Strengthening Market Discipline by Depositors : A TISM and MICMAC Approach

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Abstract

Purpose : The study aimed at identifying the interrelationships between the different factors that influence market discipline by bank depositors. Given the increasing uncertainty and volatility associated with the banking system, examining the influencers of depositor behavior was necessary.

Methodology : Ten determinants were identified through a literature review and confirmed through expert consultation. Furthermore, inter-determinant relationships were established, and a hierarchical structure of the identified determinants was constructed using total interpretive structural modelling (TISM) and Matrice d'Impacts Croisés Multiplication Appliquée á un Classement (MICMAC) analysis.

Findings : According to the study, maintaining government guarantees in control and having a solid deposit insurance scheme are essential for the banking sector's stability. Furthermore, depositor awareness and knowledge are known to achieve effective market discipline. Bank disclosure and transparency contribute significantly to the improvement of market discipline. Additionally, these characteristics encourage additional determined elements for increased attention and surveillance by depositors.

Practical Implications : The analysis helped identify determinants according to their ability to influence and get influenced by other determinants. The determinants classified as independent factors, viz., deposit insurance system, knowledge of depositors, and presence of government guarantee, should be strengthened to bring about better market discipline.

Originality : Several studies in the past have discussed the importance of market discipline to ensure the efficient functioning of banks. Nevertheless, very few studies have attempted to identify the factors that drive market discipline and their interlinkages, which is a unique contribution of this study.

Keywords : **market discipline, depositor discipline, bank failure, bank supervision, government bailout**

JEL Classification Codes : E44, G01, G18, G21

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Market discipline assumes importance in financial regulation under the Basel II and III requirements. It supplements financial regulation by creating a system of checks and balances that ensures the participation of all stakeholders in a financial system. Given that banks are vital to a country's economic health (Viswanathan & Muthuraj, 2019), they must function in an environment that minimizes the burden of regulation without compromising the soundness and safety of the system. This is expedited through

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market discipline (Berger & Turk-Ariss, 2015). Depositors keep a close check on the risk-taking behavior of banks through price channels and quantity channels (Carey et al., 2012), where the former operates through a demand for higher interest in times of uncertainty or periods of high-risk taking, while the latter implies maintaining lesser deposits with the risky banks. Essentially, the operation of market discipline would suffice in maintaining the health of a banking system. However, given the recent bank failures observed globally, the strength of market discipline stands questioned. This necessitates an exploration of catalysts that enhance market discipline, making the present study topical. It assumes added significance given that financial markets are growing interdependently (Shah, 2022), amplifying the impacts of bank failure-induced contagion. There has been significant research on the factors that affect market discipline. Still, in order to reveal the financial system's dynamic, it is necessary to see these factors as a network. With the use of total interpretive structural modeling (TISM) and Matrice d'Impacts Croisés Multiplication Appliqué á un Classement (MICMAC) analysis, it is possible to classify the variables that affect a phenomenon according to how they function in a particular network. The current analysis underlines the elements that must be adjusted as soon as possible to enable depositors to supervise banks and behaviorally ensure sustainable risk-taking inclinations effectively.

Literature Review

Market Discipline by Depositors : Influencing Bank Behavior and Financial Stability

Market discipline involves close monitoring and supervision of bank performance by bank creditors (Afzal & Firdousi, 2022). The basic tenet behind market discipline is that depositors act as rational economic agents who make informed decisions to protect their interests (Flannery & Bliss, 2019). If depositors believe that a bank is financially sound, they are more likely to deposit their funds—even at a moderate rate of return—providing the bank with a stable funding source (Brandao-Marques et al., 2020). On the other hand, if depositors perceive a bank as risky or facing financial difficulties, they may either withdraw their funds or seek a higher rate of return, which can lead to a loss of liquidity and potentially spark off a bank run (Duffie, 2019). Market discipline by depositors is imperative for stimulating financial stability and moderating moral hazard in the banking system (Vives, 2019). It incentivizes banks to uphold sound financial practices, manage risks efficiently, and ensure transparency to attract and preserve depositors' trust (Djalilov & Piesse, 2019). Banks are more likely to adopt prudent lending and investing procedures to avoid potential runs and maintain their reputation when they are confident that depositors are vigilant and can withdraw their money as needed (Martinez Peria & Schmukler, 2001). Although market discipline is considered essential for the financial system's stability, there is a shortage of thorough research addressing the primary factors that significantly affect market discipline, which is what the current study seeks to do.

Factors Influencing the Market Discipline

Building on the previous debate, it is still difficult to comprehend the overall idea of market discipline. This necessitates the creation of a framework that takes into consideration the variables affecting the event. In this regard, several factors have been discovered.

For instance, capital adequacy criteria are regulatory standards to guarantee financial soundness in banks (Tran & Pham, 2022). Such requirements protect depositors from market failure (Grassa et al., 2022). Regulatory policy changes in the post-crisis period in Indonesia constituted changes in capital regulation. In response, Hadad et al. (2011) found evidence of reduced market discipline. Furthermore, Afzal et al. (2023) found that capital

adequacy and asset quality are negatively related to the cost of funds for banks. It follows that depositors demand lesser interest rates when there is compliance with the capital adequacy norms. In addition to capital regulations in Indonesia, the deposit insurance (DI) system was revamped with the introduction of a blanket guarantee scheme. DI is used in multiple nations to promote stability as a part of the financial system safety net (Anginer et al., 2014). One of the consequences of such a provision is its distortionary nature, given that it provides buoyancy against risk-taking activities (Karas et al., 2013) and allows reduced monitoring on the part of depositors (Anderson et al., 2022). The evidence on how much the scope of DI coverage is supplied varies. According to Boyle et al. (2015), depositors from countries with explicit DI had higher withdrawal risk. However, Ioannidou and de Dreu (2019) contended that Bolivia's explicit DI reduced the incentive to monitor bank behavior.

In an implicit DI system, the probability of not being compensated in the event of loss remains. However, implicit DI has often implied an unconditional guarantee of safety to depositors. This has reduced market discipline somewhat (Acharya & Thakor, 2016). In Columbia, however, consistency in market discipline was observed despite introducing full coverage (Quintero-V, 2023). Introducing DI also reduced household sensitivity to bank capitalization (Karas et al., 2013). However, bank ownership seems to factor in as an element of risk. Arnold et al. (2016) found more excellent monitoring of savings and cooperative banks, as against commercial banks, in a given DI setup.

Besides DI, depositors' funds may also be protected through government guarantees. With expectations of a bailout, the effectiveness of market discipline is hampered in the case of government guarantees as found by Hett and Schmidt (2017) for systemically important banks during the 2008 financial crisis. Although the presence of market discipline reduces government intervention, government protection is also vital to the efficacy of market discipline (Berger et al., 2023; Grassa et al., 2022) as it maintains confidence in the banking system.

Information is one of the prerequisites for disciplining bank management. Transparency, which seems to be limited in boom times due to decreased incentive to monitor and in crisis times due to perceived inadequacy regardless of the extent supplied, is brought about by the effective use of information (Freixas & Laux, 2011). On the contrary, however, Semenova (2012) found an absence of statistically significant influence of banking system transparency on market discipline in a cross-country analysis. Besides adequate information, depositors must possess enough knowledge and awareness as market discipline is enhanced through depositors' financial knowledge and skills (Dewi & Wardhana, 2022). A DI system's inefficiency frequently refers to the bank clients' poor public consciousness and inadequate cognizance (Bijlsma & Van Der Wiel, 2015). Nier and Baumann (2006) outlined three prerequisites for the effective operation of market discipline, including depositor awareness of the danger of loss in the case of bankruptcy and access to information for evaluating bank default.

Market discipline has also been affected by the level of rivalry among banks in a financial system and the degree of confidence between banks and depositors. The volatility observed in relative market power between banks is a primary spillover of banking sector competition. Two views examine this effect: “the competition fragility view” and the “competition stability view.” Although the former explicates the effect through possible profit margins and the latter through the loan market environment, both views propound that higher market power leads to higher risk-taking (Bikker & Spierdijk, 2017). Although a higher market power stimulates risk preference, there remains a contradiction with respect to the likelihood of bank competition insinuating an augmented propensity towards risk. While a few studies suggest that higher competition makes risk favorable, forcing banks into operation with minimum capital, others believe that competitive banking environments are instrumental in averting crises (Tabak et al., 2012). The degree of trust between banks and their depositors plays a major role in how competition operates. Brown et al. (2020) stated that this relationship measures how much faith exists between these entities. Depositors of familiar banks tend to be less sensitive to bank risk during a financial crisis than unfamiliar banks (Schoors et al., 2019), implying that interest demands do not completely reflect the banking system's financial health. Deposit withdrawals from a bank in crisis are more likely to happen than they

are from a bank that is not in distress. However, depending on a single bank account or maintaining a reliable lending relationship with a troubled bank reduces the likelihood of taking part in a bank run (Brown et al., 2013).

Bank balance sheets, or asset quality, also reveal the gravity of depositor vigilance, with gross and net non-performing asset (NPA) ratios being significant indicators of bank health (Tabassum & Pande, 2021; Vijaykumar & Tripathi, 2022). Banks with larger systemic sizes are characterized by greater market discipline, given that they become too big to save in times of crisis (Bertay et al., 2013). As Abata (2014) put forth, a bank's asset quality reflects the quality of bank management, which allows for gauging the extent of credit risk associated with its operations. Better bank performance evaluation is made possible by implementing regulatory frameworks and supervision. Through its guiding principles, the Basel Committee establishes benchmarks for the steady and complete monitoring of banking systems (Bank for International Settlements [BIS], 2012). According to Podpiera (2006), the principles improve the performance of the banking industry and have a favorable, significant relationship with bank soundness (Demirgüç-Kunt et al., 2006). Respecting the principles improves openness while bolstering market discipline. Analysis of post-crisis vigilance levels in countries where bank regulation and supervision place little emphasis on market discipline found no discernible room for improvement (Cubillas et al., 2012). In contrast, in financial systems where regulation and supervision are dependent on the functioning of market discipline, post-crisis periods witness increased exercise of market discipline. Market discipline was found to have worsened following the crisis (Hadad et al., 2011).

Depositors, however, have other channels to park their funds apart from banks; greater availability of such alternatives brings about better market discipline (Mirza et al., 2016). Global bond markets have shown more integration since the 2008 financial crisis (Patel et al., 2023), and increasing financial awareness is boosting portfolio diversification and investment motivation (Nag & Shah, 2022).

Research Design and Modeling

TISM is a qualitative tool for systematically structuring compound phenomena that enables justifying relationships established through the model (Rizvi et al., 2019; Sushil, 2012; Warfield, 1974). The MICMAC analysis method, created by Duperrin and Godet (1973), helps classify factors that influence a phenomenon according to their relative importance. TISM and MICMAC have emerged as common approaches to qualitative analysis in the field of finance, as shown by Aarthi and Suresh (2018), Akhter et al. (2021), Aviantara (2021), Rana et al. (2018), and Rizvi et al. (2019).

In the present study, factors are identified through literature and discussed with five experts from the banking sector (Azevedo et al., 2013). Experts consulted throughout the study are academicians or industry experts with over five years of experience. "Ownership structure," "Market capitalization," and "Size of depositor pool" are additionally found but disregarded during expert consultation in addition to the variables already taken into account. The 10 determined post-consultation factors are compiled in Table 1.

Based on discussions with academics and industry experts, contextual linkages between the elements are created (Behl et al., 2018). Responses were sought in terms of Yes or No, and a knowledge base was developed through consultations with 30 experts in the form of a questionnaire over the latter half of 2020. The knowledge base is then converted into the VAXO matrix, or the structural self-interaction matrix (SSIM), based on the 2/3rd proportion criterion (Sushil, 2018). According to Attri et al. (2013), the responses in the SSIM are coded as *V*, *A*, *X*, and *O*. *V* indicates that factor *"j"* is impacted by factor *"i"; A* indicates that factor *"j"* has an impact on factor *"i," X* indicates a bidirectional link, and *O* indicates that there is no relationship between the components under discussion. The SSIM produced for the current study is shown in Table 2.

The SSIM is further condensed into the reachability matrix (RM). Every *V* from the SSIM stood for an *"i"* to

Table 1. ***Identified Factors***

Factor Code	Factor	Interpretation	Source
V1	Capital Adequacy Requirements	It is a metric for the financial strength of a banking system, ascertained as the minimum capital a bank must hold as a proportion of its risk-weighted assets.	Thiagarajan et al. (2011)
V2	DI System	It alludes to the amount of coverage offered when encountering bank failure.	Nayak et al. (2019) ; Wheelock & Kumbhakar (1995)
V3	Alternative Investment Avenues	Refers to the availability of alternatives to bank deposits for depositors, such as mutual funds and corporate bonds.	Afzal et al. (2020)
V4	Disclosure and Transparency of Banks	Refers to the adequacy in disclosure of specific parameters that enable market participants to gauge the financial performance of banks.	Reserve Bank of India [RBI] (2015) ; Mateev et al. (2023)
V5	Knowledge of Depositors	Refers to the degree of depositors' knowledge of the current DI system and their perceptions of the security of their deposits.	International Association of Deposit Insurers [IADI] (2009)
V6	Competition among Banks	It reflects the degree of competitiveness banks face or their relative market power.	Keeley (1990) ; Nier & Baumann (2006)
V7	The Presence of a Government Guarantee	Reflects the likelihood of a failed bank getting bailed out by the government over experiencing suspension in operations.	Nier & Baumann (2006)
V8	Asset Quality	Examines the traits of a bank's loan portfolio and credit management program.	Federal Deposit Insurance Corporation [FDIC] (2012)
V9	Bank-Client Relationship	Signifies a metric of faith between the customer and the bank.	Brown et al. (2020)
V10	Effectiveness of Supervision	Refers to the degree of adherence to the core principles for Effective Banking Supervision as drafted by the Basel Committee on Banking Supervision.	Bank for International Settlements [BIS] (2012) ; Choi & Sohn (2014)

Table 2. ***Structural Self-Interaction Matrix***

	Effectiveness of Supervision	Bank-Client Relationship	Asset Quality	The Presence of a Government Guarantee	Competition among Banks	Knowledge of Depositors	Disclosure and Transparency of Banks	Alternative Investment Avenues	DI System	Capital Adequacy Requirements
Capital Adequacy Requirements	*A*	*A*	*X*	*A*	*X*	*A*	*A*	*O*	*A*	
DI System	*O*	*O*	*V*	*X*	*V*	*V*	*A*	*O*		
Alternative Investment Avenues	*V*	*O*	*A*	*A*	*V*	*A*	*O*			
Disclosure and Transparency of Banks	*X*	*V*	*O*	*A*	*X*	*X*				
Knowledge of Depositors	*O*	*V*	*V*	*X*	*V*					

Competition among Banks	*V*	*V*	*V*	*A*
The Presence of a Government Guarantee	*X*	*O*	*V*	
Asset Quality	*V*	*X*		
Bank-Client Relationship	*A*			
Effectiveness of Supervision				

Table 3. ***Reachability Matrix***

i ↓ *j* →	Effectiveness of Supervision	Bank-Client Relationship	Asset Quality	The Presence of a Government Guarantee	Competition among Banks	Knowledge of Depositors	Disclosure and Transparency of Banks	Alternative Investment Avenues	DI System	Capital Adequacy Requirements
Capital Adequacy Requirements	0	0	1	0	1	0	0	0	0	1
DI System	0	0	1	1	1	1	0	0	1	1
Alternative Investment Avenues	1	0	0	0	1	0	0	1	0	0
Disclosure and Transparency of Banks	1	1	0	0	1	1	1	0	1	1
Knowledge of Depositors	0	1	1	1	1	1	1	1	0	1
Competition among Banks	1	1	1	0	1	0	1	0	0	1
The Presence of a Government Guarantee	1	0	1	1	1	1	1	1	1	1
Asset Quality	1	1	1	0	0	0	0	1	0	1
Bank-Client Relationship	0	1	1	0	0	0	0	0	0	0
Effectiveness of Supervision	1	1	0	1	0	0	1	0	0	1

"j" entry of 1 and a *"j"* to *"i"* entry of 0, whereas an *A* reflected as an *"i"* to *"j"* entry of 0 with the corresponding *"j"* to *"i"* entry as 1. Analogously, *X* from the SSIM results in *"i"* to *"j"* and *"j"* to *"i"* entries as 1, whereas every *O* reflected as *"i"* to *"j"* and *"j"* to *"i"* entry as 0 (Kumar et al., 2019; Shibin et al., 2017). The RM for the present study is shown in Table 3.

The RM is checked for transitive relationships. They are established through inference, and the significant

Table 4. ***Final Reachability Matrix***

c *j* →	Effectiveness of Supervision	Bank-Client Relationship	Asset Quality	The Presence of a Government Guarantee	Competition among Banks	Knowledge of Depositors	Disclosure and Transparency of Banks	Alternative Investment Avenues	DI System	Capital Adequacy Requirements
Capital Adequacy Requirements	1*	0	1	0	1	0	0	0	0	1
DI System	0	0	1	1	1	1	0	1*	1	1
Alternative Investment Avenues	1	0	0	0	1	0	0	1	0	0
Disclosure and Transparency of Banks	1	1	1*	0	1	1	1	1*	1	1
Knowledge of Depositors	1*	1	1	1	1	1	1	1	1*	1
Competition among Banks	1	1	1	0	1	0	1	0	0	1
The Presence of a Government Guarantee	1	0	1	1	1	1	1	1	1	1
Asset Quality	1	1	1	0	1*	0	1*	1	0	1
Bank-Client Relationship	0	1	1	0	0	0	0	0	0	0
Effectiveness of Supervision	1	1	0	1	0	0	1	0	0	1

ones are retained. Significant transitive links are confirmed through expert consultation. The final reachability matrix (FRM) is the outcome of this approach, as shown in Table 4. Each transitive relationship is depicted by an entry of 1*(Lakshmi Priyadarsini & Suresh, 2020). The interpretative matrix (IM), which explains the connections between the mentioned elements, is displayed in Table 5.

Analysis and Results

Considering the interrelationships revealed between the identified factors, a hierarchy is established to understand their relative prominence in affecting market discipline. This is achieved through level partitioning based on two sets associated with each factor: the reachability set and the antecedent set. The reachability set for a factor consists of the factors it influences, while the antecedent set consists of the factors that influence the factor (Sindhwani & Malhotra, 2017). The cardinality of the reachability set is the driving power of the factor, while the cardinality of the antecedent set is the dependence power of the factor (Talib & Rahman, 2020). The driving power is determined by the number of ones in the row associated with the factor in the FRM, and the number in the associated column determines the dependence power. Both powers can take a minimum value of 1 and a maximum value of 10. The levels are determined once each factor's reachability and antecedent sets are arrived at.

Table 5. ***Interpretive Matrix***

	Capital Adequacy Requirements	DI System	Alternative Investment Avenues	Transparency and Disclosure of Banks	Knowledge of Depositors	Competition among Banks	Presence of Government Guarantee	Asset Quality	Bank-Client Relationship	Effectiveness of Supervision
Capital Adequacy Requirements						Increased capital requirements concentrate on the banking industry, reducing competition.		Higher levels of capital adequacy usually increase levels of NPAs.		Compliance with capital adequacy requirements ensures better adherence to core principles.
Deposit Insurance System	The higher the DI, the higher the preference of banks to maintain CRAR only up to the statutory limit.		Characteristics of the DI system influence the choice between bank deposits and other alternatives.		The 16 core principlesof DI advocate public awareness.	Limited DI competition among banks.	DI system backed by the government is likely to improve financial stability in the economy.	The presence of a DI system is likely to deplete asset quality due to high-risk propensity.		
Alternative Investment Avenues						Banks are likely to innovate in the presence of alternatives.				With alternatives, banks will likely adhere to the core principles to stay competitive.
Transparency and Disclosure of Banks	Adequate disclosure of financial parameters would ensure better compliance with capital adequacy requirements.	Many banks in the financial system reporting vulnerability implies the need for raising the DI cover to sustain depositor confidence.	Fair and transparent disclosures by banks play a crucial role in influencing depositors to invest with banks.		Adequate disclosure of banks' financial information enhances awareness among depositors.	Banks can stay competitive through the provision of reliable and timely information.		Regulatory disclosure requirements that enable market participants to gauge banks' asset quality stimulate banks to maintain decent asset quality.	Fair and transparent disclosures strengthen bank-client relationships.	Adequate disclosures ensure better adherence to core principles.

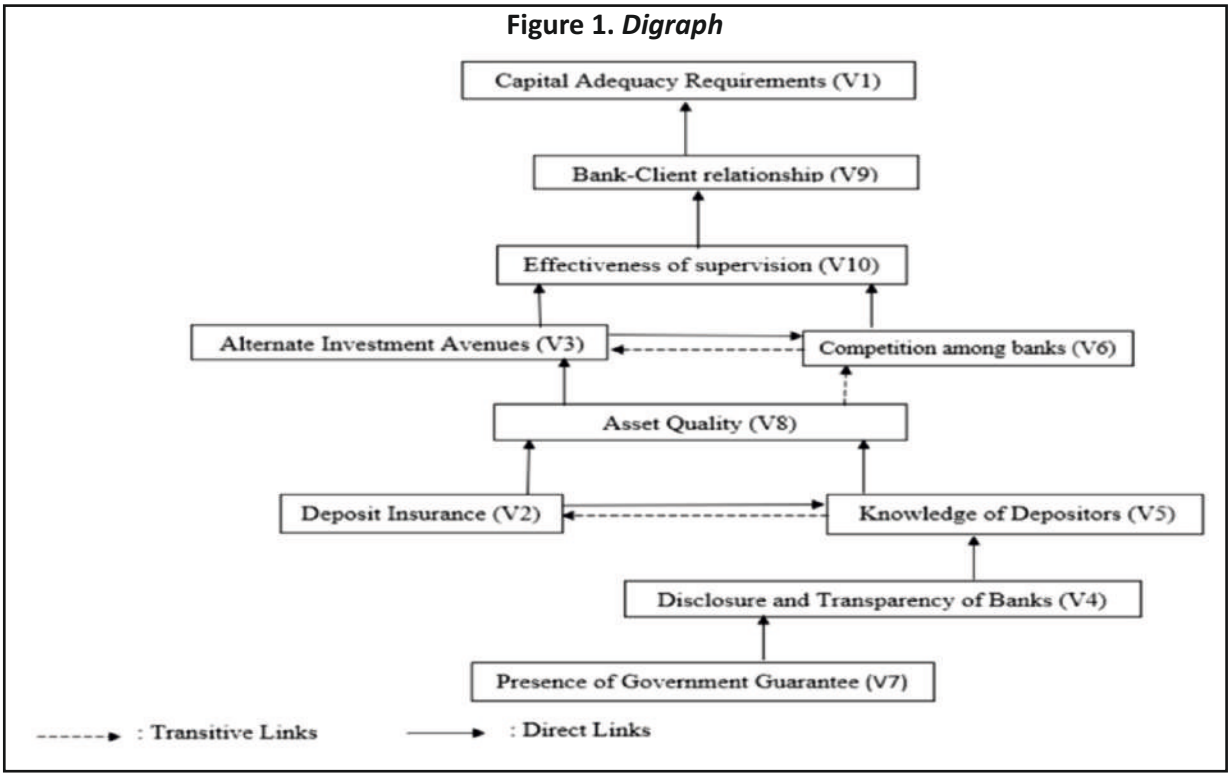
Knowledge of Depositors	The greater the awareness among depositors, the greater the impetus to comply with capital adequacy requirements.	Depositors, aware of the DI system, will play a key role in ensuring market discipline by pursuing risk-loving banks.	Depositors' knowledge of the DI system and risk-return profile of various investment avenues enables them to make suitable choices.	Greater awareness among depositors is likely to lead depositors to demand better disclosure and transparency.		Informed depositors infuse greater competition among banks to perform consistently well.	More excellent knowledge among depositors reduces the effectiveness of government guarantees.	Informed depositors closely monitor their banks' asset quality, discouraging them from allowing a drop in asset quality.	Knowledge of depositors either strengthens or weakens bank-client relationships.	More excellent knowledge amongst depositors is likely to increase accountability of adherence to core principles.
Competition among Banks	Competition enhances the need to maintain higher CRAR due to increased risky activities.		The competition encourages efficient and innovative financial services, thus influencing investors' investment choices for different alternatives.	Competition enhances fair disclosures.				Competition makes decent asset quality a mandate.	Competition enhances banks to strive for relationship banking.	Greater competition among banks makes adherence to banking principles a prerequisite for survival.
Presence of Government Guarantee	In the presence of government guarantees, capital adequacy will be closely monitored to reduce the incidence of bank failures.	The presence of government guarantee-backed DI ensures systemic stability and is likely to reduce the incidence of bank runs.	Government-backed deposits have lower levels of default risk and may be a preferred alternative for depositors over other investments.	Banks are likely to reduce the extent of disclosure if a bailout is possible.	The 16 core principles necessitate information dissemination in the presence of government guarantee.	It could enhance or deteriorate competition among banks.		Asset quality may suffer when a government guarantee considers a bailout a fallback option.		

Asset Quality	Poor asset quality enhances the need for higher CRAR.	Poor overall asset quality may make alternative investment avenues attractive.	A decent asset quality will likely incentivize banks toward better compliance with disclosure mandates.	Differing levels of asset quality enrich competition between banks.		Better asset quality is likely to result in better relationships with clients.	A decent quality is likely to result in greater adherence to core principles.
Bank-Client Relationship	The stronger the bank-client relationship, the greater the laxity in complying with capital adequacy requirements.				A good bank-client relationship may allow banks to compromise on the maintenance of asset quality.		
Effectiveness of Supervision	Adherence to core principles implies adherence to capital adequacy requirements.		Adherence to core principles is likely to result in better disclosure.		Better adherence minimizes the need for government interference.	Better adherence improves relationships.	

Table 6. ***Summary of Level Partitioning***

Level	Factor Code	Factor
1	*V1*	Capital Adequacy Requirements
2	*V9*	Bank-Client Relationship
3	*V10*	Effectiveness of Supervision
4	*V3*	Alternative Investment Avenues
4	*V6*	Competition among Banks
5	*V8*	Asset Quality
6	*V2*	DI System
6	*V5*	Knowledge of Depositors
7	*V4*	Disclosure and Transparency of Banks
8	*V7*	Presence of Government Guarantee

Figure 1. ***Digraph***



The top levels are assigned to the factors for which the reachability set and the intersection of the reachability and antecedent sets are equal. Such iterations are undertaken till levels are assigned to all the identified factors (Sandbhor & Botre, 2014), as shown in Table 6. This level assignment is depicted in the diagram in Figure 1.

According to the diagram, "Presence of Government Guarantee" lies at the bottom of the digraph's lowest level, while "Capital Adequacy Requirements" is at the top. Various elements lay at lower levels over and above the ones that impact it. The arrows show the direction in which those positioned at successively higher levels are driven by various causes (Behl & Pal, 2020). Using the digraph as a foundation, Figure 2 presents the TISM model.

Figure 2. ***TISM Model***

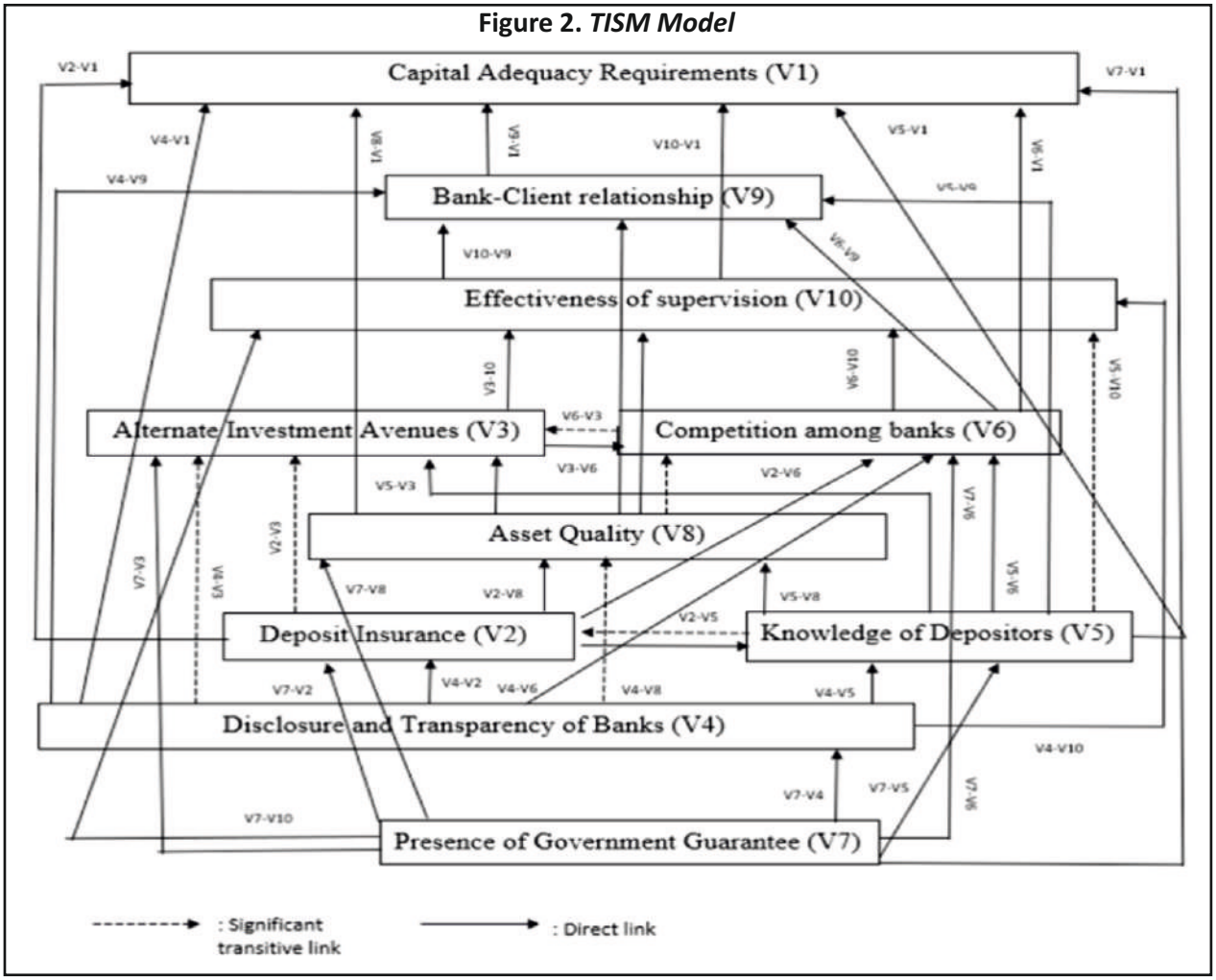
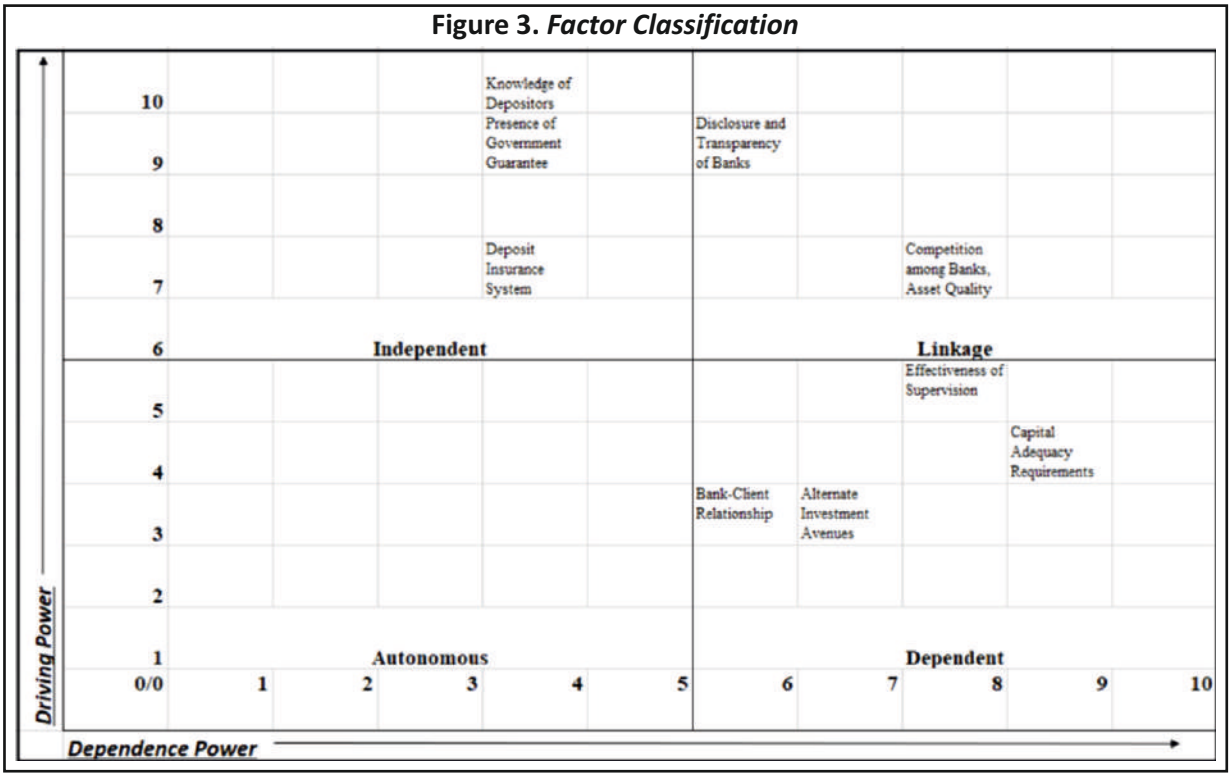


Table 7. ***Driving and Dependence Power of Factors***

Factor Code	Factor	Driving Power	Dependence Power
V1	Capital Adequacy Requirements	4	9
V2	DI System	7	4
V3	Alternative Investment Avenues	3	7
V4	Disclosure and Transparency of Banks	9	6
V5	Knowledge of Depositors	10	4
V6	Competition among Banks	7	8
V7	The Presence of a Government Guarantee	9	4
V8	Asset Quality	7	8
V9	Bank-Client Relationship	3	6
V10	Effectiveness of Supervision	5	8

Figure 3. ***Factor Classification***



Organizing the components according to their driving and dependent power is necessary to comprehend the factors' relative positions in a TISM model. Table 7 provides an overview of the driving and dependent power of the model-identified components. These powers divide the components into autonomous, dependent, linkage, and independent factors (Mani et al., 2016). Autonomous factors have driving and reliance powers under five, while linkage factors have both driving and dependence powers over five. A factor is categorized as dependent if its dependence power is more significant than five and its driving power is less than five; independent if the opposite is true. According to this MICMAC analysis rule, the components under consideration are grouped, as shown in Figure 3.

The MICMAC analysis reveals an absence of autonomous factors, implying that none of the identified factors are superfluous to market discipline. The factors assigned lower levels in the digraph are the most critical in affecting the phenomenon under consideration. These factors are characterized by high driving power and help influence other factors in the model. “Disclosure and Transparency of Banks” is the factor that takes the seventh level and is seen among the independent factors in the digraph despite being a linkage factor. The factor lies in the border between the independent and linkage zones, justifying the level occupied. The middle levels are occupied with factors classified as linkage factors in the MICMAC analysis, serving as a bridge or intermediaries between the independent and dependent factors. The topmost levels are occupied by factors classified as dependent. These factors are steered by the factors occupying the lower levels, i.e., the independent and linkage factors.

“Presence of Government Guarantee,” followed by “Knowledge of Depositors,” are the most important factors since they have the highest driving powers and the same dependence power. These factors must be strengthened in their respective adequate directions along with strengthening the “Deposit Insurance System,” which has the same dependence power. “Disclosure and Transparency of Banks,” with high driving power, must be bolstered with caution regarding the appreciable dependence power. Enhanced “Knowledge of Depositors” and an evolved “Deposit Insurance System” lead to better “Asset Quality” through vigilance exercised by

depositors using enhanced information disclosure practices. Differences in "Asset Quality" enrich competition among banks, while an overall asset quality of unsatisfactory levels may cause depositors to explore alternatives to depositing with banks. The independent and linkage factors stimulate the "Effectiveness of Supervision," which drives "Bank-Client Relationships." "Capital Adequacy Requirements" are driven by all factors apart from "Alternative Investment Avenues."

Discussion

TISM and MICMAC analysis have enabled a framework to draw a conclusive understanding of the factors that affect market discipline exercised by depositors. Its application also clarifies the order in which factors must be affected to enhance the strength of vigilance exhibited by depositors. Lower-level factors in the TISM model, such as "Presence of Government Guarantee," "Knowledge of Depositors," and "Deposit Insurance System," must be emphasized in policies to enhance the effectiveness of market discipline. Reducing the presence of government guarantees would have a high level of effectiveness given that it influences all factors except bank-client relationships. This effectiveness has been evidenced in studies such as Dam and Koetter (2012) and Gorton and Huang (2004), which establish more extraordinary risk-taking ability in banks owing to guarantees by the government.

Furthermore, it has also been stated that market discipline reduces the need for government guarantees by averting some instances of insolvency and bankruptcy (Grassa et al., 2022). The DI system and depositor knowledge must be enhanced simultaneously since they affect each other. The 16 core principles of DI by IADI advocate public awareness as aware depositors are better likely to monitor bank performance and risk-taking activities (Inakura & Shimizutani, 2010). Since it is a mediating variable in impacting change, instituting laws for better information disclosure by banks will impact several elements in the model. Better disclosure may also result in banks offering lower deposit interest rates (Balakrishnan & Ertan, 2018) and lessening the financial burden of their expenditures in the banking industry (Faria-e-Castro et al., 2017). According to the model, increased transparency enhances asset quality by influencing depositor knowledge, as discovered by Balakrishnan and Ertan (2018). However, the factor is not independent and is heavily dependent on factors placed within immediate levels surrounding it. "Presence of Government Guarantee" and "Knowledge of Depositors," among others. According to the TISM model, the DI system drives banks' asset quality. In the case of risk-insensitive DI pricing, enhanced risk-taking is incentivized, deteriorating asset quality (Besanko & Thakor, 1993). However, banks tend to maintain less risky portfolios if the DI system is characterized by risk-based pricing (Diamond & Dybvig, 1986). Reducing government guarantees would make depositors more vigilant and demand better information disclosure from banks, enhancing depositor knowledge and the DI system.

Managerial and Theoretical Implications

This study is significant for researchers and policymakers working in banking and furthering the cause of strengthening the DI system in a country. Since the number of bank runs and bank failures has increased globally, there are deliberations on how the same could be addressed by enhancing market discipline. As discussed earlier, market discipline ensures that depositors are proactive rather than reactive—they closely monitor their banks' performance and act accordingly. If depositors are active, banks will likely be vigilant in managing their funds and investments, thus reducing the possibility of bad debts and poor recoveries. This study plays a significant role in identifying the leading drivers to enhance market discipline in a jurisdiction. One prominent way to accomplish this is to have a well-designed DI system (backed by the government, with necessary checks on the extent of involvement) and share information with the general public, enabling them to make informed decisions.

Conclusion

The study reveals 11 variables influencing how vigilant depositors are about bank behavior. Through the use of TISM and MICMAC analysis, it further investigates the links between these discovered components, establishes a hierarchy, and calculates their relative importance concerning one another. This allows the identification of factors that have greater power in affecting market discipline and hence should be awarded greater attention in creating incentives that enhance depositors' vigilance. Government guarantees or bank bailouts, information disclosure and transparency, depositor knowledge, and DI systems are the primary drivers in bringing out market discipline within depositors.

Limitations of the Study and Directions for Future Research

The MICMAC analysis and the TISM model rely on expert judgment and are not statistically examined or validated. Although the model shows if there are links between elements when they are studied in pairs, it does not offer any way to measure how strong a relationship is between any two components. Understanding the established hierarchy would be improved by quantifying the depth of the relationships between the various elements. Given these restrictions, the TISM model's variables can be validated by examining their statistical significance.

Authors' Contribution

The idea was developed by Sushma Nayak, who also worked with Pia Barve to discuss the model's necessary components, sought the advice of experts, and conducted the data-gathering exercise. Additionally, Pia Barve worked with Sushma Nayak to draft the paper and complete the modeling exercise.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this manuscript.

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