

# Quantitative Method For Analysis of Non-Performing Financing Return: A Case Study on Assets of PT. BSM

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**Abstract.** There are several ways to describe data mathematically. Likewise with the computing tool. As a computational aid, Mathematica® is designed to make it easier for users to carry out the calculation process symbolically or numerically. This article will discuss the use of Mathematica® to describe banking data through quantitative methods. A case study that discussed in this article is the results of the analysis of the influence of Non-Performing Financing (NPF) against the financial performance of PT. Bank Syariah Mandiri (BSM) through indicators of Return on Asset (ROA). Research conducted using a quantitative approach to the data of the financial statements of PT BSM. The sampling technique used was purposive sampling criteria the Public Sharia Banks publish annual financial statements in the period 2009-2018 with > 75 trillion rupiahs in assets. Based on quantitative method using Mathematica® programming, the research data has a normal distribution and no deviation from the rules of classical assumptions. In addition, the diversity of the data being used can explain the regression models constructed by the NPF variable towards the ROA variable, and the hypothesis testing results show that the variables of NPF have a significant, negative effect on ROA.

**Keyword:** NPF, ROA, BSM, Quantitative method.

The output of the Mathematica® program listing is an elliptical curve as shown in Figure 5. The areas covered by the ellipse (black) curve describe the region/area of 95% confidence level for the parameters of the regression model discussed. Object interpretation is that all forms of equations constructed by coordinates ( $x$ -constant) can represent a regression given previously with a confidence level of 95%.

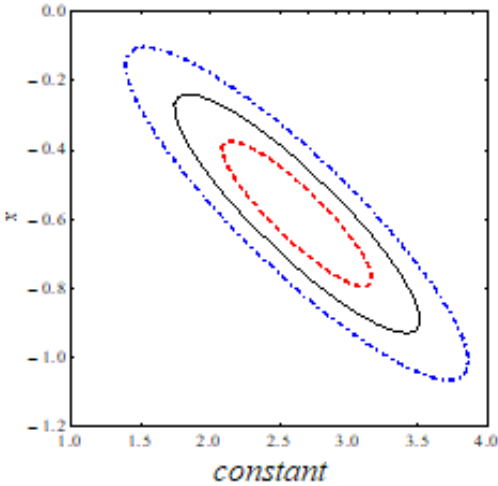


Figure 5. Elliptical curves describing areas for confidence level 75% (red), 95% (black), and 99% (blue) against linear regression model parameters.

Source: Mathematica® output

**CONCLUSIONS**

By using Mathematica® programming, it can be described in detail the NPF-ROA relationship in PT. BSM based on the 2009-2018 financial report data. In addition, the output in the form of descriptive statistical analysis provided by Mathematica® programming can also be easily converted into geometry (confidence interval ellipsoids). From the results of research and discussion, in terms of quantitatively based on data from PT. BSM 2009-2018 period in terms of the NPF-ROA variable can be concluded that the NPF has a significant and negative relationship to the financial performance of PT. BSM when viewed from the ROA indicator. In other words, if the NPF problematic financing level increases, it can reduce PT. BSM directly. From the results of this study can be followed up with regard to the level of the NPF ratio needs to be addressed with caution by the management of PT. BSM especially in terms of increased monitoring of the financing provided. Besides, to obtain research results that better explain the state of the performance of PT. BSM in terms of ROA, other variables need to be involved, for example, BOPO, FDR, and Size associated with optimizing the performance of PT. BSM. This is reasonable because there are still 27% of other variables that affect ROA that has not been discussed in this study.

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