Attribute Priority Arrangement of Cancellations in the Life Insurance Using Rough Set

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ABSTRACT

This article presents a method for the rough set which attributes priority arrangement of cancellations in the life insurance. The number of canceled documents on the rise plus they’re oscillatory and also the rates of cancellations in constant fluctuation, which requires searching in the problem of cancellations of this document, needs to be investigated in the future. It is obvious that these cancellations negatively affect the result operations of insurance companies. The article identifies the most important variables that affect the rates of cancellations and so as to reach solutions that lead to reducing the number of canceled documents by using the Rough model. The rough model was used to identify the determinants of cancellations in the life insurance of the Egyptian insurance market, so as to reach solutions that lead to reduce the number of canceled policies and find solutions to them. These findings prove that the most important factors that affect the cancellations for insurance policies are policy premiums, insurance period and age of policyholders, respectively.

KEYWORDS

Accuracy, Cancellations, Core, Life Insurance, Lower and Upper Approximations, Reduction, Rough Set

1. INTRODUCTION

The theory of rough set has been successfully applied to diverse areas, such as pattern recognition, artificial intelligence, machine learning, knowledge acquisition, economy forecast, and data mining (D’eer, Verbiest, Cornelis, & Godo, 2015; Flapan, 2000; Yao & Fu, 2013). Pawlak (2002-2005) rough set model is constructed based on equivalence relations. These relations are studied by many investigators to be used in the complex decision tasks. In multiple criteria decision-making problems, there are preference structures between conditions and decisions (Alharthi & Elsafty, 1998; D’eer, Cornelis, & Yao, 2016). A reduct should be able to preserve the original classification power provided by the whole attribute set (Chan, 1998; Li & Liu, 2002). This power may be interpreted by syntax properties and semantics properties for both positive and boundary rule sets. Instead, we need to consider multiple properties and multiple measures for evaluation.

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The classical rough set methods cannot detect the inconsistency related with the preference, such as the price, fuel amount, speed, etc., and these attributes involve preference information, but they are not considered in rough set (Lashin & Medhat, 2005; Pal, Shankar, & Mitra, 2005). Further, rules based on the dominance relation are much more suitable than those based on the indiscernibility relation when they are used to classify new objects (Yao, 2007). Because we may often meet preference information when handling with economic, managing, or financial decision-making problems, the hybrid of rough sets and dominance relation can enlarge the usage of rough set models in economic, management, or financial fields. Greco and other scholars (Creco, Inuiguchi, & Slowinski, 2006; Greco, Matazzo, & Slowinski, 2001) have put forward rough set model and its extended models based on dominance relation by replacing the indiscernibility relation with the dominance relation. Their models can do well with the possible inconsistency that exists in analyzing preference with multiple attributes as well as making decisions related with typical cases.

The granulation structures used by both rough set theory and neighborhood systems and the corresponding approximation structures are studied (Kozae, Elsafy, Swealam, 2012).

Life insurance is characterized by its long period ranging from 15 to 30 years in individual documents, and from one year to 45 years in the collective insurance. Premiums paid in the early years would be technically more than what should be paid despite the fact that the insured persons have paid equal premiums for the duration of insurance (Kilirdog & Asuk, 2012). These extra and accumulated sums are collected to be what is called the account reserve which is invested by the best means. The surplus or deficit amount in the formation of this reserve in life insurance is influenced by numerous technical elements related to compensation due for the deaths, rates of investment and productivity and administrative expenses of return and profits to be distributed to policyholders. It is possible after the cessation of the insured to pay premiums, to cancel, modify, determine, reduce the amount or re-effect the recoverable amount of the document to secure a discount after the cancellation or waived, or even by borrowing, contrary to what is the case in the documents of property insurance and responsibility.

All over the world, the law requires entitlement policyholder to obtain liquidation value often after paying a minimum premium of about three annual installments. In the case of paying fewer or stopping to pay the premiums, the contract expires and becomes premiums paid go to the company issuing the insurance contract. Studying Articles 760 and 762 of the Civil Law reveals that the Egyptian legislator did not give the insured any rights to the liquidation or reduction if the document if its three annual installments are not paid. If the insured stops paying premiums during the first three years of life document for any reason, the document is canceled after his warning and demanding repayment installments due, and he does not have the right of returning to the company. The problem of the research points out that the phenomenon of cancellations is one of the negative factors that limit the effectiveness of the insurance companies because it stops premiums flows which affect the potential contribution to invest and build up reserves. On the other hand, this phenomenon has a further negative impact on the holders of documents in general and the public insured in particular. Moreover, insurance companies should pay more attention to the phenomenon of cancellations and find appropriate solutions, particularly in developing countries, due to the increasing number abolition to the degree that it has become concrete for the number of the new production.

The contract is cancelled by the two parties. The insured can cancel the document on request. The insurer, however, can cancel only under certain conditions and must give the insured advanced written notice. In either case, the insured is entitled to a refund of the unearned premium on a pro-rated basis. The right of the insurer to cancel is limited by the provisions of the cancellation clause and may be done only under specified circumstances. Cancellation is the process of terminating coverage prior to the normal expiration date.

Table 1 shows the number of existing documents, insurance amounts, and the number of canceled documents in addition to the cancellation of EGYPT life insurance in the Egyptian insurance market rate.
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