

**“HUMAN FACTORS” IN AIR TRAFFIC CONTROL**  
**A STUDY OF ITS APPLICATION**  
**WITHIN THE DEPARTMENT OF CIVIL AVIATION MALAYSIA**

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**UNIVERSITI UTARA MALAYSIA 2003**

**“HUMAN FACTORS” IN AIR TRAFFIC CONTROL**  
**A STUDY OF ITS APPLICATION**  
**WITHIN THE DEPARTMENT OF CIVIL AVIATION MALAYSIA**

**A thesis submitted to the Graduate School in partial fulfillment**  
**of the requirements for the degree Master of Science (Management),**  
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**by**

**Chew Lam Leong**

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## ABSTRAK

Kajian ini adalah mengenai *Human Factors*. Walaupun tahap teknologi semakin meningkat, insiden dan kemalangan penerbangan masih berlaku. Kajian menunjukkan bahawa lebih daripada 70 peratus kemalangan penerbangan adalah akibat kesilapan manusia. Pemahaman terhadap kekuatan dan kelemahan prestasi seseorang dan cara mereka berinteraksi dengan manusia lain, mesin/alat, program perisian serta alam sekitar akan mempertingkatkan tahap keselamatan penerbangan. Kajian ini cuba memberikan satu gambaran terhadap tahap kesedaran Pegawai-Pegawai Kawalan Trafik Udara di Jabatan Penerbangan Awam Malaysia terhadap subjek ini. Kajian ini juga meninjau macam mana Jabatan Penerbangan Malaysia memakai konsep-konsep *Human Factors* semasa pemilihan dan latihan Pegawai Kawalan Trafik Udara, semasa sistem automasi diperkenalkan dan semasa penyiasatan insiden dikendalikan. Kajian ini adalah berasaskan maklumbalas soal selidik serta temuramah. Teknik-teknik statistik seperti ANOVA dan korelasi Pearson membenarkan hipotesis-hipotesis diuji. Hasil kajian ini menunjukkan bahawa tahap kesedaran antara Pegawai-Pegawai Kawalan Trafik Udara adalah rendah dan aplikasi konsep *Human Factors* dalam bidang-bidang yang telah disebutkan tadi boleh dipertingkatkan lagi oleh Jabatan.

## **ABSTRACT**

This study is about Human Factors. Despite advancements in technology, aviation incidents and accidents still occur. Investigations reveal that over 70 percent of aviation accidents are due to human error. An understanding of human performance limitations and strengths and how they interact with equipment, other people, software programs, the environment can go a long way in enhancing aviation safety. This study tries to provide a snap-shot picture of the general awareness of Human Factors among Air Traffic Control Officers in the Department of Civil Aviation Malaysia. It also looks at how the Department employs Human Factors concepts in the areas of selection and training of Air Traffic Control Officers, when highly automated systems are introduced and when incident investigations are conducted. The research is based primarily on survey responses. The survey instruments are questionnaires and structured interviews. Subsequent analyses using statistical analysis techniques like ANOVA and Pearson's correlation allowed hypotheses to be tested. The study found that the general level of awareness among Air Traffic Control Officers to be generally low and that the application of Human Factors concepts in the areas mentioned can be further improved by the Department.

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 AVIATION SAFETY**

##### **1.1.1 The Statistics**

Aviation accidents are always news grabbers. They become headline news if it is a high profile accident, e.g. the break-up of the space shuttle Columbia or a mid-air collision with a high fatality rate. According to the website [www.airlinesafety.com](http://www.airlinesafety.com), there were 1.7 murder stories for every 1,000 homicides, 2.3 AIDS stories for every 1,000 AIDS deaths and 0.02 cancer stories for every 1,000 cancer deaths. But for every 1,000 airplane deaths, there are 138.2 plane crash stories, 81 times the number of murder stories!

This fascination by the media when it comes to air accidents is probably because air accidents are very rare. The same website also cited that travelling by American commercial airline flights is 22 times safer than car travel and that the actual risk of one person being involved in a fatal accident to be once every 19,000 years. More recent data showed that there were 141.1 million departures by commercial aircraft operating scheduled services between 1993

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