

SUMMARY OF MASTER'S DISSERTATION

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Title Systems Engineering Approach for Sustainable Business Model of Regional Air Transportation			
Abstract <p>Since 1950's, a lot of airports were constructed in Japan according to the airport development plan using special budgets under Airport Development Law. Today, among 98 airports existing in Japan, most of regional airports and regional airlines are suffering from chronic profit loss mainly due to the unbalanced operating cost to the revenues. Regional air transportation plays indispensable role for developing local life and economy, and thus government provides various subsidies for maintaining the flight operation.</p> <p>In Japan, legacy airlines such as Japan Airline (JAL) and All Nippon Airways (ANA) have been dominating the air transportation market. After the air deregulation in Japan in 1986, they have tended to retreat from unprofitable regional flights with ease and focus on mainline flights seeking for more traffic and profitability. On the contrary, regional airlines have been required to maintain or even to take over the retreated flights at the cost of their profit. This study aims to propose a new business model for unprofitable regional air transportation in Japan without relying too much on governmental subsidy. I expect that an integrated operation of multiple regional airlines is likely to reduce both the operating cost and the risk of demand fluctuation.</p> <p>Originality of the research lies in the quantification of the risk associated with demand fluctuation of regional air transportation. I applied portfolio theory in finance so as to evaluate an optimal combination of regional flights using regional flight records in Japan in 2009 (Ministry of Land, Infrastructure, Transport and Tourism). The result showed that well-diversified portfolio of regional airlines and airports can reduce the total variation of demand fluctuation and succeeded in mitigating the business risk as well.</p>			
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