probability Method for Handling Tolerances for Limit Stack Ups". He looked at the classical situation with a stack of disks and how the overall error in the size of the stack, relates to errors in the individual disks. Based on "probability, approximations and experience", Bender suggests:

$$V = 1.5\sqrt{\text{var}(x)}$$



A run -chart, depicting a $+1.5\sigma$ drift in a 6σ process. USL and LSL are the upper and lower specification limits and UNL and LNL is the upper and lower natural tolerance limits.

Defects & the Sigma Level

One significant feature of six-sigma is that it translates the messiness of variation into a clear black-or-white measure of success: either a product or service meets customer requirement or it doesn't. Anything that falls below the customer's expectation level is called a 'defect'. A more rational approach to determine the Sigma level is to calculate how many defects occur compared to the number of opportunities there are in the product or service for things to go wrong; viz., Defects per Million Opportunities (DPMO). The Table presented below illustrates the relationship between the sigma values as are relative to % Accuracy corresponding to the Defects per Million Operations.

Range of Six Sigma Quality

σ	% Accuracy	defects per Million Opportunities
1	30.85	691,500
2	69.15	308,500
3	93.32	66,800
4	99.38	6,210
5	99.977	233
6	99.9997	3.4
7	99.999998	0.020

Six Basic Ingredients of Six-Sigma

'Six-Sigma Way' introduces the following six critical ingredients that are generally needed to achieve

significant Six-Sigma capability within an organization: (i) Genuine focus on customer, (ii) Data and Fact - driven Management, (iii) Process Focus, Management and Improvement, (iv) Proactive Management, (v) Boundary-less Collaboration, (v) Drive for perfection, Tolerance of Failure. To operationalize 'Six-Sigma' ways effectively the ideal thing to do is to form Six-Sigma teams to address specific business issues and improve processes, products and services. In fact, Six-Sigma ideas need to become a way of life for a professionally managed organization, as by applying these ideas, an organization becomes dynamic, profitable with unparalleled efficiency, and customer loyalty.

Six-Sigma Implementation

To operationalize Six-Sigma Design, there are seven critical functions and roles that need to be identified, organized and developed. These are: (i) Formation of Leadership group or Council, (ii) Identification/ Nomination of Sponsors and Champions, (iii) Deployment of Implementation Leader, (iv) Six-Sigma Coach (Master Black Belt), (v) Team/Project Leader (Black Belt), (vi) Team member, and (vii) Process owner. Scoping Six-Sigma Projects entail first clearly defining its opportunity. In this exercise, the team refines its problems statement and goal, identifies customers served along with their requirements and writing plan as to how to complete the project (i.e. Process Map). In the implementation schedule, Process map gives way to measuring performance, as a transitional step. There are two important components of performance measurement of activities based on Six-Sigma principle: (i) Plan and Measure performance against customer requirements; (ii) Develop baseline defect measures and identify improvement opportunities.

Benchmarking for Six-Sigma

Lean Six-Sigma is a methodology that maximizes shareholders' value by achieving the fastest rate of improvement in customer satisfaction, cost, quality, process speed, and investment capital. The fusion of lean and Six-Sigma is required because:

- Lean cannot bring a process under statistical control.
- Six-Sigma alone cannot dramatically improve process speed or reduce investment capital.

Benchmarking is an improvement tool whereby a company measures its performance or process against other companies' best practices, determines how those companies achieved their performance levels, and uses the information to improve its own performance. Benchmarking is a continuous process whereby an enterprise measures and compares all its functions, systems and practices against strong competitors, identifying quality gaps in the organization, and striving to achieve competitive advantage locally and globally. Traditionally, Lean has been more closely associated with production and manufacturing operations. At the outset of Lean in GE, the Supply Chain organization and its manufacturing locations were the primary focal points of Lean activity, concentrating on shortening the cycle from customer order to delivery, and targeting essential areas that hold the potential for substantial improvement. These natural targets of opportunity include better flow of work and shorter cycle time in manufacturing, reduced inventory levels to improve operational efficiency and conserve cash, lower costs and better forecasting to improve lead times. In the past few years, phenomenal improvements in cycle times across the Supply Chain, as well as hundreds of thousands of dollars in cost savings from process upgrades substantiates the power of Lean.

Adapting to the rigors of Six-Sigma requires significant culture change for most companies and many find it a challenge. Companies are finding innovative ways to address this issue along with the usual training programs and by attempting to introduce change gradually. However, training needs to reach the mind, heart and soul of a company and must be an on-going effort. Not all challenges are cultural though. With its statistical engineering heritage, Six Sigma methodologies are indeed dependent on data, so data collection can present significant obstacles. Automated data collection and Information Technology (IT) solutions can play a key role in resolving these obstacles, yet findings indicate insufficient use of automation and analytics to support Six-Sigma activities. As a result, enterprises are not achieving the anticipated goals of Six Sigma programs. Such factors, for instance, left Aberdeen Six-Sigma Group to conservatively estimate that industry is missing out on billions of dollars in potential savings, sales, and profits each

year through ineffective application of Six-Sigma tools and methodologies¹⁸.

Six-Sigma Process Redesign

Like Product Life Cycle (PLC), Six-Sigma Design may also suffer the Law of diminishing returns in post-maturity phase of DMAIC Projects on account of a few main causes of pains, costs and defects in a process or product. The following issues confronted by six-sigma Team may even prompt a process of rethinking leading to redesign of the project:

- Gap between real customer requirement and current performance is so wide that 'fix it' solution won't do
- Number of critical factor/causes that combine to drag the process down is so large that it is prudent to replace the whole process with a new one (e.g. Business Process Reengineering)
- Customers demand greater flexibility needing team's improved process innovations and new technologies to compete with the competitors
- Need for enhanced risk-taking capability

The best way to address the above circumstantial requirement and redesign a broad framework for DMAIC is to go through the following logical steps for the Six-Sigma Process Redesign:

- Step 1: Define the Design/Redesign Goal, Scope and Requirements
- Step 2: Measure to Establish Baseline Performance
- Step 3: Analyze the Critical Elements to trigger Process Design
- Step 4: Improve -Designing and Implementing the New Process
- Step 5: Control the New Process

Sustaining Design for Six-Sigma through Leadership Roles

Six-Sigma is basically a methodology that needs to continue indefinitely and in an uninterrupted manner since there is always a room for improvement in designs, approaches and processes involved. The first and the most effective means of sustaining gains achieved through six-sigma is to use it diligently to improve the processes designed through DFSS; that

is to say, maintaining the capability of the design. Second sustaining factor is to continue to focus on customers in specific context of customer demand, complaints, feed-back information, focus group, one-to-one interview, contextual enquiry etc. Third crucial aspect relates to efficient knowledge management involving maintaining a database of the 'lesson learned', followed by continuous knowledge transfer.

A good communication system enabling knowledge sharing with Six-Sigma Group, combined with good leadership quality of the CEO, can ensure sustenance. Combined with this, a high quality of infrastructure, reinforcement and control can considerably help the organization to promote and sustain DFSS. Last, but not the least, organizational culture can influence and stimulate the process of designing and redesigning of Six-Sigma to see through not only its successful conclusion but also its long-term sustainability perspective.

Successful Six-Sigma programs are the result of executive leadership. Without leadership, there will be no effective followership¹⁹. A Six-Sigma program is a change initiative and must be legitimized, supported, and actively overseen from the top down. Likewise, each successful project demands the effective engagement of management sponsors, team leaders, and team members. Each role carries very different responsibilities. To meet these demanding requirements product developers have to develop products in the shortest amount of time that is safe, reliable, and competitive. Tools and techniques such as Quality Function Deployment (QFD), Failure Modes and Effects Analysis (FMEA), statistical tools, and Design of Experiment (DOE) can help in this product development cycle²⁰.

Six-Sigma Black Belts are the change agents for corporate performance improvement. The Black Belts must be working business leaders facilitating dramatic improvement by reducing waste using Six-Sigma intelligently. Black Belts must realize that they can't achieve much improvement very fast by doing the same thing over and over, or by fine-tuning existing processes. They must explore new possibilities, eliminate non value-added activities and make processes more efficient. Businesses must make excellence elementary, thinking a must-do activity and innovation a standard process²¹.

Assessing the Different Implementation Stages of Six-Sigma

Assessing various Six-Sigma program initiatives as well as defined goals at different stages of implementation is not end-of-the-process post implementation. The key to the success of Six-Sigma implementation lies in assessing the status quo at various stages. Assessments reveal the deviations the implementation efforts have taken from the intended line of progress. As the deployment of Six Sigma is signified by emphasis on accomplishing benchmarks in process optimization and control to render progressively higher degrees of quality, performance efficiency and timeliness, a system of assessment needs to be inbuilt which puts in place an appropriate set of checks and balances.

Companies successful at their Six Sigma implementation have developed and adopted their own assessment procedures. Some of them have used their own internal audit teams with their own criteria to assess the progress of Six-Sigma implementation. Even using the audit procedures developed by Malcolm Baldrige Quality Awards is not new and unique. Many Six-Sigma companies have actually gone ahead with evolving a custom developed audit system based on ISO 9000. The fundamental premise of assessment in Six-Sigma is identifying and reading the gaps between 'as is' and 'should be' conditions of the process stages. The 'should be' list of conditions is what is established at the beginning of the deployment described in great length for each category. The categories for assessment are listed below: (i) Leadership, (ii) Communication and Implementation in Everyday Activities, (iii) Project Effectiveness and Efficiency, (iv) Organizational Transformation, and (v) Customer Impact.

The requirements of these top level categories are the customized topics needed for achieving overall objectives. The method of assessment contains written tests and interviews starting with top level managers down to line employees, in addition to meetings and seminars. The overall results are shown as applicable to the core business process. The results of leadership assessments that show possible areas for improvements are essentially helpful in chalking out a course correction plan. The results also show weaknesses that are to be assessed as the first step toward fine tuning the exercise for needed changes.

The need for assessment may be fulfilled whenever it is warranted. In the normal course, where the results take 4-6 months to show, the assessment can be scheduled as an annual exercise. Experience from successful implementation of Six-Sigma has shown that major roadblocks in changing an organizational mind set lies in sustaining the gains made²².

Non-Manufacturing Six-Sigma Solutions

Today, the world class corporations that implemented Six-Sigma for manufacturing processes are implementing Six-Sigma in the non-manufacturing environment on soft processes such as Order to Cash, Customer Acquisition, After Sales Service & Support, etc. They are doing this because they realize that no matter how good your manufacturing processes are, if soft processes are of poor quality, the company and its customers will suffer. Various soft processes could be of paramount importance to Six-Sigma applications in Non-Manufacturing sectors on following counts:

- Soft processes are the ones that touch customers and suppliers
 - Soft processes initiate manufacturing and distribute the products of manufacturing
 - Soft processes often have fewer transactions and these transactions are of greater value
 - Soft processes are human centric and are full of variation and special cases, science must be applied to reduce and manage this variation
 - In non-manufacturing industries, there are only soft processes.
 - Soft processes manage your money!
- Traditional DMAIC Six-Sigma, some of the fundamental differences between traditional Six-Sigma as found in manufacturing, and the Six-Sigma for transactional processes are described below²³.
- Places more emphasis on the big picture - whole process optimization
 - Emphasizes use of information systems for process automation
 - Emphasizes greater use of technological and procedural benchmarking
 - Specifically addresses evolution as a phase and

places emphasis on continuous improvement, seeking to deal with the greater degree of random variation and special case situations inherent to human driven processes

Building Six-Sigma Excellence: A Case of General Electric

General Electric's Six-Sigma program originated in a meeting between CEO Jack Welch and former vice-chairman Lawrence Bossidy- now CEO of Allied Signal. Welch invited Bossidy to speak to GE executives on Six-Sigma in May 1995. By October 1996, Six-Sigma was company policy. Best Practices, LLC originally studied GE's implementation of Six-Sigma in 1997; two years after CEO Jack Welch designed his company's program, now a global benchmark standard. Allied Signal analysts recently revisited the financial and cultural implications of the program to produce "Building Six-Sigma Excellence: A Case Study of General Electric." The updated and expanded report provides detailed descriptions of how problem-solving skills and techniques mastered at General Electric can boost the impact and efficiency of all business activities. The power of this research study is the comprehensive yet concise profile of successful practices at several top GE business units, including GE Capital, GE Appliances, GE Plastics, and GE Medical Systems as well as in-depth information highlighting Six-Sigma innovation at Motorola and Allied Signal. The Six-Sigma methodology has become more deeply ingrained in GE's corporate culture than any other company. Throughout the development and deployment of the program, GE has benchmarked the Six-Sigma methodology from other companies, including Motorola and AlliedSignal, to ensure that the process is implemented for maximum benefit²⁴.

At the General Electric, implementation of Six-Sigma Programme resulted in the following pattern of return on investment over the years:

- In 1996, costs of \$200 million and returns of \$150 million
- In 1997, costs of \$400 million and return of \$600 million

- In 1998, cost of \$400 million and return of more than \$ 1 billion

Lean Six- Sigma practice at GE in India: A Case Study. GE Consumer and Industrial (GE C&I) is one of the GE growth businesses in India focusing on Industrial and Lighting segments. The industrial segment includes electrical distribution products like switch gears, control panels and air circuit breakers (ACB). The Industrial market in India is on a growth curve and GE has aggressive plans to increase the market share in this growing pie. However, the Sales teams were looking for strategies such as key customer penetration. The Master Black Belt, who was assigned a challenge to resolve this "Big Y", has conducted an Action WorkOut (AWO) to chalk out the ways and means to resolve this problem. The key action items were taken up by the Lean Six Sigma team which found that customer touch time (X) was the key driver for generating orders and converting the same into orders (Big Y). As a result, initiating ACFC program at key customers was the need of the hour to improve the customer engagement process. A Lean Six Sigma workout was conducted by GE's Lean Six Sigma team with one of the customers to improve their plant efficiency. In the process, customer has benefited immensely by working with the GE team and GE has built strong customer relations which paved the way for sales team to develop critical leads and bag more orders.

At GE, the journey doesn't end with customer delivery but also carries forward to make sure the customer is happy with its products and services. In this regard, Net Promoter Score (NPS) initiative was rolled out to gauge customer satisfaction levels and post survey data analysis indicated the burning areas in the business process. Improvisations on CRM, roles and responsibilities were few changes made to resolve the post sales issues and improve the customer response time. However, there was a long term need for new products in the market as the existing products were becoming redundant. A NPI workout was carried out to understand VOC and as an outcome of this, the technology team has brought in new design changes. These efforts were well received in the market as reflected by more orders won and lost customers won back²⁵.

Six -Sigma:

A Case Study of Motorola in Road Mapping

Motorola is widely considered the pioneer of road-mapping. The company initially began using roadmaps in the 1980's to forecast market requirements, predict the availability of key technologies and plan product development accordingly. During the 80s and early 90s, roadmaps were popularized by former Motorola CEO, Robert Galvin, and he is widely quoted in speeches crediting Motorola's success in the marketplace to their technology road-mapping process.

Today, this pioneer uses Aligned's software solutions as their single, company-wide system for all road-mapping information. With Aligned, Motorola's disciplined road-mapping process is now highly collaborative, easy to build upon year-over-year, and tightly connects all business units across the worldwide company.

Motorola, a global communications leader and Fortune 100 company, has long relied on strategic roadmaps to identify new technology and market opportunities. After decades of road-mapping, the company found itself with a "problem of riches" by 2001- Motorola now needed a better way to track and organize the tens of thousands of product roadmap documents distributed across the enterprise. Roadmaps were fueling the company's strategy and innovation practices, but the physical documents were becoming cumbersome to manage.

As Motorola evaluated its evolving road-mapping needs, the company's leaders determined that they not only needed a single system to manage enterprise-wide road-mapping information, they also needed a system that could accomplish six key requirements²⁶:

1. Improve innovation planning and collaboration across distributed business units
2. Forecast emerging technologies, products and markets, including monitoring external and internal innovation factors
3. Capitalize on strategic planning data instead of re-planning from ground zero each year
4. Identify instances where the company could increase technology re-use, inserting platform technology into the new product development process to leverage time and resources

5. Minimize duplicative product planning efforts in departmental silos across the globe
6. Implement strategic planning software that incorporates road-mapping best practices into the tool, providing a central repository where roadmaps can be accessed and stored

Motorola explored various options that could scale and support long-range global innovation planning efforts. After an extensive search, Motorola selected Aligned as its road-mapping partner. Motorola has now deployed Aligned's software in more than nine countries around the world. The company has reported savings of more than \$100 million by consolidating strategic planning projects across various business units. Planning teams continuously update roadmaps to reflect changes in markets, customer needs and competitive activity. Individuals across business units collaborate via online strategy meetings where they give and receive feedback on strategic product plans and roadmaps.

Crystal Ball in Designing Six-Sigma

To succeed, Six-Sigma programs must combine a tight focus with the right people and the best tools- and when it comes to software, the best tools are the ones that streamline your journey to profitability. Crystal Ball is one such tool. As a suite of Microsoft Excel add-ins, Crystal Ball software works to turn the existing engineering and process spreadsheet models into dynamic analytical tools that help customers identify and control the negative effects of variation throughout the Crystal Ball demonstrated Six-Sigma projects. Six Sigma applications of Crystal Ball include: ● Design development and optimization ● Tolerance and reliability analyses ● Project selection ● Process simulation.

Because testing on physical models can be prohibitively expensive, Crystal Ball is particularly valuable in Design for Six-Sigma (DFSS) practices, providing designers with easy access to simulation and optimization techniques that help them predict capability, pinpoint critical-to-quality factors, and explore design alternatives. Engineers use "design by analysis" and simulation to estimate data, improve designs and uncover defects before products are built- a process Crystal Ball facilitates by helping them identify, test, and control how the input (X) variation affects the output (Y). The result is better

designs which lead to overall savings. In the end, customers receive robust products and processes, and get to market fast while avoiding the costly consequences of bad design²⁷.

Six- Sigma: Designing for Quality & Excellence by Siemens

The task of the Quality Systems Group at Siemens Westinghouse Power Corp. (SWPC) has been reported to be quite challenging in the Power generation industries: It endeavored to systematically implement a supplier-facing standardized product- and process qualification process for gas turbine blades. The new process, still under testing, helped to considerably reduce PPQ cycle time, eliminated or minimized product failure points downstream, reduced scrap and improved first-time yield. In the highly complex and demanding power-generation industry, business success depends on effective collaboration with suppliers to ensure superior, reliable and efficient designs; rapid planning to production cycle time; and containment of development and manufacturing costs. For SWPC, the main business objective was to improve economic performance while achieving customer satisfaction and strategic supplier relationships through standardized processes and consistent methodologies.

Headquartered in Orlando, Florida, SWPC is the regional business entity in the Americas for Siemens Power Generation's global fossil power generation business, which has an installed fleet of more than 600,000 megawatts worldwide. Siemens Power Generation offers a full spectrum of products and services, throughout the entire power plant life-cycle, including gas and steam turbines, electric generators, process control and power management systems, and fuel cells for the distributed generation market. With about 250 multi-tier suppliers across the globe providing components for gas turbines, the supplier quality management function plays a vital role in the sourcing process. Gas turbine blades have one of the most complex sourcing processes, involving upto five unique sourcing steps.²⁸

- 1) Investment casting
- 2) Root machining
- 3) Cooling hole drilling (electrical discharge

machining and electro-chemical machining)

- 4) Diffusion and ceramic coatings
- 5) Airflow testing and moment weight

The process of designing a turbine blade is inherently complex, involving precise and unique product characteristics, such as high-strength and high-temperature alloys, thermal barrier coating, and complex cooling to withstand extreme turbine operating temperatures and tight dimensional tolerances. Meeting the stringent requirements of the design intent and close to zero tolerance for failures requires the skills of many design, manufacturing and quality professionals across various organizations. This eventually made the design and qualification process for gas turbine blades highly collaborative and complex.

Furthermore, the Six-Sigma study concluded that a system leveraging the Internet would drive the PPQ process in a way that steers suppliers to focus on up-front process development as opposed to the current practice of creating a basic process and modifying it after full production has begun.

Applying Six Sigma Methodology to DCC's Energy-Saving Projects:

The Dow Chemical Company is a leading science and technology company that provides innovative chemical, plastic, and agricultural products and services to many essential consumer markets. With annual sales of \$27 billion, Dow serves customers in more than 170 countries and a wide range of markets that are vital to human progress, including food, transportation, health and medicine, personal and home care, and building and construction, among others. Committed to the principles of Sustainable Development, Dow and its approximately 50,000 employees seek to balance economic, environmental, and social responsibilities. In 1998 Dow chose to implement Six-Sigma methodology to accelerate the company's rate of improvement in quality and productivity. A trial of Six-Sigma in two of Dow's global businesses convinced management that the value proposition was well worth the effort, and in September 1999 the company launched a corporate-wide program to incorporate the Six-Sigma methodology into all of its businesses and functions. The company's 1999 annual report stated that by the

end of 2003, Dow expected its Six-Sigma implementation to deliver revenue growth, cost reductions, and asset utilization totalling \$1.5 billion in earnings before interest and taxes (EBIT). At the close of 2002, Dow achieved its \$1.5 billion cumulative financial goal-a full year ahead of schedule.

At Dow, Six Sigma goes beyond dollars and manufacturing efficiency improvements. In 2003, the tools and methodology of Six-Sigma were put to work on more than 300 projects related to Environment, Health, and Safety (EH&S) activities²⁹. These projects were primarily focused on 2005 EH&S goals and productivity targets. DCC's Six Sigma project focused on improving water treatment at a major manufacturing complex. In the end, this project delivered effective, efficient wastewater treatment and managed to save Dow approximately \$3 million.

DCC is also applying the company's Six-Sigma mindset to improve company's social performance - because DCC view employee dissatisfaction and shortcomings in community relations as defects in our operations, the same as waste generation or shortfalls in plant productivity.

The Advanced Defense Technology Company Mind-Manager to Facilitate Lean Six-Sigma Process-Improvement Events

The Advanced Defense Technology Company (ADTC) MindManager- a Fortune-500 defense technology company is a world leader in building extremely complex defense systems - everything from missiles to fighter aircraft. But when the company needs to improve the mission-critical business processes behind its products, it finds there's no substitute for visually mapping information. The company's Lean Six-Sigma facilitators use Mindjet® MindManager® to map information collected during Lean Six-Sigma process-improvement events.

"Lean Six Sigma initiates structured change into the environment," says one of the company's leading Lean Six Sigma event facilitators. "Change is very frightening to most people, and inevitably generates resistance. Mapping helps address the challenges of changing an environment, because employees are able to focus better with the visual representation of that change." Capturing the way things are the

facilitator uses MindManager to facilitate week-long Lean Six-Sigma events that bring together up to ten people from across many functional areas involved in a business process. The events have addressed hardware design, software development, networking and telecommunications, and horizontal integration. This leading defense technology company uses MindManager to create visual representations of current, ideal and future state characteristics. Team members are able to quickly grasp the current and future state characteristics, issues and process improvements related to those characteristics, and to work together to devise ways to improve mission-critical business processes in developing Defence Technology³⁰.

Six-Sigma in Healthcare

Healthcare companies of various types are using six-sigma projects as change management tools to improve the business. The healthcare industry and hospitals, in particular, are ripe for a set of improvement tools such as six-sigma. In some healthcare institutions, it has become imperative to reduce costs and provide better and more value added services all at the same time. And the time frame to get this done was "yesterday". Six-sigma is one initiative helping these companies combat this margin squeeze. For example, if a provider performed six ultrasounds per day, it may now be necessary to provide sixteen or more.

Six-sigma tools include statistical analysis, both simple and complex. They include tools such as regression analysis, ANOVA (analysis of variance), FMEA (failure mode and effects analysis), cause and effects matrix, voice of the customer, design of experiments, control charts, hypothesis tests, comparison of means and standard deviations, CT trees, and many others. As an example of how a tool is used, suppose a hospital chain is trying to find a way to increase the number of tests performed per day, such as X-rays. Six-sigma tools can be used to help analyze each technician's results and times, and determine the most effective methods.

Maximizing revenue per bed in a hospital is important. The system must provide excellent care, but providing a bed without providing any other services is not maximizing resources. It is, therefore, critical to find the optimum balance to fill every bed with the most rapid turnover of services while providing the best care possible.

There are hundreds of ways six-sigma and lean six-sigma can be used to improve the business in healthcare companies. They could be as simple as reducing the wasted motion for nurse's aids or as complex as finding the best combination of drugs to treat cancer³¹. In children undergoing surgical intervention, performance improvement principles can improve the handoff process and decrease the delay of time-sensitive therapies³².

As identified in Phase 1 of this study-the "Define," "Measure," and "Analyze" steps of the Six-Sigma framework-communication errors frequently occurred during the postoperative handoff communication process (mean 5.6; median 5.0 errors per handoff event). These most commonly involved information pertaining to a patient's medical history or current surgical intervention (87 percent of communication errors). Furthermore, the handoff process was found to be negatively affected by the following three factors: (1) clinicians involved in a patient's recent care did not consistently participate; (2) the handoff content and method were poorly standardized; and (3) interruptions or distractions were frequently present during handoff events.

Because of this initial evaluation, the "Improvement" step focused on a standardizing the communication process. This standardization centered on establishing a team handoff model and modifying the environment in which the handoffs occurred³³.

To educate the multidisciplinary health care providers caring for children's heart disease in structured communication techniques, the staff underwent "team training" through the TeamSTEPPS™ curriculum. This program, developed by the Agency for Healthcare Research and Quality (AHRQ) in collaboration with the Department of Defense, is an evidence-based curriculum focused on improving patient outcomes by developing communication and other teamwork skills among health care professionals³⁴.

Achieving Synergy from BPM & Six-Sigma

Companies are just discovering the benefits of combining Business Process Management (BPM) and Six-Sigma. Ideal for enhancing the long-term performance of business processes, the BPM/Six Sigma union helps companies better characterize, understand, and manage entire value chains. It also

helps companies improve control and predictability of corporate business processes and generate sustainable enterprise improvements in performance levels. BPM aligns processes across an enterprise using technologies to provide visibility and management at any point in a business process. BPM and associated technologies help model data flow, people, resources, and systems in an organization. With BPM, Six-Sigma projects can pinpoint problems and address the underlying causes.

In addition to identifying quality improvement targets, BPM enhances Six-Sigma projects by speeding the collection and distribution of critical data. Honeywell International, the Morristown, NJ, Technology Company, recently applied Six-Sigma to its accounts receivables process. Its efforts were initially stymied because key information was dated by the time it reached decision-makers³⁵.

Combined BPM and Six-Sigma is a powerful tool. The two approaches are synergistic. What one lacks the other provides and vice versa. Together, they are a better approach to understanding, analyzing, and improving business processes than other methodologies alone. Unfortunately, this union has not become a mainstream approach to improving enterprise-related business processes. One reason may be that companies are unaware of how well these two initiatives work in concert with each other.

Nevertheless, companies with revenues greater than \$200 million have been adopting Six-Sigma at a 28 per cent rate, according to trend analyses by Don Redinius, Agillist Group, Inc., a business performance improvement solutions company. While this rate is significant, it is bound to improve as companies come to understand the synergies between BPM and Six-Sigma. The union is ideal for providing long-term, enterprise-wide performance solutions.³⁶

Statistical Software for Six-Sigma

Advanced statistical software such as Minitab (<http://www.minitab.com/>) or Statgraphics (<http://statgraphics.com>), are very useful if not essential for gathering, categorizing, evaluating, and analyzing the data collected throughout a Six-Sigma project. Both Minitab and Statgraphics are powerful standalone statistical process control software applications for performing statistical analysis. Both are highly recommended for Six Sigma use as they

are tools that can help you utilize one of Six Sigma's biggest advantages: the ability to make better decisions based upon data. They will work with the DMAIC Define-Measure-Analyze-Improve-Control methodology and Lean Six-Sigma.

Both Minitab and Statgraphics are designed to support the Six-Sigma philosophy offering a range of following tools for graphical analyses, collecting powerful statistics, quality analyses with potential for a range of custom designed uses.

- Statistical Process Control Charts
- Analysis of Variance and Regression Analysis
- Design of Experiments
- Factorial and Matrix Plots
- Relationships between variables
- Life Data Analysis and Reliability
- Process Capability Analysis
- Hypothesis Testing
- Correlation and regression
- Time Series Analysis and Forecasting
- Measurement Systems Analysis
- Regression Analysis
- Multi-variation analysis
- ANOVA tools and techniques
- Six-Sigma Quality Assessment

Both applications provide you with nearly real time statistical data, enabling you to respond quickly to prevent further defects. Statistical evaluation of the data identifies key areas to focus process improvement efforts on, which can have an adverse effect on product quality if not controlled.

However, while it is easy to purchase a statistical software application, it is harder to use it effectively. It is smart analysis of the data that create real change. All too often, Six-Sigma/DMAIC teams collect and load data into Minitab or Statgraphics only to find them overwhelmed by the prospect of where to start and how to use their new tool to successfully analyze their data that comes up with, not just any answers, but meaningful and useful answers. As a result, Six Sigma/DMAIC projects often fall far short of the productivity expectations associated with statistical software. Training in use of Minitab is often offered

integrated with Six Sigma training. Minitab training will focus on solving practical problems with Minitab. This includes learning the practical aspects of major statistical tools like Control Charts, Capability Analysis, Regression Analysis, and ANOVA. There is a strong emphasis on learning how to get data into Minitab, learning how to manipulate data once in Minitab and learning how to display graphically major findings from the data. Proper training will teach you how to drive Minitab like a pro and thus bring greater statistical power to your Six Sigma projects (<http://www.buzzle.com/editorials/4-3-2006-92630.asp>)³⁷.

Conclusions

Scores of Six-Sigma consulting companies are now in existence, promising to improve an organization's bottom-line. Expectations frequently fall short, however, because the so-called expert consultants do not fully understand or put into practice the true Six-Sigma methodology in the right perspective and/or operational frame.

"Six-Sigma remains a vital force for identifying and addressing the inefficiencies in business operations that lead to outrageous levels of defects and extraordinarily wasteful operating costs," says Greg Brue- the man who confirm Six- Sigma in GE, Motorola, Allied Signal and more than 75 leading corporations. "But to gain the benefit of Six-Sigma, one need to know who to select to lead one's company's deployment." According to the findings of Greg Brue, Six-Sigma is today's most honoured and effective quality initiative.³⁸

Yet to achieve optimal results from such an initiative, companies must fast master the building blocks of Six-Sigma. Design for Six-Sigma (DFSS) shows decision makers at all levels how to implement and improve the DFSS tools and techniques from earliest design through final production of virtually any product, service or process. Design for Six-Sigma (DFSS) involves a business process focused mainly on improving profitability. When properly applied, DFSS generates the right kind and mix of products and services at right time at right cost. Using Six-Sigma, organizations can significantly improve their core processes together with core competency, which, in turn, will improve their product and service delivery. To be consistent, and deliver quality product and services is what ultimately translates into organizational credibility. It also facilitates its

transformation to strategic partners at every step with the customer - thus enhancing long-term value in a sustainable manner.

Six-Sigma principles and methodologies also show us how to join today's quality leaders by incorporating DFSS to each step of new product or service development programme for maximum impact and return on Six-Sigma Investment. This point has been effectively exemplified through citing some of the illustrative case studies in this paper covering manufacturing, non-manufacturing sector, electronics, telecom, automotive, defense technology, chemicals, energy and healthcare sector. The scope of Six-Sigma applications can be synergistically extrapolated to other important segments of the National economy needing creation of critical infrastructure such as Aviation, Port and shipping, hospitality, tourism, mining & minerals, Space research, Oil & Natural gas, Energy & Power etc. Integrating Six-Sigma with Business Process Management, Business Process Reengineering and Business Process Innovations will take the Six-Sigma approach a long way to achieve corporate leadership and excellence.

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A Study of Personnel Satisfaction with Performance Appraisal Practices in the Indian Universities

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The theme of performance appraisal has remained a buzz word in the personal and professional life of each individual. With the growing competitiveness in the higher education at global level, the performance appraisal of faculty is gaining increased significance in the changing scenario. The requirement for universities to evaluate the faculty performance against objective yardsticks is emerging with force. In the series, before introducing any change in the system, the first step is to assess the satisfaction level of the faculty with the existing appraisal system. The results of the present study suggest that no single system of performance appraisal is preferred exclusively by the faculty and a new system of appraisal having specific weightage of various academic and allied activities seem to be the need of the hour. The new faculty has shown high level of satisfaction with the performance appraisal practices adopted by the university system. However, as the experience of the faculty is increasing the satisfaction towards existing performance appraisal has been found decreasing. The faculty members have been found to differ significantly on the basis of their age, total experience, designation experience and the organisation experience. Of course, in rest of the dimensions no significant differences have emerged.

Introduction

The essence of performance evaluation is the development of individuals' competence and commitment of individuals working towards the achievement of shared meaningful objectives within an organisation. Performance evaluation may serve as a criterion to retain employees during layoffs, to assess the quality of training programmes, to measure equitable treatment of different groups of employees, to increase employees' pay, and also to promote or terminate the service of employees (Landy, Farr and Jacobs, 1982). Evaluation outcome may not only help the good performers to excel by giving positive reinforcement but also help the poor performers to improve upon their performance by giving specific feedback about needs for development. Therefore, the approach of evaluation and feedback system an organization should adopt, occupies critical position in improving the performance of employees and leading the organisation towards managerial efficacy. In a way, effective performance evaluation system is among the tools of not only measuring and improving the productivity but also providing a solid platform to the organization for managing change and gaining competitiveness. Performance evaluation provides a periodic review and assessment of an individual's job performance. Although the evaluation Forms may be completed only once a year, the job of performance

evaluation is continuous - sometimes daily - and requires effective communication on both the part of the supervisor and the employee. Performance evaluation issue faced by organizations is the perceived fairness of the performance review and the performance evaluation system. Most employees perceive their performance evaluation system as neither accurate nor fair. Skarlicki and Folger (1997) suggest that the evaluation process can become a source of extreme dissatisfaction when employees believe the system is biased, political or irrelevant. A major problem for organizational leaders is that the performance evaluation process and the performance evaluation system are often perceived as both inaccurate and unfair (Latham and Wexley, 1981). Much of the research into performance appraisal has accomplished to focus on appraiser and instrument reliability and validity rather than examining the views of the individuals who are the subjects of performance appraisal. Murphy and Cleveland, (1991) concluded that a performance appraisal system will not be effective unless it is perceived to be fair by all of those involved in the process (Ilgen, et al., 1979)

Review of Literature

When literature was reviewed on the employee satisfaction with performance appraisal practices in

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India especially related to academic field, it was found that there was hardly any study that could support the results of the present study as most of the literature is based on the studies conducted abroad. A ground of satisfaction with performance appraisal has been attributed to a number of different causes. Mount (1983, 1984) put forward that employees' satisfaction with a performance appraisal system was mainly related to their overall experience with the system, whereas managers' satisfaction was much more aligned with some of the components of the system. Whereas Pooyan and Eberhardt (1989) examined the difference in satisfaction levels in terms of goal setting behaviour and relationships between appraisers and appraisees; the results indicate that appraisers perceived they received more technically sound appraisals than those with a solely appraisee role.

Tilburg (1989) conducted a study to find out relationships between selected categorical variables and the level of satisfaction with the new rating system were determined for the group of agents and the group of chairs using analysis of variance. The selected variables were: age combination, gender combination, and program area responsibility combination. The results showed that there were no significant differences among the above mentioned combination groups. Therefore, no relationships were discovered between age, gender, and program responsibility combination variables and satisfaction with the new rating system (chair conducting performance appraisal). The relationship between years of stable faculty membership and agent and chair with satisfaction was determined using a Pearson product moment correlation. The correlation coefficient for the group of agents, $-.11$, was described as a low negative relationship suggesting that the longer the county team had been together, the less satisfied the agents were with the new rating system. The correlation for the group of chairs was $.20$, a moderate positive relationship suggesting that the longer the team had been together, the more satisfied the chairs were with the new rating system. To determine the relationship that county position (agent/chair) had with satisfaction with the rating system, a *t*-test was performed. From the study results it can be concluded that the greater the satisfaction with relationship discrepancy score, the higher the satisfaction with the rating system. Based on the

literature review and as suggested by the open-ended comments of respondents, organizations need to be aware that having a peer or immediate supervisor as a performance rater provides a rater with more opportunities for interaction and observation of the subordinates, but it may also provide opportunities for personality conflicts and other concerns as well. Organizations should investigate employees' satisfaction levels with the organizations' methods of performance appraisal to gather information about benefits and shortcomings of those performance appraisal methods.

Shiri (1996) did an applied investigation in one of the provinces of Iran. The results demonstrated that school employees are relatively satisfied with their system of performance appraisal. For example, 92% of participants believe that an effective performance appraisal can enhance positive perception of raters and ratees from each other; 69% reported that they were satisfied with their performance scores in the last three years, and 74% believed that the performance appraisal scores accurately reflected their performance.

Heathfield (2000) stated that although performance appraisal has several objectives and uses to any organisation, in practice, it has disappointing and unsatisfactory results. There seems to be a negative attitude and considerable dissatisfaction from both employees and managers of the appraisal systems and same was supported by the study results of Grint, (1993) and Williams (1994). Some of the most common problems cited for the failure of an appraisal system include lack of employee's participation and involvement in the process especially in establishing their job targets which may turn out to be unclear, unfeasible or non-existent. Another source of appraisal failure is the lack of feedback and performance review sessions with employees (Sheal, 1992; Somerick, 1993; Lucas, 1994). Moreover, poor appraisers' training can be another area of ineffectiveness in some organisations (Smith, 1990). Ineffective appraisals can also be a result of having weak communication and a lack of coaching relationships between superiors and subordinates (Sheal, 1992; Lucas, 1994; Cadwell, 1995; Valerie, 1996). In summary, many performance appraisal systems fail as a result of lack of managing the system effectively or lack of top management support

Fandray (2001) in the results of his survey indicated that thirty two per cent of human resource professionals were unsatisfied and/or very unsatisfied with the existing performance management system, because of deficiencies in leadership development, coaching, feedback and development planning, twenty two per cent said that the greatest challenge they face is lack of support from the top management, forty two per cent of the total respondents reported that the executives not even bother to review the performance management systems currently in place.

Glendinning (2002) gathered data, using a questionnaire, from 64 HR professionals in supervisory positions, in a diverse range of industries. The objective of the study was to ascertain opinion about performance evaluation including information on satisfaction with performance evaluation. Supervisor perceptions of performance evaluation varied from 11% who were very satisfied with their performance evaluation program, 76% said they were moderate to moderately high in satisfaction and 8% said they very unsatisfied with performance evaluation. Participants were also asked to quantify their employees' satisfaction with the performance evaluation system with 12% claiming employees were very satisfied, 6% of the supervisors saying their employees were very unsatisfied and 42% believed employees were moderately satisfied with the performance evaluation system. Performance evaluation was also perceived to offer a number of benefits, including improved employee work (79%); identified employees with potential for advancement (94%); improved the quality of supervision (70%) and achieved business objectives (78%). In contrast, 71% of respondents said they had observed rater biases, while 49% were not including milestones to gauge employee goal attainment and 39% said that the system had hindered legal proceedings. This research again highlights the mixed reactions to performance evaluation. However, Glendinning suggests that there are still benefits to be had from well-constructed and properly used performance programs, as there can be detrimental effects to an organisation and employees, if a system is not implemented and conducted correctly.

Performance appraisal ratings might be used during layoffs in order to retain more valuable employees,

to determine the quality of training programs, to measure equality of treatment, to manage employees' compensation, and to promote or dismiss them. Thus, appraisal results have a very important role in the HRM activities of the organisation. A well-established appraisal system helps make justified decisions and avoid litigation by terminated employees (Mani, 2002). Thus, the modern appraisal process is an essential part of organisational life, for it helps to justify, compensation differentiation, promotions, demotions, selection, validations and terminations (Longenecker and Fink 1999).

In the study conducted by Szeto and Wright (2003) the researchers have tried to explore and ideal system of faculty evaluation. They have found that for the evaluation of scholarship or research, not surprisingly, number of papers published in "quality" journals and the number of books (sole or senior author), were regarded as the most acceptable methodologies. When degree of satisfaction with the present system was measured more directly, however, a different scenario emerged. Only 58.2 per cent of respondents indicated they were either "somewhat" or "very satisfied," leaving a substantial minority in the "dissatisfied" category. The merits of multi-rater appraisal have been debated extensively and these arguments need not be repeated here. The multiple measure concept, however, appears to have gained widespread acceptance. The authors concurred with this view, but wish to stress that an element of flexibility needs to be added to the process, so that disaffected minorities can be reduced. In addition, an element, so far missing from the research, is the service aspect of the profession. Traditionally shunned, or seen as unproductive, institutional citizenship also should be measured and perhaps rewarded. They have combined traditional and novel ideas, therefore, into an evaluation approach that can accommodate either discipline-based or individual-based idiosyncrasies and suggested strongly that no organisation can operate effectively when close to half its people do not believe their efforts are being measured fairly and effectively.

Khoury and Analoui (2004) studied the faculty members' perception regarding the effectiveness of managing their performance appraisal process at the five Palestinian public universities. Their

perception was the same irrespective of gender and the academic title of faculty members. All members of the faculty (respondents) prioritised the criteria of measuring their performance in a similar manner regardless of their title or highest academic degree. However, no relationship exists between faculty members' point of view and management point of view regarding prioritizing the criteria of performance appraisal of faculty. The various elements that respondents dislike about their performance appraisal process are: unclear standards (33.6%); too much emphasis on students' evaluations (51.5 %); secrecy and lack of feedback (32.6); inflexible standards (12.1 %); top management routine and irresponsibility for the appraisal process (34.8 %); timing (10.6 %); others (11.4 %). Several factors which causes dissatisfaction with the appraisal process include: traditional appraisal approaches, methods and sources. In addition, heavy emphasis was placed on students' evaluation, the lack of awareness of performance standards and superior's expectations, the lack of appraisers' competency, poor feedback and lack of appraisal interviews, failure to apply appraisal results to various administrative decisions and poor top management commitment to faculty members' appraisal. It is expected that all these issues will definitely influence faculty members' level of satisfaction and motivation at work even if most respondents do not have the intention to leave their current job.

Odhiambo (2005) found that the 64.3 per cent teachers' felt that there were important positive appraisal outcomes in their schools and 35.7 per cent felt that there were no important outcomes and teachers have shown dissatisfaction about existing appraisal system. Improved learning of students and improved performance of staff were the two factors identified by the teachers as the most important positive outcomes of the appraisal system in their schools. 47 per cent of the teachers responded about the negative outcomes of appraisal in their schools, and their feeling is that it has led to poor relationships between appraisees and appraisers and they found the prospect of appraiser threatening and subjective. In this study, some teachers claimed that appraisals had led to demotivation and low morale in their schools and that the available opportunities for them to enhance their skills and confidence were pathetically limited. One of the dilemmas clearly

facing teachers was the belief that, on the one hand, the appraisal function should lead to professional development while, on the other, it provided a ready weapon for manipulation by administrators. Overall, 55.7 per cent of the teachers perceived the current teacher appraisal system in Kenyan secondary schools as less than adequate, 23.5 per cent indicated that it was very poor and a handful (15.7 per cent) were of the opinion that it was adequate. None indicated that it was neither more than adequate nor excellent and 5.2 per cent did not respond. The majority of the teachers (71.3 per cent) indicated a need for the improvement of the current teacher appraisal scheme in Kenyan secondary schools.

Objectives and Methodology

The system of faculty appraisal in the Indian universities has remained staff activity and has not been as strict as it is in the industrial organisations. However, in the changed scenario the universities cannot afford to implement the performance evaluation in an untailed manner and there is a need to strengthen the system. Herein, the assessment of personnel satisfaction with the existing system is the foundation for a stronger, effective and futuristic system. The scope of the study has been confined to examine the faculty satisfaction with the existing performance appraisal practices in Indian Universities, which has following specific objectives:

- To study the overall satisfaction level of the faculty with existing performance appraisal system in the Indian universities.
- To compare the satisfaction level of faculty across the diverse demographic variables.
- To examine the variances in the faculty satisfaction with existing performance appraisal system in the Indian universities.

Keeping in view the objectives of the present study a descriptive-cum-exploratory research design has been taken up. To unravel the answers of the above objectives, a well structured questionnaire has been used for data collection. The questionnaire consist of eight statements, in addition to the personal and institutional details of the respondents and satisfaction factor. The respondents were asked to respond on a five point scale ranging from strongly disagree to strongly agree. The questionnaires were

got filled through personal visits to different universities as well as through post/ mail and the respondents were continuously followed through telephonic requests.

The total sample size for this study has been 500 respondents from different Central and State Universities having different academic stream i.e. Science/Engineering, Social Sciences, Arts/Humanities, employing faculty with different qualifications and designations. The sample encompasses 129 Professors, 204 Readers and 167 Lecturers. Random sampling has been applied for selecting university faculty members. However, while selecting the sample, due care has been taken to make it representative of all the major streams of studies, for example, science, social science, arts etc. The sample has been taken from central and state universities, residential and affiliating universities, and general and special character universities. In the sample respondents, majority has been found of male faculty members i.e. 355 and also a vast majority of teachers are having Ph.D. degree i.e. 412.

To analyse the data, first of all it was transposed in normal distribution to have three distinct levels i.e. high, moderate and low on both the dimensions of the study. Thereafter, composite scores on both the dimensions were computed out of ten by applying data reduction technique through SPSS package. The outcome on both the dimensions has been analyzed and interpreted with the help of tabulation, percentage, data computation for mean derivation and one way ANOVA.

Results and Discussion

By applying the above-mentioned methodology, the data of 500 respondents has been analysed and the results obtained have been discussed, henceforth, under the three broad sub-heads:

Diverse Modes of Performance Appraisal and Faculty Satisfaction Level

Table-1 shows the overall status of faculty satisfaction with existing appraisal system in the different Indian universities. All the modes of faculty performance evaluation have been put under three categories i.e. self appraisal without comments of HOD; self appraisal with comments of HOD; and any other system (evaluation by HOD only;

evaluation by head of the organisation only; evaluation by HOD & head of the organisation; joint evaluation by students; HOD & head of the organisation; joint evaluation by students; colleagues; HOD & head of the organisation).

The results of table-1 explain that the majority of universities (41 per cent) have adopted the first evaluation method i.e. self appraisal without comments of HOD followed by the second method (33 per cent) i.e. self appraisal with comments of HOD. 34 per cent respondents have witnessed high satisfaction level and 27 per cent shown low satisfaction level irrespective of the appraisal system in use. However, majority of faculty members (39 per cent) have registered moderate satisfaction level with the existing appraisal system. While cross-examining the data, it has been found that depending upon the available system the faculty members have shown more inclination i.e. satisfaction level with the third category of appraisal system. The respondents have witnessed almost equal level of satisfaction with the first category of appraisal system. In summation, no single system is preferred by the faculty and a new system of appraisal having specific weightage of various academic and allied activities seem to be the need of hour.

Satisfaction Level across Demographic Variables

Table-2 divulges the respondents' views on their satisfaction level with the existing appraisal system on the basis of demographic variables. The highest satisfaction level was found in the respondents with an age of above 55 years and closely followed by the faculty members in the age group of 36-45 years and below the age of 35 years, with a respondents of 36 and 34 per cent respectively. While unfolding the table data, we found that the male faculty members have shown high level of satisfaction in contrast to their female counterparts. As the 35 per cent male respondents have shown high satisfaction level with prevailing performance evaluation practices. Whereas 33 per cent females admitted that they have high level of satisfaction with regards to performance appraisal practices in their organisation. When the respondents' views were analysed on the basis of academic stream, it has been found that the respondents have exhibited almost similar level of high satisfaction and they were lead by arts faculty, followed by social sciences and sciences respectively.

Table-1: Satisfaction Level across Diverse Modes of Performance Appraisal

Levels of Satisfaction		System of Performance Appraisal			Overall Status
		1	2	3	
High	Count (%)	69(33.5)	56(33.5)	46(36.2)	171 (34.2)
Moderate	Count (%)	69(33.5)	68(40.7)	56(44.1)	193 (38.6)
Low	Count (%)	68(33.0)	43(25.7)	25(19.7)	136 (27.2)
Total	Count (%)	206(100)	167(100)	127(100)	500 (100)

Note: 1=Self Appraisal only without comments of HOD; 2=Self appraisal with comments of HOD; 3= Any other (Evaluation by HOD only; Evaluation by Head of the organisation only; Evaluation by HOD & Head of the organisation; Joint evaluation by Students; HOD & Head of the organisation; Joint evaluation by Students; colleagues; HOD & Head of the organisation)

We did not find any significant difference in the satisfaction level on the basis of highest qualification variables, as the 34 per cent of faculty with Ph.D. has shown high satisfaction level and it was very closely followed by the respondents having only basic entry qualification. The 36 per cent professors have registered a high level of satisfaction and were very closely followed by the lecturers and readers with 35 and 32 per cents. On the basis of total work experience variable; 40 per cent of the respondents with total work experience of more than 21 years have shown low level of satisfaction about the existing appraisal system, whereas, the 45 per cent of respondents having work experience of less than 7 years have shown high level of satisfaction and they were followed by the group having 16-21 years of total experience. When the views of the respondents were considered in relation to the performance appraisal practices with respect to the designation experience variables of the respondents, we found that 38 per cent respondents have shown high level of satisfaction belonging to the category of work experience of below 7 years in the same designation. We found that the new faculty has shown high level of satisfaction with the performance appraisal practices adopted by the university system and the 35 per cent of faculty who belongs to the category having 7-15 years of designation experience has shown low level of satisfaction. On the basis of organisation experience, the faculty having more than 21 years of experience in the same organisation have revealed low level of satisfaction with existing performance appraisal practices, whereas, 40 per cent of the respondents having 16-21 years of same organisation experience have shown high level of satisfaction. From the table scores, it may be

concluded that as the experience is increasing, the satisfaction towards existing performance appraisal is decreasing. From the results, it is ascertain that the faculty of central universities have shown high satisfaction about existing performance appraisal practices as compared to the faculty of state university. It was found that central university's respondents have also shown higher percentage of low level of satisfaction in contrast to the faculty of state university. On the basis of the nature of the organisation, 33 per cent of the technical/special character university faculty has shown high level of satisfaction, whereas, only 19 per cent of respondents have shown low satisfaction about the existing evaluation system of the organisations and remaining 48 per cent of respondents were moderately satisfied. While comparing the respondents' views on the basis of structure of the organisation, It was found that the respondents who were the employees of residential university have shown high satisfaction about the existing system of performance evaluation as compared to the employees of affiliating universities. 37 per cent respondents of the residential universities have shown high satisfaction about the appraisal practices adopted by their organisation, whereas, 33 per cent of affiliating university faculty has shown high satisfaction level.

Explaining Variations in the Satisfaction Level

To explain the variations in the level of faculty satisfaction, one way ANOVA has been applied to confirm whether the difference amongst the different faculty demography is significant or not and the results of the same are presented in table-3. According to age categories of the respondents, the

Table-2: Satisfaction Level with the Existing Performance Appraisal System across Demographic Variables

Dimensions of Faculty Demographics		Satisfaction Level						Overall Status	
		High		Moderate		Low			
		Count	[%]	Count	[%]	Count	[%]	Count	[%]
Age Category	Below 35 yrs	37	[34]	47	[44]	24	[22]	108	[100]
	36-45 yrs.	71	[36]	82	[41]	45	[23]	198	[100]
	46-55 yrs	44	[31]	42	[29]	57	[40]	143	[100]
	Above 55 yrs.	19	[37]	21	[41]	11	[22]	51	[100]
Gender	Male	123	[35]	132	[37]	100	[28]	355	[100]
	Female	48	[33]	60	[41]	37	[26]	145	[100]
Academic Stream	Science/Engineering	48	[32]	61	[41]	41	[27]	150	[100]
	Social Sciences	80	[34]	96	[40]	63	[26]	239	[100]
	Arts/Humanities	43	[39]	35	[31]	33	[30]	111	[100]
Highest Qualification	Basic Entry Qualification	29	[33]	36	[41]	23	[26]	88	[100]
	Ph. D.	142	[34]	156	[38]	114	[28]	412	[100]
Designation	Lecturer	59	[35]	64	[38]	44	[26]	167	[100]
	Reader	66	[32]	88	[43]	50	[25]	204	[100]
	Professor	46	[36]	40	[31]	43	[33]	129	[100]
Total Experience	below 7 yrs.	33	[45]	23	[31]	18	[24]	74	[100]
	7-15 yrs.	51	[32]	74	[46]	35	[22]	160	[100]
	16-21yrs	29	[34]	44	[51]	13	[15]	86	[100]
	above 21 yrs.	58	[32]	51	[28]	71	[40]	180	[100]
Designation Experience	below 7 yrs.	93	[38]	99	[40]	54	[22]	246	[100]
	7-15 yrs.	58	[29]	71	[36]	69	[35]	198	[100]
	16-21yrs	13	[37]	15	[43]	7	[20]	35	[100]
Organisation Experience	below 7 yrs.	7	[33]	7	[33]	7	[34]	21	[100]
	7-15 yrs.	48	[33]	57	[39]	40	[28]	145	[100]
	16-21yrs	61	[35]	84	[47]	32	[18]	177	[100]
Category of the Organisation	below 7 yrs.	24	[40]	19	[32]	17	[28]	60	[100]
	7-15 yrs.	38	[32]	32	[27]	48	[41]	118	[100]
	above 21 yrs.	7	[33]	7	[33]	7	[34]	21	[100]
Nature of the Organisation	Central University	39	[36]	38	[35]	32	[29]	109	[100]
	State University	132	[34]	154	[39]	105	[27]	391	[100]
Structure of the Organisation	General University	134	[34]	138	[36]	116	[30]	388	[100]
	Tech./Spl. Nature University	37	[33]	54	[48]	21	[19]	112	[100]
Overall Status	Affiliating University	112	[33]	134	[39]	96	[28]	342	[100]
	Residential University	59	[37]	58	[37]	41	[26]	158	[100]
Overall Status		171	[34]	192	[39]	137	[27]	500	[100]

Table-3: Variations in the Satisfaction Level across Faculty Demographics

Dimensions of Faculty Demographics		Count (%)	Mean	F-Value	p-value
Age Category	Below 35 yrs	108	5.35	3.10	.026
	36-45 yrs.	198	5.67		
	46-55 yrs	143	4.99		
	Above 55 yrs.	51	5.77		
Gender	Male	355	5.45	.307	.580
	Female	145	5.33		
Academic Stream	Science/Engineering	150	5.46	.044	.957
	Social Sciences	239	5.39		
	Arts/Humanities	111	5.42		
Highest Qualification	Basic Entry Qualification	88	5.32	.202	.653
	Ph. D.	412	5.44		
Designation	Lecturer	167	5.38	.083	.920
	Reader	204	5.46		
	Professor	129	5.38		
Total Experience	below 7 yrs.	74	5.46	2.97	.031
	7-15 yrs.	160	5.57		
	16-21yrs	86	5.85		
	above 21 yrs.	180	5.05		
Designation Experience	below 7 yrs.	246	5.69	3.09	.027
	7-15 yrs.	198	5.06		
	16-21yrs	35	5.59		
	above 21 yrs.	21	5.27		
Organisation Experience	below 7 yrs.	145	5.23	4.31	.005
	7-15 yrs.	177	5.78		
	16-21yrs	60	5.75		
	above 21 yrs.	118	4.92		
Organisation Category	Central University	109	5.20	1.23	.267
	State University	391	5.47		
Nature of the Organisation	General University	388	5.35	1.52	.218
	Tech./Spl. Nature University	112	5.64		
Organisation Structure	Affiliating University	342	5.30	2.68	.102
	Residential University	158	5.65		

Note: Significant at 1 percent level if p-value ? .01

Significant at 5 percent level if p-value ? .05

faculty members have been found differing significantly at 0.05 level ($F= 3.10, p= .02$). The highest mean score was observed of the respondents of the age group of above 55 years (mean=5.77), followed by the age group of 36-45 years (mean=5.67). Contrary results have been emerged on gender basis i.e. male and female faculty members do not differ significantly, though male faculty is comparatively more satisfied than females. When the results were investigated on the basis of academic stream, no significant difference has been found in the highest qualifications and designation.

Experience variable of the respondents seems to be more critical as difference has been found significant on all the dimensions experience. On the basis of total work experience, the difference has been found at significant at 0.05 level ($F= 2.97, p= .03$). Similar results have been obtained on designation experience dimension with $F= 3.09$ and $p= .02$. However, the difference in the faculty satisfaction on the basis of work experience in the same institution has been found significant at 0.0 level ($F= 4.32, p= .00$). When we compare the mean score for total work experience dimension it was found highest for the category having 16-21 years of total work experience (mean score=5.85), followed by respondents having 7-15 years of total work experience (mean=5.57) and below 7 years category (mean=5.46). On the basis of designation experience dimension, the mean score for the group having below 7 years of designation experience was found 5.69 and followed by the faculty having 16- 21 years (mean=5.59) and above 21 years (mean=5.27) and 7-15 years (mean=5.06) designation experience. The respondents having 7-15 years experience in the same organisation, where they were currently working have shown more satisfaction with the current appraisal practices as compared to those working for above 21 years. The lowest mean score (4.92) was found for the respondents' category who had more than 21 years of experience in the same organisation and highest mean score i.e. 5.78 for the faculty members who had 7-15 years of experience in the same organisation.

The results found on organisation dimension states that the faculty of state universities have shown high mean score of 5.47 in contrast to the faculty of central universities with a mean score of 5.20. As a whole, the variations across the two organisation

categories i.e. central university and state university have been found insignificant at any level of significance. On the basis of nature of the organisation, the general university respondents have shown the mean score of 5.35 which is less than the mean value of 5.64 for the technical/special character university teachers. Here also, no statistical difference has been found at any of the level. The result for the organisation structure variable has been found statistically insignificant at any of the levels. However, the mean value for the residential university has been found higher (5.65) as compared to the responses of affiliating university faculty i.e. 5.30. In summation, the faculty members have been found differencing significantly on the basis of age, total experience, designation experience and the organisation experience. However in rest of the dimensions no significant differences have emerged.

Conclusion

The results of the present study suggest that no single system of performance appraisal is preferred exclusively by the faculty and a new system of appraisal having specific weightage of various academic and allied activities seem to be the need of the hour. The new faculty has shown high level of satisfaction with the performance appraisal practices adopted by the university system. However, as the experience of the faculty is increasing the satisfaction towards existing performance appraisal has been found decreasing. The faculty members have been found to differ significantly on the basis of their age, total experience, designation experience and the organisation experience. Of course, in rest of the dimensions no significant differences have emerged.

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Organizational Stress: Issues and Implications - An Empirical Study in Sri Lankan Private Sector Banks

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The aim of this paper is to identify the level of occupational stress as well as its consequences for bank managers in Sri Lanka through an empirical study. Every human being has to go through some kind of stress condition during one's life cycle. The consequence of stress is a deviation from the existing physical and psychological condition of human life. The association between occupation and stress has long been established. A sample of 27 managers out of 265 branches in Colombo district was randomly chosen for the purpose of this study. The study found that there is evidence for increased stress levels and it has been implicated for mental illness amongst managers. Further the stress of a single worker is also found to be harmful to entire institute, society and economy at large. The findings hold significant implications for management of private sector banking system in Sri Lanka.

Introduction

The stress has engulfed as burning issue in modern society. It connotes negative meaning and implies menacing or challenging situations. The consequence of stress is a deviation from the existing physical and psychological condition of human life. The stress is regarded as an inevitable consequence of employee functionality. According to Nelson et.al (2003) stress is an important topic in organizational behavior, in part due to the increase in competitive pressures that take a toll on workers and manager alike. Every human being has to go through some kind of stress condition during one's life cycle. With so many factors contributing to stress; it is difficult to define the concept of stress. However, many people have attempted to define the concept of stress. The first actual scientific investigation of stress is attributed to by Hans Selye (1956), who is considered by many to be the "Father of stress" (Steve M Jex., 2002).

It is identified that occupational stress is inevitable in the present fast-moving world and it becomes an important issue in the study of organizational behavior. The occupational stress adversely affects the health and performance of the employees of an organization. The occupational stress should not be considered as a problem of an organization alone. In general, an economy and a society consist of so many socio and economic institutions. These

institutions are inter-related in nature. Hence it should be understood that the stress of an individual worker not only affects the institution or organization concerned but also other institutions and organization of an economy. The previous studies conducted so far on this topic in Sri Lanka have covered only the behavioural aspect of a person who is affected by stress. Further, they failed to measure the level of stress among bank managers. The present study, therefore, has undertaken on the topic related to bank managers.

Theoretical Background

Selye (2002) developed the General Adaptations Syndrome (GAS) concept to explain the problem of stress and to explain the different stages of stress. The general adaptations syndrome consists of three distinct stages namely alarm, resistance and exhaustion. In the alarm stage, the physiological resources of the body are mobilized, in wholesale fashion, to deal with an in pending threat. In the resistance stage, the body recognizes that not all of its resources may be needed, and thus continues to mobilize only those that are necessary. Finally, in the exhaustion stage, the body realizes that its physiological resources are depleted and, as a result, makes another attempt to mobilize.

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The occupational Stress has become an important attention in the present organizational context. The researches have also established that the high level of occupational stress results in substantial costs to organizations and community through health care expenses, compensation, payments, less productivity and turnover (Cooper and Catwright, 1994, Johns, 1998). The present study attempts to explore the job stress among the sample managers of private sector bank in Sri Lanka. The Government of Sri Lanka has viewed the private sector as the engine of growth (The Central Bank, 1997). Further, the majority of the people of Sri Lanka view that the role-played by the private sector is efficient and effective than in public sector organizations. Therefore, a considerable place has been given to the private sector for the purpose of achieving economic development in Sri Lanka.

According to reports of Central Bank of Sri Lanka 2004 and 2006, the bank management staff has traditionally been regarded as a low stress occupation. In order to succeed in this role, they need to have a free supporting working environment. The banks staff has been envied for their tenure and more workloads.

During the past, workers dissatisfaction is an unavoidable characteristic of life and work and, as such, its consequences are neither inherently bad nor necessarily destructive. There is, however, a clear difference between being 'under pressure' at work and being subject to the kind of chronic stress that is a potential illness and it affects the physical health.

Due to the rapid globalization process, the Sri Lankan banks have started to provide many customer friendly services. The scenario of Banking Sector has seen some important changes with the announcement of some private bank activities (Central Bank of Sri Lanka, 2006), which includes development financing, mortgage activity, financing, lease financing, investment banking, corporate financing, dealing in government securities, pawn broking, credit card facilities, teller card facilities, debit card facilities, fast cheques transactions, international transactions etc. These changes have increased the work burden of the employees and caused severe mental stress. This problem of the employees has not given due importance and no steps have been made to control their stress. The banking authorities have not come forward to address

this problem by announcing salary hike with some other benefits such as promotion, housing, transportation, leave and other welfare facilities etc.

Statement of the Problem

There are numerous common causes of occupational stress including lack of free time, job environment problem, high workloads, low salary, unrealistic deadlines, job insecurity, lack of clarity of role, and a sense of feeling undervalued. However, roles without sufficient levels of challenge, lack of clear policies and procedures, and weakly managed organizational situations may also lead to stress. Whilst external causes of stress are more challenging for managers to proactively manage, an employee who receives support from his organization is more likely to limit how this impacts his work role.

Whatever the causes of stress in the occupation, it can hinder the organizational process of not only individuals but also their teams and, in some cases, the organization as whole. In this respect, managers can play an important part in minimizing stress amongst their workers and reducing the cost of its impact to the bank organizational profit.

As mentioned above, though the bank industry is important in different ways, it seems that there are invisible problems due to stress in this industry. Thus the problem centered in this study is making an observation regarding the major causes behind that situation and offer suggestions to reduce the situations. A large number of researches exist on topics that measure the construct of stress. Thousands of studies have been conducted that identify various sources of stress (Hoffman 2006). While there has been significant number of research on stress of bank staff around the world.

There is no attempt in Sri Lankan context that has focused on stress among bank staff. What factors that influence on stress, consequences of stress on organizational level, the syndromes of stress, the level of stress and coping strategies have not been investigative so far. Therefore, it is timely important to investigate this issue. Thus this study is to fill these gaps.

Review of Literature

Hoffman Richard. (2006) has examined stress

among graduate level counsellor education students at different stages during their training program. Three constructs were chosen from the survey: (1). Stress, (2). Cognitive hardiness, and (3). Psychological well-being. The constructs were developed using the theoretical framework of Lazarus's (1999) theory of appraisal and stress. These variables were compared among the students to determine if a difference in stress levels exists at different times during their training. Although the survey did not demonstrate significance on the measure of stress and cognitive hardiness, the data displays a directional trend of increasing stress as the students' progress through their training program.

Lane Rebecca Spooner (2004) stated one of the stress theories, transactional stress-strain-coping proposed by Lazarus and Folkman (1984), which provides the theoretical basis for all these stress related studies. The thesis explores the influence of social support on the stress-burnout relationship in nurses. According to the hypothesis of the study, social support buffers the negative effect of stress that resulted in highly conflicting findings. The overload, Job conditions and Role conflict were the main determinants of Emotional Exhaustion. The research found no significant evidence to support the buffering effect of work support on burnout.

According to Williams Stephen and Cooper Cary L. (1998) the study of occupational stress was hindered by the lack of compact and comprehensive standardized measurement tools. The Pressure Management Indicator (PMI) is a 120-item self-report questionnaire developed from the Occupational Stress Indicator (OSI). The PMI is more reliable, more comprehensive, and shorter than the OSI. It provides an integrated measure of the major dimensions of occupational stress. The outcome scales measure job satisfaction, organizational satisfaction, organizational security, organizational commitment, anxiety depression, resilience, worry, physical symptoms, and exhaustion. The moderator variables measure drive, impatience, control, decision latitude, and the coping strategies of problem focus, work life balance, and social support.

Oi-Ling Siu (1996) reviewed the different conceptualizations of teacher stress and burnout, and agrees that the interactional approach proposed by Dunham (1992) is more constructive. The author

identified policy changes that can potentially reduce the levels of stress among Hong Kong teachers. Specifically, unresolved issues relating to teacher stress in the light of the reports of the Education Commission were discussed.

According to Woods Antoinette Petrazzi (2005), the burnout is a job-related hazard for human service employees including rural community mental health counselors.

From the above literature survey, the researchers have concluded that everyone is suffering from stress, but level of stress varies from person to person and, therefore, one needs to develop a versatile kind of intervention strategies in order to cope with this menacing problem.

Objectives and Hypothesis

1. To investigate the level of stress among private sector bank managers in Sri Lanka.
2. To identify factors (variables) causing occupational stress among bank managers in Sri Lanka.

This study is carried out with the following hypothesis

"There is a positive relationship between the degree of job involvement and the level of manager's stress".

Methodology

Sample: The population for the study consists of private sector banks managers in the Colombo district. The 10% of sample was selected from 265 branches in Colombo district (Central Bank of Sri Lanka, Economic and Social Statistics of Sri Lanka, 2007). The sample for this study consisted of 27 managers (branches), drawn on the basis of random sampling from banks in Colombo district. For the purpose of selecting the sample, random sampling lottery technique was administered.

Procedure: The required data for this investigation was collected through interview schedule using the five point Likert scale, from managers in their branch offices. Prior appointments were obtained from the managers over the phone. Interview schedules were administered to sample managers at 27 branch offices. There were 45 questions (multiple choice) in the schedule. Total score on this scale was

considered for the assessment of occupational stress totally. More score on this scale indicates more stress.

Statistical Tools: The variables were analyzed by the percentage and major descriptive statistical tools such as mean, standard deviation, standard error, range and variance using the software SPSS version 10. And also, the Karl Pearson's coefficient of correlation was applied in this study for testing the hypothesis.

Period of Study: The present study was conducted covering a period of one year from January 2007 to December 2007.

Area of Study: The study has been conducted in Colombo district which is situated in western province of Sri Lanka.

Limitations

1. The study is restricted to only one district i.e. Colombo.
2. The study covered only 27(10% of the population) branch managers of private bank in Colombo district.
3. This study was conducted only on the branch managers not other categories of employees.
4. The study did not cover the other major sector, namely, public sector banks.

Analysis and Discussion

Measure No 01: Under General situation

If $p = 0$, then the variables is not affecting to stress

If $p > 0$, then the variable is affecting to stress.

P = actual marks (variables Score)

According to the measure no 01, all the variables have scored (p) more than 0 values. There were 7 variables, such as Personal Traits, Job Involvement, Strain, Age, Environment, Marital status and Well-being. According to the survey, all the respondents have scored more than 0 value marks for each and every question. It implies each and every variable affect the level of stress.

Measure No 02: Stress Levels

Measure Frame of Stress Levels

The responses of all the questions in the schedule

were tested using the five point Likert scales taking point as 5,4,3,2, and 1. As a first calculation for total variables: 225 is the highest value and 45 is lowest value. The difference between these two values is 180 (225 - 45). The value 180 was divided by 4 so as to make a four range continuum (180/4=45) which could category the respondents' responses. The following figure shows the distribution of range of stress.

45	90	135	180	225
Low Stress	Moderate	Considerable	High Stress	

The range of stress can be categorised in to four namely High Stresses, Considerable, Moderate and Low Stress (see appendix 01 - for other variables measure frames).

Low Stress and Moderate levels of stress are manageable but Considerable and high stress are damageable for both side; human and organisation. This concept was used because the directions of the relationships were theoretically predictable.

The Calculations of Degree of Stress Level

The calculations of degree of stress level for total variables are presented in table 01 along with frequencies and percentages.

According to the aggregate score of the respondents, they have been classified into different level of stress. From the table 01, it is clear that the highest frequency

Table 01-The Degree of Total Variables/Overall

Degree of stress	Frequency	Percentage
High Stress	00	00%
Considerable	08	29.62%
Moderate	19	70.38%
Low Stress	00	00%
' 0' stress	00	00
Total	27	100

Source: Sample survey 2007

(19) is recorded under moderate level. It is indicated more respondents (bank managers) suffering from stress. Moderate stress is manageable. If any employee is suffering from less amounts of stress like low level stress and moderate level stress, employee can use it for his development and also organization can use him for the purpose of

Table 02- Stress Levels of Variables

Degree of Stress	Variables		Job Invol:		Strain		Age		Environment		Marit:Stat:		Well-being	
	Pers: Tra:		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
High Stress	00	00	00	00	00	00	17	63	00	00	00	00	04	15
Considerable	13	48	00	00	09	33	09	33	04	15	16	59	20	74
Moderate	11	41	23	85	18	67	01	04	23	85	09	33	03	11
Low Stress	03	11	04	15	00	00	00	00	00	00	02	08	00	00
Total	27	100	27	100	27	100	27	100	27	100	27	100	27	100

Source: Sample survey 2007

maximizing organizational goals. But 8 respondents are under considerable stress and this considerable stress situation is not good for the person as well as the organization.

Stress level of variables were analyzed one by one (table 02). Personal traits (variable) had considerable effect on stress. Respondents' highest value is 13 under considerable level. This situation is harmful for managers and institutions. Other two levels the moderate (11) and the low stress (03) can be manageable. Anyhow, 14 respondents (11+03) out of 27 (majority) have less or moderate stress. Otherwise those figures have come close to 50% of 27.

Variable - Job involvement was affected by stress moderately. Respondents' highest value is 23 under moderate level. Its percentage is 85%. Other respondents (04) have low stress (15%). job involvement has not serious effected to stress.

Variable - Job Strain, Respondents' highest value is 18 under moderate level. Job strain contributed to stress moderately. Its percentage is 67%. Other respondents (09) have indicated considerable level. It can have effect on stress serious. Generally job strain does not affect occupational stress, because majority of the workers are moderate.

Variable - Age, has high effect on the stress. Respondents' highest value is 17(63%) under high stress level. 09 of respondents (33) are under considerable level. According to the above two levels shown, age is highly connected to stress level and age is harmful for managers stress.

Variable - Environment had their moderate effect on stress. Respondents' highest value is 23 under

moderate level. Environmental factor does not contribute to occupational stress.

Variable - Marital status Respondents' highest value is 16 under considerable level. Its percentage is 60%. Marital status has its effect on the occupational stress.

Variable - Well-being has its effect on stress considerably. Respondents' highest value is 20 under considerable level and another 04 respondents under high stress level. Anyhow, well-being has its considerable effect on occupational stress (for further information about all variables see appendix 02).

Measure No 03: Single Measure using major Descriptive Statistical.

The variables were analyzed and evaluated by the uni(single)-measure. According to the calculation, overall variables were obtained following descriptive statistics values.

According to the table no 03, overall mean value of 130.3704; it has less than the central point value (135) of the marks. As shown in the above table, it illustrates stress conditions of the bank managers. Above mean value is closed to central point of value. According to the standard deviation of 12.3729 is

Table 03- Descriptive Statistics for Total Variables (overall variables) value

No. of managers	27
Mean	130.3704
Standard Deviation	12.3729
Standard Error of Mean	2.3812
Skewness	-1.471
Variance	153.088

Source: Sample survey 2007

also very low. It has indicated most of variables mean values are closed to the total mean value. The standard error of mean value of 2.3812 is very low. This displays that most of values are scattered closer to the mean value, describing a good predictive ability to explain the above total variables situation of bank managers. Further, other figures given above also have indicated bank managers stress situation.

Further, overall understandings on each mean value, standard deviation, standard error and variance have been used in relation to 27 respondents as shown in the table 04.

As shown in the table no 05, the mean values of most of variables are less than the central point of values. But some mean values are very close to central point value. Standard error of variables is less than 1, which implies that all the variables are statistically significant and also it indicates that all

the variables are equally contributing in determining the level of stress of bank managers.

According to the table 02, all the variables have affected to the bank manager's stress. Two variables have high effected among them. These two are Age and Well-being. And also, Personal traits, Strain and Marital status are very close to the central point value. Rests of the variables values are less than the central point of values. Even though, all the variables have effected on the bank manager's stress.

Measure no 04: Analysis of the Hypothesis

H = There is a positive relationship between the degree of job Involvement and the level of manager's stress.

Pearson correlation was computed for analysis of hypothesis between job involvement and well-being

Table 04- Descriptive Statistics for all Variables

	Range Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic	Variance Statistic
Personal Traits	15.00	22.9259	.6999	3.6366	13.225
Job Involvement	12.00	19.1852	.5921	3.0764	9.464
Strain	8.00	22.9630	.4219	2.1923	4.806
Age	2.00	4.5926	.1102	.5724	.328
Environment	11.00	20.4074	.6115	3.1776	10.097
Marital status	4.00	5.3333	.1997	1.0377	1.077
Wellbeing	21.00	35.0370	.9222	4.7917	22.960

Source: Sample survey 2007

Table 05-Comparison between Mean Values and Central point of Values

Variables	Mean Values	Central point Values
Personal Traits	22.9259	24
Job Involvement	19.1852	24
Strain	22.9630	24
Age	4.5926	03
Environment	20.4074	24
Marital status	5.3333	06
Wellbeing	35.0370	30
Total	130.3704	135

Source: Sample survey 2007

variables. One tailed test of significance was used because the directions of the relationships were theoretically predictable. According to the result of Pearson's correlation analysis between job involvement and well-being of the private bank managers, Colombo district in Sri Lanka, the correlation coefficient was 0.667 which is significant at the 0.01 level (01-tailed). It shows a positive and strong correlation between the above two variables for occupational stress among bank managers. Therefore, this hypothesis is accepted.

Findings and Implications

The study was conducted among the bank managers in Sri Lanka and the data obtained from them was used to validate the information gathered. In general, numerous factors determine an individual's behavioral, physiological or psychological reaction under stress. The following are the findings and discussion of the study.

- Adult managers were found to have experienced more stress than the young employees.
- Physiological and Psychological well being affect the stress level very highly.
- Managers were affected by the stress because of occupational strain, marital status and personal behavior.
- Managers had Job involvement and Environment factors.
- According to the survey, most of the managers were suffering from high blood pressure and at least once or more have headache per month. Further, most of managers have not gone on trip in last eight months. And also, they did not like to explain their family situations and private information (matters).
- As a result of global development in the banking sector, the banks in Sri Lanka now undergoing many changes in the name of modernization of their banking practices, which makes the managers of the banks to learn new things. Moreover, as a part of developmental process, the operation of the banking activities have increased in the recent past, which has increased the work load of the bank managers. As a result of these factors, the study found that the managers of the banks are suffering with stress.

The study revealed that stress level can be viewed on both sides, such as individual's behaviors and, organizational situation. The individual's behaviors display the following effect on stress;

- Aggression, withdrawal, anger exposure to distress may impair the body's Immune system leading to a greater susceptibility to illness.
- Change in appetite
- Transient increases in blood pressure
- Insomnia
- Transient increases in heart rate
- Feeling of fatigue
- Gastrointestinal problems
- Difficulty in concentration and, sometimes, effects on short term memory

Organizational situation displays the following;

- Institutional bad names among the workers
- Inadequate or less communication between all levels of management.
- Work ambiguity
- Workload, pressure and deadlines with work.
- Inadequate counseling or processes
- Anxiety caused by organizational and environmental change and
- Fatigue in the workplace.

Conclusion

From the aggregate score of the respondents, the study found that majority of the bank managers i.e. more than 70 per cent of them have the moderate level of stress, which is manageable. However, the remaining of the bank managers has considerable level stress, which needs serious attention.

Both individual and organization have the responsibility to manage stress; individual should manage his stress for his own benefit while the organization (as a system) should help to manage individual stress for its own survival and economical development per se.

The goal of the study as such is not to eliminate stress but to learn how to cope with it and how to use the knowledge of it to help society or

organizations. From the study it is very evident that stress cannot be avoided but could be managed or reduced. Recognizing the early signs of stress and then paying attention to them can make an important difference in the quality of human life and may actually influence human survival in the long run.

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AS Kohli & Tapomay Deb, Performance Management**Oxford University Press, New Delhi**

2008, pp 511, Price Rs 375/-

Performance management is the most critical function and strong determinant of organizational excellence. It is an ongoing dynamic process that articulates organizational vision and objectives, installs performance criteria in the light of these objectives, and continuously reviews interval procedures to integrate them with organizational philosophy and culture. Thus it is a continuous process of identifying, measuring, and developing the performance of individuals and teams and aligning performance with the strategic goals of the organization. However, despite the fact that performance management is critical to all types of organizations, there is acute shortage of good literature on the subject. The book under review is one step in the direction of making sound contribution towards enhancing literature on performance management.

The strength of any textbook on performance management lies in combining sound theoretical concepts with real-world organizational experience. Since one of the authors is from the academic world and possesses a long and rich experience and the other author is from the corporate sector, the book addresses both theoretical and practical issues and makes a meaningful and interesting reading.

The book is divided into four parts. While the first part which comprises four chapters has presented a good over-view of human resource management besides dealing with introductory and various other aspects of performance management, performance management systems and performance counselling, the second part of the book has extended a comprehensive treatment to the intricacies of performance planning and performance monitoring. The third part of the book has discussed at length the vital issues of performance implementation, and performance-linked reward systems. The fourth and the last part of the book has highlighted the role of HR professionals in performance management besides ethics in performance management which is a unique contribution on the subject

Each chapter of the book ends with its summary, key terms, concept review, questions, critical thinking questions and web-based exercise. Some case studies have also been cited. All these features add to the quality of the book and make it really useful not only for the students and teachers of the subject but also for the practioners of performance management.

The value of the book would have been further enhanced if a detailed treatment would have been given to different strategies and interventions of performance management and also to the relevant drivers of each intervention. Some more case studies could have also been included in the book.

However, the pedagogical features of the text are really praise worthy and add to the value of the book. Keeping in view the size of the book, the coverage and structure are upto the mark.

Overall, the book represents a good scholastic work of the authors, with perfect blend of theoretical and practical issues. Hence both the line and staff managers, besides academicians, can draw heavily from this book and make use of the information so derived, in their respective organizations. The authors truly deserve appreciations for such a masterpiece presentation of the relevant material.

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N Sengupta & M S Bhattacharya - International Human Resource Management
Excel Books, New Delhi

2007, pp 322, Price Rs 275/-

The belief that, human resource management (HRM) is significant in achieving bottom line success and providing sustained competitive advantage to organisations, has been accepted the world over. Organisational researchers have consistently shown relationships between a range of human resource management (HRM) practices and organisational effectiveness. The changes in the business environment with increasing globalisation, changing demographics of the workforce, has led to the increased importance of managing Human Resources not only from the national perspective but also from an international point of view.

This book analyses the expansion of the role of HR in businesses across the boundaries and also lays emphasis on understanding various ways which can lead to success of managers both on the grounds of the home country and around the globe

The book has been divided into four parts comprising 14 chapters. Part one consisting of three chapters gives an introduction to International Human Resource Management. The first chapter discusses the macro-level dimensions to understand the context of managing human resource in International business. Chapter 2 examines the dynamics of strategic planning by global firms also mentioning about the concept of Glocal strategy with special reference to Indian context. In chapter 3 the author has meticulously made distinction between the domestic and International HRM. The chapter also proposes an integrated approach in developing an IHRM model.

Part two of the book deals with functional aspect of IHRM and includes five chapters, Chapter 4 to 8 where chapter 4 focuses on the most important functional aspect of HRM i.e. Recruitment and Selection from the International point of view. In Chapter 5 another complex function of HR i.e. Training and development with regard to international operations has been dealt with. While chapter 6 addresses the issue of compensation management, chapter 7 gives a clear understanding of managing performance of expatriates. In chapter 8 the author unfolds the international industrial relations issues which are another critical function of HRM.

Chapter 9 which is the first chapter of part three of this book meticulously presents the organizational and national culture in terms of readjustments that are needed to be made for enhancing the HRM in terms of international operations. Chapter 10 brings together the organizational processes in IHRM.

Part four of this book deals with unique issues in IHRM. Chapter 11 highlights the role of global HR manager. In chapter 12 attempts has been made to discuss a special theme of women expatriates and various work related factors that women expats have to face. Chapter 13 deals with a contemporary topic of International Joint ventures na Chapter 14, the last chapter of this book interestingly debates on expatriation vs. impartation.

The book lays emphasis on active learning and capturing student's interest through end-of-chapter questions and web exercises. Readers learn to effectively manage people in the essential aspects of recruitment, selection, training, compensation and appraisal..... Practical applications, inclusion of essential theories, tools and processes, and the lively presentation of the text with the help of diagrams are worth appreciation.

An earnest attempt has been made by the authors to cite appropriate examples throughout the book, which is also interspersed with the earthy observations of practising managers. Not only will the book be a preferred choice of the students, it should be an essential reading for all those who face critical challenges and look to HRM for solutions in an international context.

The worth of the book would have been enhanced if some more relevant case studies had been included. Overall, the book appears to be a masterpiece on the subject.

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Main Institutes Exchanging their Journal with Our Journal on Mutually Agreed Basis

Title of the Journal	Name of the Institute	Place
ANVESHA: A Journal of IES Management College & Research Centre	IES Management College & Research Centre	Mumbai
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