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# Proceeding International Conference on Mathematical and Computer Sciences (ICMCS 2013)



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**Organized by:**

**Department of Mathematics**

**and Department of Informatics Engineering**

**Faculty of Mathematics and Natural Sciences**

**Universitas Padjadjaran**

**and Indonesian Mathematical Society (IndoMS)**



Proceedings of the International Conference on Mathematical and Computer Sciences  
Jatinangor, October 23<sup>rd</sup>-24<sup>th</sup>, 2013

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Proceedings of

INTERNATIONAL CONFERENCE ON  
MATHEMATICAL AND COMPUTER SCIENCES

## PREFACE

This event is a forum for mathematician and computer scientist for discussing and exchanging information and knowledge in their area of interest. It aims to promote activities in research, development and application not only on mathematics and computer sciences areas, but also all areas that are related to those two fields.

This proceeding contains sorted papers from the International Conference on Mathematical and Computer Sciences (ICMCS) 2013. ICMCS 2013 is the inaugural international event organized by Mathematics Department Faculty of Mathematics and Natural Sciences University of Padjadjaran, Indonesia.

In this proceeding, readers can find accepted papers that are organized into 3 track sections, based on research interests which cover (1) Mathematics, (2) Applied Mathematics, (3) Computer Sciences and Informatics.

We would like to express our gratitude to all of keynote and invited speakers:

- Prof. Dr. M. Ansjar (Indonesia)
- Assoc. Prof. Dr. Q. J. Khan (Oman)
- Prof. Dr. Ismail Bin Mohd (Malaysia)
- Prof. Dr. rer. nat. Dedi Rosadi (Indonesia)
- Prof. Dr. T. Basarudin (Indonesia)
- Assoc. Prof. Abdul Thalib Bin Bon (Malaysia)
- Prof. Dr. Asep K. Supriatna (Indonesia)

We also would like to express our gratitude to all technical committee members who have given their efforts to support this conference.

Finally, we would like to thank to all of the authors and participants of ICMCS 2013 for their contribution. We hope your next participation in the next ICMCS.

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Jatinangor, October 23<sup>rd</sup>-24<sup>th</sup>, 2013

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**on October, 23<sup>rd</sup>-24<sup>th</sup> 2013**

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**KEYNOTE SPEAKER**

# Simulation of Factors Affecting The Optimization of Financing Fund for Property Damage Repair on Building Housing Caused by The Flood Disaster

(Literature Review)

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**Abstract:** Natural disasters, such as floods are one cause of property damage in residential buildings that cannot be avoided, because it cannot know when it happened. This leads to the risk that financing should be optimized. In this paper, optimization is performed on a combination of three methods of financing funds (insurance, credit, and savings). Optimization is made under conditions to ensure a comprehensive loss of damage to property on the residential buildings. Simulation is done to see the effect of changes in the factors that influence the optimization value of property, amount of debt, and the future value annuity. As a result, the value of the loss ratio and the cost ratio is numerically shown in the table, and in graphical form in three different situations.

**Keywords:** flood insurance, credit, savings, optimization, simulation.

## 1. Introduction

Natural disasters are categorized into four, namely: natural disasters were meteorological or also called hydro-meteorological disasters are climate-related causes, such as floods (events that occur when the flow of excess water soak the mainland), geological disaster is a natural disaster that occurs on the surface of the Earth, such as earthquakes (vibration or shock that occurs in the earth's surface caused by the release of energy from the sudden that creates seismic waves), volcanic eruptions (events that occur due to deposition of magma in the earth's crust is pushed out by a high-pressure gas), and also tsunami (water body displacement caused by changes in sea surface vertically with a sudden). Disasters from space is the arrival of various celestial bodies such as asteroids or solar storms disorders, such as asteroids can be a threat to countries with large population such as China, India, United States, Japan, and Southeast Asia. Outbreak or epidemic is an infectious disease that spreads through the human population at large in scope, eg, across the country or around the world.

Natural disasters caused the risks. Risks cannot be avoided, eliminated, or moved, but the risk can be minimized. One of the risks caused by natural disasters is financing risks arising from property damage. There are various methods of financing (insurance, reserves, loans, etc.). Financial risk management can be done by one or a combination of several methods of financing. Research on this problem was made by Hanak (2010), the sensitivity analysis on the optimization of funding providing property damage repair in residential buildings contained in a journal with a combination of the two methods of financing. Based on the journals, the research focus is on the optimization of simulation analysis of funding provision for property damage repairs in residential buildings with a combination of three methods of financing. Hanak research goal is to ensure that losses covered comprehensively by utilizing the advantages of the method of financing and credit insurance. Results of research conducted by Hanak (2010) is valid on the parameters used in the case study.

In this paper conducted a review of the literature study simulation model optimization improved the provision of funding for property damage to a residential building, which was developed by Hanak