CALCULATION OF IBNR (INCURRED BUT NOT REPORTED) INSURANCE CLAIM RESERVES USING THE CHAIN LADDER AND BORNHUETTER FERGUSON METHOD WITH INFLATION ADJUSTMENT IN AXIS INSURANCE

UNDERGRADUATE THESIS

Submitted as one of the requirements to

obtain

Sarjana Aktuaria

By:

MARSYA 'ILMA RIANY

02120190002020

FACULTY OF BUSINESS

ACTUARIAL SCIENCE STUDY PROGRAM

CIKARANG

SEPTEMBER 2023

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Fauziah Nur Fahirah Sudding, S.Pd., M.Si

Examiner 1

Dr. Dadang Amir Hamzah, S.Si., M.Si

Examiner 2

Promoted by,

Maria Yus Trinity Irsan, S.Si., M.Si

Head, Actuarial Science Study Program

Recommended by,

Agus Sofian Eka Hidayat, S.Pd., M.Ed., M.Sc., ASAI.

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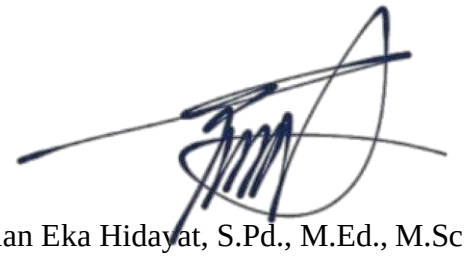

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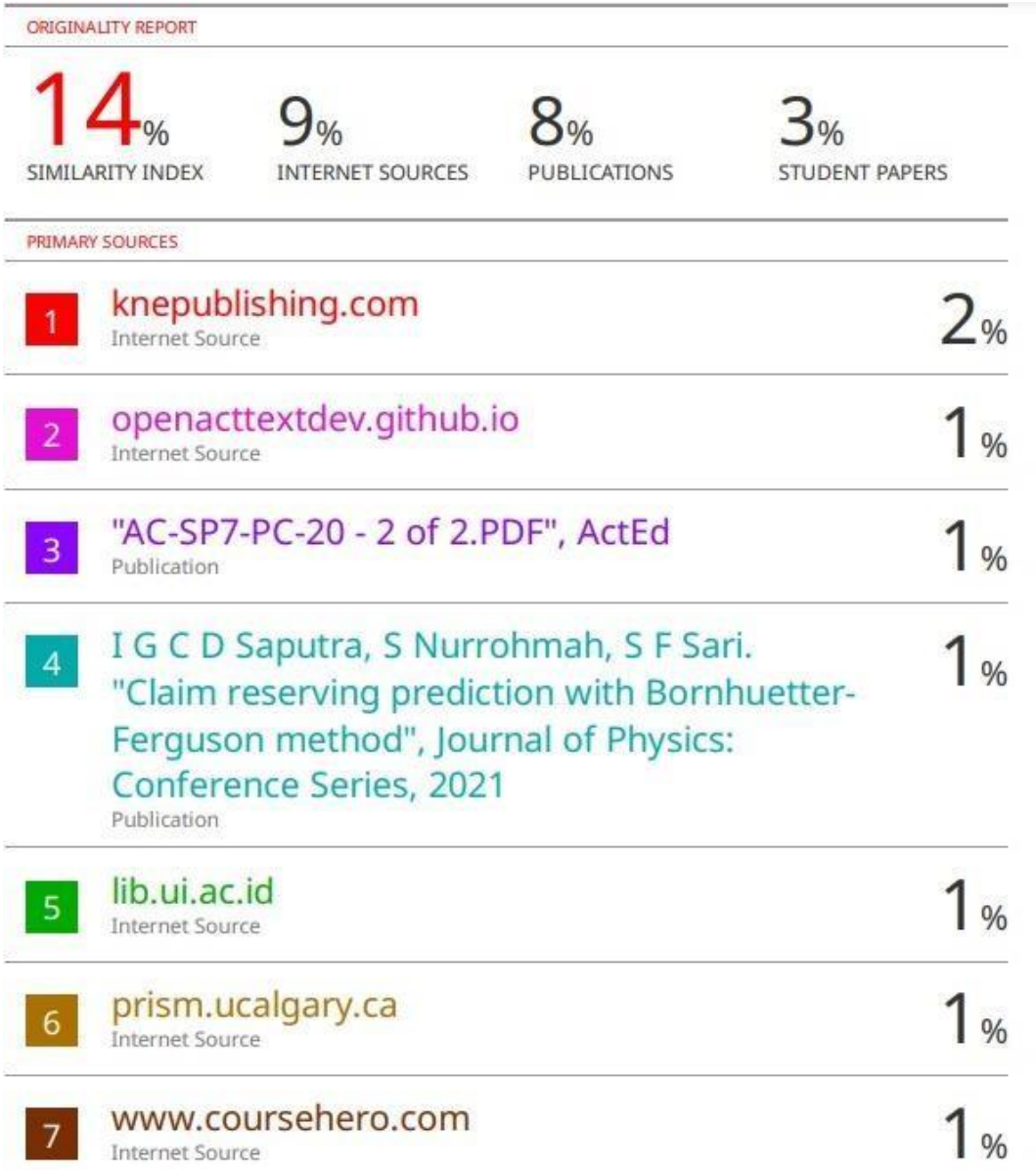

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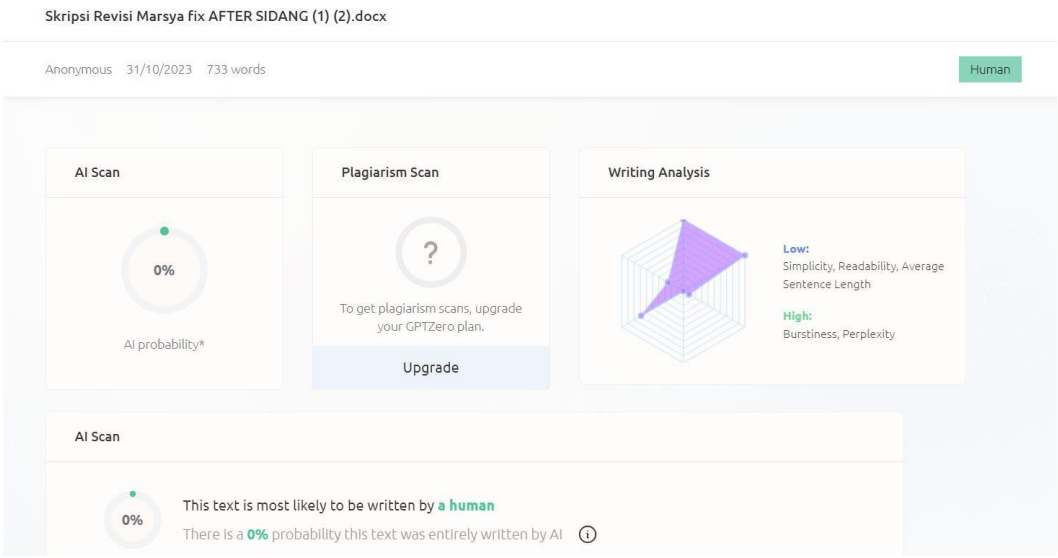

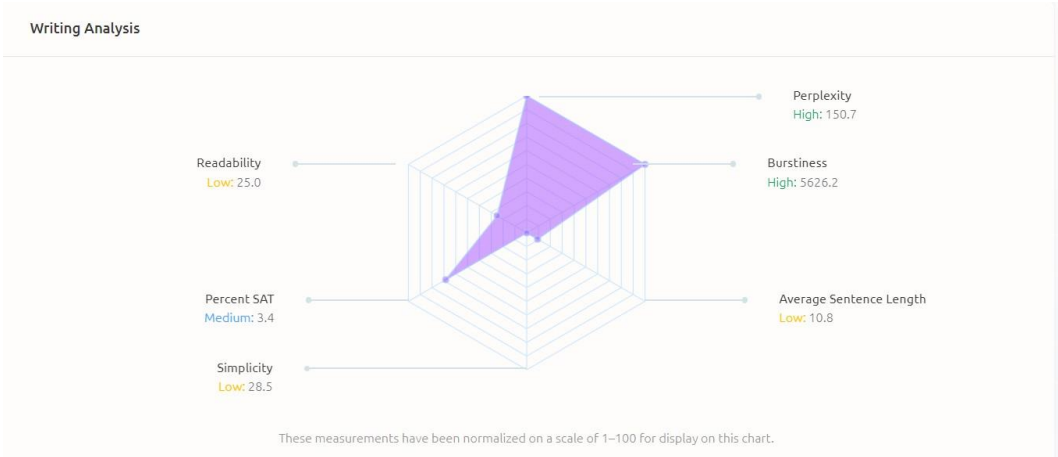

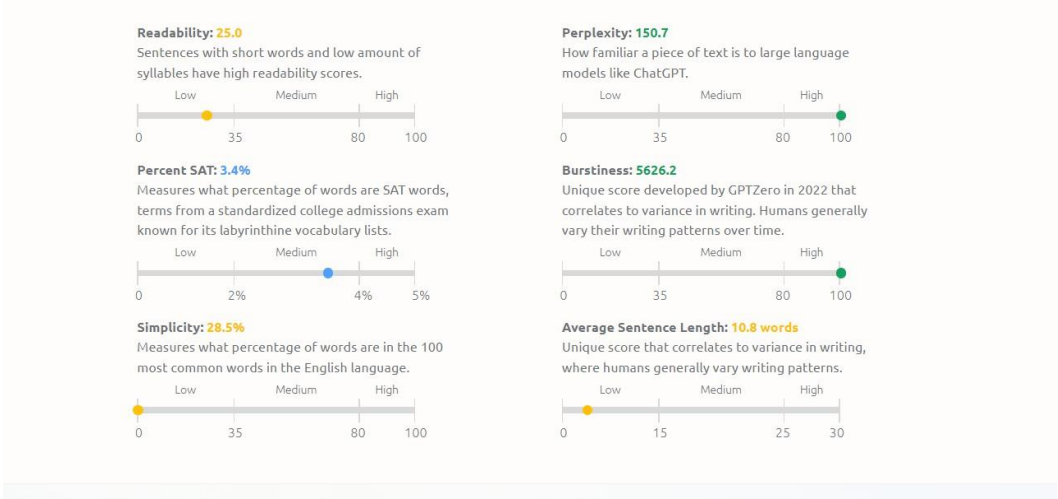

ABSTRACT

People needs are closely related to managing life, health and even investment risks, both in personal life and business activities when carrying out insurance claims. The insurance company will determine the appropriate estimated claim reserve value to inform the insurer of its company's ability to pay. This claims reserve is very important for insurance companies to pay compensation for claims that have been reported and are eligible to be paid. Once a claim is reported, the insurance company usually handles payment of the claim. However, policy holders often do not immediately report claims regarding incidents to the insurance company. This process can be said to be Incurred But Not Reported (IBNR). Incurred But Not Reported is a claim that has occurred but has not been reported. So, insurance companies need to reserve funds to pay compensation to policy holders. Several methods that can be used to estimate IBNR include The Chain Ladder and Bornhuetter Ferguson. In this research, IBNR reserves were calculated using AXIS Capital Holding data based on incremental IBNR data with accident years 2011-2020. The results of this research analysis show that the claim reserve value generated using the Chain Ladder method is greater, namely USD 14,544,465 with an RMSE value of 1,237,230 and Bornhuetter Ferguson with an Average Loss Development Factor of USD 13,214,257 with an RMSE value of 1,235,835.

Keywords: Claim Reserve, IBNR, Chain Ladder, Bornhuetter Ferguson, Mean Square Error (MSE), Root Mean Square Error (RMSE).

ABSTRAK

Kebutuhan masyarakat erat keterkaitannya dengan pengelolaan risiko jiwa, kesehatan, dan bahkan investasi, baik dalam kehidupan pribadi ataupun kegiatan usaha ketika melakukan kegiatan klaim asuransi. Perusahaan asuransi akan menentukan nilai estimasi cadangan klaim yang tepat untuk memberi tahu penanggung tentang kemampuan perusahaannya untuk membayar. Cadangan klaim ini sangat penting bagi perusahaan asuransi untuk membayarkan kompensasi atas klaim yang telah dilaporkan dan memenuhi syarat untuk dibayar. Setelah klaim dilaporkan, perusahaan asuransi biasanya menangani pembayaran klaim tersebut. Namun, sering sekali pemegang polis tidak langsung untuk melaporkan klaim atas kejadian kepada perusahaan Asuransi. Proses ini dapat dikatakan dengan Inccured But Not Reported (IBNR). Inccured But Not Reported ini merupakan klaim yang sudah terjadi tetapi belum dilaporkan. Sehingga di perusahaan asuransi perlu mencadangkan untuk membayar atas kompensasi kepada pemegang polis. Beberapa metode yang dapat digunakan untuk mengestimasi IBNR diantaranya The Chain Ladder and Bornhuetter Ferguson. Pada Penelitian ini menghitung cadangan IBNR dengan menggunakan data AXIS Capital Holding berdasarkan data lncremental IBNR dengan accident year 2011-2020. Hasil dari analisis penelitian ini menunjukkan bahwa nilai cadangan klaim yang dihasilkan menggunakan metode Chain Ladder lebih besar yaitu sejumlah USD 14,544,465 dengan nilai RMSE yaitu 1,237,230 dan Bornhuetter Ferguson dengan Average Loss Development Factor sejumlah USD 13,214,257 dengan nilai RMSE 1,235,835.

Keywords: Claim Reserve, Inflation Adjustment, IBNR, Chain Ladder, Bornhuetter Ferguson, Mean Square Error (MSE), Root Mean Square Error (RMSE).

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Cikarang, 12th September 2023

Marsya 'Ilma Riany

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