

論文 / 著書情報
Article / Book Information

題目(和文)	航空事故が航空会社と利用者に及ぼす社会的影響に関する研究
Title(English)	A Study on Social Effects of Aviation Accidents on Airlines and Users
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種別(和文)	論文要旨
Type(English)	Summary

(博士課程)
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論文要旨

THESIS SUMMARY

専攻： 人間環境システム 専攻
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Student's Name

申請学位 (専攻分野)： 博士 (工学)
Academic Degree Requested Doctor of
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要旨 (英文 800 語程度)
Thesis Summary (approx.800 English Words)

This research studies on the social influences, public perception to aviation accidents, and process of the airline's decision making for safety measures. Repeated aviation accidents happened in Taiwan in half of a year to the same airline, TransAsia Airways, aroused huge public safety concerns, resulting in safety problems. Therefore, the study selects Taiwan as a case study, aims to develop a comprehensive structure of accident influences covering multiple stakeholders, and provides a prospective to enhance the long-term level of aviation safety from perspectives of users and the airline and to minimize impacts of accidents. Through the data collection of stock price fluctuation, online survey toward Taiwanese citizens, a site visit to air crash site, and an interview with TransAsia Airways, fruitful outcomes covering diverse aspects are drafted. This dissertation is composed of six chapters.

Chapter 1 tackled the research background, showing recent accidents in Taiwan and Malaysia. This motivates us to explore the influences of accidents and aims to prevent risk. Objectives and the structure clarify the research process and give an overview across the entire dissertation.

Chapter 2 explained the difference between safety and safety perception. Literatures about risk analysis were described to further discuss public safety perception. Accident causes, databases and diverse safety ranking criteria were summarized. Factors that dominate people's worry and behavioral intention were also reviewed and explored.

Chapter 3 analyzed social and economic effects, and collected information via site investigation. A structure of accident crisis covering the user, society, airline, and government sides identified the potential consequences it may bring. Several measures have been proposed to minimize social panic and the loss associated with accidents. When an accident happens, the media usually exaggerates the consequences and people may worry about airline safety management, resulting in loss of passengers and social panic. Firstly, a stakeholder analysis and economic fluctuation using event study method were described to express social influences, stock price fluctuation, and the correlation with the media index. Via our field visit to Penghu, Taiwan, interviewed results were summarized to reveal local impacts of an aviation accident.

Chapter 4 conducted a survey to collect data for exploring influences on public perception, formation of safety concerns, analysis of worry duration, and users' behavioral

intention change. Accidents of TransAsia Airways were selected for the case study. After the accident of GE222 on July 23, 2014, subjective data were collected through an online survey with Taiwanese citizens to investigate their perception about the airline considering. While sending out the questionnaire, another accident occurred with the same airline on February 4, 2015 (GE235). This unique data allowed us to analyze influences on the aviation market and public attitude change toward airlines for two different groups of respondents: those who answered six months after the first accident, and those who answered immediately after the second accident. We used regression analysis to find the factors that associated with formation of safety perception. The Cox proportional hazards model was used to quantify the strength of worry with time scale as the worry duration, and to estimate the variables that dominate their concerns. Lastly, a structural equation model was built to clarify the attributes of user' behavioral choice intention.

Chapter 5 focused on the interaction between the airline and users to discuss airline motivation for safety measures via game theory. The airline may not conduct safety measures after accidents and tend to do promotion to attract more passengers because of people's abating of worries and continual usage, causing safety and long-term aviation development problems. This makes a tradeoff of safety and profit between the airline and customers, and can be expressed with a non-cooperative game. The game of safety improvements consists of two players with two strategies respectively, the airline (do safety measures, do promotion) and customers (use the airline, not use the airline). We also quantified each player's payoff to make a simulation for diverse scenarios to display different outcomes, conducted sensitivity analysis to observe variable differences, and found the win-win condition. The purpose is to enhance the overall safety level, and our theory is also supported through an interview with TransAsia Airways about practical safety affairs.

Conclusions of each chapter and recommendations for future research were summed up in Chapter 6.

This is an overall research considering diverse stakeholders, the society, users, and the airline. This study provides a strong reference to understand public reaction and to deal with crisis management. Currently, to the best of our knowledge, there is no similar research to study multiple stakeholders' performances after repeated accidents, making our results meaningful and innovative. Airlines may also make more efforts to implement safety management measures in order to prevent accidents from happening. Users have to pay more attention to aviation safety, because their consciousness may alter safety level as well. Therefore, a safety information sharing mechanism or risk communication is necessary among stakeholders to avoid information asymmetry, and to enhance safety.

備考：論文要旨は、和文 2000 字と英文 300 語を 1 部ずつ提出するか、もしくは英文 800 語を 1 部提出してください。

Note : Thesis Summary should be submitted in either a copy of 2000 Japanese Characters and 300 Words (English) or 1copy of 800 Words (English).

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