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CAUCHY

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PREFACE

Cauchy is a national journal published by Mathematics Department, Science and Technology Faculty, Maulana Malik Ibrahim State Islamic University of Malang. This is the second issue of this year. It contains 6 (six) article from all over the country, not only from local area of East Java. Those articles covered numerical analysis, statistics, mathematical analysis, and decision making. This issue was authored by 15 authors and co-authors.

In the first article, the author elaborated an alternative parameter estimation in Heteroscedastic Regression. It models the consumption patter of students in Faculty of Mathematics and Natural Science, Brawijaya University. It also implemented the REML methods in modeling the students' saving.

The second article discussed about the metric dimension of some operation graphs. The paper showed that the local metric dimension of some graph operation such as joint graph, amalgamation of parachute, amalgamation of a fan and shack.

The third article, entitled "Simulation Study of the Implementation of Quantile Bootstrap Method on Autocorrelated Error" proved that the estimated value with quantile regression was within the bootstrap percentile confidence interval. It also proved that 10 times replication resulted in a better estimation value compared to the other replication measures.

The fourth article emphasized the discussion to the epidemic model with non-constant population. The results of local stability analysis indicated that if $R_0 < 1$, then the disease-free equilibrium point E_0 is locally asymptotically stable. It means if the terms fulfilled, then in a long time, there would have no spread of disease in susceptible and vaccinated subpopulations, or in other words, the epidemic will stop

The fifth article discussed on the rainbow vertex-connection number of star fan graphs. It proved several theorems concerning to the rainbow connection number. The interesting part of this article that it generates general theorems in terms of the related graphs.

In the sixth article, the authors take advantage of DANP-TOPSIS method to improve the Guidance Learning (LBB) satisfaction in Malang city. The marketing strategy that needs to be improved on LBB Avicenna Education Malang is cluster D4, which is classroom criteria, additional consultation, and activities outside KBM. By understanding the marketing strategy to be improved, it is expected to improve the quality of LBB customer satisfaction.

The seventh article generated the simulation study of Bayesian quantile regression use in Non-normal error. It introduced the ability of the Bayesian quantile regression method in solving the problem of the non-normal errors. It also jumped to conclusion that the best regression equation model is Bayesian quantile method used quantile value of 0.50.

The eighth article, discussing Structural Equation Modeling based on variance density index. It is implemented on larvae of the rainy season in the city of Banjarbaru. The results of the study showed with SEM based variance approach that this research model meets the required criteria.

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The ninth article discussed Geographically Weighted Regression to predict the prevalence of hypertension based on the risk factors in south Kalimantan. It concluded that the prevalence of hypertension spread spatially because there are heterogenitas between the location of the observation that means that observations of a location depends on the observations in another location that the distance is near so do spatial regression modeling with Adaptive Gaussian kernel function, to result five groups.

The tenth article elaborated the vector autoregressive modeling on cases of malaria based on the tribal in Tanah Bumbu District. It concluded that the pattern of the number of the prevalence of malaria tends to be uniform from the four tribes, the number of the prevalence of Malaria Javanese there is a relationship with the other tribes and the number of the prevalence of Malaria tribe Bugis with other tribes.

The last article entitled “The Estimation of Generalized Method Moment Poisson Regression Model on The Prevalence of Acute Respiratory Tract Infection (RTI) in South Kalimantan”, focused the discussion to health problem of ARTI. It concluded that the number of the prevalence of Acute (RTI) in South Kalimantan Province follow Poisson distribution, so used Poisson regression modeling.