

# Reconstructing gearing ratios and digital-based service rates to mitigate financial risks for sustainable development in Indonesia's credit guarantee industry

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**Abstract:** This research examines the role of the credit guarantee industry in supporting the growth of MSMEs in Indonesia through guarantee programs that aim to reduce information asymmetry between banks and MSMEs. Using structured interview methods and data triangulation techniques from various sources, this study analyzes the management of gearing ratio and tariff risks that significantly impact the financial stability of guarantee industry. The analysis results with NVIVO 12 and the Analytical Hierarchy Process (AHP) reveal digital transformation's importance in efficiency and transparency in risk management. This research also produces a digitalization design for the Program Gearing Ratio (PGR) and offers practical solutions through SWOT analysis to improve the guarantee capacity and sustainability of the industry. The findings contribute to the literature by proposing an integrated internal audit approach for financial risk mitigation in the credit guarantee industry.

**Keywords:** Credit guarantee, Digitalization, Gearing ratio, MSMEs, Risk management.

## 1. Introduction

The guarantee industry is one of the macro instruments created to assist the financial sector in strengthening the economy. This is very important for the growth of MSMEs (Micro, Small, and Medium Enterprises), which are substantial business entities in terms of number and capacity to employ people (Oberman et al., 2012; Wijaya et al., 2022). The purpose of a guarantee agency is to make it easier for businesses to obtain financing. To that end, the government offers a credit guarantee program that guarantees a percentage of bank loans to small and medium-sized enterprises (SMEs). The level of demand by SMEs is higher than the total amount of loans to SMEs, indicating an information imbalance between banks and SMEs (Ardic et al., 2011). In this scenario, the volume of loans to SMEs will increase due to the guarantee offering by the guarantee agency, which will reduce the information asymmetry between SMEs and banks. Banks and SMEs will lend more money to each other (Yoshino & Taghizadeh-Hesary, 2019). Collateral has historically been a foundation of trust for SMEs (Wijaya et al., 2022).

The guarantee sector is proliferating along with the increasing need for MSMEs to finance and diversify into other areas, such as infrastructure and exports (Junaidi, 2023). To improve efficiency and transparency, some guarantee agencies have undertaken digital transformation. Digitalization changes companies' innovation and competitiveness, especially in an increasingly advanced digital economy. Innovation and standardization are the primary keys to driving company competitiveness in the digital era (Yang et al., 2023). However, this progress also has many difficulties, especially regarding risk management. Maintaining the financial stability of guarantee institutions through sufficient capital reserves to address liquidity and solvency risks, and defaults, which often occur among MSMEs with a high-risk profile, is a crucial danger. As regulatory uncertainty can impact the operations and plans of a guarantee institution, adapting to regulatory changes is also a significant issue.

As a result of technological developments, guarantee agencies must now face additional operational risks in addition to default risk. These risks include system failures and cyber-attacks, which have the potential to disrupt the guarantee process and undermine consumer confidence (Kaur et al., 2021). Reputational risk is also a significant concern, as trust is a valuable asset in this industry. To ensure the viability of the guarantee sector, guarantee agencies must be closely supervised by financial regulators and create strong collaboration with financial institutions to properly handle these various risks (Gualandri et al., 2024; Seal et al., 2021).

The gearing ratio measures the total guarantee made by the guarantee company against its equity to assess how much credit is guaranteed compared to the equity owned. The Financial Services Authority (OJK) regulation Number 35 / POJK.05 / 2018 concerning the Implementation of the Financing Company Business regulates that the gearing ratio provisions that finance companies must meet are a maximum of 40 times with a division of 20 times for productive credit and 20 times for non-productive credit. Gearing ratios do not have a significant influence on risk disclosure because guarantee companies with high gearing ratios can be interpreted as being in poor financial condition compared to guarantee companies with low gearing ratios, provided that the gearing ratio limit is a suitable category (optimal for generating profits) (Tunji et al., 2015).

Based on tariff risk and gearing ratio risk, the risk management of credit guarantee companies has a significant impact on the performance of both risks, if credit guarantee companies fail to manage their risks, their performance will deteriorate both in the short and long term. The Financial Services Authority (OJK) is responsible for fulfilling this commitment through the sustainable finance program. To support institutions that apply sustainable finance principles following OJK regulation number 18/SEOJK.05/2018 concerning the Financial Health of Guarantee Institutions, guarantee institutions must maintain their financial health conditions where guarantee institutions are required to maintain gearing ratios for credit guarantees.

This research aims to find solutions to the problems faced by the credit guarantee industry in Indonesia, namely in increasing guarantee capacity and income (Guarantee Service Incentives), and increasing the ability of guarantee companies to bear credit risk. The novelty of this research lies in the integrated internal audit that mitigates financial risk.

## 2. Literature Review

### 2.1. Audit Theory

Audit theory encompasses a variety of approaches and methodologies aimed at ensuring the accuracy of information as well as the effectiveness of an organization's strategy. According to Akbaralievich (2020), audits not only focus on financial statements, but also include operational audits and marketing audits, which can improve overall company performance. In the context of marketing, marketing audits help organizations understand the market and evaluate the effectiveness of the strategies implemented (Cahya, 2019).

A marketing audit involves analyzing the external and internal environment, as well as the use of various analytical techniques such as SWOT analysis to identify the strengths, weaknesses, opportunities, and threats faced by the organization (Mansour Elkafrawi et al., 2023). Research by FESHCHUR et al. (2023) shows that the implementation of regular marketing audits can improve customer satisfaction and sales performance, providing a solid basis for strategic decision-making.

### 2.2. Technology Acceptance Model

The Technology Acceptance Model (TAM) is a theoretical framework developed by Fred Davis in 1989 to understand and predict user acceptance of new technologies. This model emphasizes two main variables: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). PU refers to the extent to which users believe that using a particular technology will improve their performance or productivity, while PEOU refers to the extent to which the technology is perceived to be easy to use. According to TAM, the higher users' perceptions of these two factors, the more likely they are to adopt the technology (Davis, 1989). TAM has been applied in various contexts, including education and healthcare, to provide insights into the psychological factors that influence technology acceptance.

(Venkatesh et al., 2016). The model also serves as a foundation for further research into technology acceptance, including the development of variations and modifications to include social factors and a broader user context (Venkatesh & Bala, 2008).

### 2.3. Risk Management

Risk management theory is a framework used to identify, analyze, and manage risks that may affect the achievement of organizational objectives. The process includes several key steps: context setting, risk identification, risk analysis, risk evaluation, risk treatment, and monitoring and review (ISO 31000:2018 Risk Management-Guidelines, 2018). Setting the context involves understanding the environment in which risks are managed, while risk identification focuses on recognizing the potential threats that exist. Thereafter, risk analysis is conducted to understand the likelihood and impact, followed by evaluation to determine which risks need to be addressed further. Risk handling includes the development of strategies to reduce or avoid those risks. With this systematic approach, risk management aims not only to minimize losses, but also to capitalize on existing opportunities, thus supporting the sustainability and growth of the organization (Barraza de la Paz et al., 2023).

### 2.4. Research Method

The field study conducted by this research uses a structured interview method with triangulated data because it uses a variety of different data sources in the research to see if the results are consistent between these sources, namely the credit guarantee company, the credit granting bank, and the credit recipient customers with the following details:

**Table 1.**  
Interviewee.

	<b>Interviewee</b>
1.	PT. Jamkrida Jatim
2.	PT. Jamkrida Jateng
3.	PT. Jamkrida Jabar
4.	PT. Jamkrida Jakarta
5.	Bank Jatim Malang Branch
6.	BPR Jatim Kediri Branch
7.	BPR Jatim Kepanjen Branch
8.	Client Surety Bond Malang
9.	Client Surety Bond Mojokerto
10.	Client Surety Bond Tuban

The results of interviews with these parties will then be processed using the Analytical Hierarchy Process (AHP) to determine the priority scale with several stages, namely making a pairwise comparison matrix, calculating the eigenvalue of normality, calculating the eigenvector value, calculating the consistency index (CI), and calculating the consistency ratio (CR).

The results of this analysis will result in a PGR (Program Gearing Ratio) digitalization design which aims to utilize digital technology in managing gearing ratios in companies, especially in the credit guarantee industry, and follow-up steps in the form of strategies with SWOT analysis (Strengths, Weakness, Opportunities, and Threats) using EFAS (External Factor Analysis Summary) and IFAS (Internal Factor Analysis Summary) to produce sustainability in the performance of the credit guarantee industry.

## 3. Result

The gearing ratio measures the extent to which a company can guarantee credit compared to equity. In the credit guarantee industry, the gearing ratio provides an overview of the financial risk and stability of the company. A high ratio indicates the level of risk guaranteed, while a low ratio indicates that the guarantee company has been unable to optimize its equity capacity. To manage

gearing ratios, guarantee institutions consider diversifying financing sources, including seeking additional equity sources. One example is that as of the end of June 2024, PT Jamkrida Jatim had a gearing ratio of 34 times, close to the maximum limit of 40 times set by OJK. This shows that the company is still in a healthy position, but there is room for improvement or adjustment. To increase its guarantor capacity, PT Jamkrida Jatim is submitting additional applications to the East Java Provincial Government and other potential shareholders.

The guarantee fee tariff (IJP) is the amount of money received by the guarantee company from the guarantee in the context of guarantee activities. The current IJP tariff is still based on market rates that overlap with insurance rates even though the Financial Services Authority has regulated it regarding the limits of allowed and not allowed services. This tariff still does not show adequate coverage of claims and it is necessary for the Financial Services Authority must regulate the tariff limit for the guarantee industry so as to create a sustainable guarantee ecosystem.

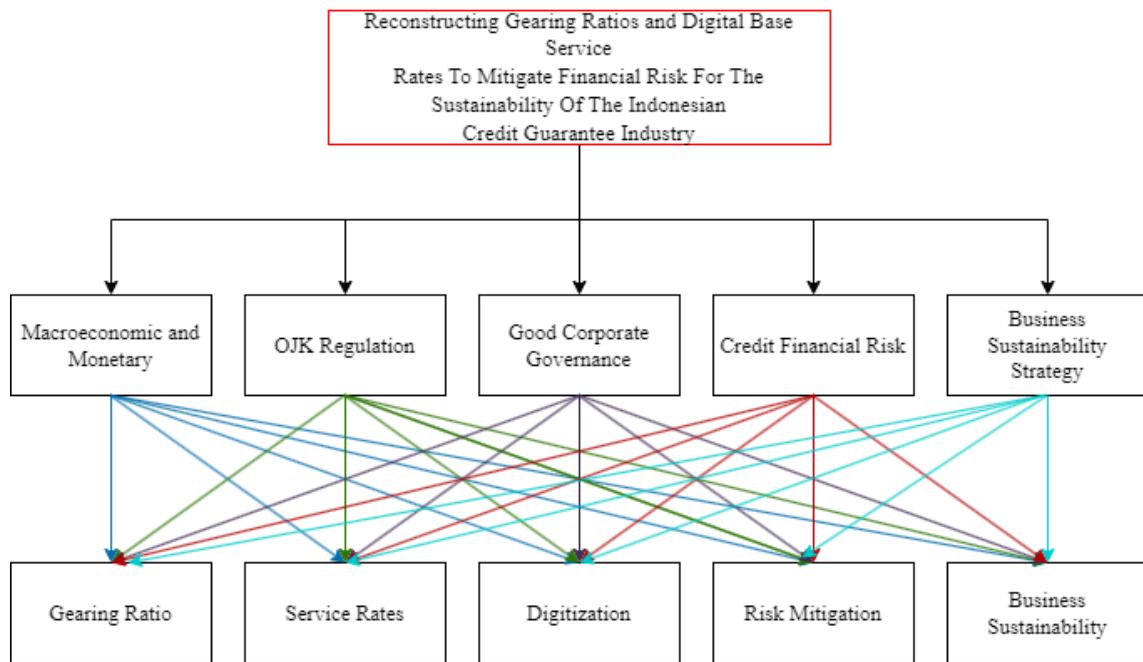
The results of this study include research design, field research, and data collection in the form of interviews with competent parties in the credit guarantee industry. The data obtained through interviews with ten related parties was then analyzed using several stages as follows:

### 3.1. Analytical Hierarchy Process (AHP)

**Table 2.**  
Consistency index.

Matrix size (n)	IR value (Index random)
1. 2	0.00
3	0.58
4	0.90
5	1.12
6	1.24
7	1.32
8	1.41
9	1.45
10	1.49
11	1.51
12	1.48
13	1.56
14	1.57
15	1.59

### 3.2. Creating a Pairwise Comparison Matrix



**Figure 1.**  
AHP Criteria.

This study has five criteria, namely macroeconomic and monetary criteria, financial services authority regulations, governance, credit financial risk, and business sustainability strategies. The value in this pairwise comparison matrix is based on decision-making judgment to represent the relative importance of one element to another.

**Table 3.**  
Priority comparison.

Intensity of importance on an absolute scale	Definition
1	Equal importance
3	Weak importance of one over another
5	Essential or strong importance
7	Demonstrated importance
9	Extreme importance
2, 4, 6, 8	Values between two adjacent considerations. This value is given when there are two compromises between 2 options

The fundamental scale for pairwise comparisons is as in Table 4.

**Table 4.**  
Pairwise comparison matrix.

Criteria	Macroeconomic and monetary	Financial services authority regulation	Corporate governance	Credit financial risk	Business sustainability strategy
Macroeconomic and monetary	1	2	3	3	5
Financial services authority Regulation	0.5	1	1.5	1.5	2.5
Corporate governance	0.33	0.67	1	1	1.67
Credit financial risk	0.33	0.67	1	1	1.67
Business sustainability strategy	0.2	0.4	0.6	0.6	1
Total	2.37	4.73	7.1	7.1	11.83

### 3.3. Calculating the Eigenvalue of Normality

**Table 5.**  
Eigen normalization.

Criteria	Macroeconomic and monetary	Financial services authority regulation	Corporate governance	Credit financial risk	Business sustainability strategy	Total	Priority
Macroeconomic and monetary	0.42	0.42	0.42	0.42	0.42	2.11	0.42
Financial services authority regulation	0.21	0.21	0.21	0.21	0.21	1.06	0.21
Corporate governance	0.14	0.14	0.14	0.14	0.14	0.70	0.14
Credit financial risk	0.14	0.14	0.14	0.14	0.14	0.70	0.14
Business sustainability strategy	0.08	0.08	0.08	0.08	0.08	0.42	0.08

### 3.4. Calculating the Eigenvalue of the Vector

**Table 6.**  
Eigen vectors.

Criteria	Macroeconomic and monetary	Financial services authority regulation	Corporate governance	Credit financial risk	Business sustainability strategy	Total
Macroeconomic and monetary	0.42	0.42	0.63	0.63	1.06	3.17
Financial services authority regulation	0.07	0.14	0.21	0.21	0.35	0.99

Corporate governance	0.05	0.09	0.14	0.14	0.23	0.66
Credit financial risk	0.03	0.06	0.08	0.08	0.14	0.39
Business Sustainability strategy	0.20	0.40	0.60	0.60	1.00	2.80

### 3.5. Calculating the Consistency Index Value (CI)

This calculation is used to ensure that the value of the consistency ratio (CR) < 0,1.

**Table 7.**  
Consistency ratio calculation.

Criteria	Total	Priority	Results
Macroeconomic and monetary	3.17	0.42	3.59
Financial services authority regulation	0.99	0.21	1.20
Corporate governance	0.66	0.14	0.80
Credit financial risk	0.39	0.14	0.54
Business sustainability strategy	2.80	0.08	2.88
Total			9.01

From the table above, the following values are obtained:

Total result = 9.01

n (number of criteria) = 5

$\lambda \text{ max (sum divided by n)} = 9,01 : 5 = 1,80$

$CI ((\lambda \text{ max} - n)/n) = (1,80 - 5) : 5 = -0,64$

#### 1. Calculating the Consistency Ratio (CR)

$CR = CI/IR \quad CR = (CI / IR) = -0,64 : 1,12 = -0,57$

Where CR = Consistency Ratio

CI = Consistency Index

IR = Random Consistency Index

Since  $CR < 0.1$ , the preference weighting is **consistent**.

### 3.6. PGR Digitalization Design

Based on the analysis results with AHP, a context diagram of the decision support system in the credit guarantee industry is obtained to produce a PGR (Program Gearing Ratio) digitization design. At PT Jamkrida Jatim, there are five entities related to digitalization: the Commissioner, President Director, Director of Guarantee, Director of Finance, and Head of Business Plan and IT who regulate all forms of digitalization at Jamkrida.





**Table 8.**  
IFAS and EFAS SWOT analysis.

<b>Internal factor evaluation (IFE)</b>							
<b>No</b>	<b>Strengths</b>		<b>Weight</b>	<b>Rating</b>	<b>Total</b>		
1	The Guarantee Industry has managed to maintain its gearing ratio at 34 times, which is within the healthy range and below the maximum limit set by OJK, which is 40 times.	7.5	0.08	8	0.60		
2	The Guarantee Industry has successfully increased investor and shareholder confidence through improved capital efficiency.	4	0.04	5	0.20		
3	Competitive guarantee service rates the average guarantee service rate in Indonesia ranges from 0.5% - 2.5% of the loan value.	5	0.05	6	0.30		
4	Flexibility in Pricing according to risk level	7	0.07	8	0.56		
5	Strengthen relationships with financial institutions and investors	10	0.10	8	0.80		
6	Ensure long-term operational sustainability	5	0.05	7	0.35		
7	Speed up the assurance and decision-making process	5	0.05	8	0.40		
8	Enable early risk detection with advanced analytics technology	5	0.05	6	0.30		
9	Ensure long-term operational sustainability of the company	5	0.05	8	0.40		
10	Enhance reputation as a socially and environmentally responsible company	2	0.02	4	0.08	3.99	$x = (3.99 - 2.90)$
						$x =$	1.09
<b>No</b>	<b>Weaknesses</b>						
1	Reliance on Additional Capital	10	0.10	8	0.80		
2	Dependence on Debt	2	0.02	4	0.08		
3	Uncertainty in Tariff Determination leads to customer confusion and dissatisfaction	7.5	0.08	8	0.60		
4	Less transparent tariffs can reduce customer trust.	3	0.03	6	0.18		

5	Data Limitations for Risk Analysis. especially for the MSME segment that does not have a long credit track record.	5	0.05	6	0.30		
6	High cost of implementing a comprehensive mitigation strategy.	3	0.03	5	0.15		
7	Requires new skills and training for the workforce.	3	0.03	4	0.12		
8	Reliance on technology can be a risk in the event of technical glitches.	3	0.03	5	0.15		
9	Implementation of sustainability strategies can require a large initial investment	3	0.03	4	0.12		
10	Dividend Distribution and Restricted Reserves:	5	0.05	8	0.40	2.90	
		100	1.00				
External Factor Evaluation (EFE)							
	Opportunities						
1	Increased demand for credit guarantees especially in the MSME sector and infrastructure projects. there are opportunities for credit guarantee companies to increase the scale of operations and use a higher gearing ratio.	10	0.1000	8	0.80		
2	Service Development with Other Banks	7	0.0700	8	0.56		
3	Peluang mengembangkan produk underwriting baru dengan harga yang lebih kompetitif	7	0.0700	7	0.49		
4	Strengthening customer relationships through tariff transparency	5	0.0500	4	0.20		
5	Enable the development of new. more secure underwriting products	5	0.0500	6	0.30		
6	Opportunity for safer investment portfolio diversification	5	0.0500	3	0.15		
7	Government support for digitalization	3	0.0300	5	0.15		
8	Opportunity to become a market leader in digital innovation in the guarantee	7	0.0700	4	0.28		

	sector						
9	Opportunity to attract environmentally conscious investors and customers	2	0.0200	3	0.06		
10	Potential to develop sustainable and innovative products and services	4	0.0400	5	0.20		
					3.19	3.19	$(Y=(3.19-2.70))$
	Threats					Y =	0.49
1	New regulations that may affect the implementation of stricter ratios	3	0.0300	4	0.12		
2	Economic Uncertainty and Credit Risk	7	0.0700	8	0.56		
3	Competition from other companies offering lower rates	7	0.0700	8	0.56		
4	Possible regulatory interventions that limit the company's ability to adjust tariffs	2	0.0200	2	0.04		
5	Global economic crisis that may increase overall risk	5	0.0500	6	0.3		
6	Competition from other companies that are more aggressive in taking risks	7	0.0700	8	0.56		
7	Cybersecurity threats and potential data breaches.	3	0.0300	4	0.12		
8	Risk of technology failure that could disrupt operations	2	0.0200	4	0.08		
9	Competition from other companies that are more advanced in sustainability initiatives	5	0.0500	4	0.2		
10	Reputational risk if the company fails to meet expected sustainability standards.	4	0.0400	4	0.16	2.70	
		100	1.00		2.70		

#### 4. Conclusion

This research highlights the importance of the credit guarantee industry in supporting the growth of MSMEs in Indonesia, primarily through credit guarantee programs that aim to reduce information asymmetry between banks and SMEs. With the growing credit guarantee sector, including diversification into other sectors such as infrastructure and exports, there is an increasing need for adequate financing and risk management. Digital transformation and the use of big data by

guarantee agencies a significant steps towards improving efficiency and transparency, but they also present new risks such as operational and reputational risks,

The gearing ratio is an important indicator in assessing the financial health of guarantee institutions, where the optimal ratio is a maximum of 40 times and an in-depth study needs to be carried out regarding its calculation policy, considering the quality of guarantee risk.

Guarantee Fee Rates (IJP) in Indonesia need to be regulated by the Financial Services Authority regarding the number of guarantee rates so that no tariff war impacts the performance of the credit guarantee industry. This study found that tariff risk management and gearing ratios have a significant impact on the performance of credit guarantee institutions, which if not managed properly can result in decreased performance both in the short and long term.

This research utilizes NVIVO 12 to analyze the data and find critical themes such as risk management, digitalization, and sustainability through interviews with various relevant parties. The Analytical Hierarchy Process (AHP) was used to determine the priority scale in risk management and support the digitalization design of the Program Gearing Ratio (PGR) which aims to improve the management of gearing ratios in the credit guarantee industry.

The next step of SWOT analysis using IFAS and EFAS provides a more in-depth view of credit guarantee institutions' strengths, weaknesses, opportunities, and threats. This research concludes that credit guarantee institutions' financial sustainability and stability can be achieved through effective risk management, digital transformation, and strong collaboration with financial regulators and other financial institutions.

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