# The Contribution of Risk Management to Profit and Cost Efficiency in Rural Shariah Banks (BPRS)

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**Abstract**

The development of Shariah baking in Indonesia has been so tremendous that the banks should try their efforts to improve their operation. Risk management is vital to be implemented in order that the operation can minimize any risk. This study examines the impact of risk management practice on the profit and cost efficiency in the rural Islamic banks. The data were collected from 33 BPRS but only 29 could be analyzed using the current software. This study also tried to implement better software for financial report. Initially, the initial report shows that, on average, the efficiency is 64% in which the minimum is 30% and maximum is 100%. In fact, only five banks could achieve the efficiency that is from 29 banks during the investigation. From city of origin, it was found that the banks in Pasuruan and those which are in Probolinggo are the most efficient.

**Keywords**: risk management, cost efficiency, profit efficiency, Islamic Rural Bank.

## Introduction

The Sharia Rural Banks (BPR-Sharia) is one of the financial institutions of Islamic banking in which their operations are obliged to follow the principles of sharia or Islamic *muamalah*. SRBs were established under the Law No. 7 of 1992 on Banking and Government Regulation (PP) No. 72 of 1992 concerning the banks based on the Principles of Sharing. In Article 1 (point 4) of Law No. 10 of 1998 on the Amendment of Law No. 7 of 1992 on Banking, it is stated that the SRB is a bank conducting business based on sharia principles and they do not provide services in payment traffic.

Since 2013, the growth and development of shariah banking institutions in Indonesia has been so fast. For example, the asset growth of Islamic banking not only shows endurance in the midst of the global financial crisis but it also shows their achievement of a good performance. The banking intermediation of these banks still continue to perform well with FDR 103%. These data indicate that the Islamic banking intermediation function can drive the economy. The budget grew relatively high 32.2% (while nationally only 23.2% in Q3 2013. The growth in assets is 31.8% (while nationally 18.2 in Q3 2013).

Until October 2015, the number of SRB in Indonesia was 163 units with 435 service offices. BPRS average growth over the last 6 years (January 2008- June 2015) had reached by 38% . The average growth in financing extended for 6 years even could reach by 31.52% a year. In addition, the Raising funds in the form of deposits SRB was Rp 2.09 trillion, while savings of Rp 558 billion. The portfolio is dominated *murabaha f*inancing disbursements (80%) and 12% of revenue sharing (*mudharabah*), the rest *Ijara multi* services (6%) and *qardh* 2 %).

According to the World Bank survey (2010), only 49 percent of Indonesia's population has access to formal financial institutions. Thus, the number of people who do not have a good savings in the bank or in the non-bank financial institutions is still relatively high, 52%. The presence of Islamic banks in such rapid growth is expected to be closer to the people to formal financial institutions, like an Islamic banking.

As presented in Figure 1, it indicates that the performance of the IRB is declining. Almost all indicators show a negative sign indicating there is a difficult situation faced by IRB. The CAR is 20% far above the minimum 8 percent. This also indicates the capital strength of the bank. ROE is also downward indicating the profitability problem. Non-performance finance (NPF) also increases, indicating the problem in economic situation. The NPF of IRB in that condition can be predicted to still continue to increase due to the present economic situation. The cost efficiency is also increasing due to expensive fund in the

market. The condition above attracts the researchers and therefore, this study is conducted to find the constitution of risk management on such banks' efficiency. It is salient to conduct a study related to risk management to see the contribution to the banks efficiency so that they can improve their operations to have their competitiveness and grow much more efficient.

In order to have a precise scope of the research, this study attempts to raise the problems as the following:
1. What is the general level of cost efficiency of the Islamic rural bank?
2. To what degree does the risk management contribute to the cost and profit efficiency of islamic rural banks?

**Literature Review**
Mghaieth and Mehdi (2014) studied the Islamic bank's scores of efficiency and their determinants were from 16 countries before, during, and after the 2008 financial crisis. The predictors for bank efficiency used are total assets, capital adequacy, profitability, credit risk and operational costs. They used the model both cost efficiency and profit efficiency. They did a random effects model for the three periods and found that a high total asset and high operation cost showed the most efficient in terms of cost. With regard to the profit efficiency model, they apply fixed-effects. The result shows the level of cost efficiency of 82.13% and an average score of profit efficiency of 82.47%. A study by Mongid and Notodihardjo (2009) found that rural banks charged higher interest due to scale inefficiency.

Cyree and Spurlin (2012) examine the impact of competition in rural markets after the presence of large banks in the bank rural areas where they are the genuine small markets. When Competing against major banks, BPR operates at a lower level of efficiency gain but higher, increasing the level of interest income and fee from the loan. The efficiency of much lower profits and benefits that are higher in rural areas suggests that the large banks have market forces in the rural market and that they can extract rent to get the benefits that are higher than the average efficiency. Therefore, of small banks in rural market should not be scared of other competitors.

On the contrary, the customers rely on loans from rural areas, of small banks that suffered negative impact on a higher level. The more competitors are usually seen as a threat for the BPR in rural Market. Rural small bank managers need not fear because BPR can get higher profits when they are more efficient and have a competitive advantage against competitors in rural market. This research implies that BPR should not consider big banks as their competitors so that their managers cannot be inflicted on a higher interest rate and fees for credit.

Beck Demirgüç-Kunt and Merrouche (2013) discussed the implications of Sharia-compliant products of Islamic banking for agency problems using traditional theory of financial intermediation. They found the equity-like nature of Islamic banking and they suggest that Islamic banks' business model might not be different from conventional banks' business model. Their empirical estimations show little significant differences between Islamic and conventional banks. From cross-bank comparison of conventional and Islamic banks, they suggest opposing the effects of Sharia-compliant business model. Tahir and Haron (2010) studied the cost and profit efficiency of the Islamic banking from around the globe for 2003-2008. They found that the average cost and profit efficiency are 43.6 percent and 41.1 percent. This result implies that Islamic banks are relatively better in controlling cost than generating profits.

From time perspectives, the efficiency scores suggest that the trend for both the cost and profit efficiency of Islamic banking is improving. Due to better environment condition, Islamic banks from Europe are more cost and profit efficient than the other groups of Islamic banks. In contrast, Islamic banks from the Far East and Central Asia show lower cost efficiency and African Islamic banks worst in their profit efficiency. To provide the way forward of the research, the reseacrhers present the road map of the research, especially, on its realtionship with previsous research and especially to the first year result. The first year research focuses on the risk management practice especially on how islamic rural banking manage their risk taking (lending/financing), liquidity risk, and operational risk. This study produced two manuscripts for scopus indexed journal and one has been published and the second is under blind review process.

**Research Metode**
This study applies parametric methodology known as the Stochastic Frontier Analysis (SFA). This methodology is regarded as superior as it can produce efficiency more accurately and consistently to economic theory. In order to estimate the cost efficiency of banks, this study employs the so called two-stage SFA model. It also employes three approaches; (SFA assuming the efficiency follow

normal-exponential distribution, SFA assuming efficiency follow normal- half normal distribution and SFA Panel Time Invarian that efficiency distribution follow truncated distribution) and then compare the empirical results to select the best one.

The result implies a common frontier is based on the belief that efficiency differences across banks are mainly attributable to managerial decisions within banks. Managemerial decision is defined as risk management practice . Banking technology can be defined as the set of specific methods that banking irms employ to combine financial and physical inputs to generate a certain amount of banking services, such as loan and service for their customers. These methods are diversification, risk pooling, financial information collection and evaluation, risk management are ssumed to have impact on bank cost and profit efficiency.
Previous studies showed that the bank-specific variables should be taken into account account because these variables are evicenced to have very important role in variability differences in the banking cost and profit. To measure the cost and profit efficiency of French banks we employ the stochastic frontier approach (SFA), as developed by Aigner et al. (1977). The SFA specifies a particular form for the cost and profit function. The model assumes that these errors consist of inefficiencies, which follow an asymmetric distribution and random errors that follow a symmetric distribution. The reason for this particular structure of the composite error term is that, by definition, inefficiencies cannot be negative. Both the inefficiencies and random errors. This study is clasifffed as quantitative study and using secondary data collected from IRBs. The imput in this study is total deposits, workers and capital or fixed asset. These data were collected via survey and interviews with IRBs sample. Worler is total personel expsense and fixed asset include premises. The outputs are total loan and other productive assets.
The next step is modelling the determimant of profit and cost efficiencies of the banking firms. The efficiency score using the SFA model is then used for further analysis. To examine the determinants of bank cost efficiency, we use a Tobit regression model which regresses the efficiency scores obtained from the SFA models on a number of bank specific variables especially realated to risk management practices of the individual islamic ruiural bank and bank specific veraiable such as size and cpital. The environmental variables such as economic growth and inflation are all excluded although thesy are a standard for bank efficiency study determinant because we assume all islamic rural bank are exposed to the same conditions. In this study, the reseacrhers adopt the intermediation approach in defining the outputs and inputs (price) of banking services. The reseacrhers chose this approach as it is simpler and previous empirical research is relatively abundant. In this study we use the SFA methodology. To estimate the efficiency score, the stochastic requires inputs and output specification. We include input prices; interest, labour and other price for physical capital. Refering to Hasan and Marton (2003), Mongid, Tahir and Haron (2012) and use the ratio of total other expenses to total fixed assets as the best available proxy measure for the average cost of non financial inputs to banks. Table 1 presents the variable and the definitons.

**Table 1.** The Total Expenses, Total Output, Prices

| No | Variable | Definition | Measurement Mean |
|---|---|---|---|
| 1 | Ltc | Log Total cost | Total IRB operating expeses |
| 2 | lq1 | Log Total loans | Total loan disbursed |
| 3 | lq2 | Log Other earning assets | Total Placement in other bank |
| 4 | lp1 | Log Price of funds | Total profit sharing to total deposits |
| 5 | lp2 | Log Price of labour | Total salary to total assets |
| 6 | lp3 | Log Price of other expenses | Other expsese to total fixed asset |

The total banking costs are both of interest expense and operating costs. The Stochastic Frontier Approach (SFA) is used to analyze the efficiencies of IRB samples. This methodology is well documented in the literature. In this study we refer and follows the methodology based on Coelli (1996) and Coelli, Rao, O'Donnell and Battese (2005). SFA has been widely used by a considerable number of studies for evaluating banking efficiency The SFA starts with a standard cost or profit function and estimates the minimum cost or maximum profit frontier for the entire sample from balance sheet data. According to Greene (2002) the stochastic frontier model may be written

$$y_{it} = f(\mathbf{x}_{it}, \mathbf{z}_i) + v_{it} \pm u_{it} = \boldsymbol{\beta}'\mathbf{x}_{it} + \boldsymbol{\mu}'\mathbf{z}_i + v_{it} \pm u_{it}, \quad (1)$$

where the sign of the last term depends on whether the frontier describes costs (positive) or

production (negative). The second component, $u_{it}$ represents technical or cost inefficiency, and must be positive. The approach aims to estimate not only the cost and profit efficiency scores of IRB but also to identify the determinants that affectthese scores. Therefore, we adopt the Battese and Coelli (1995)approach, where $u_i$ ,the technical inefficiency effect, is assumed to be a function of a set of bank specific variables. In this regard, cost efficiency gives a measure of how close a bank's cost is to what a best-practice bank's cost would be for producing the same bundle of output under the same conditions. Profit efficiency indicates how well a bank is predicted to perform in terms of profit rela tive to other banks in the same period for producing the same set of outputs.

Evaluating bank efficiency is a complex process that involves assessing interaction between the environment where banks operate, internal bank condition and external activities. Currently, primary method of evaluating internal performance of banking firm is by analyzing accounting data. Financial ratios usually provide a broader understanding of the bank's financial condition since they are constructed from accounting data contained on the bank's balance sheet and financial statement. However, economic efficiency measured using SFA is currently getting popularity as it imunes from creative accounting. Figure 2 shows the model of the factors in this reseacrh.

The study uses risk management aspects that influence the cost and profit efficiency of islamic rural banking firms. This study is to find a link between bank-specific factors and the macroeconomic environment meaning that the finding can is useful for academic knowledge and policy assessment. The framework basically replicates the work previously done by Louzis, Vouldis, Vasilios and Metaxas (2012) and Mongid, Tahir and Haron (2012).
To examine the determinant of Islamic rural bank cost and profit efficiency (EFFI), the reseacrhers use simple linear regression model which is a linear relationship between response variable, $y$ and the predictor variable, $x_i, i = 1,2...,n$ . The model is

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_n x_n + \varepsilon \qquad (2)$$

where $\beta_0, \beta_1 ..... \beta_n$ are regression coefficients and $\varepsilon$ is the error due to variability in the observed responses. In our study, the model can be formulates as:

$EFF_i = \alpha + \beta 1\ SIZE_{it} + \beta 2\ PERSTEX_{it} + \beta 3\ CAR_{it} + \beta 4\ LLRGL_{it} + \beta 5\ LIQMGM_i + \beta 6$
$CREDIMGM_i + \beta 7\ OPRMGM_i + \varepsilon$

To assess the ability of the model to explain cost efficiency (CIR), we use linear regression testing technique such as t-tests and F-test. F-test is used to test the capability of the model to explain the variability of the CIR. To assess the capacity of the individual variable, we use t-test.

Variables will be employed in this study are derived from theoretical as well as previous empirical studies. There are two types of variables in this study. The first is data derived from individual bank balance sheet and income statement. These data are to measure the individual bank characteristics.

**Table 2** Variable and Sources of Data

| Number | Variable | Observation | Sources of Data | Measurement |
|---|---|---|---|---|
| 1 | EFFI | SFA Cost and Profit Efficiency | Bank Level | Percentage |
| 2 | OPERATIONMGM | Operational management | Bank Level | Percentage |
| 3 | LIQMGM | Liquidity Management | Bank Level | Percentage |
| 4 | LASSET | Logarithm of Asset Size | Bank Level | Logarithm |
| 5 | LLRGL | Loan Loss Provision to Total Loan | Bank Level | Percentage |
| 6 | PERSTEX | Personnel Expense to Total Expenses | Bank Level | Percentage |
| 7 | CAR | Capital Adequacy Ratio | Bank Level | Percentage |
| 8 | CREDITMGM | Credit management | Bank Level | Percentage |

In this study we use time series and cross sectional model mostly known as panel data. Panel data models combine a cross-section observations with a time series dimension. The cross-section nature of the panel expalin the variability in the for bank-specific factors and how these vary across banks in the samples. However, if as our samples are not fully balanced, we will only apply simple linear regression for simplicity.

**Result and discussions**

Total samples are 93 banks ofthe east Java member of ASBISINDO. For 2013, there are 31 banks. As our study will apply panel data, total sample for every year should be similar to make it balance panel. The interesting point of the data collection process is that not all regency own Islamic rural bank (BPRS). It means even though Islam is the main religion the eastJava, the awareness to establish BPRS is not rigorous. This may as result of a very time consuming process to establish BPRS. Another interesting point is BPR flourish in the region that assumed as religious city. Pasuruan, for example, is known as the most business active city whereMoslem is the dominant player. Compared to Surabaya, economic capacity of Surabayaten folds of Pasuruan but the number of BPRS in Pasuruanexceeds Surabaya. The interesting point is Batu city where BPRS is also very flourished due to regional government initiative to push the establishment of BPRS.

As an Islamic bank should not apply usury in their business, the musyarkah fianncing is regarded as the most Islamic bank contracts compare to other such mudarobah. Second best city is Gresik as the amount of musyarkah financing also dominant. BPRS from Batu and Malang are mostly applied Musyarakah. Unfortunately, BPRS from Kediri is reluctant to use this type as it is more risky. The problem is BPRS from Magetan that only doing interbank placement but not fiancing. The result may as a result of the problem of BPRS especially on capital constraint. In terms of customer fund, Sumenep is the biggest BPRS. It is not strange but the local government initiatives to establish the bank. It makes all government servants eager to serve in this BPRS.

The reseacrhers conducted an initial investigation on how BPRS operate by looking at it efficiency score. Using SFA software software we conduct the initial assessment how the cost efficiency of samples. We estimate 30 BPRS as the rest contains 0 information on assets that cannot do done by our current software. However, for the final report we are going to use more sophisticated software. The estimation is using data set for 2013 (See Table 3).

**Tabel 3:** Efficiency Score

| No | DMU | **Efficiency** | BPRS |
|---|---|---|---|
| 1 | **f2** | 77,56 | BPRS Amanah Sejahtera |
| 2 | **f3** | 35,55 | BPRS Mandiri Mitra Sukses |
| 3 | **f4** | 39,35 | BPRS Asri Madani |
| 4 | **f5** | 31,18 | BPRS LANTABUR TEBUIRENG |
| 5 | **f6** | 80,08 | Artha Pamenang |
| 6 | **f7** | 41,71 | Rahma Syariah |
| 7 | **f8** | 100,00 | Tanmiya Artha |
| 8 | **f9** | 33,32 | Bumi Rinjani Batu |
| 9 | **f10** | 100,00 | Bumi Rinjani |
| 10 | **f11** | 100,00 | Mitra Harmoni |
| 11 | **f12** | 44,08 | Madinah |
| 12 | **f13** | 30,39 | BPR Syariah Magetan |
| 13 | **f14** | 44,87 | Bhakti Haji |
| 14 | **f15** | 64,30 | Bumi Rinjani kepanjen |
| 15 | **f16** | 31,72 | BPRS Kota Mojokerto |
| 16 | **f17** | 49,05 | Sarana Prima Mandiri |
| 17 | **f18** | 100,00 | Al Hidayah |
| 18 | **f19** | 67,71 | Daya Artha |
| 19 | **f20** | 88,87 | Jabal Tsur |

| | | | |
|---|---|---|---|
| 20 | **f21** | 75,99 | Untung Suropati |
| 21 | **f22** | 56,56 | Al Mabrur |
| 22 | **f23** | 100,00 | Bumi Rinjani Probolinggo |
| 23 | **f24** | 39,43 | Bakti ARtha Sejahtera |
| 24 | **f25** | 95,33 | Annisa Mukti |
| 25 | **f26** | 43,99 | Baktimakmur Indah |
| 26 | **f27** | 98,34 | Unawi Barokah |
| 27 | **f28** | 90,33 | Situbondo |
| 28 | **f29** | 29,97 | Bhakti Sumekar |
| 29 | **f30** | 76,18 | Jabal Nur |

From Table 3, It showsd that there are only five BPRS that are efficient. It means only 15% islamic rural bank is efficeinct. The reseacrhers applied output oriented assumption that there should a room for bank to be more efficiecent. This result should be taken with care as assumption of cost of production in BPRS may should follow different approach. From the initial result, we find that that BPRS from Pasuruan and Probolinggo is the most efficient one. The most inefficienct is Magetan. We notice this as a result of its assets only on placement not loan. With same cost structure this finding confirm that output should be increased to enjoy economies of scale.

**Table 4 :** Efficicency and City of Origin

| | City | var20 |
|---|---|---|
| 1 | Gresik | 78 |
| 2 | Jember | 36 |
| 3 | Jombang | 39 |
| 4 | Kab Malang | 54.5 |
| 5 | Kediri | 51 |
| 6 | Kota Batu | 66.5 |
| 7 | Kota Malang | 100 |
| 8 | Lamongan | 44 |
| 9 | Magetan | 30 |
| 10 | Mojokerto | 32 |
| 11 | Pamekasan | 49 |
| 12 | Pasuruan | 83.25 |
| 13 | Ponorogo | 57 |
| 14 | Probolinggo | 100 |
| 15 | Sampang | 39 |
| 16 | Sidoarjo | 79 |
| 17 | Situbondo | 90 |
| 18 | Sumenep | 30 |
| 19 | Surabaya | 76 |
| | Total | 64.31 |

**Conclusion**

It can be concluded that BPRS as the banking industries provide special evidence. First of all, it is more unique in term of their role, business model, and business size. It was found that among these shariah rural banks are with the present software and, therefore, they have used better software for their financial report. In the initial report, this study revealed that the average efficiency is 64% with the minimum of 30% and maximum 100%. Only five banks can achieve efficiency (among 29 banks), in the investigation. From city of origin, it was found that the banks in Pasuruan and Probolinggo are considered to have the most efficiency. The following step found that the estimated cost efficiency are on a set of bank specific variables (such as size, equity to total asset, loan to total asset, problem financing).

It was found that the risk management being implemented can also increase the banks efficiency. In this case, it is advisaby that the shariah rural banks managers should do a rick management to improve their banks opertion and efficiencyt. Other big banks are not necessarily to be

*considered their competitors. As long as they can manage the banks with minimizing their risk, they could be more even competitive and surviving.*

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