AIRCRAFT SPARES CONSUMPTION PREDICTION MODEL FOR THE SMALL AIR OPERATORS

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Degree of Master of Business Administration in Supply Chain Management

Department of Transport & Logistics Management

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Thesis/Dissertation submitted in partial fulfillment of the requirements for the degree Master of Business Administration in Supply Chain Management

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DECLARATION

I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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The above candidate has carried out research for the Masters Dissertation under my supervision.

Name of the Supervisor: Dr. Varuna Adikariwattage

Signature: ..... Date: .....

ABSTRACT

When an aircraft spare or component found defective on ground or during the flight that might compromise the aircraft's safety, it is important to remove it and replaced with serviceable component always. However, in order to avoid delays in the operations, it is critical that the availability of the replacement at the aircraft parts store for a quick turnaround.

Aircraft spares consumption prediction is so important. While excess inventories expensive due to additional inventory holding cost, inventory obsolesce, tying up capital. As well as stockouts creates huge capital losses to the air operators through costly flight delays or cancellations, loss of brand reputation, over utilization of other aircraft in the fleet, etc. So that availability of the right quantity at the right time of the aircraft spares is so vital, for that aircraft consumption prediction plays the key role.

Regression analysis and the consumption prediction is classical and practical forecasting method. Four years of Cessna 208 series aircraft Main Wheel consumption details used for the analysis. Initially data analysed with linier regression analysis and found relationship with the Aircraft Flying Time and Main Wheel consumption is significant, but it is non linier relationship. Then same data was analysed with Poisson regression analysis and the final model was developed. It can be used for the consumption prediction model as well as a decision-making tool for the inventory level estimations.

Key words: aircraft spares, consumption prediction, linier regression, Poisson regression

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AMP	Aircraft Maintenance Programme
AOC	Air Operator Certificate
AOG	Aircraft on Ground
ATA	Air Transport Association of America
BIA	Bandaranaike International Airport
CAASL	Civil Aviation Authority of Sri Lanka
CASA	Civil Aviation Safety Authority of Australia
DHL	Deutsche Post/Dalsey Hillblom Lynn (International Shipping Courier Service)
EASA	European Aviation Safety Agency
FAA	Federal Aviation Administration
Fedex	Federal Aviation Express (International Shipping Courier Service)
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IPC	Illustrated Parts Catalogue
LEAP	Leading Edge Aviation Propulsion
MMEL	Master Minimum Equipment List
MRO	Maintenance Repair Organization
MRP	Material Requirement Planning
NASA	National Aeronautics and Space Administration
OEM	Original Equipment Manufacturer
SCM	Supply Chain Management
SLTDA	Sri Lanka Tourism Development Authority
UPS	United Parcel Services Inc
USA	United State of America