

Human Factors Affecting Avionics Workshop in MRO 145

Abdul Ghani Abdul Samad, Rayed Haider, Khairul Amiza Md Hairudin

Abstract: The study set out to find the human factors influencing aviation safety in Maintenance, Repair and Overhaul 145. The research objectives were to establish the extent to which personal professional qualifications, aviation infrastructure and technical guidance material influence human factors in Maintenance, Repair and Overhaul 145. The target population of the study was 30 employees of Maintenance, Repair and Overhaul 145. A census approach was used as the researcher was interested in collecting data from every member of the target population. The questionnaire was constructed using structured and unstructured questions. Both descriptive and inferential statistics were used as a tool of evaluation in the data analysis. A set of 27 questions consisted of 3 subsets (Personnel Qualified and Aviation Safety, Infrastructure on Aviation Safety and Technical Guidance Material (TGM) on Aviation Safety) of variables have been used to meet the research objectives respectively. The study concludes that personnel professional qualifications are a major contributor to aviation safety because the aviation industry is technical based with rapidly changing technologies, applications and emerging issues. Recruitment and retention policies need to be prioritized in order to attract the appropriate personnel based on the organization needs. The overall infrastructure Maintenance, Repair and Overhaul 145 is wanting and hence has a great effect on aviation safety. The study concludes that the relevance of the existing TGMs is in line with the current practices in the aviation industry. However, recommended revisions should be implemented as soon as possible.

Keywords: TGMs, Aviation Safety, Technical Guidance Material (TGM).

I. BACKGROUND

Human Factors Principles¹⁻³: Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance. Human performance⁴⁻⁶: Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations. Human factors are essentially a multi-disciplinary field, including but not limited to⁷⁻²⁵: psychology, engineering, physiology, sociology and anthropometry. Aviation human factors are primarily oriented towards solving practical problems in the real world. As a concept, its relationship to the human sciences might well be likened to that of engineering to the physical sciences.

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Abdul Ghani Abdul Samad, Senior Specialist, Universiti Kuala Lumpur – Malaysian Institute of Aviation Technology, Dengkil, Selangor, Malaysia

Rayed Haider, Undergraduate Student, Universiti Kuala Lumpur – Malaysian Institute of Aviation Technology, Dengkil, Selangor, Malaysia

Khairul Amiza Md Hairudin, Lecturer, Universiti Kuala Lumpur – Malaysian Institute of Aviation Technology, Dengkil, Selangor, Malaysia

And, just as technology links the physical sciences to various engineering applications, there are a growing number of integrated Human Factors techniques or methods; these varied and developing techniques can be applied to problems as diverse as accident investigation and the optimization of pilot training. The study findings could provide important information that can be integrated by aviation stakeholders to improve MRO 145 safety record. The Infrastructure may use the findings to review aviation regulations and policies with a view to inculcating an aviation safety culture. Donors and international aviation bodies may use the outcomes of the study to identify and establish programmed that are tailored towards specific challenges facing aviation safety in MRO 145. Researchers, academicians and aviation stakeholders could use the findings and recommendations of this study as a reference. The objectives of the study were to establish; (1) the extent to which personnel professional qualifications influence aviation safety in MRO 145, and (2) the perception of the workforce toward safety elements.

II. METHODS

Primary raw data were processed using SPSS 21 and tabulated for some results. A data set from 30 selected respondents has been processed for reliability, frequency and descriptive analysis which has been contemplated into histogram and mean data respectively. The study targeted 30 respondents in the data collection however, 30 questionnaires sent out were answered and returned making a response rate of 100%. This response rate is considered as excellent and was achieved through the cooperation of the respondents and the diligent efforts made by the researcher to ensure a reliable response.

III. RESULTS

All data from SPSS computed were tabulated for mean average to indicate the perception of the respondents toward variable from questionnaires. Table 1 below depicted the visual of the variables about perception parameters by the 30 MRO staffs.

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Table. 1 Means for all items

#	Variables	Mean
1	The number of qualified safety inspectorate staffs adequate in your department.	4.8667
2	The number of qualified technical safety staff in the safety management system	4.7667
3	Effectiveness of methods used to determine adequate staff requirements.	4.8000
4	The organization's personnel who are deployed to provide flight safety oversight are sufficiently qualified.	4.8333
5	Training offered is innovative and responsive to the needs of the aviation industry.	4.8333
6	The percentage of training execution in the Organization	4.8000
7	Your assessment of the organization's commitment to staff development	4.8000
8	The working environment is conducive to personnel.	4.8000
9	The extent to which inspectorate staff is empowered to carry out its job including resolution of safety concerns.	4.9000
10	The aerodrome ground infrastructure adequate for the current aviation activities in the country.	4.8333
11	Planning and implementation of the civil aviation infrastructure is methodically integrated into the civil aviation system.	4.8000
12	The technology supporting civil aviation air traffic system is adequate and up to date	4.6333
13	The layout of pavements for movement of aircraft at aerodromes support safe increase of airport throughput.	4.8667
14	There is an effective regulatory system to ensure control of developments around civil aerodromes to guard against encroachment that might be detrimental to safe use of the aerodrome.	4.6667
15	The ICAO runway safety programme been implemented in the entire aerodrome where it applies.	4.8000
16	Aerodromes' infrastructure maintenance practices or programmes are adequate to ensure sustained availability and compliance with international standards.	4.9000
17	The National government and/or the County Government have an impact on airport operations especially in urban planning.	4.8667
18	National plans integrate well with the Airport master plans.	4.9333
19	TGMs are vital tools in enhancing safety.	4.9667
20	Employees are provided with adequate guidance material to effectively carry out their functions.	4.9667
21	The existing TGMs are well laid out and easy to follow.	4.6667
22	The TGMs in your domain are up-to- date.	4.6667
23	Recommended revisions on TGMs are promptly implemented.	4.6667
24	The management is committed to the implementation of provisions laid out in the TGMs.	4.8333
25	The existing TGMs are in tandem with the current practices and technology.	4.8333
26	The applicability of the existing TGMs are congruent with the intended operations.	4.8333
27	The number of qualified safety inspectorate staffs adequate in your department.	4.8333
TOTAL MEAN AVERAGE		4.812823

IV. CONCLUSIONS



The study established that personnel professional qualifications have a major effect on aviation safety at the MRO 145. The study revealed that the percentage of the number of qualified technical safety staff in the safety management system was low compare to the other field that is mean 4.7. On a positive note, the study revealed that the extent to which inspectorate staff is empowered to carry out its job including resolution of safety concerns and the organization had enough plans to implement new technologies based on emerging trends by identifying and managing threats to aviation operations. As far as airport infrastructure was concerned. The study also revealed that the technology supporting civil aviation air traffic system is not adequate and up to date had not been entirely implemented properly with the lowest mean of 4.6. The study also established Aerodromes" infrastructure maintenance practices or programmed are adequate to ensure sustained availability and compliance with international standards with highest mean of 4.9. The study concludes that personnel professional qualifications are a major contributor to aviation safety because the aviation industry is technical based with rapidly changing technologies, applications and emerging issues. Recruitment and retention policies need to be prioritized in order to attract the appropriate personnel based on the organization needs. The overall infrastructure in MRO 145 is wanting and hence has a great effect on aviation safety. The study concludes that the relevance of the existing TGMs is in line with the current practices in the aviation industry, however, recommended revisions should be implemented as soon as possible.

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