CHAPTER – I

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Stress, particularly work-related stress, has aroused growing interest across the globe in recent years. The workplace has changed dramatically due to globalization of the economy, use of new information and communication technology, growing diversity in the workplace (e.g. more women, older and higher educated people, as well as increased migration), and an increased mental workload (Kompier,2002; Landsbergis, 2003).

Stress is a part of everyday life and not necessarily a negative phenomenon, being a physiological stimulus usually connected with human-environment interactions. However, it can become a harmful risk factor for health when it is perceived as an imbalance between an excess of demands and the individual ability to meet them. This causes a perturbation of the psycho-physical equilibrium, taxing physical, psychic and behavioral responses aimed at coping with it. If this coping fails, stress can have harmful consequences on physical, mental and social well-being, with high costs both for the individual and society.

Work-related stress is a pattern of reactions that occurs when employees are presented with work demands that are not matched to their knowledge, skills or abilities, and which challenge their ability to cope. These demands may be related to time pressure or the amount of work (quantitative demands), or may refer to the difficulty of the work (cognitive demands) or the empathy required (emotional demands), or even to the inability to show one's emotions at work. Demands may also be physical, i.e. high demands in the area of dynamic and static loads. When the worker perceives an imbalance between demands and environmental or personal resources, this can cause a number of possible reactions. These may include physiological responses (e.g. increase in heart rate, blood pressure, hyperventilation), emotional responses (e.g. feeling nervous or irritated), cognitive responses (e.g. reduced attention and perception, forgetfulness), and behavioral reactions (e.g. aggressive, impulsive behavior, making mistakes).

Stress occurs in many different circumstances, but is particularly strong when a person's ability to control the demands of work is threatened. Insecurity about successful performance and fear of negative consequences resulting from performance failure may evoke powerful negative emotions of anxiety, anger and irritation. The stressful experience is intensified if no help is available from colleagues or supervisors at work. Therefore, social isolation and lack of cooperation increase the risk of prolonged stress at work. Conversely, work tasks with a high degree of personal control and skill variety, and a work environment with supportive social relationships contribute to workers' well-being and health.

Airport employees are generally considered one of the working groups having to deal with a highly demanding job pressure. In fact, airport working entails a complex set of tasks requiring very high levels of knowledge and expertise, as well as the practical application of specific skills pertaining to cognitive domains, communicative aspects and human relations. According to several surveys, the main sources of stress reported by airport employees are connected both to operative aspects and to organizational culture. The airport employees, despite their rank or field of working, always have to run under the pressure of time to deliver the services which should not only be valuable to the customers but also proficient to the employer and therefore have to undergo tremendous stress during the working hours. These stress factors can affect not only their performance and job satisfaction, but also the well-being and safety of the employees.

1.1.1 Indian Aviation Sector

Commercial aviation in India is worth 12 billion USD and contributes less than 1% to the GDP of the country. Experts and consultants predict that aviation share in GDP will double in next 5 years and have the potential to reach around 80 to 100 billion USD. India has committed around 14 billion USD investments for acquiring new aircrafts and has orders of around 350 new aircrafts in next 5 years. Growth of aviation industry is crucial for the economic growth of the country and state.

India is considered to be the economic super power of the future and will play a very important role in the global business environment. India with 1.2 billion populations which includes 300 million middle class citizens can be a super power in global aviation. Indian Aviation environment is still at its infancy and is ready to explode with the airport privatization and development of better infrastructure to support the growth. Bombay and Delhi will continue to be the Gateway to India and there will be huge aviation developments at Chennai, Hyderabad, Bangalore and other developing cities like Ahmedabad, Cochin, and Pune for establishing these airports in line with the needs of fast growing economy. South India has a uniqueness of having 3 large metros in the region, with airports at Bangalore and Hyderabad being privatized and Chennai on its way. Capacity and airport infrastructure will not be a constraint in this region with the planning of Greenfield airport in Chennai, the excess capacity in Hyderabad and the expansion program of Bangalore.

Bangalore with its geographical positioning (shortest connecting distance to all the south Indian airports and centrally located), existing connectivity and the growth potential can position themselves strongly as the true "Gateway to South India" and thereby connect South of India to the world.

1.1.2 About Bangalore International Airport

Bangalore (BLR) which was considered to be a retirement city or garden city with excellent climate and greenery started witnessing an explosive growth in the late nineties to become India's global face in terms of IT / ITES and aerospace industries. BLR was slowly emerging as the "Face of new India" with its increasing dominance in the export space of IT / ITES and aeronautical services. This also resulted in Bangalore attracting the first airport privatization project under the Public Private Partnership (PPP) scheme and the city got its brand new Greenfield international airport in the year 2008.

Bangalore International Airport Limited (BIAL), the Greenfield airport was launched in 2008 as the country's first PPP project with Siemens being the largest investor followed by L&T, Zurich airport (Unique), AAI and the Govt. of Karnataka. The airport was launched with great fanfare but also received lots of criticism from the Government, media, consumers and airlines in terms of the distance from the city Centre and also on the capacity. Nevertheless

BIAL was focused on getting the operational excellence in place and this led the airport to deal with 11.6 million passengers annually, housing 15 International airlines and 7 domestic airlines and has managed to become India's best managed airport with lots of awards from the industry experts, consumers, airlines and the latest award from the Skytrax as the "Best airport in India".

Documented Vision of BIAL is "BIAL will excel in consistent, efficient and friendly delivery of airport services as the *Gateway to South India*". "Gateway to South India" means BIAL will be an alternate hub in India after Mumbai and Delhi connecting the fastest growing region in the country which is the South of India (South India beats the entire national averages across all the measurable economic parameters in the country and has a huge potential in terms of growth).

"Karnataka's capital Bangalore is a brand the world identifies with. It is also the single biggest reason why India has become such a hot investment destination"- Dr. Manmohan Singh, Prime Minister of India.

BIA has very high potential to grow and establish as the 'gate way to South India' as obvious from the following highlights of Bangalore International Airport in the current scenario:

1) Geographical positioning – BIA is the center point of South India (SI) with least connecting time to all the points in the region. Refer to picture above.
2) Excellent traffic growth – Beats national average on Passengers (Pax) and cargo
3) Around 40% pax traffic growth from June 08-May 09 to June10 – May 11
4) High yield long haul traffic – Business and Corporate traffic
5) Aviation growth 2.4 times the GDP, highest in the country across any airports
6) Most preferred investment destination in the country – ASSOCHAM
7) One global company moves to Karnataka every week
8) Good Mix of Tourism and Business traffic
9) Good expatriate population – Excellent weather conditions
10) Aerospace hub of India – Highest number of R&D centers in the country
11) Efficient and World class airport – Recently awarded by Skytrax as the "Best Airport in the country"
12) Seamless Transfer facilities – Least walking distances and efficient airport

13) Maximum number of new airports and modernization projects are happening in SI and in Karnataka
14) Cargo potential – BIA witnessed highest cargo growth rate for the financial year 2010-2011 at 27%. With the state proposed aerospace and IT SEZ at the airport BIA can be the logistics hub of SI
15) Excellent Cargo infrastructure operated by global brands like Menzies & AI Sats

1.2 PROBLEM DEFINITION

Air transport is considered one of the safest modes of travel today due to the reason that it is heavily regulated and safety considerations have top priority in all areas of its operation. It is also the most exciting mode of travel, especially for the infrequent travelers. However, a recent report published in June 2011 says that millions of travellers find airports so stressful that they have given up flying. The research, conducted for the credit-card insurer CPP, reveals that while most refuse to give up their holidays, four in ten who have flown find the airport experience stressful. More than a third believes it is worse than work, and nearly a quarter think it as stressful as moving house. Of the 2,000 holidaymakers questioned, 9 per cent now avoid flying because of airport stress including flight delays, mislaid belongings and getting to the gate on time. Almost half of travellers believe a holiday doesn't start until they have left the airport.

According to new findings from life assistance company CPP, despite taking a flight to pave the way for rest and relaxation, four in ten (42%) people say airports make them feel stressed and close to a quarter (23%) find the prospect of getting on to their flight as stress inducing if not more stressful than moving house. The problem has become so rife that one in ten (9%) of us are now avoiding flying altogether as a result. The most nerve-wracking parts of the airport experience include flight delays, mislaying belongings and getting to the gate on time - all of which mean close to half of travelers find it difficult to relax until they're safely on the plane.

The problem is exacerbated on the other side of the border, with four in ten (41%) holidaymakers struggling to find their way around foreign airports as a result of the language barrier. The evolution of flight charges, which now sees many airlines charging for checked in

baggage, also has a negative impact on stress levels, as do more recently implemented security measures such as liquids not being accepted in traveller's hand luggage.

Studies have shown that the airport experience is having significant physiological effects on a traveler's anxiety levels - one previous experiment using Heathrow airport saw holidaymakers' heart-rates rise to a level equivalent to doing intense exercise. This was echoed in the CPP research, which revealed that holidaymakers who had visited more than one airport cited more stressed. Recent disruptions in airport services as a result of bad weather over the winter also mean that flight delays and cancellations have become more common.

In fact airports are inherently stressful places, according to Psychologist David Moxon, who says that a number of factors combine to make airports uniquely challenging to the human psyche. Moxon comments, "Humans are wired to experience stress in situations where many feel out of control - and airports, where you have to follow instructions that are likely change at the last minute, and procedures that are unpredictable, lead many to react with a stress response. There is also what is known as an accumulation effect, resulting from other anxieties that we may be harboring. If you head to the airport having worried about waking up on time, or what you've left behind at work, the airport itself will seem more stressful as a result."

For a passenger, airport stress starts the moment he/she leaves home. Air passenger's adrenaline rises at multiple stages of travel to destination. Reaching the airport on time, getting inside the terminal surpassing the initial security screening, queuing at checking counter, immigration process in case of international travel, queuing and cumbersome procedures during security check, waiting for the boarding announcement (added worries in case of delays), final queuing and screening before boarding etc. are the stress inflicting situations at embarking point. Issues at disembarking airport are different; wait on for the baggage, reconnaissance by immigration and customs in case of international travel, handling luggage till the taxi holding point, organizing ground transport to the destination etc. are some of them. Onboard issues are more complex; securing space for the cabin baggage, substandard onboard services, bad weather conditions and resultant aircraft turbulences, deleterious thoughts relating to flight safety (a probable hijack or bomb scare or 9/11 situation) are a few to list.

If this is the case of passengers (users of the service), what about the airport employees who exert to meet the expectations of the passengers on one side and obligations of the organization on the other side at above cited stages of travel and during many other crucial operational functions which passengers generally do not come across? Let it be air traffic controllers, security personnel, operational and maintenance personnel, cargo handlers, people in technical and support functions, ground handlers, flight catering personnel or any other workers involved in operation of the airport, everyone has to accomplish the task under tremendous time pressure, efficiency of operation and effectiveness of services. The operation should not only be effective for the satisfaction of the demanding customers, but also efficient from the organization's perspective. This is the biggest challenge the aviation industry is facing today. Many establishments including major international and domestic carriers are bleeding and finding it difficult to endure in the industry. These setbacks and 'not so well' syndrome of organizations add further pressure on its employees by the way of staff retrenchment, pay cuts, reduced incentives and other benefits, long working hours etc.

The ill-effects of stress on employees can be apparent from mild cold or stomach upset to major illness such as cardiac arrest or accidents which can be fatal whereas its effects on organization can manifest from staff absenteeism or staff turnover to low productivity or poor performance or major losses. Stressed employees can drive the operation in to frequent minor incidents in airfield to occasional major accidents concerning an aircraft (even an air crash rarely) which can take many lives of the passengers and crew.

Work carried out by professor Cary Cooper and others (Preventing Stress, Improving Productivity, Kompier and Cooper, 1999) identified ten of the most important sources of work stress at a major international airport. His team used the 'occupational stress indicator' to assess a rank order for workplace stress. Their findings of sources of stress were as follows:

1) Working time pressures/responsibilities/overwork
2) Pay
3) Promotion/permanency/job security
4) Supervision difficulties
5) Lack of resources/staff/equipment
6) Poor management support and planning

7) Lack of information and communication
8) Work environment/working conditions
9) Feeling undervalued/receiving no feedback/no recognition for work done
10) Overtime/shift working/working hours

In this research, the researchers also asked employees about stress experienced outside work – in their domestic and social life. They found that 'more than 75 per cent of outside work stressors were due to a combination of family problems relating to children, in-laws, bereavement, money problems, interpersonal relationships and recreational arrangements' (from Kompier and Cooper). This is a timely reminder that stress doesn't all come from work and that we don't always leave domestic problems at the factory gate or office reception.

Family and work are inter-related and interdependent to the extent that experiences in one area affect the quality of life in the other (Sarantakos, 1996). Home-work interface can be known as the overlap between work and home; the two way relationship involves the source of stress at work affecting home life and vice versa effects of home life demands from work at home, no support from home, absent of stability in home life etc. It asks about whether home problems are brought to work and work has a negative impact on home life (Alexandros-Stamatios G.A et al., 2003). For example, it questions whether the workers have to take work home, or inability to forget about work when the individual is at home. Home-work interface is important for the workers to reduce the level of work-related stress. According to Lasky (1995) demands associated with family and finances can be a major source of 'extra-organizational' stress that can complicate, or even precipitate, work-place stress. Russo & Vitaliano (1995) argued that the occurrence of stressors in the workplace either immediately following a period of chronic stress at home, or in conjunction with other major life stressors, is likely to have a marked impact on outcome.

Several studies have highlighted the deleterious consequences of high workloads or work overload. According to Wilkes et al. (1998) work overloads and time constraints were significant contributors to work stress among employees. Workload stress can be defined as reluctance to come to work and a feeling of constant pressure (i.e. no effort is enough) accompanied by the general physiological, psychological, and behavioral stress symptoms (Division of Human

Resource, 2000). Al-Aameri AS. (2003) has mentioned in his studies that one of the six factors of occupational stress is pressure originating from workload. Alexandros-Stamatios G.A. et al. (2003) also argued that "factors intrinsic to the job" means explore workload, variety of tasks and rates of pay.

Rapidly changing global scene is increasing the pressure of workforce to perform maximum output and enhance competitiveness. Indeed, to perform better to their job, there is a requirement for workers to perform multiple tasks in the workplace to keep abreast of changing technologies (Cascio, 1995; Quick, 1997). The ultimate results of this pressure have been found to one of the important factors influencing job stress in their work (Cahn et al., 2000). A study in UK indicated that the majority of the workers were unhappy with the current culture where they were required to work extended hours and cope with large workloads while simultaneously meeting production targets and deadlines (Townley, 2000).

Role ambiguity is another aspect that affects job stress in the workplace. According to Beehr et al. (1976), Cordes & Dougherty (1993), Cooper (1991), Dyer & Quine (1998) and Ursprung (1986) role ambiguity exists when an individual lacks information about the requirements of his or her role, how those role requirements are to be met, and the evaluative procedures available to ensure that the role is being performed successfully. Jackson & Schuler (1985) and Muchinsky (1997) studies found role ambiguity to lead to such negative outcomes as reduced confidence, a sense of hopelessness, anxiety, and depression.

Another research titled Assessment of work related stress in air-traffic controllers from Sofia Airport by R. Nikolova, V. Stantchev and S. Danev shows statistically significant correlations between R-R distribution measures and frequency - domain measures with psychological parameters, while psychological parameters do not correlate with the mean heart rate (25). The results of this study show that neuro-psychic stress influences both parasympathetic and sympathetic function. Researchers considered this pattern of autonomic modulation, consisting of significant correlations between HRV parameters and visual indices, is a result of synergic action upon the Autonomic Nervous System which facilitates both parasympathetic and sympathetic autonomic activity.

Professor Geovanni Costa, Institute of Occupational Medicine, University of Verona in his research titled "Occupational stress and stress prevention in air traffic control" indicates a number of preventive measures targeted to the elimination of the causes of stress, rather than the treatment of its effects, and how these measures can become an integral part of the necessary organizational development of a sound enterprise and eventually pay for themselves.

Stress at work can be generated by job demands, environmental conditions, work organization and human relations; its impact on job satisfaction, performance efficiency and health can vary widely depending on the psycho-physical characteristics and coping resources of individuals, as well as on the social support received.

According to several surveys, the main sources of stress reported by airport employees are connected both to operative aspects and to organizational structures. For the former, the most important are peaks of traffic load, time pressure, having to bend the rules, limitations and the reliability of equipment. The latter are mainly concerned with shift schedules (night work in particular), role conflicts, unfavorable working conditions and the lack of control over work.

With regard to the short-term effects of occupational stress, an employee's responses can be documented in terms of changes in hormonal secretion (e.g. adrenaline, non-adrenaline, cortisol etc.), heart rate, blood pressure, muscular activity, cerebral waves, work performance (errors) and behavior (sleeping, smoking, eating and drinking habits). These can indicate a normal, physiological adaptation of the individual to external stimulation, as well as an excessive strain due to an imbalance between demands and resources.

In the long term, some studies indicate that this demanding occupational activity may be a risk factor for stress-related symptoms, such as headaches, chronic fatigue, heartburn, indigestion and chest pain, as well as for serious illnesses, such as hypertension, coronary heart disease, diabetes, peptic ulcers and psychoneurotic disorders. It is quite easy to foresee the high costs from both the existential and the economic point of view that these negative consequences of stress can have, not only for the single person, but also for companies and society.

Therefore, prevention and control of stress becomes a compulsory target for airport employees, in order to safeguard their physical, mental and social health; for companies, in order to improve the efficiency and reliability of the service; as well as for society as a whole, in order to guarantee the highest levels of safety and comfort for all included and affected by this very important work activity.

Having stated that the airport employees, despite their rank or field of working, always have to run under the pressure of time to deliver the services which should not only be valuable to the customers but also proficient to the employer and therefore have to undergo tremendous stress during the working hours, the ground reality is that the middle and top management levels are the most affected group compared to lower level workers. For this reason, this study will be restrained with special focus on the middle and top management group in aviation industry.

The researcher in his association with the industry for the past 18 years has witnessed the stressful working conditions at various sectors of aviation industry in most of the important Indian airports. It is believed that the occupational stress in aviation industry is significantly high compared to other service industries; but this needs to be proven technically. The researcher strongly believes that the occupational stress can be minimized to a large extent by changing the working environment, inducing distinctive thought process in employees mind and enhancing the team bonding. The results of many workshops conducted by the researcher in this field have been very encouraging and satisfying to the belief that the Indian way for handling stress is the most effective way and is easy to implement in fast moving industries like Aviation. The researcher's keen interest to contribute towards an enhanced and enlightened working environment for the benefit of employees and the organizations in aviation industry is the motivational factor to select this research topic.

Following are the questions which need to be answered to complete this research:

i) Is there any significant difference in stress levels among airport employees compared to the stress level among employees in other service sectors such as hospitality industry, infrastructure services, medical services etc.?

ii) What are the main stressors for airport employees? What are the outcomes, especially the ill effects, of such occupational stress in airports?

iii) Is there any considerable difference in stress levels among employees at various functional levels within aviation industry?

iv) What are the practical measures followed in western countries to mitigate occupational stress? Are these approaches effective in Indian environment?

v) How stress is viewed in Indian philosophical system? What are the latest developments and studies conducted in this area?

vi) What are the practical approaches in Indian context that can be easily adopted for occupational stress mitigation?

vii) How to integrate such practical systems in the work culture of organizations for sustained positive results?

viii) How effective is such modified work culture in combating ill effects of occupational stress?

1.3 OBJECTIVES OF THE STUDY

Though lots of researches have been done across the globe on the topic of impact of stress on employees in various industries, a very few such studies have been conducted among the airport employees to analyze their occupational stress and to suggest remedial measures. It is not understood from the available records if any such studies have been conducted among the employees working in Indian airports. It is more or less certain that the stress mitigation measures suggested by the western researchers are not effectively workable in Indian scenario due to various cultural and demographic factors. Though a few literatures are available on using Indian traditional system for stress management, its workability in integrating it in the work culture of an organization and its positive outcomes to the people and the organization need to be

established. This study is intended to reveal all such opportunities and therefore the outcome of the research may be greatly useful for the top management of various organizations in aviation industry to draw their strategy to minimize the perceived gap between service effectiveness and operational efficiency in addition to improving the employee job satisfaction level.

Having articulated the overall problem statement and the significance of the project, the objectives that need to be achieved in order to satisfy the ultimate aim of the research can be stated as follows:

i) To map the stress profile of aviation sector employees, taking Bangalore International Airport as a case study.

ii) To evaluate the stress level of employees from a few other service sectors such as hospitality industry, infrastructure services, health sector etc. to test if any significant variation in stress level between airport employees and non-airport employees exists.

iii) To distinguish the occupational, personal and social components of stress within the overall stress level of employees.

iv) To identify the most common stressors in airport environment and its ill effects on employees and the organizations.

v) To identify various environmental factors, work factors and organizational factors contributing to occupational stress in airport.

vi) To assess the personality types among airport employees and to ascertain if any relation exists between the personality types and their stress levels.

vii) To identify workable stress mitigation measures from various Indian systems that can be integrated in the work culture of the organizations.

viii) To derive a practicable stress mitigation model that can be tested on an experiment group of airport employees.

ix) To assess whether or not there has been any alteration in stress level among the experiment group of employees compared to the rest of employees.

1.4 HYPOTHESES OF THE STUDY

Hypotheses are tentative answers to research questions that need to be tested. Testing them involves seeing if the associated variables have the same relationship as that predicted in the hypothesis. Lundberg's (1942) book on social research provides a classical view of the role of hypothesis. He argued that there are four steps in 'the scientific method': the formulation of a scientific hypothesis, the observation and recording of data, the classification and organization of data collected, and the production of generalizations that apply under given conditions. In this context, Lundberg defined a hypothesis as 'a tentative generalization, the validity of which remains to be tested. In this most elementary stage, the hypothesis may be any hunch, guess, imaginative idea or intuition whatever which becomes the basis for action or investigation' (1942: 9). To achieve the objectives of the study, the following hypothesis are formulated for testing:

i) There is significant difference between stress level of airport employees and employees in other service sectors.
ii) There is a relation between the managerial level of employees and their corresponding stress level.
iii) There is significant variation in the distribution of personal stress and occupation stress among employees.
iv) There is a relation between the gender and their overall stress level.
v) There is a relation between the gender and their occupational stress level.
vi) There is a relation between the age group of employees and their overall stress level.
vii) There is a relation between the age group of employees and their occupational stress level.
viii) There is a relation between the age group of employees and their personal stress level.
ix) There is a relation between the age group and their social stress level.

x) There is significant difference between stress level of BIAL employees and stress level of other airport employees.

xi) There is a relation between stress level of employees and rotational shift work.

xii) There is a relation between occupational stress level of employees and shift work.

xiii) There is a relation between personal stress level of employees and their shift work.

xiv) There is a relation between the stress level of employees and their functional area.

xv) There is significant difference in the distribution of type of personalities between gender groups

xvi) There is significant difference in the distribution of type of personalities among various levels of management.

xvii) There is significant difference between the stress levels of different type of personalities.

xviii) There is significant difference in the stress impact due to work factors and organizational factors.

xix) There is significant difference in the stress level in experiment group before and after the workshop.

xx) There is significant difference in the stress level in experiment group before and after the yoga workshop.

1.5 SCOPE OF THE STUDY

This research is a case study centered to the employees working at Bangalore International airport to investigate the stress level among employees, identifying most prominent stressors and the impact of stress in their productivity, health and personal front. This study also target to identify and establish various stress mitigation measures with main focus on Indian ethics which can be adopted easily in the work environment. For this purpose, an experimental group is established and their stress levels are measured periodically to assess and compare it with the data of the target group. For comparative analysis, data collection is also done from another target group of non-airport service sector employees.

1.6 RESEARCH METHODOLOGY

It has been common practice to divide research methods in to two broad types, quantitative and qualitative. However, the concepts have also been used to contrast five different aspects of the social research enterprise:

- *methods,* that cover the techniques of data collection and analysis;
- *data,* that are produced by particular type of methods;
- *research,* in which particular type of methods are used;
- *researchers,* who use particular type of methods; and
- *paradigms,* approaches or perspectives, that adopts different assumptions

Quantitative methods are generally concerned with counting and measuring aspects, while qualitative methods are more concerned with producing discursive descriptions and exploring social actors' meaning and interpretations. By quantitative methods, researchers have come to mean the techniques of randomized experiments, quasi-experiments, paper and pencil objective tests, multivariate statistical analysis, sample surveys etc.

In this research the quantitative techniques of sample surveys, multivariate statistical analysis and experiment analysis is used to conclude the results of the case study.

The most commonly used quantitative data gathering methods in research are undoubtedly the self-administered questionnaire and the structured interview. Sometimes 'survey' will be used to refer to questionnaires, and questionnaires are seen to be used in structured interviews. De Vaus (1995) used 'questionnaire' as the generic term and then distinguished between face-to-face, telephone and mail as different methods of administration. Oppenheim (1992) on the other hand, made the distinction between 'standardized interview' and 'questionnaire' very clear.

The method of data collection adopted in this research is through mailed self-administered structured questionnaire and by the way of direct approach to the respondents by trained volunteers with the structured questionnaires. Since the mailed questionnaire is programmed to enable auto scoring on various aspects under study, it eliminates huge volume of labor involved in computing the scorings and is free from manual errors. Hence mailed questionnaires in soft

copy is preferred as the primary method of data collection from the randomly selected sample respondents.

1.6.1 Case Study Research:

Case study has been described as 'an umbrella term for a family of research methods having in common the decision to focus on inquiry around an instance' (Adelman *et al.* 1977). As in all research, evidences are collected systematically, the relationship between variables is studied and the study is methodically planned. Case study is concerned principally with the interaction of factors and events and, as Nisbet and Watt (1980: 5) point out, 'sometimes it is only by taking a practical instance that we can obtain a full picture of this this interaction.' Though observations, interviews and questionnaires are most frequently used in case studies, no method is excluded for collection of data.

Some writers have suggested that case studies are suitable for single-person research on a limited budget, and that the study of one case provides a manageable opportunity for a researcher to study one aspect of a problem in some depth in a limited time scale (e.g. Bell 1993; Blaxter et al. 1996). It is implied that they are appropriate for student research, particularly for post graduate and PhD theses, and that most researchers are capable of doing a case study.

Case studies have been used for various purposes: exploratory, descriptive and explanatory research (Yin 1989: 15-16), and to generate theory and initiate change (Gummesson 1991). These uses will depend on the research questions asked and the extent which the researcher has control over the events being studied (Yin 1989). According to Gluckman (1961), the anthropological notion of the case study has had three main uses: as 'apt illustrations', as 'social situations' and as 'extended case studies'. While Gluckman's classification was based on differing degree of complexity, and to a lesser extent on duration of time, Eckstein's (1975) five way classification focused on different uses of case studies in theory development: *configurative-ideographic studies, disciplined-comparative studies, heuristic case studies, plausibility probes and crucial-case studies.*

The great strength of the case study research is that it allows the researcher to concentrate on a specific instance, situation or topic and to identify, or attempt to identify, the various interactive processes at work. Denscombe (1998: 36-7) makes the point that the extent to which

findings from the case study can be generalized to other examples in the class depends on how far the case study example is similar to others of its type'. This means that the researcher must obtain data on the significant features of the topic under study in general from the targeted audience, and then demonstrate where the case study examples fits in relation to the overall picture.

Since the airports are highly regulated and considered homogeneous work platforms as any airport in India operates under same set norms and working practice, there may not be much significant change in the results of such studies conducted in a particular airport from the results of the whole industry. Hence, the researcher decided to target Bangalore International Airport for undertaking and completing his research in expediency point of view. However, the outcome of the research including results of the study and recommendations can be more or less applicable to any organization operating from any of the Indian airports.

As Yin (1994: 137) reminds us: Case studies have been done about decisions, about programs, about the implementation process, and about organizational change. Beware these types of topic – none is easily defined in terms of the beginning or end point of the 'case'. He considers that 'the more a study contains specific propositions, the more it will stay within reasonable limit' (P. 137) and therefore we have to keep our research within reasonable limits.

1.6.2 The Experimental Study:

It is relatively easy to plan experiments which deal with measurable phenomena such as stress level among employees. Experiments have been set up to measure the effects of a particular initiative by establishing a control group and an experimental group. In such experiments, the two groups, matched for age, sex, social class and so on are given pre-test examination before the implementation of a particular experimental initiatives and post-test examinations are conducted after implementation of the initiatives to draw about the effectiveness or otherwise of the particular initiative. The principle of such experiment is that if two identical groups are selected, one of which (the experimental group) is given special treatment and the other (the control group) is not, then any difference between the two groups at the end of the experimental period may be attributed to the difference in treatment. As Wilson (1979) points out, social causes do not work singly. 'The cause of social phenomena is usually

multiple ones and an experiment to study them requires large numbers of people often for lengthy periods. This requirement limits the usefulness of the experimental method.' (Wilson 1979: 22). In general, R.A. Fischer suggests that a single complex factorial experiment is often more efficient and effective in investigating the effects of multiple treatments than devoting a separate experiment to each treatment factor.

The test statistics are functions of data which measures the effects of the treatments being compared relative to the underlying experimental error. Because the data are the realization of variables, the test statistics are realization of variables as well. The conclusions drawn using the observed value of the test statistic is subject to error due to experimental error. Two types of errors are possible. A *type I* error is made when we incorrectly reject H_0 in fact when H_0 is the true underlying condition. The probability of a *type I* error for this research is specified as 0.05 (i.e. 1 in 20 chances). A *type II* error is made when we incorrectly do not reject H_0 when in fact H_0 should be rejected.

Since the research involves testing of a broad hypothesis in order to generalize it to the aviation industry and also to establish practical solutions to the problem, it is felt important to conduct a field experiment by setting up an randomized experimental group ensuring internal as well as external validity to instigate the stress mitigation measures and to appraise its effectiveness after enactment. Since one of the hypotheses of the research is that the practical mitigation measures can be effectively implemented as part of the work culture with assured positive results, the hypothesis can't be tested without having comparative data before and after implementation of the mitigation initiatives. Therefore, the researcher preferred to set up an experimental group with the consent of BIAL management to test the effectiveness of the initiatives. In effect, the research model will be a case study design using quantitative data and also engaging experimental research strategies by analyzing quantitative data to achieve the research objectives. The following were the two major initiatives implemented for experiment.

1. The experimental group was first subjected to a stress management workshop wherein conditioning technique was used as a stress mitigation measure. The group underwent a whole day workshop every week for four consecutive weeks. During the workshop, the group was subjected to a series of conditioning techniques to make them unlearn many of their hidden fears, beliefs and concerns over life and to instill positive thoughts, beliefs

and feelings in their subconscious. They also have been taught about practicing visualization, breathing techniques, positive thinking and auto-hypnosis to protect them from the ill effects of stress. In the end of four weeks, their stress level was again measured for comparative analysis.

2. The experimental group was then subjected to a specially designed yoga workshop wherein selected hatha yoga postures, selected breathing techniques and meditation were taught and followed up for 12 weeks. The participants were trained in the specialized techniques one and a half hours every week and were asked to practice it on daily basis. In the end of the workshop after twelve weeks, the stress level of the participants was again measured for comparative purpose.

1.6.3 Research Design

Ideally, the research design is the process of making all decisions related to the research project before they are carried out. This involves anticipating all aspects of the research, then planning for them to occur in an integrated manner. 'To design is to plan; that is, design is the process of making decisions before the situation arises in which the decision has to be carried out. It is a process of deliberate anticipation directed towards bringing an expected situation under control. If, before we conduct an enquiry, we anticipate each research problem and decide what to do before-hand, then we increase our chance for controlling the research procedure. (Ackoff 1953: 5).

As Lincoln and Guba (1985) have pointed out, research design requires the following to be spelt out before the research begins:

- The overall plan of the study;
- Variables to be included;
- Expected relationship between these variables (hypothesis);
- Methods for data collection; and
- Modes of data analysis

The researcher, in the past had conducted two similar researches in aviation industry on different titles concerning organizational climate during his MBA and M.Phil studies. One study

was targeting all the airports in the country and the second was concerning the employees in Western Region airports. These researches revealed that the airports are homogeneous work platforms due to the reason that any airport in India is operated under same set of norms and working practices and therefore there will not be any significant change in the results of a particular airport from the whole industry.

International Civil Aviation Organization (ICAO) is the global body which governs the air traffic and airport operation across the world under common set regulations. In India, it is the Director General of Civil Aviation (DGCA) who sets guidelines in line with the ICAO regulations, but with added stringency to suit it to local conditions. Also there are other bodies such as Bureau of Civil Aviation Security (BCAS), International Air Transport Association (IATA), Federation of Indian Airlines (FIA), Airports Council International (ACI) etc. to stream line the process of airport/airlines operations. The latest addition in the list is Airports Economic Regulatory Authority of India (AERA) which is supposed to set the regulations and standards for commercial operation by way of fixing common tariffs for various airports services.

Largely, any airport in India operates under similar conditions and therefore the result of the study will not vary considerably if the target is one airport or all the airports in a region or all airports across the country. Hence, the researcher decided to target Bangalore International Airport for undertaking and completing his research in expediency point of view.

This research is designed as a case study employing both qualitative and quantitative research with special focus on the middle and top management levels at Bangalore International Airport. Since the research involves testing of a broad hypothesis in order to generalize it to the aviation industry and also to establish practical solutions to the problem, it is felt important to conduct a field experiment (subject to the approval of management) by setting up an randomized experimental group ensuring internal as well as external validity to instigate the stress mitigation measures and to appraise its effectiveness after enactment. In effect, the research model will be a case study design using qualitative data and also engaging experimental research strategies by analyzing quantitative data to achieve the research objectives.

The methodology for collection of primary data will be through structured questionnaires directly administered to the employees. It is targeted to collect maximum data through e-mail as

far as the top and middle management personnel of various organizations are concerned. Considering the prevailing close proximity of the researcher with team leaders of various work groups in the industry, it is also convenient to collect the data directly from employees by engaging a few trained personnel. The primary data will be processed and analyzed using various statistical tools and the results will be summarized and presented.

1.6.4 Data Collection and Analysis

Collecting and analyzing data are frequently regarded as the core activities in research. A wide array of quantitative and qualitative methods is available for adoption. They discuss a variety of types of observational methods, ranging from highly structured to unstructured, and from a very detached position to a very involved position. Similarly many types of interviewing are reviewed, ranging from highly structured to unstructured or in-depth methods, and including both individual and group interviews.

In a sample survey, information is collected on only a small part of the population called a sample. In principle, if the sample is selected in a proper way, the researcher can make inference about the population as a whole. Proper means in this context that elements in the sample are selected at random. However, the researcher may not have everything under control as he may confront with many practical problems in the course of the survey process.

The statistical methods for implementing randomization with appropriate restrictions to achieve good balance have been well established for many years. More elaborate methods exist for achieving balance across many baseline factors (Taves, 1974), though in practice few researchers consider such efforts worthwhile. However, there remain doubts about whether lack of bias in performing randomization is generally achieved in many trials (cf. Schulz, Chalmers, Grimes, & Altman, 1994) so that one has greatest concern about practical implementation of the randomization process rather than statistical details of balancing and stratification.

Some of the practical difficulties in achieving perfect randomization in this case study are as follows:

i) Difficulty in getting complete employee data, levels, contact details etc. from all organizations functioning out of BIA since multiple organizations are involved in airport operation.
ii) Difficulty in reaching the employees working in different shifts during the survey period since round the clock operation is involved.
iii) Difficulty in getting permission from the management of many organizations to conduct a free survey among the employees; this issue was more prominent with government/public sectors organizations.
iv) Possibilities of more *non-response* as the employees involved in field level direct operation will find this exercise as an interruption in their work.

1.6.5 Literature Review

Major function of the literature review is to link the proposed research with the current state of relevant knowledge, to provide background and justification for the current research, and to select theory, research strategies and methods. Another purpose of the literature review is to find possible answers to research questions, particularly on the stress mitigation methods generally adopted in industries, views on stress in Indian context, its applicability to work organization etc. There is always a possibility that the review of literature will reveal some part of the answers to some of the research questions and will aid as supplementary data for drawing conclusions. This review may include:

i) Background information that establishes the existence of the problem to be investigated;
ii) Previous research on the topic, or related topics;
iii) Theory of relevance to the research questions;
iv) Theoretical perspectives as a source of concepts as well as assumptions;
v) Methodological considerations of relevance to the selection of a research strategy or strategies; and
vi) A review and/or elaboration of the methods to be used.

The details of these components and various other dimensions of review of literature in included in chapter-2 of the thesis.

1.6.6 Design of Questionnaire

If we consider stress as the external demands upon an individual, it is clear that stress for employees is connected, on the one hand, with the intrinsic characteristics of the job and, on the other hand, with the work organization and conditions in the workplace. It is important to bear in mind that the psycho-physical responses of individuals also depend on their resources, defined both in terms of personal characteristics and coping strategies.

According to the "demand/control/support" model on stress at work, high stress levels and consequent troubles and illnesses are more likely to develop in work activities where there is high psychological demand, but low decision latitude and inadequate social support at the workplace ("high strain job"). On the other hand, jobs having not only high psychological demands, but also a high decision latitude and adequate social support, are likely to determine an active behavior that stimulates learning, motivation and employee productivity. However, both "demand" and "control", as well as "social support", can vary widely according to several factors dealing with different working situations, e.g. work environment, equipment, work planning and procedures, workload distribution, team composition, working hours, rest pauses, shift schedules and human relations.

Furthermore, the consequences on an employee's performance and well-being may differ widely among individuals in relation to many factors dealing with age, life styles, life events, work experience, personality traits (introversion, anxiety, type A), behavioral, attitudes, motivation, and physical and mental health. Moreover, many other factors related to social conditions can play an important role in this respect, e.g. socio-economic status, housing conditions, commuting, family attitudes, social support and integration.

Therefore, all these aspects can have more or less influence on an employee's job satisfaction, health and well-being according to different circumstances. They can interact and interfere with each other, giving rise to not only possible additive or multiplicative, but also subtractive effects, so that it is often very difficult to evaluate and compare the effective stress

and strain in different groups and individuals. This is the reason why many studies on the stress of employees reported apparently contradictory findings.

Stress questionnaires are questionnaires designed to conduct a survey of the stress levels of target audience. Stress questionnaires must be composed of questions which are relevant, direct and pointed; they must be framed in such a way as to eschew any vagueness. The questionnaire for this research is framed keeping many important factors such as brevity, coverage of all important areas, to the point, relevance to the objectives, frame of reference to the targeted audience etc. Stress questionnaires are documents which highlight and guide the direction a survey can take and is of immense importance in figuring out trends among the employees. Stress Level Questionnaire helps to analyze how well people appraise situations into least or extremely stressful situations. Various dimensions of life are looked at while designing the questionnaire. Respondents are made conscious about even those aspects that they might have ignored. And hence the stressful situations are handled by tackling those aspects that cause trouble in a person's mind.

No survey can achieve success without a well-designed questionnaire. The design of a questionnaire will depend on whether the researcher wishes to collect exploratory information (i.e. qualitative information for the purposes of better understanding or the generation of hypotheses on a subject) or quantitative information (to test specific hypotheses that have previously been generated). Since the researcher is looking to test and quantify hypotheses and the data is to be analyzed statistically, a formal standardized questionnaire is designed. The questionnaire for this study is characterized by the following:

- prescribed wording and order of questions, to ensure that each respondent receives the same stimuli
- prescribed definitions or explanations for each question, to ensure interviewers handle questions consistently and can answer respondents' requests for clarification if they occur
- Prescribed response format, to enable rapid completion of the questionnaire during the answering process.

A well-designed questionnaire should meet the research objectives by obtaining the most complete and accurate information possible. The questionnaire is designed to ensure that

respondents fully understand the questions and are not likely to refuse to answer, lie to the interviewer or try to conceal their attitudes. Emphasis is given in wordings to encourage respondents to provide accurate, unbiased and complete information. Care has been taken to ensure that the questionnaire make it easy for respondents to give the necessary information and for the interviewer to record the answer, and it is arranged in a way that sound analysis and interpretation are easy. The questions are made brief, to the point and so arranged that the respondent(s) remain interested throughout the interview.

The following steps were involved in the development of a questionnaire:

Step 1: Decide the information required: The first step is to decide what are the things needs to know from the respondent in order to meet the survey's stated objectives and ensure that all relevant information required are covered in the questionnaire. One of the primary objectives of this research is to measure the stress level which has many sub-components such as personal stress, occupational stress and social stress. Hence it is necessary that the questionnaire designed for measurement of stress level of employees contains questions related to all these areas. Similar way questions to gather relevant information concerning other objectives of the study also need to be incorporated.

Step 2: Define the target respondents: It is necessary to define the population about which the conclusions be generalized after the research from the sample data to be collected. Here, the population is the employees working at Bangalore International Airport and the data need to be collected from the sample of employees chosen on random. The respondent's background and demographic characteristics to be kept in mind while phrasing the questionnaire.

Step 3: Choose the method(s) of reaching your target respondents: It may look strange that the method of reaching the intended respondents should constitute part of the questionnaire design process. However, a moment's reflection is sufficient to conclude that the method of contact will influence not only the questions the researcher is able to ask but the phrasing of those questions. The main methods decided in this survey research to reach the target are mailed questionnaires and personal data collection/ interview with structured questionnaire. Hence two kinds of questionnaires, one meant for mail communication and the second in hard copies for personal

contact data collection is prepared. The soft copies of questionnaires are designed in such a way that the respondents can select their answer by single click on each questions and scores are computed automatically through in-built formulae, but can be accessible only by the researcher through password. The manual questionnaire is designed to enable respondents to select their answers by ticking the right choice for each question.

Step 4: Decide on question content: It has been ensured that the questions really needed to conclude the research only are included in the questionnaire. Since inclusion of questions without critically evaluating their contribution towards the achievement of the research objectives as specified in the research proposal can be counterproductive, extra care has been taken to ensure that right questions are included in all sections of the questionnaire. It has also been ensured that the opening questions that are easy to answer and which are not perceived as being "threatening", and/or are perceived as being interesting is provided in the initial part since it can greatly assist in gaining the respondent's involvement in the survey and help to establish a rapport.

Step 5: Develop the question wording: The right wordings are important especially for closed questions with multiple options to ensure that it provides the respondent with an easy method of indicating his answer - he need not have to think about how to articulate his answer. It should 'prompt' the respondent so that the respondent has to rely less on memory in answering a question. It has also been ensured while finalizing the questions that the responses can be easily classified, making analysis very straightforward. Questions are clearly worded and response options clearly identified through repeated reviews and taking third party suggestions in to consideration.

Step 6: Put questions into a meaningful order and format: Opening questions are made easy to answer and not in any way threatening to the respondents. If they find the initial question difficult to understand, or beyond their knowledge and experience, or embarrassing in some way, they are likely to break off immediately. Questions are further arranged to ensure the flow in a kind of psychological order, so that one leads easily and naturally to the next. Respondents become bored quickly and restless when asked similar questions continuously. It is natural for a respondent to become increasingly indifferent to the questionnaire as it nears the end. Because of

impatience or fatigue, he may give careless answers to the later questions. Those questions, therefore, that are of special importance are included in the earlier part of the questionnaire. Potentially sensitive questions are however left to the end, to avoid respondents cutting off the interview before important information is collected.

Step 7: Pre-test the questionnaire: The questionnaires were pre-tested twice to check and ensure its effectiveness and to collect the initial feedback from the selected respondents. Initial pre-testing was done with 10 respondents at a predefined time schedule. After collecting the filled in questionnaires their feedback on clarity, relevance, difficulty level, how interesting it was, time consumed for completion etc. were taken before making the revisions. The revised questionnaires were again administered to a different group of 7 selected respondents to test its effectiveness. Since the response from the entire sample respondents were found satisfactory without any significant nature of comments or remarks, the final format was frozen for field use.

Step 8: Develop the final survey form: Once the structuring of questions were final, different versions of the questionnaires were finalized for internal (airport employees) and external (non-airport service sector employees) survey. Total 4 models of questionnaires were used as follows:

- Questionnaire by mail for internal survey
- Questionnaire for personal distribution for internal survey
- Questionnaire by mail for external survey
- Questionnaire for personal distribution for external survey

By following the above referred steps, the questionnaire of the study has been derived and administered for field data collection. The structure of the questionnaire consists of the following:

Part A: Stress questionnaire: This section consists of total 25 questions based on various measurable parameters of human stress. Since the total stress profile of an individual generally consists of stress due to personal reasons, stress spawned due to social causes and work related stress. The total stress questionnaire is blended with questions related to the above three areas with an intention to enable separation of share contributed by personal factors, social reasons and

occupational issues. Out of 25 questions, 12 are related to general stress or social causes, 8 are in connection with various occupational factors and 5 are based on personal stress factors. The formulae are inbuilt in the questionnaire in such a way that the scoring of overall stress level as well as the scores of personal/social/occupational stress is computed automatically.

Part B: Personality type questionnaire: This section consists of 15 questions based on personality traits to identify the personality type of the respondent. Here too the total scoring is computed automatically to identify the person as Type-A personality, Type-B personality or balanced personality based on the total score.

Part C: Health impact questionnaire: This section consists of 14 questions related to various stress related illness or symptoms. Since the outcome of stress manifest in different ways with different individuals, it is necessary to include all probable common symptoms to measure how it impacts the respondents health and at what magnitude.

Part D: This section consists of a single question to check the duration of revealed health problem of the respondent.

Part E: Environmental parameters questionnaire: This section deals with various stress inflicting environmental factors at work place. From the answers to these 13 questions, the most influencing environmental factors at work place can be identified to enable probable curative suggestions.

Part F: Job performance questionnaires: The occupational stress can arise out of the reasons related to the nature of work or due to organizational structure and culture. This section of 17 questions deals with various work related stressors.

Part G: Organizational culture questionnaires: This section consists of 17 questions dealing with organizational issues. Most of the time, more than the nature of work, it is the internal culture of the organization that infuse stress among the employees. Hence it is necessary to understand the stressors those originated from the organizational issues.

To ensure a natural flow and with an intention to avoid any kind of boring by the respondents, the questions relating to work and organizational culture are blended in a meaningful manner and spread under sections F & G. however, the formulae is set in such a way that the scoring on work factors and organizational factors are automatically separated from the intermingling questions to reduce labor for computation and evaluation.

Part H: Emotional factors questionnaire: This section of 12 questions are implanted to check the perception of respondents on their own emotional state at workplace. Stress disturbs a person at cognitive level and makes psychological and behavioral changes if affected gravely. The emotional state of a person is one of the best indications of his stress level though many other factors including his personality type etc. also need to be considered before making conclusions.

Part I: Miscellaneous information: This section deals with various supplementary information from the respondents that may help to achieve some of the research objectives.

Part J: Open ended question for the respondents to express his views on the topic or to provide any additional information if he/she desires so.

1.6.7 Data Analysis

Though the researcher attempts to obtain as much as possible interesting results from the collected data, a lot can go wrong in the process of collecting and editing data if proper care is not taken and this will have an impact on the results of the analysis. The *Dirty Data Theorem* states that the data come from a sample that is obtained by a dependent sample with unknown and unequal selection probabilities from a bizarre and unspecified distribution, whereby some values are missing and many other values are subject to substantial measurement errors. It is clear that the researcher has to take in to account that his data may be affected by measurement errors and non-response, that some values may not be observed but imputed, and that he has to use weights to compensate for a possible non-response bias.

1.7 LIMITATIONS OF THE STUDY

This study, like any other research, is not free from restraints and the following inadequacies are envisaged at this point of time:

i) Scope of a study covering airport employees in more than 100 airports across the country is enormous in terms of volume of work, time, cost etc. and therefore this research is targeted at the employees of only one airport which is the fourth biggest airport in the country. Though the conclusions of the research may have application in any airport in the country, it will be subject to some imperfections due to demographic trends, local culture, local management and leadership style, local climatic condition; hardships (disturbed areas for instance) etc. at various airports.

ii) The airport environment is generally charged with a few current issues all the time. The study results will have the impact of such current issues at the time of measurement.

iii) It is arduous to distinguish the stress impact on an employee due to his/her personal issues from the impact of distress added at the work place. This mix up of personal and workplace stress will have influence in the results and findings.

iv) The government agencies working in the airport such as Central Industrial Security Force, Immigration, Customs, intelligence Bureau etc. have been excluded from the scope due to the bureaucratic hurdles in getting organizational consent.