

OPTIMIZATION OF DISTRIBUTION OF FUNDS BANK PEMBANGUNAN DAERAH BALI

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ABSTRACT: The purpose of this research is to find out whether the distribution of funds into various types of loans from Bank BPD Bali is optimal. This research is a quantitative descriptive research that is, explains the optimal credit portfolio. The data used is the mobilization of funds and lending Bank BPD Bali in 2018. The analysis technique used is linear programming. The results showed that the composition of the distribution of funds in MSME loans amounted to Rp5,632 billion, working capital loans amounted to Rp2,602, investment loans amounted to Rp4,276, consumption loans amounted to Rp10,021 with total profits of Rp1471.14 billion, whereas funds that had been channeled to Bank BPD Bali in 2018, namely to MSME loans of Rp6,086 billion, working capital loans of Rp2,602, investment loans of Rp4,276, consumption loans of Rp9,567 with total profits of Rp1443.91 billion, which means the distribution of funds in the Bank BPD Bali 2018 credit is considered not optimal, so by using the linear programming method, the composition of the distribution of funds on the optimal credit is obtained

KEYWORDS : *optimalization, type of credit, linear programming*

I. INTRODUCTION

Banks have an important role in supporting the economic growth of a country because banks play an intermediary institution between people who have excess funds and who need funds in the form of loans or credit (Megawati and Kesuma, 2014). Banks must be able to manage the sources of funds owned and allocate bank funds. Sources of bank funds that are used as operational capital are sourced from: own funds, namely funds originating from shareholders. Loans from outside parties (can be from other banks) Community savings funds or third party funds.

According to Law No. 10 of 1998 concerning banking, the allocation of bank funds is basically divided into two parts of bank assets, namely, assets that do not produce such as primary reserves (cash, cash and current accounts), investments in fixed assets (offices, equipment, equipment others to be able to run a banking business convincingly) and assets that produce such as secondary reserves (certificates of deposit and SBI), lending, credit placement funds and investments. Banks must distribute their funds optimally, so that maximum bank income, especially the distribution of funds in the form of credit, because the bank's largest income comes from interest income and credit provision.

This research will focus only on lending, because the bank's largest source of income comes from credit. Forms of BPD credit distribution, such as MSME loans, working capital loans, investment loans, and consumer loans, where each type of credit has different income and costs. Giving credit to customers is an activity that benefits the bank, because the loan recipient pays a certain amount of interest to the borrowed bank. This profitable activity has consequences or problems that may arise as a result of late or failure to repay the loan. Banks must develop a good strategy on how to get credit back to customers according (Sahiti et al., 2019).

Linear programming is an approach that can be used to determine the optimal credit portfolio. The results of research from Woubante (2017), Rachmat & Purwono (2018) and Gunasekaran & Aghapour (2015) get optimal results due to increased profits by using a linear programming approach to the desires of customers. Research from Haider et al., (2016), Molina (2018) and Kral et al., (2019) shows the results that most manufacturing industries are more effective in using linear programming decisions in determining optimal product combinations to obtain maximum income, optimization product mix with minimum supply costs and for brand portfolio optimization.

Research on credit from Prasetyo and Darmayanti (2015) and Abbas et al., (2019) found that credit risk had a significant negative effect on profitability. The results of research from Supeno (2017) show BPR performance in fundraising and lending in the form of credit is considered to have increased growth, so that BPRs can continue to improve cooperation with customers and can increase public trust.

Based on the empirical study, it is revealed that several studies on the distribution of bank funds obtained significant positive results as well as studies using linear programming in the manufacturing sector showed that there were still not optimal in determining the combination of production.

II. LITERATURE REVIEW

Hasibuan (2009: 36) a bank is a business entity that collects funds from the public in the form of deposits and distributes them to the community in the form of credit and or other forms in order to improve the lives of many people. According to Rose (2002: 28) commercial banks are banks that can provide services in payment traffic, where in the conduct of business activities they can be conventional or based on sharia principles. Commercial banks are also agents of development aimed at increasing equity, economic growth and national stability towards improving the welfare of the people at large.

Various sources of funds that have been successfully collected by banks, it is appropriate for banks to prepare fund distribution strategies based on allocation plans that have several objectives, namely: achieving sufficient profit levels and maintaining public confidence by maintaining a safe liquidity position. Banks in choosing the allocation of funds, of course, also take into account the benefits, and also must take into account the risk. The allocation of bank funds, basically divided into two parts of bank assets, namely: assets that do not produce and assets that produce.

Investment in assets that do not produce consists of primary reserves and investment in fixed assets. Primary reserves are highly liquid reserves which can be used at any time to fulfill immediate obligations to third parties. Primary reserves consist of cash originating from company cash and current accounts. Investment in Fixed Assets, planting in assets that produce, consists of: Reserves. Secondary and long-term fund investment. Secondary reserves are funds owned by banks in which the bank can meet the needs of its customers and is also a source of income while waiting for the fulfillment of these needs, Placement of funds, and Credit is the backbone of banking activities.

In general, Bank BPD Bali Credit Products can be divided into two products, which are seen from the purpose of credit financing, namely Consumer Loans and Productive Loans. Furthermore, in carrying out its function as a Regional Development Agent, Bank BPD Bali also contributes to the economic development of the Balinese community through the distribution of special-featured loans with low interest rates and low fees aimed at micro, small, medium and cooperative businesses (UMKMK) as the main driver of the economy in the Province of Bali, which in its distribution is Bank BPD Bali in collaboration with the Central Government, Regional Governments and non-governmental companies that have a common goal with Bank BPD Bali to develop the Bali economy.

One of the tasks of a company manager is how to use the available resources as efficiently as possible. In the banking industry, the materials obtained from suppliers and the products they sell are in the form of funds. Therefore, bank management will try how to use funds as efficiently as possible, in order to guarantee liquidity and profitability. In other words it must be able to manage assets. Sadiq (2018) the classic approach to portfolio optimization is based on these two conflicting optimization criteria: minimizing the risk of loan portfolios and maximizing expected returns on loan portfolios. Returns and risks of these items conflict with each other and find the best loan mix that provides the highest and lowest risk returns.

Linear Programming is one of the techniques that can help in making optimal allocation of limited and scarce resources. These limited resources if in one industry or company covers all factors of production such as; machinery, labor, raw materials, capital, technology and information according to Syarifuddin (2011: 8). This approach is used to determine the amount of funds allocated to each asset optimally so that the maximum profit is obtained. The analytical tool used in this study is *POM QM for Windows 5*.

III. METHODS

The design used by this research is quantitative descriptive, that is, describing the optimal distribution portfolio at Bank BPD Bali with linear programming in 2018. The study was conducted at the Regional Development Bank (BPD) of Bali, located at Jl. Raya Puputan, South Denpasar, Panjer. This location was chosen to determine whether the distribution of funds carried out by the Regional Development Bank (BPD) of Bali at this time is optimal. The object of this research is the distribution of funds from the Regional Development Bank (BPD) of Bali in accordance with the criteria, in the form of credit portfolios (MSME loans, working capital loans, investment loans and consumption loans).

Sources of data used in this study are: primary data: data obtained directly from the Bali Regional Development Bank (BPD) through interviews regarding the fund distribution policy and secondary data: data obtained from the financial statements of the Bali Regional Development Bank (BPD) for the 2014-2018 period as well as several libraries on banking and bank fund management. Data collection conducted in this study was obtained by: observation, observing company documents in this case related to the financial statements of the Bali

Regional Development Bank (BPD) and interview, conducting direct interviews with the leadership of the Bali Regional Development Bank (BPD) regarding banking policies.

Linear Programming is used to find the optimal composition of credit distribution from Bank BPD Bali in 2018. According to Krisnadewi&Setiawan (2018) this approach requires managers to be able to formulate existing problems before calculations.

The objective functions of linear programming in this study are:

$$Max. P = (s_{k1}K1 + s_{k2}K2 \dots + s_{ki}Ki)$$

Constrain :

1. $K1 + K2 \dots + K_i \leq LF$
2. $s_p, s_{k1}, s_{k2}, \dots, s_{ki} > 0$
3. $K_i > 0$

Information :

S = the spread between the interest rate received and the cost of funds and the risks borne.

sk_1 = MSME credit spread

sk_2 = spread of working capital credit

sk_3 = investment credit spread

sk_4 = consumption credit spread

K_1 = MSME credit

K_2 = working capital credit

K_3 = investment credit

K_4 = consumption credit

LF = Loanable Fund

IV. RESULT AND DISCUSSION

The purpose of using linear programming is to optimize the use of bank funds from the source of funds. The formulation states that, a financial institution must channel funds in certain proportions in each sector of the credit and placement, so as to maximize profits by basing on the concept of determining a favorable spread rate in terms of the interest rates charged and obligations to be paid and the level of risk borne. It states that, banks must manage their asset portfolios in such a way that with certain costs and risks a maximum profit is obtained. The application of linear programming analysis in channeling funds at Bank BPD Bali, by evaluating the distribution and collection of funds that have been carried out during 2018. This is done because the lending period and the maturity of deposits have a term that varies from 1 month, 3 month, 6 months, 12 months and 24 months. Before carrying out calculations with linear programming analysis, it is first necessary to determine how much funds are available to be channeled both for credit and for placement (loanable funds); what is the cost of funds; interest rates obtained; risks borne and spreads obtained.

$$Max P = 2.45 K1 + 6.45 K2 + 7.45 K3 + 8.45 K4$$

Information :

2.45 K1 = MSME credit spread

7.45 K3 = investment credit spread

6.45 K2 = working capital credit spread

8.45 K4 = consumption credit spread

Formulation of constraint functions

Limitation on distribution of funds

Bank BPD Bali participates and also distributes credit to four sectors namely, MSME loans, working capital loans, investment loans, and consumption loans. The function of limiting credit distribution becomes:

a) $LF = 22,531,000,000,000$

b) $K1 + K2 + K3 + K4 \leq LF$

c) $K1 > 0; K2 > 0; K3 > 0; K4 > 0$

In determining the limits of credit lending policy, there is a policy from Bank BPD Bali that the distribution of minimum funds to MSME credit ($K1$) is 25%, then $K2$ (Working Capital Credit) and $K3$ (Investment Credit) are determined according to requests from customer.

a) $1K1 = 25\% \text{ of } LF$

c) $-0.5 K3 + 1K2 \geq 0$

b) $1K2 + 1K3 = 6878$

d) $-0.5 K4 + 1K3 \geq 0$

Table 4.4 Calculation results with the Linear Programming method

Type of Cedit		Funds Channeled (Billion Rupiah)	Spread (%)	Total Profit (Billion Rupiah)
1		2	3	(2x3)
MSME Credit	(K ₁)	5.632	2,45	137,98
Working Capital Credit	(K ₂)	2.602	6,45	167,83
Investemnr Credit	(K ₃)	4.276	7,45	318,56
Consumer Credit	(K ₄)	10.021	8,45	846,77
Total		22.531		1.471,14

Source: *Data processing results*

Table 4.5 Distribution of funds to the Bank BPD Bali credit for 2018

Type of Cedit		Funds Channeled (Billion Rupiah)	Spread (%)	Total Profit (Billion Rupiah)
1		2	3	(2x3)
MSME Credit	(K ₁)	6.086	2,45	149,11
Working Capital Credit	(K ₂)	2.602	6,45	167,83
Investemnr Credit	(K ₃)	4.276	7,45	318,56
Consumer Credit	(K ₄)	9.567	8,45	808,41
Total		22.531		1.443,91

Source: *Data processing results*

V. CONCLUSION

Based on the results of research and discussion that has been described, it can be concluded that :

- 1) The composition of the distribution of funds to credit using linear programming analysis techniques of funds that should be channeled to credit in order to be optimal, namely: disbursement for MSME loans of Rp5,632 billion, working capital loans of Rp2,602 billion, investment loans of Rp4,276 billion and consumption credit of Rp10,021 billion. Distribution of funds to Bali BPD Bank credit in 2018 for MSME loans of Rp6,086 billion, working capital loans of Rp2,602 billion, investment loans of Rp4,276 billion and consumption loans of Rp9,567 billion, which means channeling funds to BPD Bank loans Bali in 2018 is considered not optimal, so by using the linear programming method, the composition of fund distribution on optimal credit is obtained.
- 2) The total profit of Bank BPD Bali before using linear programming analysis technique was Rp1,443.91 while after using linear programming analysis technique was Rp1,471.14, so there was an increase in profit of Rp27.23 billion.

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