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Analysis of Bank Soundness Level at Regional Development Bank of Bali for 2012 to 2021

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Abstract. The purpose of this study is to analyze the health level at RDB of Bali by using the Risk Based Bank Rating (RBBR) method. The RBBR method includes Risk Profile, Good Corporate Governance, Earnings, and Capital (RGEC). A quantitative descriptive approach was used to analyze. The variables in this study are the Risk Profile includes the ratio of Non Performing Loans (NPL) and Loan to Deposit Ratio (LDR), Good Corporate Governance (GCG) uses the composite value of GCG, Earnings includes the ratio of Return on Assets (ROA) and Net Interest Margin (NIM) and Capital includes the Capital Adequacy Ratio (CAR). Data were collected from annual reports for the period 2012 to 2021. The results showed that RDB of Bali obtained a composite rating of 2, which means the bank is in a healthy condition.

Keywords: Bank Soundness Level; Risk Based Bank Rating; RGEC

INTRODUCTION

The role of banks in supporting the community's economy is needed and very important, because banks are able to provide credit and enable businesses and households to save, invest which in turn supports economic growth and helps increase the distribution of people's welfare (Naili & Lahrichi, 2022). Banks that are included in the healthy category are banks that always maintain good liquidity in order to meet obligations and improve bank performance and efficiency. The health of a bank can be known by analyzing it. In addition, the results of the analysis can also be used in making decisions in the context of formulating strategies and policies which in the end will maintain customer confidence. Bank Indonesia has issued Circular Letter No. 13/24/DPNP dated October 25, 2011 related to the guidelines for assessing the soundness of banks with a risk-based approach, namely the Risk Based Bank Rating (RBBR) Method. The method has 4 assessment factors, namely Risk Profile, Good Corporate Governance, Earnings, and Capitals (RGEC). Banks that are categorized as healthy will certainly be able to encourage the pace of development, especially in the regions. One of them is the Regional Development Bank (RDB), where the RDB has a strategic role in accelerating regional development. RDB provides investment capital for business actors in the regions, of course in accordance with the culture of their respective regions. RDB encourages the acceleration of the growth of micro, small, and medium scale enterprises in the regions which in turn will also accelerate the acceleration of national economic growth. RDB of Bali is used as the object of analysis. The following is an overview of RDB of Bali's finances.

Table 1
Financial Highlights of the RDB of Bali (in Billion Rupiah)

Year	Total Assets	Total Credit	Total TPF	Total Equity	Net Income
2021	28.911	19.800	23.377	3.319	549
2020	26.109	19.123	21.451	3.205	522
2019	24.656	18.405	20.064	3.502	570
2018	22.454	16.446	18.011	3.394	537
2017	22.151	16.239	17.498	3.269	525
2016	20.445	15.624	15.124	3.269	577
2015	19.538	14.447	14.728	3.121	476
2014	16.951	12.531	12.866	2.413	467
2013	14.367	10.131	11.466	1.822	416
2012	12.632	8.525	10.537	1.481	391

Source: Annual Report (2012 to 2021)

RDB of Bali has good asset growth. Third party funds and lending continues to grow. RDB of Bali has quite large third party funds which are a source of funds compared to others so that its existence is important for the operations and survival of the bank itself. Positive growth in deposits shows a good sign for the bank itself, because it is directly proportional to the growth of customer bank accounts and profits earned by banks. The purpose of the analysis is to understand the overall soundness of RDB of Bali during 2012 to 2021.

Risk Profile

In general, banks often face or take different risks, such as credit and/or liquidity risk. Although each of these risks may exist independently, the two ratios often influence each other. Liquidity is considered a fundamental part of banking operations and credit is one of the main assets that generate profits for banks (Abdelaziz et al., 2022). This study uses a Non Performing Loan (NPL) proxy as credit risk, then liquidity risk is proxied by Loan to Deposit Ratio (LDR). Banking credit risk is usually indicated by the level of non-performing loans (NPL) and is considered a major threat to the stability of the banking sector, has been widely discussed among researchers and policy makers (Naili & Lahrichi, 2022). Some of these studies include research from Karadima & Louri (2020), Khairi, et al. (2021) and research by Ghosh (2017). Credit risk when a lender lends money to a borrower but cannot be repaid. Loans are granted to borrowers based on the business or individual's ability to meet future payment obligations (principal and interest). Banks that experience high levels of NPLs can threaten the stability of the banking industry and the financial system as a whole (Abdelaziz et al., 2022). The criteria for assessing the NPL rating are presented in the table below.

Table 2
NPL Rating Assessment Criteria

Rating	Category	Assessment Criteria
1	Very healthy (SS)	NPL < 2%
2	Healthy (S)	$2\% \le NPL < 5\%$
3	Healthy enough (CS)	$5\% \le NPL < 8\%$
4	Less healthy (KS)	$8\% \le NPL < 12\%$
5	Unhealthy (TS)	$NPL \ge 12\%$

Source: Bank Indonesia Circular Letter Number 13/24/DPNP (2011)

Liquidity risk using the LDR proxy, this risk is a potential loss that can arise due to the bank's inability to fulfill its obligations. Liquidity risk arises when the maturity of payment of obligations is shorter than the assets (Sari & Sholikhah, 2019). LDR rating criteria are presented in the table below.

Table 3
LDR Rating Assessment Criteria

	Rating	Category	Assessment Criteria
1	V	Very healthy (SS)	LDR < 75%
2	H	Iealthy (S)	$75\% < LDR \le 85\%$
3	H	Iealthy enough (CS)	$85\% < LDR \le 100\%$
4	L	ess healthy (KS)	$100\% < LDR \le 120\%$
5	J	Inhealthy (TS)	LDR > 120%

Source: Bank Indonesia Circular Letter Number 13/24/DPNP (2011)

Good Corporate Governance

Solikhah et al. (2020), explains that good corporate governance reflects a set of standards that govern the behavior of all stakeholders, thereby convincing investors that leadership will run the company efficiently which is reflected in the company's share price. Crifo et al. (2019) states that corporate governance refers to a set of systems that are controlled and regulated to run its business. The implementation of GCG must be based on five principles, namely transparency, accountability, responsibility, independence, and fairness. The criteria for assessing the GCG composite score rating are presented in the table below.

Table 4
GCG Rating Assessment Criteria

	Rating	Category	Assessment Criteria
1		Very good (SB)	GCG < 1,50%
2		Good (B)	$1,50\% \ge GCG < 2,50\%$
3		Good enough (CB)	$2,50\% \ge GCG < 3,50\%$
4		Less Good (KB)	$3,50\% \ge GCG < 4,50\%$
5		Ungood (TB)	$4,50\% \ge GCG < 5\%$

Source: Bank Indonesia Circular Letter Number No. 15/15/DPNP (2013)

Earnings

Earnings or profit is defined as the ability of a company based on its operational activities to earn a profit. The assessment of profit in this study is proxied by Return on Assets (ROA) and Net Interest Margin (NIM). ROA is the most popular financial ratio used. ROA is able to measure the company's ability to generate profits (Christianto & Munir, 2022). ROA can also reflect how efficient the industry is in obtaining profits from its assets (Wijaya, 2019). The ROA rating assessment criteria are presented in the table below.

Table 5
ROA Rating Assessment Criteria

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	Rating	Category	Assessment Criteria
1		Very healthy (SS)	ROA > 1,50%
2		Healthy (S)	$1,25\% < ROA \le 1,50\%$
3		Healthy enough (CS)	$0.5\% < ROA \le 1.25\%$
4		Less healthy (KS)	$0\% < ROA \le 0.5\%$
5		Unhealthy (TS)	$ROA \le 0\%$

Source: Bank Indonesia Circular Letter Number 13/24/DPNP (2011)

NIM is a calculation between interest income earned by the bank against earning assets. The NIM also reveals how much interest the bank earns on its loans compared to how much it pays on deposit interest (Puspitasari et al., 2021). The criteria for assessing the NIM rating are presented in the table below.

Table 6
NIM Rating Assessment Criteria

	Rating	Category	Assessment Criteria
1		Very healthy (SS)	NIM > 3%
2		Healthy (S)	$2\% < NIM \le 3\%$
3		Healthy enough (CS)	$1,5\% < NIM \le 2\%$
4		Less healthy (KS)	$1\% < NIM \le 1,5\%$
5		Unhealthy (TS)	$NIM \le 1\%$

Source: Bank Indonesia Circular Letter Number 13/24/DPNP (2011)

Capital

Capital can be defined as the funds available to finance the daily operations of the bank and to fund the bank's growth in the future. Capital also means the amount or assets invested in a business by investors or business owners. The proxy used in the capital aspect is the Capital Adequacy Ratio (CAR). CAR shows a minimum capital adequacy ratio, a high CAR indicates the bank can withstand other unexpected losses, on the other hand a low CAR indicates that the bank does not have enough capital to meet obligations and mitigate risks associated with its assets (Puspitasari, et al., 2021). The criteria for assessing the CAR rating are presented in the table below.

Table 7
CAR Rating Assessment Criteria

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	Rating	Category	Assessment Criteria
1		Very healthy (SS)	CAR ≥ 11%
2		Healthy (S)	$9.5\% \le CAR < 11\%$
3		Healthy enough (CS)	$8\% \le CAR < 9.5\%$
4		Less healthy (KS)	$6.5\% \le CAR < 8\%$
5		Unhealthy (TS)	CAR < 6,5%

Source: Bank Indonesia Circular Letter Number 13/24/DPNP (2011)

Risk Based Bank Rating

The assessment of the bank soundness level has made regulations and the assessment is carried out based on a risk approach that includes four measurement factors. The assessment that has been carried out shows the performance and soundness of the bank as measured by a composite value and then given a rating according to the applicable regulations.

Table 8
Composite Rating Criteria

	Rating	Category
1		Very healthy (SS)
2		Healthy (S)
3		Healthy enough (CS)
4		Less healthy (KS)
5		Unhealthy (TS)

Source: Bank Indonesia Circular Letter Number 13/24/DPNP (2011)

METHODS

The object of research includes the health level of PT. Bank Pembangunan Daerah Bali (RDB of Bali) during the period 2012 to 2021. The type of data used in this study is secondary data obtained from the annual report of PT. Bank Pembangunan Daerah Bali. The research method uses a quantitative descriptive approach with bank soundness analysis techniques using a risk-based approach (Risk Based Bank Rating). Operational variables analyzed were NPL, LDR, GCG, ROA, NIM and CAR. The correlation between operational variables is based on the Codification of Bank Indonesia Regulations concerning Institutional Assessment of Bank Soundness Levels issued by Bank Indonesia (2012). The steps taken are to collect the necessary data and then conduct an analysis, after which conclusions are made on the research findings.

RESULTS

Table 9
NPL at RDB of Bali for 2012 to 2021

Year	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
NPL	2,42	2,61	2,61	3,17	3,10	1,47	1,96	0,35	0,33	0,45
Rating	2	2	2	2	2	1	1	1	1	1
Category	S	S	S	S	S	SS	SS	SS	SS	SS

Source: Annual Report (2012 to 2021)

Table 9 shows that the NPL ratio at RDB of Bali in the last ten years, which was 0.45% in 2012, fell to 0.33% in 2013, then rose to 0.35% in 2014, rose to 1.96% in 2015, it fell back to 1.47% in 2016, then rose to 3.10% in 2017, rose again to 3.17% in 2018, then fell to 2.61% in 2019 to 2020, then dropped back to 2.42% in 2021, so that the NPL value at RDB of Bali during 2012 to 2021 was still in the healthy (S) and very healthy (SS) category.

Table 10 LDR at RDB of Bali for 2012 to 2021

Year	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
LDR	84,69	89,11	91,72	91,22	92,57	102,75	97,32	96,41	87,87	80,60
Rating	2	3	3	3	3	4	2	2	2	2
Category	S	CS	CS	CS	CS	KS	S	S	S	S

Source: Annual Report (2012 to 2021)

Table 10 shows that the LDR ratio at RDB of Bali in the last ten years, namely 80.60% in 2012, rose to 87.87% in 2013, then rose to 96.41% in 2014, rose again to 97.32 % in 2015, rose again to 102.75% in 2016, then fell to 92.57% in 2017, fell back to 91.22% in 2018, then rose to 91.72% in 2019, then fell back to 89.11% in 2020, decreased to 84.69% in 2021, so that the LDR value at RDB of Bali during 2012 to 2021 was still in the healthy (S) category and healthy enough (CS), but only in 2016 in the less healthy (KS) category .

Table 11 GCG at RDB of Bali for 2012 to 2021

Year	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Rating	2	2	2	2	3	2	2	2	3	3
Category	В	В	В	В	CB	В	В	В	CB	CB

Source: Annual Report (2012 to 2021)

Table 11 shows that the GCG rating at RDB of Bali in the last ten years, namely ranking 3 in 2012 and 2013, then rose to rank 2 in 2014 to 2016, then its ranking dropped to rank 3 in 2017, then rose again to rank 3 in 2017. ranked 2 in 2018 to 2021, so that the GCG rating at RDB of Bali which has carried out self-assessment during 2012 to 2021 is still in the good (B) category.

Table 12 ROA at RDB of Bali for 2012 to 2021

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Year	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
ROA	2,62	2,70	3,08	3,17	3,16	3,76	3,33	3,92	3,97	4,28
Rating	1	1	1	1	1	1	1	1	1	1
Category	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS

Source: Annual Report (2012 to 2021)

Table 12 shows that the ROA ratio at RDB of Bali in the last ten years, which was 4.28% in 2012, fell to 3.97% in 2013, decreased to 3.92% in 2014, fell again to 3.33% in 2015, increased to 3.76% in 2016, then decreased to 3.16% in 2017, rose to 3.17% in 2018, then decreased to 3.08% in 2019, then fell back to 2.70% in 2020, down to 2.62% in 2021, so that the ROA value at RDB of Bali during 2012 to 2021 is still in the very healthy (SS) category.

Table 13 NIM at RDB of Bali for 2012 to 2021

Year	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
NIM	5,78	6,41	6,88	7,10	7,28	7,75	6,85	7,68	7,63	7,50
Rating	1	1	1	1	1	1	1	1	1	1
Category	SS									

Source: Annual Report (2012 to 2021)

Table 13 shows that the NIM ratio at RDB of Bali in the last ten years, which was 7.50% in 2012, rose to 7.63% in 2013, rose to 7.68% in 2014, then fell to 6.85% in 2015, increased to 7.75% in 2016, then decreased to 7.28% in 2017, decreased to 7.10% in 2018, then decreased to 6.88% in 2019, fell back to 6,41% in 2020, down to 5.78% in 2021, so that the NIM value at RDB of Bali during 2012 to 2021 is still in the very healthy (SS) category.

Table 14 CAR at RDB of Bali for 2012 to 2021

Year	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
CAR	20,28	20,56	22,48	23,47	19,28	20,42	24,44	20,71	18,71	16,79
Rating	1	1	1	1	1	1	1	1	1	1
Category	SS									

Source: Annual Report (2012 to 2021)

Table 14 shows that the CAR ratio at RDB of Bali in the last ten years, which was 16.79% in 2012, rose to 18.71% in 2013, rose to 20.71% in 2014, rose to 24.44% in in 2015, then decreased to 20.42% in 2016, fell to 19.28% in 2017, then rose again to 23.47% in 2018, then fell to 22.48% in 2019, fell back to 20.56% in 2020, down to 20.28% in 2021, so the CAR value at RDB of Bali during 2012 to 2021 is still in the very healthy (SS) category.

Table 15 Composite Rating of RBBR at RDB of Bali 2012 to 2021

RBBR	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Risk										
NPL	2	2	2	2	2	1	1	1	1	1
LDR	2	3	3	3	3	4	2	2	2	2
GCG	2	2	2	2	3	2	2	2	3	3
Earnings										
ROA	1	1	1	1	1	1	1	1	1	1
NIM	1	1	1	1	1	1	1	1	1	1
Capital										
CAR	1	1	1	1	1	1	1	1	1	1
Composite	2	2	2	2	2	2	2	2	2	2
Category	S	S	S	S	S	S	S	S	S	S

Source: Annual Report (2012 to 2021)

Table 15 shows that RDB of Bali has a Composite Rating of 2 (PK 2) in the healthy (S) category in terms of four aspects (RGEC). This shows that RDB of Bali is able to face competition and changing business conditions. This information is used as a basis for measuring bank performance and soundness more effectively. These results are in line with several previous studies conducted by Maramis (2022), Azmansyah, et al. (2022), Gaspar, et al. (2022), Naibaho, et al. (2022), Kristina & Prasetyo (2022), Fitriani, et al. (2022), Dewi, et al. (2022), Putri & Suryani (2022), Hikmah (2022), Yunita (2022) which stated that the RGEC method was very good in assessing the banks soundness level.

CONCLUSION

The conclusion of the study explains that the health level at RDB of Bali during 2012 to 2021 as measured using a risk approach (Risk Based Bank Rating) has an average composite rating of 2 which means RDB of Bali has the predicate of a healthy bank category. The results of the analysis show that RDB of Bali has been good at managing risks arising from its business activities. In addition, RDB of Bali also achieves a high level of profitability and has sufficient capital against the risk of loss. This condition is reflected in RDB of Bali's financial performance indicators. Although RDB of Bali has the predicate of the criteria for a healthy bank, there are several things that need to be improved, namely the competence of human resources that still need to be continuously improved to understand all operational activities of the Bank and the applicable regulations. RDB of Bali must also consider macroeconomic conditions in addition to the bank's internal conditions, therefore it is necessary to conduct a SWOT analysis, namely an analysis of strengths, weaknesses, opportunities and challenges faced. RDB of Bali must continue to maintain quality services and continue to innovate, paying attention to the principle of prudence while maintaining healthy credit quality.

REFERENCES

- Abdelaziz, H., Rim, B., & Helmi, H. 2022. The interactional relationships between credit risk, liquidity risk and bank profitability in MENA region. *Global Business Review*, 23(3), 561-583.
- Azmansyah, Hayati, R., Agia, L. N., & Susanti, E. 2022. Analisis Tingkat Kesehatan Bank dengan Metode Risk Based Bank Rating Pada Bank Pembiayaan Rakyat Syariah (BPRS) di Provinsi Riau. *Jurnal Tabarru': Islamic Banking and Finance*, 5(1), 264-280.
- Bank Indonesia. 2011. Surat Edaran Bank Indonesia Nomor 13/24/DPNP Perihal Penilaian Tingkat Kesehatan Bank Umum. www.bi.go.id. 25 Oktober.
- Bank Indonesia. 2012. Kodifikasi Peraturan Bank Indonesia Kelembagaan Penilaian Tingkat Kesehatan Bank. Pusat Riset dan Edukasi Bank Sentral (PRES).
- Bank Indonesia. 2013. Surat Edaran Bank Indonesia Nomor 15/15/DPNP Perihal Pelaksanaan Good Corporate Governance Bagi Bank Umum. www.bi.go.id. 29 April.
- Christianto, D., & Munir, A. 2022. Analysis of The Effect of Liquidity, Leverage and Fixed Asset Turnover to Return on Assets of Oil Gas Mining Sub-Sector Companies (Listed in IDX For The Period 2018-2021). *Journal of Management and Leadership*, 5(1), 14-26.
- Crifo, P., Escrig-Olmedo, E., & Mottis, N. 2019. Corporate governance as a key driver of corporate sustainability in France: The role of board members and investor relations. *Journal of Business Ethics*, 159(4), 1127-1146.
- Dewi, S., Isharijadi, I., & Sulistyowati, N. W. 2022. Penilaian Tingkat Kesehatan Bank dengan Metode RGEC. *Tangible Journal*, 7(1), 1-8.
- Fitriani, F., Susianti, N., Meylianingrum, K., & Amalia, S. N. A. 2022. Analisis Tingkat Kesehatan Bank Menggunakan Metode RGEC Pada Bank Umum Syariah yang Terdaftar di Bursa Efek Indonesia Periode 2018-2020. *Iqtishaduna*, *13*(1), 91-105.
- Gaspar, J. J., Mangantar, M. M., & Sumarauw, J. S. 2022. Analisis Tingkat Kesehatan Bank dengan Menggunakan Metode RGEC Pada Bank Umum Bumn yang Terdaftar di BEI Periode 2015-2019. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi*, 10(1), 1356-1366.
- Ghosh, A. 2017. Sector-specific analysis of non-performing loans in the US banking system and their macroeconomic impact. Journal of Economics and Business.
- Hikmah, H. 2022. Analisis Tingkat Kesehatan Perbankan yang Terdaftar di Bursa Efek Indonesia. *COMPETITIVE Jurnal Akuntansi dan Keuangan*, 6(1), 92-97.
- Karadima, M., & Loury, H. 2020) *Non-performing loans in the euro area: Does bank market power matter?* International Review of Financial Analysis. 72: 101593.
- Khairi, A., Bahri, B., & Artha, B. 2021. A Literature Review of Non-Performing Loan. *Journal of Business and Management Review*, 2(5), 366-373.
- Kristina, L., & Prasetyo, I. 2022. Tingkat Kesehatan Bank Pembiayaan Rakyat Syari'ah (BPRS) di Jawa Tengah Selama Covid-19. *Monex: Journal of Accounting Research*, 11(2), 189-201.
- Maramis, P. A. 2022. Analisis Tingkat Kesehatan Bank Dengan Metode Rgec (Risk Profile, Good Corporate Governance, Earning, Capital) Pada PT Bank Mandiri (Persero) Tbk Periode 2015-2018. *Jurnal Pembangunan Ekonomi dan Keuangan Daerah*, 20(4).
- Naibaho, M., Mangantar, M., & Saerang, I. S. 2022. Analisis Tingkat Kesehatan Bank dengan Metode Risk Profile, Good Corporate Governance, Earnings, dan Capital Pada Bank BRI dan Bank Danamon Periode 2016-2020. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi*, 10(2).
- Naili, M., & Lahrichi, Y. 2022. The determinants of banks' credit risk: Review of the literature and future research agenda. *International Journal of Finance & Economics*, 27(1), 334-360.
- Puspitasari, E., Sudiyatno, B., Hartoto, W. E., & Widati, L. W. 2021. Net interest margin and return on assets: A Case Study in Indonesia. *The Journal of Asian Finance, Economics and Business*, 8(4), 727-734.
- Putri, H. T., & Suryani, A. 2022. Penggunaan Metode RGEC dalam Menilai Tingkat Kesehatan Bank: Suatu Kajian. *Ekonomis: Journal of Economics and Business*, 6(1), 264-270.
- Sari, S. P., & Sholikhah, H. 2019. Liquidity Risk Disclosure: A Review of Corporate Governance. *Riset Akuntansi dan Keuangan Indonesia*, 4(2), 147-155.

- I Kadek Bagiana et al., Analysis of Bank Soundness Level at Regional Development Bank of Bali for 2012 to 2021
- Solikhah, B., Wahyudin, A., & Rahmayanti, A. A. W. 2020. The extent of intellectual capital disclosure and corporate governance mechanism to increase market value. *The Journal of Asian Finance, Economics and Business*, 7(10), 119-128.
- Wijaya, R. 2019. Analysis of The Development of Return On Assets (ROA) and Return On Equity (ROE) to Measure Financial Performance. *Journal of Management Science*, 9(1), 40.
- Yunita, A. 2022. Analisis Tingkat Kesehatan Bank Dengan Menggunakan Metode Risk Profile, Good Corporate Governance, Earnings, Capital (RGEC) Pada Bank Muamalat Periode 2013-2017. *Science of Management and Students Research Journal (SMS)*, 2(3), 171-179.