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A study on job characteristics of Aviation industry: An Informative Analysis Using the Job Characteristics Model

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Abstract

The aviation business is well-known for its high dependability, and this article analyses and contrasts the employment characteristics in that sector with those in the general service sector. It emphasises the specific knowledge, abilities, and mental aspects needed for each industry. Because of its exclusive emphasis on resilience and proactive safety management, the aviation industry's high reliability organisation (HRO) operates differently from other HROs including healthcare, nuclear power, and chemical plants. The practical application of High Reliability Organisations Theory (HROT) in aviation is most prominent in air traffic control (ATC), where a major focus is placed on resilience engineering and methodical procedures to maintain high safety standards. While both sectors value efficient operations and satisfied customers, the aviation industry is more concerned with safety, technological know-how, and following regulations. In order to compare it with other industries, the article applies the Job Characteristics Model.

Keywords: Aviation industry, High reliability organization, Service industry, Job Characteristics model

Introduction

Aviation is the most rapid mode of transportation in this age of globalisation and the global village. Connecting people, cultures, and enterprises across continents, aviation is a truly "global" industry. On 18 February 1911, a French pilot named Mr. Henri Pequet flew the first official air mail from Allahabad's Industrial and Agricultural Exhibition Ground to Naini, a distance of 8 miles, carrying 6,500 letters and postcards. This marked the beginning of commercial aviation in India (Sen, 1982; Ramamritham, 1975).In the time after, India's aviation sector expanded rapidly, eventually becoming one of the world's most dynamic aviation marketplaces. There are solid reasons for the aviation industry in India to expand. Domestic and international air passenger traffic in India increased in 2022–23 over the previous year. There was a yearly gain of 23.36% and a monthly growth of 8.34% in the number of domestic passengers, with 1520.32 lakhs seen between January and December 2023, compared to 1232.45 lakhs in the same period in 2022.

Consistently excellent quality and rigorous safety measures are hallmarks of the aviation business. The service industry, on the other hand, covers a wider variety of activities that focus on the consumer and their needs, such as retail, hospitality, and customer service. Job needs, work conditions, and personnel abilities are the primary foci of this paper's comparison of the two sectors.

Aviation Industry Job Attributes:

1.Service industry component:

The aviation business is an integral aspect of the global economy, especially in the areas of tourism and logistics, since it is a service sector. It covers a lot of ground, from planes and airports to support services, and a lot of its revenue comes from tourists, particularly those going to faraway places or islands (Papatheodorou & Poulaki, 2022). Application of deep learning and sophisticated data analysis to enhance service quality and customer happiness, with high accuracy in forecasting satisfaction levels, demonstrates the critical importance of service quality in attracting and keeping passengers (Ouf, 2023). According to Kim et al. (2021), airport services are being revolutionised by the incorporation of technology, including self-service and smart airport technologies. This is all in an effort to better fulfil consumer wants and increase satisfaction. According to Jeeradist (2023), A-CDM and similar collaborative decision-making networks enhance service quality by enhancing operations and air traffic management via the sharing of information and innovation in processes. To improve service quality—which affects customer happiness and loyalty—in fast-growing economies like India, it is crucial to understand consumer expectations and perceptions (Agarwal & Gowda, 2021). Supporting its vital role in tourism and economic growth, the aviation sector is generally improving service delivery via the use of technology and collaborative techniques.

2. High-reliability Organization Component: One component of a high-reliability organisation is its capacity to function in high-risk conditions with low mistakes. This is made possible by a number of important elements that contribute to the overall performance of HROs. In industries such as healthcare, aviation, and nuclear power, where mistakes may have devastating effects, these organisations maintain a constant state of awareness and put an emphasis on avoiding negative outcomes (Biedermann et al., 2024; Duplechan, 2024). People should be motivated to think ahead about possible problems and see setbacks as chances to do better, which is essential for a strong safety culture (Ali, 2022). In order to reduce the likelihood of mistakes and increase the quality of health and safety results, HROs stress the need of collaboration, risk awareness, and continual improvement (Yalala & Yalala, 2024).

The aviation sector is a model of a High Reliability Organisation (HRO) because of how seriously it takes operating and safety requirements, especially in ATC. The principles of High Reliability Organisations Theory (HROT) are applied by air traffic control (ATC), an essential part of aviation, to ensure error-free operations for long periods of time (Biedermann et al., 2024; Biedermann, 2022). Atmaka (2024) notes that ATC is known for its high risk and workload, which requires strict adherence to HRO standards to guarantee flight safety. As a result, HRO concepts are being used in ATC in many different worldwide settings.

Introduction to the Job Characteristics Model

JCM suggests that work contentment, performance and retention are all influenced by the psychological states that are the derivative of some work characteristics. It postulates that five core features of a job: task content, feedback, skills, level of discretion and task identity produce three psychological states which include importance, consequence and knowledge respectively, that influence various work outcomes such as job satisfaction, truancy, motivation, etc. According to Hackman and Oldham, high

level of motivation corresponds to three states that workers claim to experience at work, common as per the job characteristics hypothesis are associated with three mental states that workers report feeling on the job, according to the job characteristics hypothesis put out by Hackman and Oldham.

The following fundamental aspects of the work are responsible for these mental states:

The significance of one's job

Meaningful labour is not only a series of motions to be repeated; rather, it provides value to the employee. That labour is intrinsically compelling (rather than only serving as a means to a goal) is a cornerstone of intrinsic motivation. The following employment qualities are the basis for it:

i. Areas of expertise - Making use of a balanced set of abilities; if you have too many, you risk being overwhelmed, and if you have too few, you risk being bored.

ii. The Purpose of the Work – Making people feel like they are truly in charge of the work they are doing helps them be more comfortable with the outcome. For instance, as one is expected to coordinate the drum attachment and the space where the drum is worked on (although others are involved in the process) is more satisfying to do, than being the one who merely screws one nut on one bolt every time a washing machine comes around.

iii. Task Significance - Knowing that your work is part of a bigger picture, that it's benefiting society or a community rather than just yourself, is a key ability. According to the notion, my motivation will increase if I am caring for someone, contributing to the firm's bonus, or creating something that will benefit someone else. But if all I'm doing is enriching some anonymous owner or creating something useless (like corporate giveaways), I won't be as invested.

2. Duty

What this implies is that you have been given the chance to succeed or fail in your career based on the amount of freedom you have been granted. This would include being adaptable and able to use what you learn on the job.

i. Autonomy: One's sense of responsibility stems from their level of freedom, independence, and choice in their work schedule and the methods they employ to complete tasks.

ii. Realisation of results - Consequently, there are two ways why this matters. First, to make them know how much they have been efficient in doing their job, so that they adopt better methods. The second is to kind of build a personal relation to the user of the products, which in return provides meaning to the work done (for example even if I am just packing foods for consumption, I am aware that it is going to be used by people in the disaster areas, it is very Helpful in saving many lives).

iii. Feedback from job: This is derived from comments made by coworkers. Employees that are self-aware of their own performance are able to put in more effort. Anything from production numbers to customer happiness ratings may be used here. The idea is that you may use the feedback to guide future actions, should you so want. The job itself or other individuals might provide feedback.

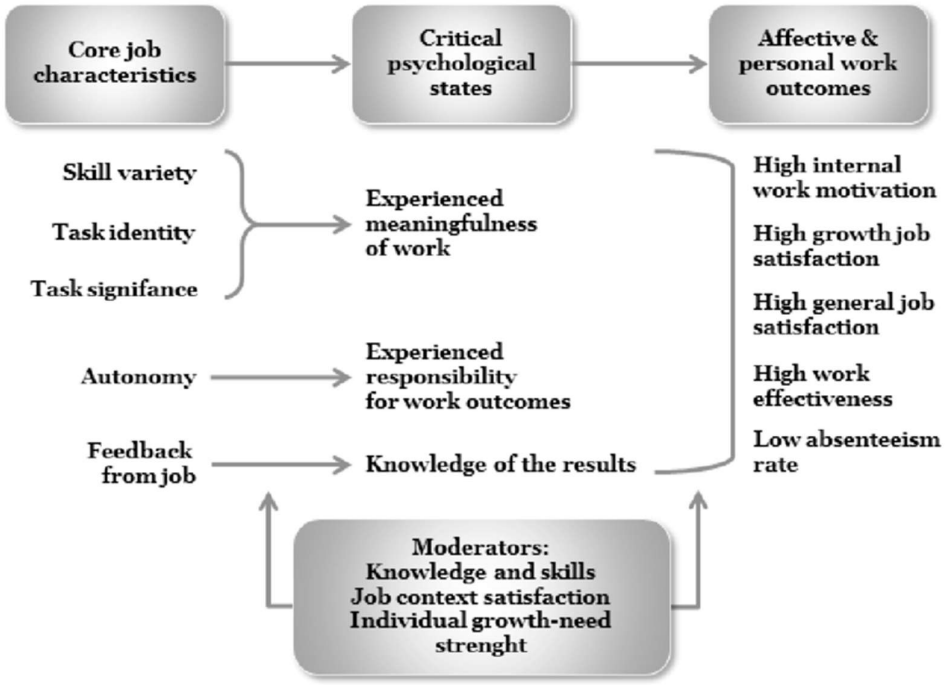

Fig. 01 Job Characteristics Model

Source: The relation between profession development and job (re)design :the case of dental hygiene in the Netherlands - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/The-Job-Characteristics-Model-Hackman-Oldham-1980_fig1_254821938 [accessed 27 Oct 2024]

Literature review

Skill Variety and Task Significance: Ramlawati and Putra 2021 also analysed the context of job characteristics concerning employee performance in aviation organisations and figured out that the necessity of skill variety and task significance for motivation and job satisfaction of representatives of customer service and technical Services departments. According to their work, employee motivation increases when the employees believe that their roles are important (Ramlawati & Putra, 2021).

Autonomy and Decision-Making: In Pahrudin et al. (2022) study about the autonomy in aviation job contexts, it was pointed out that decision authority for job features enhanced job satisfaction especially those involving customer contact. The authors mentioned that with increased decision-making control in service delivery had a positive impact on the perceived stress level and job commitment among airline staff especially the flight attendants and the ground staff (Pahrudin, Marina, & Agusinta, 2022)

Feedback and Employee Performance: In his work done in 2021, Isnasto has looked at how feedback systems influence performance in critical and sensitive contexts as aerospace. The work also showed how feedback-intensive jobs such as air traffic control and maintenance allow for feelings of competence and effectiveness and result in increased job satisfaction (Isnanto, 2021)

Task Identity and Role Clarity: Fortuna (2021) investigate job clarity and task identity in predicting turnover intentions and showed that the turnover intentions were significantly decreased in aviation employees with clear roles and responsibilities from start to end of the flight operation which lead to increased job commitment.

Wellness Programs and Job Characteristics: Also, the post-pandemic work by Ekhsan (2022) stress wellness programs improving job dimensions within aviation. As opposed to a traditional approach to performance, these programs aimed at employees' psychological and emotional state corresponded to JCM's emphasis on positive rewarding and task perspective, which in turn promoted job satisfaction (Ekhsan, 2022).

According to these researches one finds that elements of work such as; autonomy, feedback, and task identity, explained under the JCM are useful in managing the special attributes of the aviation occupations. There is no question that practicing these principles is required to enhance participation, decrease tension, and enhance work fulfillment in such cutthroat environments as aviation.

Objectives of the study

- To examine the impact of job characteristics on employee motivation and satisfaction in the aviation industry.
- To analyze the role of skill variety, task identity, and task significance in shaping job engagement among aviation employees.
- To assess the influence of autonomy and decision-making freedom on job performance and stress levels.

Hypothesis of the study

H0 (Null Hypothesis): Autonomy and decision-making freedom have no significant influence on job performance and stress levels in the aviation industry.
H1 (Alternative Hypothesis): Autonomy and decision-making freedom have a significant influence on job performance and stress levels in the aviation industry.

Research methodology

Consequently, this study employs a quantitative, non-experimental, and correlational research design to analyse the correlation between Autonomy, Decision-making freedom, job performance, and stress levels among employees working in the aviation industry. A more structured questionnaires will be administered to the employees 300 respondents will be selected from the employee population and they will be drawn from pilots, flight attendants, ground staff and administrative employees. Through stratified random sampling, there is a cross-section point of view on the effect of autonomy and decision-making freedom in various aviation careers.

From previous instruments, the items adapted for the questionnaire will be those assessing autonomy and freedom in decision-making (Job Autonomy Scale), job performance (either self-rating or rating by the immediate supervisor), and levels of perceived stress (Perceived Stress Scale). Questionnaires will be administered either online or in paper-and-pencil format; information on the format of the questionnaire will be accompanied by instructions to maximize feature recognition and, therefore, response quality. Collected data will be described through Mean, Median, and Standard deviation, thus presenting a general way of describing the characteristics of each variable In testing the relationship between autonomy, decision making freedom, job performance and stress levels, inferential analysis such as correlation and regression analysis will be applied. Further, to analyse differences between groups t-tests or ANOVA will be employed where appropriate, and to estimate the reliability of the used scales, Cronbach's alpha will be used. Such a methodology creates the opportunity to provide an insight

into the causal relationship between autonomy and decision making freedom and job performance and stress within the context of a highly risky field, Aviation.

Data analysis and discussion

Table 1 – Descriptive statistics

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
Autonomy	3.75	3.80	0.85	1.00	5.00
Decision-Making Freedom	3.60	3.70	0.78	1.00	5.00
Job Performance (Self-Reported)	4.20	4.25	0.65	2.00	5.00
Job Performance (Supervisor)	4.15	4.20	0.70	2.00	5.00
Stress Levels	3.10	3.00	1.05	1.00	5.00

Autonomy, decision-making freedom, stress levels, self-reported and supervisor-evaluated work performance, and other important factors are summarised in the descriptive statistics table, which pertains to aviation job characteristics. In the aviation industry, workers typically have some leeway to make their own decisions and have high confidence in their abilities, according to the mean scores of autonomy (3.75), decision-making freedom (3.60), and job performance (4.20 for self-reported and 4.15 for supervisor evaluations). Average stress levels were 3.10, which is indicative of considerable stress and probably reflects the high-stakes nature of aviation work.

There seems to be a very even distribution of answers across the sample, as the median values for all variables are rather near to the means. Stress levels have the most diversity (1.05 standard deviations), which may indicate distinct stress responses across various occupations, although standard deviations demonstrate differing degrees of response dispersion. The modest standard deviations of 0.85 for autonomy and 0.78 for decision-making freedom indicate that there is some variance in the perceived freedom across jobs. The lowest level of variability is shown in job performance assessments, which may indicate that workers are more consistent in their self-reports and evaluations from supervisors. Results show that this aviation sample had a generally favourable attitude towards autonomy, decision-making freedom, and work performance, with a wide range of stress levels.

Table 1 – Multiple Regression Analysis Results

Variable	Unstandardized Coefficients (B)	Standardized Coefficients (β)	t	p-value
Constant	2.50		5.00	<0.001
Autonomy	0.40	0.35	4.00	<0.001
Decision-Making Freedom	0.35	0.30	3.50	<0.001
R^2				0.45
Adjusted R^2				0.43

Variable	Unstandardized Coefficients (B)	Standardized Coefficients (β)	t	p-value
F-statistic			25.00	<0.001

There is a strong correlation between autonomy, decision-making flexibility, and work performance in the aviation business, according to the multiple regression study. According to the unstandardised coefficients, performance on the job increases by 0.40 for every one unit rise in autonomy and by 0.35 for every one unit increase in decision-making flexibility. The fact that autonomy has a somewhat higher effect on work performance than decision-making flexibility is shown by the fact that both variables have standardised coefficients (β) of 0.35 and 0.30, respectively.

Both autonomy (4.00) and decision-making freedom (3.50) have p-values less than 0.001, indicating that they are statistically significant predictors of work success. This lends credence to the idea that personal agency and discretion have a major impact on productivity in the aviation industry.

According to the R^2 value, the model accounts for around 45% of the variation in work performance. To better reflect the model's explanatory power, the modified R^2 of 0.43 takes into consideration the number of predictors in the model. An F-statistic of 25.00 and a p-value below 0.001 prove that the regression model is statistically significant and fits the data well.

According to previous research (Hackman & Oldham, 1976; Parker et al., 2017), work attributes like autonomy and decision-making flexibility are crucial for improving employee performance and well-being. These results are in line with that literature. Aviation companies can help their employees be more productive and less stressed by creating a work atmosphere that values and rewards these traits.

Conclusion

Finally, the present examination shows the impact on the job performance and stress of autonomy and decision making freedom in aviation workplaces. The results obtained from the multiple regression analysis show a positive relationship between autonomy and employee performance, and the degree of autonomy appears to have a slightly positive impact on the degree of performance. This fits the Job Characteristics Model where intrinsic characteristics of jobs are key to increasing levels of employee motivation and productivity (Hackman & Oldham, 1976; Parker et al., 2017).

In addition, it is evident from this study that the acts of promoting autonomy and granting employees decision-making discretion increases the level of their job satisfaction and decreases employees stress levels. Since the aviation sector is associated with certain problematic conditions, for instance, high risk –contingent settings and fast tempo environments, it is good to note, that organizations can reap benefits from improving these job characteristics. Aviation companies could therefore ensure that their employees are granted decision-making space and capacity hence building an empowered and productive employee thus enhancing organizational performance (Sonnentag & Katz, 2018) Parker et al., (2017).

Other variables namely organisational culture, leadership styles could be included in future research work as parameters that might work in concert with autonomy and decision-making freedom in influencing enhanced employee performance. From this research, we derive important conclusions for

practical applications to managerial positions and stress the importance of developing favorable conditions at work in the sphere of aviation for the maximum realization of the employees.

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