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An Intercontinental Study of Employee and Employer Human Factor Issues Put Up in Aerospace and Aviation Industry

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Abstract

Through my recent swot i understood that the topic of human factor is continually gaining higher level of visibility in all the spheres of aviation and aerospace engineering; however, the elements that drive future human interactions with emerging technologies have room for further studies. A considerable amount of effort has been invested in improving the physical motor skill-centric design considerations. Emerging aerospace organisations face the challenges of properly interpreting and implementing the emerging human factor requisites. A lot of the emphasis in the average design organization is typically centred around the hardware and software components, the system performing to its stated requirements, meeting the reliability specification, and the system's impact safety of flight but lower is the overall focus on all the facets of human in the loop irrespective of employee and employer. A mastery of human factors (HF) in such complex systems as air traffic management (ATM)and air traffic control (ATC) is crucial to maintain the efficiency and safety of the systemand the well being of those working within,it is an very fundamental issue specially in the field of aviation and aerospace industry. For instance,ATC aims at preventing collisions of aircrafts. In ATC work, several characteristics cause complexity, uncertainty and dynamicity, and there is a possibility of risks and disturbances that make ATC vulnerable to human error. The discipline of HF applies knowledge regarding human behaviour to the design of systems. In the current thesis, HF is used as a tool for improving work, competence and safety in the context of design, work well being, and satisfaction level of employee and employer at aviation industry. Aimed at incorporating different studies at different aviation based organizations, the application of HF which is a relatively new concept in the aviation industry,study of factors that support or hinder the adoption and application of new thinking and to measure andevaluate the new tools. Population of the study ranges from fresher's to 20 years experienced employee and employer. Unusual Interviews, intervention results, questionnaires and incident data were used as the material and methods for the studies. In general, aviation industry would run in strict compliance with international regulations so it has a strong technical competence, but practical literature study articulate that this would not be the case with respect to HF aspects . In few studies, the interview of the upper and middle managers of the target organization has revealed to me that there was no unified strategy within the organisation for applying knowledge regarding HF. The survey result is the motivation for this proposal and shows the limitation in utilising incidents as material for organization learning and safety improvement. Finally, the organization would succeed by applying an easy-to-use tool to determine,analyse and learn about HF risks and resources. Taken together,

the studies in this thesis would demonstrate that, in spite of the cultural and structural barriers, strong, fragmented and authoritarian history of aviation administration that hindered the adaptation of new thinking.The HF application was facilitated by the tensions for change in which HF-based interventions and tools would scrupulous valuable solutions.On the other hand it has been claimed that human factors emerged as a significant challenge to flight safety only after the frequency of technical failures diminished in the early years of aviation. Few authors contributed through an assessment study of 100 aircraft accidents that occurred between 1921 and 1932, revealed that pilot factors contributed to most accidents, while technical failures contributed to significantly fewer accidents. Accident data from World War 1 also show this pattern.The results suggest that human factors have been the primary flight safety issue since the early days of aviation. The current proposal indicates that the target aviation organization should continue HF application to strengthen its competence as a highreliability organization. In this proposed process, recognizing the facilitating and hindering factors involved in the mastery of HF is necessary. My findings from this research may also support the possibility of using HF application in other complex systems. In a previous study few authors have identified the incidence of human factors and errors in the security screening process, concerning the Brazilian civil aviation. This finding led to the analysis of labour activity in the security checkpoint from an ergonomic perspective. The objective of this study was to evaluate the various labour conditions in the security checkpoints of Brazilian airports, in order to promote safer and higher performance of the AVSEC professionals, as well as the security equipment. For this purpose, they analyzed 14 of 60 questions of a self-observation questionnaire based on the theory of Generic Error–Modelling System (GEMS) and the four themes about human factors recommended by the International Civil Aviation Organization (ICAO). The questionnaire was responded to by 602 AVSEC professionals who worked in the security checkpoints of 18 Brazilian airports. Their analysis was focused on the preponderant indexes of each question, taking into account the sequential arrangement in which the questions were displaced in the questionnaire and the classification of human factors and errors. In another study relevant to this few authors found In approximately 75-80% cases of aviation mishaps the main cause were human performance deficiencies. Human error is rather the starting point than the end in the investigation and prevention of aviation mishaps. One of the most popular models for analyzing the human factor and its role in aeronautical activity is the SHELL model. The components of this model are: software, hardware,environment, live ware. The systems need in human factors is determined by their impact in two major areas such as system efficiency and the health of operational staff. The most important applications of human factors are in the field of preventing and managing human errors through education in the human factors.The current proposal indicates that the target aviation organization should continue HF application to strengthen its competence as a high reliability organization. In this proposed process, recognize the facilitating and hindering factors involved in the mastery of HF is necessary. My upcoming findings of this research may also support the possibility of using HF application in other complex systems

KEYWORDS: Human factors , Human mental health , aviation error , aviation managements

I. INTRODUCTION

Human Factor is becoming an important factor for the operations of Aerospace and Aviation industries nowadays. Moreover, with further studies in future human interactions with complex technologies and machines, there is a way of decreasing the human error in any critical situation. But somewhere the organisations are facing problems with implementing proper human factor requisites. This maybe because

of the more emphasis given to develop hardware and software components and less concentration for recruiting proper skill based employees. Hence, a loop is developed in the working process of human factors. From ATM (Air Traffic Management) to ATC (Air Traffic Control), Human Factors play an important role and there is no place of any error in this critical field. But in past, there are some examples of accidents or malfunctioning for which human factors are responsible. For this complex operations, one have to be efficient enough and also have a quality of good decision making as these fields are vulnerable to Human Errors.

As this Human Factors is still a new concept in aviation industry, in the paper there are some graphs and pie charts of questions asked to employees of different aviation organisations and with their responses we framed some useful data which will help to further study about the Human Factor and about its proper implementation in corporate industry.

II. SURVEY AND CHARTS

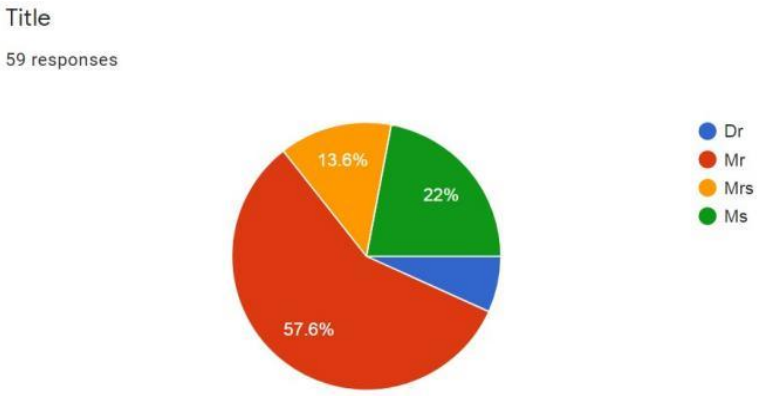

Fig no:1

In the pie chart (fig no 1), provides information about the percentage of titles of the respondents. Overall, in the questionnaire Men (Mr.) made up the biggest part of the chart (57.6%) followed by women (22%) and married women (13.6%), while persons with a doctoral degree (Dr) made the lowest contribution to the questionnaire.

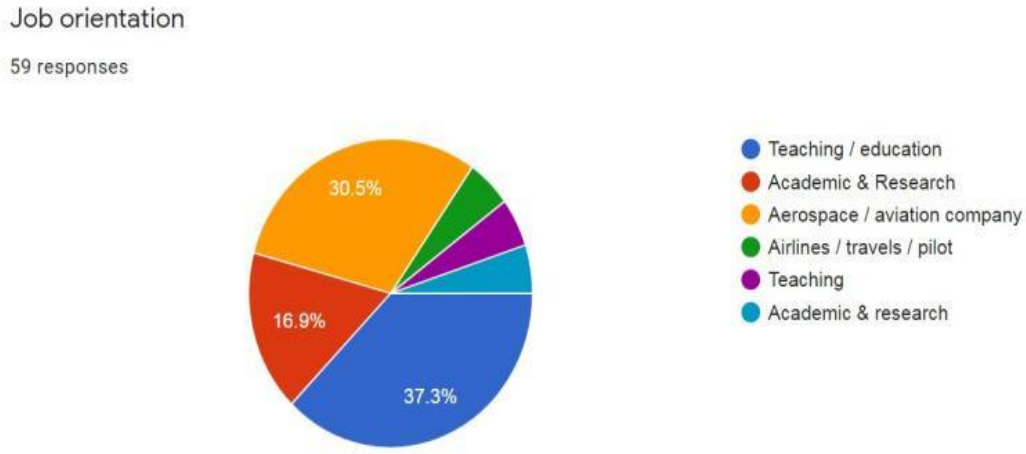

Fig no:2

zzThe pie chart (fig no 2), illustrates the percentage of Job orientation of the respondents. Overall, most of the respondents are oriented in Teaching / education (37.3%) followed by Aerospace / aviation company (30.5%), Academic and research (16.9%) and Airlines / travels / pilot.

Fig no.3

The (fig no 3), bar chart shows the age (horizontal axis) to the number of respondents (vertical axis). Overall, 6 respondents (10.2%) are 27 years old, 5 respondents (8.5%) are 29 years old, ages 23, 26, 30 and 35-36 have 4 respondents (6.8%) in each age group (accounting to a total of 16 respondents), ages 22, 25, 28, 31, 32-33, 38-39 have 3 respondents (5.1%) in each age group (accounting to a total of 18 respondents), ages 34 and 37 have 2 respondents (3.4%) in each age group (accounting to a total of 4 respondents), ages 20, 21, 24, 40, 41,42,43-44,45,46 have 1 respondents (1.7%) in each age group.

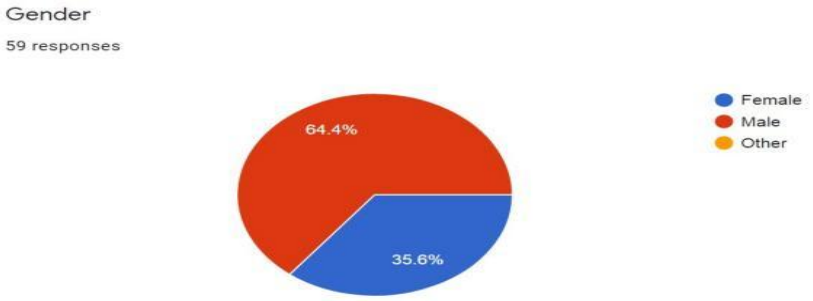

Fig no:4

The pie chart (fig no 4) provides information about the gender of the respondents. For the current study samples of men and women has been gathered. Overall, 64.4% of the respondents are male and 35.6% of the respondents are female. Throughout the experiment the individuals was very supportive and responsive.

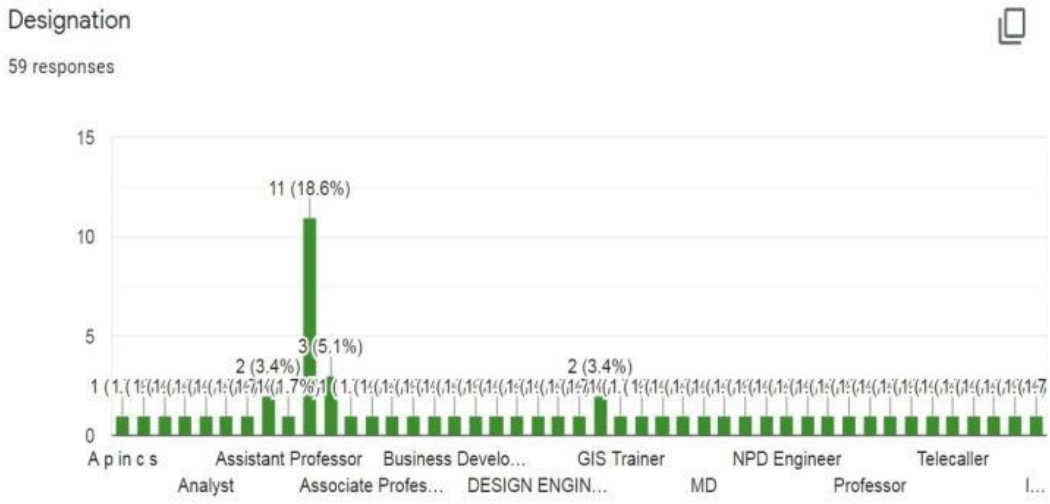

Fig no:5

The bar chart(fig no 5), shows the designation of the respondents (horizontal axis) to the number of respondents (vertical axis). Overall, 11 respondents (18.6%) are Assistant professors, 3 respondents (5.1%) are Associate professionals, 2 respondents (3.4%) are Analysts, 2 respondents (3.4%) are GIS Trainers and other designations have one respondent each.

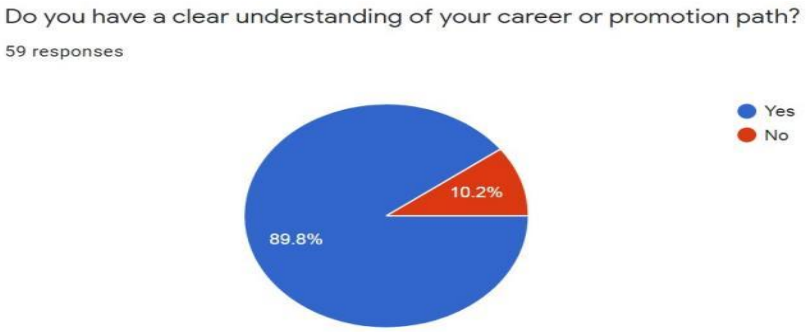

Fig no:6

In fig no 6, the pie chart depicts that 89.8% of the employees in the field of aviation have a clear understanding about their promotion plans and are well aware where their career is directed, whereas 10.2% of people working in aviation field do not have any vision of their career.

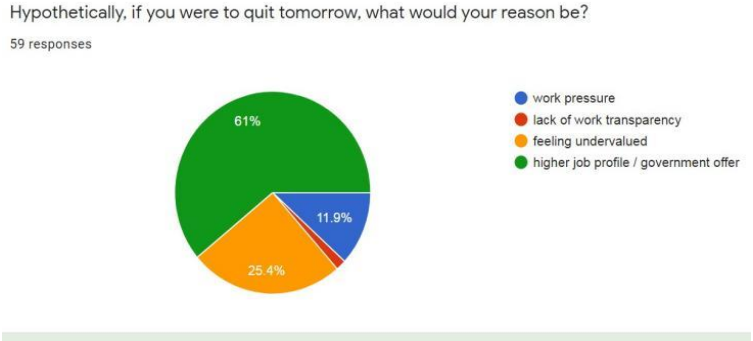

Fig no:7

In fig no 7, the pie chart depicts that, from the survey conducted, 61% of the total number of employees working in aviation quote higher job opportunities and government offers as the reason to quit and 25.4% of the total employees would quit as a result of feeling undervalued, whereas 11.9% of employees would quit due to increased work pressure and 1.7% of employees would quit due to lack of work transparency.

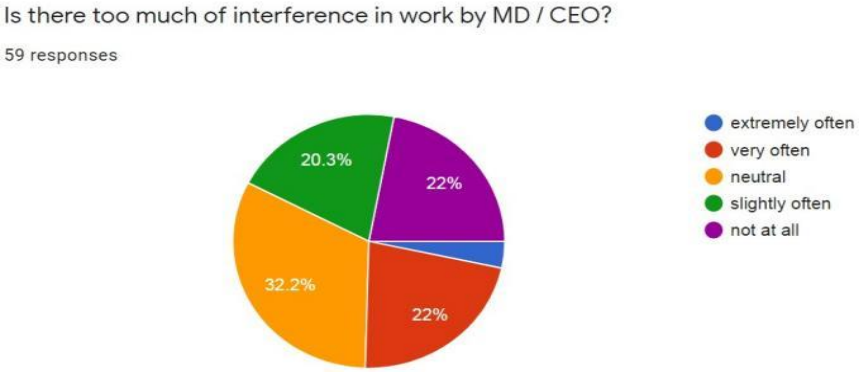

Fig no:8

In fig no 8, the pie chart depicts that 3.5% of the employees in aviation experience extreme work interference by their CEOs, 22% experience often interference, 32.2% experience neutral interference, 20.3% experience very less interference and 22% employees do not experience any interference at all by their CEOs/MDs.

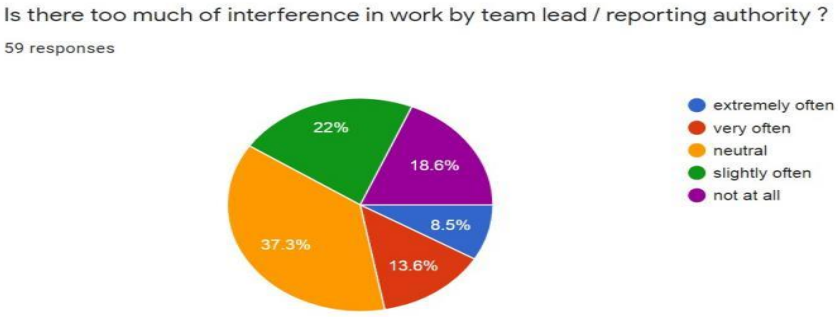

Fig no: 9

In fig no 9, the pie chart depicts that 8.5% of the employees in aviation experience extreme work interference by their team lead or reporting authority, 13.6% experience often interference, 37.3% experience neutral interference, 22% experience very less interference and 18.6% employees do not experience any interference at all by their reporting authority.

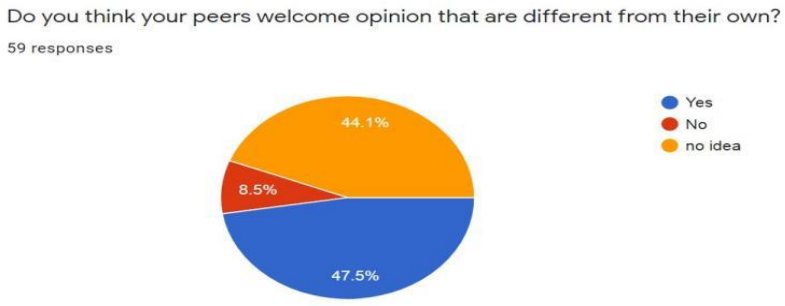

Fig no: 10

In fig no 10, the pie chart depicts that 47.5% of the total employees working in aviation have peers who welcome opinion that are different from their own, whereas 8.5% employees have unwelcoming peers and 44.1%of employees take a neutral stand.

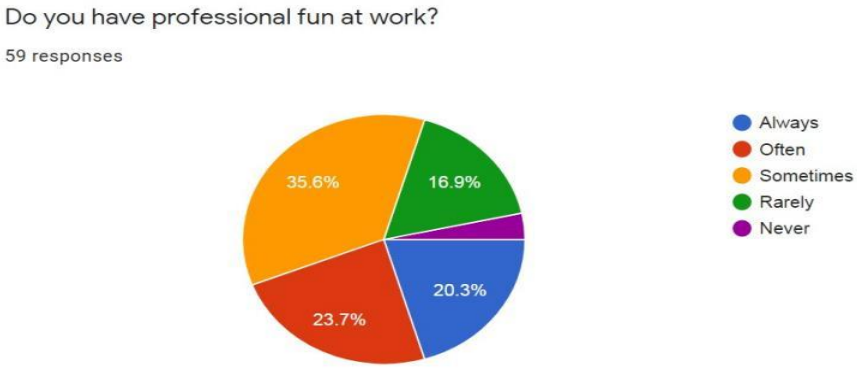

Fig no:11

From fig no 11, we can observe that, maximum responses are for sometimes and minimum are for rarely. It clearly depicts that, professional fun in aviation industries depend upon the work load, assigned by the higher authority along with the peer pressure of the employees. It also depends upon the different companies with their different work environment. Professional fun is a stress relief from the daily pressure of critical works and also may be regarded as the relaxation of the mental health without hampering the work.

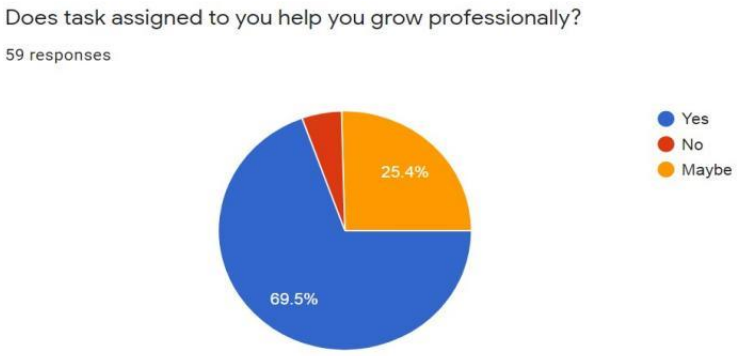

Fig no:12

From Fig no 12, majority has chosen yes but still there is also a decent amount of responses for maybe. This means , most of the employees are satisfied with their job profile in industries and companies and they believe that the work assigned are helping them to grow professionally. In some companies, maybe employees are not that much satisfied with their assignment and hence are in a confused state that whether they are able to grow more professional knowledge or just stick to one phase for long time. This problem has to be solved soon, as in coming year, people are demanding for more professional knowledge and want to implement those things in real life .

Fig no:13

From Fig no 13, we can see that, maximum employee responses are yes and minimum is maybe. For giving value to feedback by MD/CEO, here comes the essence of appreciation. If they appreciate and give value to the feedback of their employee directly, it will help employee to motivate and will create a mindset to work more hard for the particular company. But in some cases, higher officials do minimum interaction with the general employee. Hence, it creates a communication gap between them, which apparently feels to the employee that maybe their feedback or suggestion is not so valuable, which gives a negative vibe in the working environment.

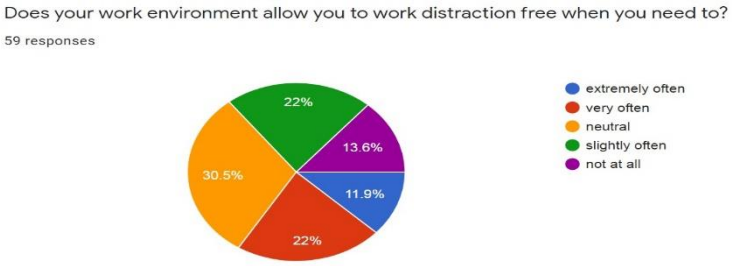

Fig no:14

In fig no 14, mixed responses is given. For working distraction free in the work environment, it is pretty unusual that maximum responses are neutral, that means, there are some irregularities in the work environment and again those problems are sometimes sorted out too. Equal responses are for slightly often and very often, which is quite usual for any working space. The shocking thing is, more responses are for not at all than extremely often. In this case, companies and industries need to take some actions about these complaints of employee.

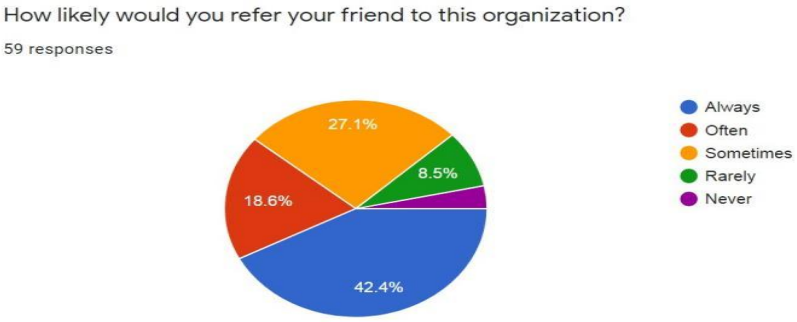

Fig no:15

From fig no 15, we can analyze that, most employee will recommend their working company to their friends which is a good professional gesture, as the maximum responses are for always. Then comes, often and sometimes. These responses also indicate a decent gesture, and a employee will recommend to his friend after a proper discussion and requirements to be fulfilled. The minimum responses are for rarely which is quite disgraceful gesture. Again, it may have some personal reasons for not recommending or it may have some issues with the working space, thus an employer don't want his friends to face the same issues.

Results and Discussions

But in past, there are some examples of accidents or malfunctioning for which human factors are responsible. The systems need in human factors is determined by their impact in two major areas such as system efficiency and the health of operational staff. Hence, a loop is developed in the working process of human factors. From ATM (Air Traffic Management) to ATC (Air Traffic Control), Human Factors play an important role and there is no place of any error in this critical field. Their analysis was focused on the preponderant indexes of each question, taking into account the sequential arrangement in which the questions were displaced in the questionnaire and the classification of human factors and errors. In a previous study few authors have identified the incidence of human factors and errors in the security screening process, concerning the Brazilian civil aviation. In the pie chart (fig no 1), provides information about the percentage of titles of the respondents. The pie chart (fig no 2), illustrates the percentage of Job orientation of the respondents. Accident data from World War 1 also show this pattern.The results suggest that human factors have been the primary flight safety issue since the early days of aviation. Fig no:4 The pie chart (fig no 4) provides information about the gender of the respondents. Fig no:5 The bar chart(fig no 5), shows the designation of the respondents (horizontal axis) to the number of respondents (vertical axis). Fig no:13 From Fig no 13, we can see that, maximum employee responses are yes and minimum is maybe. The current proposal indicates that the target aviation organization should continue HF application to strengthen its competence as a high reliability organization. Emerging aerospace organizations face the challenges of properly interpreting and implementing the emerging human factor requisites

Conclusion:

As this Human Factors is still a new concept in aviation industry, in the paper there are some graphs and pie charts of questions asked to employees of different aviation organisations and with their responses we framed some useful data which will help to further study about the Human Factor and about its proper implementation in corporate industry. Fig no:7 In fig no 7, the pie chart depicts that, from the survey conducted, 61% of the total number of employees working in aviation quote higher job opportunities and government offers as the reason to quit and 25.4% of the total employees would quit as a result of feeling undervalued, whereas 11.9% of employees would quit due to increased work pressure and 1.7% of employees would quit due to lack of work transparency. Fig no:8 In fig no 8, the pie chart depicts that 3.5% of the employees in aviation experience extreme work interference by their CEOs, 22% experience often interference, 32.2% experience neutral interference, 20.3% experience very less interference and 22% employees do not experience any interference at all by their CEOsMDs.

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