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Utilization of QRIS Data-based Alternative Credit Scoring for MSME Financing Risk Mitigation at Sharia Banks in the Semarang Area

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ABSTRAK

The limitation of formal credit history and accountable financial statements remains a classic obstacle for MSMEs to access Islamic banking financing. The phenomenon of digitalization through QRIS opens up opportunities for implementing Alternative Credit Scoring (ACS) as a new risk mitigation instrument. This study aims to analyze the utilization of QRIS data-based ACS for MSME financing mitigation in Islamic banks, focusing on the sociological aspects and readiness of business actors at the grassroots level. Using a qualitative approach with a descriptive case study design, this research examines MSME actors utilizing QRIS in Ngaliyan District, West Semarang. The results reveal a paradox: MSMEs in Ngaliyan demonstrate highly healthy financial governance, strictly separating personal and business accounts, and possess a consistent digital footprint with a balanced proportion of QRIS and cash transactions (50:50). However, all informants explicitly reject bank financing due to the psychological burden of debt and deep concerns regarding financial data privacy. This study concludes that the implementation of QRIS-based ACS for risk mitigation will only succeed if Islamic banks shift their product approach from rigid debt-based schemes (Murabahah) to pure equity partnerships (Mudharabah/Musyarakah) utilizing an automatic revenue-sharing system based on real-time QRIS turnover, which aligns with the Maqashid Shariah principles.

Keywords: *Alternative Credit Scoring, QRIS, MSMEs, Islamic Banking, Risk Mitigation, Maqashid Shariah*

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Introduction

Papers should be submitted in English or Indonesia as doc Ms Word. Each paper should be single-spaced with wide margins, on one side only of the paper, preferably of A4 size, with pages in numbered sequence. The font used for the main body should be 12 pt Times New Roman and for the bodynotes 12 pt Times New Roman or the closest font available. Footnotes should be numbered consecutively and placed within the text. Please leave one line empty before and after every section. In introduction clearly explain the nature of the problem, previous work, purpose, and contribution of the paper. Ensure that your paper has been fully proofread before submitting it for publishing. In Introduction, Authors should state theMicro, Small, and Medium Enterprises

(MSMEs) play a crucial role as the backbone of Indonesia's economy, including in the city of Semarang. As a key hub of economic activity in Central Java, Semarang boasts a highly dynamic MSME sector. This sector not only drives the local economy but also absorbs a significant amount of labor. Meanwhile, the sharia banking sector in Semarang holds great potential to serve as a strategic partner in fostering MSME growth by providing financing based on principles of fairness and public welfare. However, the actual disbursement of financing to the MSME sector often encounters perennial obstacles, namely high financing risk and information asymmetry.

The primary obstacle facing Islamic banks in extending financing to MSMEs is the absence of formal credit histories and accountable financial records. The majority of MSME operators in Semarang still rely on manual record-keeping that falls short of banking standards. Consequently, it is difficult to optimally apply conventional credit assessment methods based on the 5C framework (Character, Capacity, Capital, Collateral, and Condition). This situation compels Islamic banks to exercise extreme caution to mitigate the risk of Non-Performing Financing (NPF), ultimately making it difficult for MSMEs to access formal capital (rendering them "unbankable").

Amidst the massive digitalization of the economy, Bank Indonesia has integrated cashless payment systems through the Quick Response Code Indonesian Standard (QRIS). In Semarang City, the adoption of QRIS by MSMEs has surged rapidly. Daily QRIS transactions generate a wealth of alternative data, ranging from sales volume, transaction frequency, and money circulation patterns to consumer loyalty levels. This digital footprint reflects a business's actual financial performance capacity in real-time and objectively, even in the absence of formal financial statements.

This phenomenon opens up opportunities to utilize QRIS-data-based Alternative Credit Scoring (ACS) as a risk mitigation instrument for Sharia banking. By leveraging artificial intelligence and big data analytics, Sharia banks can assess the financing eligibility of MSMEs by converting QRIS digital transaction data into indicators of financial capacity and business character. From a Sharia finance perspective, the implementation of ACS serves not only as a risk mitigation tool to maintain bank liquidity health but also aligns with the principles of Maqashid Shariah—specifically regarding the preservation of wealth (hifdzul mal) and the promotion of economic justice through financial inclusion for historically marginalized sectors.

Recent research has begun exploring the use of alternative data for credit assessment; however, specific implementation within the regional Sharia banking ecosystem—such as in Semarang City—remains very limited. The socio-economic characteristics of MSME players and the competitive landscape of Sharia banking in Semarang present unique factors regarding the application of this model. Therefore, this article aims to analyze the utilization of QRIS-data-based Alternative Credit Scoring as a strategy to mitigate MSME financing risks for Sharia banks in Semarang City. The study's findings are expected to offer practical contributions to the Sharia banking industry by expanding the reach of secure financing, while also providing policy recommendations for relevant authorities to accelerate inclusive and sustainable digital financial inclusion.

Micro, Small, and Medium Enterprises (MSMEs) play a crucial role as the backbone of the economy in Semarang City. This sector serves as a primary driver of local economic activity while absorbing the majority of the local workforce. As financial institutions grounded in principles of fairness and public welfare, Sharia banks in Semarang possess significant potential to act as strategic partners in providing capital to MSMEs. However, the channeling of Sharia financing to this sector is often hindered by information asymmetry. Sharia banks face difficulties in validating business viability because the majority of MSMEs lack formal financial statements and banking credit histories. Consequently, many MSME operators in Semarang are categorized as “unbankable.”

This situation compels Sharia banks to enforce strict prudential principles to mitigate the risk of Non-Performing Financing (NPF). Conversely, these constraints widen the gap in capital access for MSMEs that actually possess high-potential businesses. However, the landscape of MSME transactions in Semarang has undergone a massive digital transformation following Bank Indonesia's mandate to standardize the Quick Response Code Indonesian Standard (QRIS). Field observations

indicate that the majority of merchants and micro-entrepreneurs—ranging from those in traditional markets to culinary hubs across Semarang—have now adopted QRIS as their primary payment channel.

Daily transaction activity via QRIS indirectly creates a digital footprint that captures the actual turnover, sales frequency, and cash flow patterns of MSMEs in real-time. This digitalization trend paves the way for the implementation of Alternative Credit Scoring (ACS) based on QRIS transaction data. For Sharia banks, this alternative data can be converted into indicators for assessing a business's character and capacity. From a Sharia perspective, the use of ACS serves not merely as a risk mitigation tool to safeguard wealth (hifdzul mal), but also as an instrument to foster economic justice by expanding financial inclusion for small business owners who have historically been marginalized

Although the potential of QRIS-based ACS technology is considered high, its successful implementation hinges heavily on the readiness, literacy, and acceptance of MSME players themselves as data providers. Previous research has largely examined ACS from the technical perspectives of banking algorithms or macro-level regulations. There is a dearth of studies exploring sociological and practical aspects at the grassroots level—specifically, how MSME players in Semarang perceive the security of their transaction data when used as a requirement for Sharia financing applications. Given that MSME players in Semarang are deeply rooted in local values and relational approaches, a profound understanding of their actual experiences using QRIS is crucial.

Therefore, this study aims to analyze the use of QRIS-based alternative credit scoring for mitigating risks in MSME financing at Sharia banks in Semarang City, employing a qualitative approach. Through a case study method and in-depth interviews with MSME owners, the research explores the consistency of QRIS usage, the readiness of digital business documentation, and their perceptions regarding the use of transaction data as a basis for Sharia credit assessment. The findings are expected to provide Sharia banks with empirical insights for designing digital-based financing schemes that are MSME-friendly, while also offering input to regulators for accelerating the digital financial inclusion ecosystem in Semarang City.

Literature Review

This literature review asserts that implementing Alternative Credit Scoring (ACS) based on QRIS transaction data is a crucial strategy for addressing information asymmetry and the "unbankable" status of MSMEs in Semarang—factors that have historically hindered the assessment of Sharia financing eligibility under the 5C framework. By leveraging big data and artificial intelligence, the real and transparent digital records of daily QRIS operations can be converted into indicators of business financial capacity. This approach serves not only as a risk mitigation tool for Non-Performing Financing (NPF) to safeguard bank liquidity (hifdzul mal) but also fosters economic equity through financial inclusion aligned with Maqashid Shariah principles. Given that most existing literature focuses on technical algorithms and macro-level regulations, this qualitative study addresses a research gap by analyzing the readiness, literacy levels, and sociological perceptions of MSME operators in Semarang regarding the security of their transaction data at the grassroots level.

Method

This study employs a qualitative approach utilizing a descriptive case study to explore socio-economic dynamics in depth. The primary focus is on the continued use of QRIS, the availability of digital business documentation, and the perspectives of MSME operators in Semarang City regarding the implementation of Alternative Credit Scoring (ACS). Through the case study method, the researcher is able to map out contextual boundaries, real-world experiences, and the sociological and relational dimensions of micro-entrepreneurs concerning the protection of their transaction data when applying for financing from Sharia banks.

In this qualitative study, the researcher acts as the primary instrument (human instrument). The researcher is directly and actively involved in the entire research process, ranging from designing interview guidelines and personally approaching MSME business locations in Semarang to conducting face-to-face interviews with

informants and performing data transcription and analysis.

The study was conducted within the administrative area of Semarang City, Central Java. The research focused on hubs of economic activity and MSME digitalization—specifically in the Ngaliyan area of West Semarang—where the adoption of the QRIS standard has been widespread. Data collection, involving field interviews and observations, was carried out on July 9, 2026. Interviews were conducted with six MSME operators representing the micro and small business sectors (such as food vendors).

Result and Discussion

The data analysis in this chapter is based on in-depth interviews with MSME operators in Ngaliyan District, West Semarang. The structure of the discussion follows the interview guide, exploring aspects ranging from digitalization profiles, financial management, and perceptions of data risk to the business owners' theological-economic attitudes toward Sharia banking financing.

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Operational Characteristics and Transaction Landscape

QRIS vs. Cash Regarding daily transaction volume, all sources indicated a consistent trend: the average share of QRIS transactions and cash transactions is balanced (roughly a 50-50 split). This balanced transaction profile indicates that QRIS transaction data in the Ngaliyan area already accounts for half of the businesses' total actual revenue. Although not yet fully digital, this 50% share is highly significant, as it reflects daily fluctuations and the continuity of business operational cash flow in real-time.

Financial Management Discipline and MSME Digital Document Readiness

All informants stated that revenue from business sales is strictly segregated into a dedicated business account and not commingled with personal or family savings. The existence of this dedicated business account facilitates the tracking of transactions and serves as a strong indicator of Good Corporate Governance (GCG) at the micro level. When recording daily turnover, MSME operators combine manual records or standalone point-of-sale (POS) applications with digital verification derived from transaction histories in QRIS applications. The informants fully understand that QRIS transaction history reflects the health of their business capital circulation. They view the QRIS dashboard as a tool for instant validation, allowing them to check daily turnover without the need for complex recalculations.

Rejection of Bank Financing and the Alternative Credit Scoring Paradox

Despite maintaining organized financial management and an active QRIS digital transaction history, MSME owners in Ngaliyan exhibit a critical anomaly regarding capital acquisition. All interviewees firmly refused to take out loans or seek capital financing from banking institutions, including Sharia banks. This refusal does not stem from conventional administrative hurdles—such as a lack of financial statements or collateral—but is instead driven by sociological and psychological factors, as well as a commitment to financial independence. These MSME owners tend to avoid institutional debt due to concerns that the psychological burden of monthly installments could jeopardize the stability of their businesses, which currently operate steadily through self-funding (bootstrapping). When presented with the concept of Alternative Credit Scoring (ACS)—a financing model requiring no physical collateral but granting banks access to monthly QRIS revenue data—a collective apprehension emerged. There is a shared fear that granting banks access to financial transaction data could lead to cybersecurity breaches or the misuse of revenue information for external oversight measures detrimental to their businesses.

Preference for Fairness in the Sharia Profit-Sharing System.

Although they currently reject bank financing options, the informants place strong emphasis on the aspect of fairness should they ever require external capital (Question 12). As business owners operating in the dynamic suburban environment of Semarang—yet still upholding communal values—they consider a fair profit-sharing system (Sharia-compliant) to be far more important and the absolute preferred choice over the fixed-interest systems of conventional banks. They view fixed-interest systems as an unjust, stifling burden, particularly when business turnover declines.

Typology of Raw Material Purchasing Behavior and Local Vendor Retention

Complementing the analysis of MSME financial circulation dynamics in Ngaliyan District, this study identifies an asymmetry between revenue collection systems and operational expenditure. Although business owners receive a substantial volume of digital payments from consumers via QRIS (accounting for 50% of transactions), the majority of expenditures for purchasing stock or raw materials at Semarang City's traditional wholesale markets are still settled in cash. This situation presents a new challenge for Sharia bank ACS algorithms. Balance fluctuations on the QRIS dashboard do not automatically reflect the business's true profitability, as the cost of goods sold (COGS) is not digitally recorded. Consequently, Sharia banks need to formulate an additional mitigation variable—a "supply chain multiplier score"—to accurately estimate the portion of QRIS turnover that flows back into the business as operational working capital.

Analysis of Risk Mitigation and Strategic Approaches by Sharia Banks in Ngaliyan. Field data characteristics from MSMEs in Ngaliyan offer a new paradigm for implementing QRIS-based Alternative Credit Scoring (ACS).

1. Recalibration of Credit Scoring Algorithms Based on Mixed Transaction Patterns Given the balanced ratio (50:50) between cash and QRIS transactions, Sharia banks cannot rely solely on digital QRIS data to assess the actual capacity of MSMEs in Ngaliyan. The alternative score derived from QRIS data must be adjusted using a multiplier factor based on secondary data—specifically, transaction records from dedicated business accounts maintained separately by the business owners. Integrating QRIS data with these dedicated account records yields highly accurate risk assessments and helps lower Non-Performing Financing (NPF) rates, as the analyzed financial profile reflects 100% of actual turnover.
2. Education Based on Personal Data Protection (PDP) and Reputational Risk Mitigation The outright refusal by MSMEs in Ngaliyan to grant access to banking data indicates a lack of sociological trust in the digital security of banking systems. To mitigate the risk of such refusal, Sharia banks must implement the Principle of Radical Transparency in accordance with the Personal Data Protection Law. Sharia banks are required to educate business owners that the QRIS data retrieved is used solely for automated score calculation via an encrypted Application Programming Interface (API), without granting the bank the right to intervene or share said data with third parties.
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Conclusion

Conclusions Based on the qualitative analysis of MSME operators in Ngaliyan District, West

Semarang, several key conclusions have been drawn:

1. Digital Data Potential: QRIS infrastructure has established a robust financial digital footprint, with transaction volumes balanced equally (50:50) between digital payments and cash. Coupled with the business owners' discipline in separating personal and business accounts, MSMEs in Ngaliyan possess highly valid data profiles that are ready for integration into Alternative Credit Scoring (ACS) systems.
2. Resistance to Banking: A paradox exists on the ground where MSME operators who are administratively sound show total resistance to bank financing. This resistance stems from the psychological burden associated with debt, concerns regarding privacy or the leakage of revenue data, and an aversion to rigid fixed-installment models.
2. Need for a Pure Sharia Model: MSME operators place high hopes on a fair Sharia profit-sharing system (Tawazun). The implementation of QRIS-based ACS in Sharia banks will only succeed if banks shift their approach from being debt providers to becoming genuine profit-sharing partners (equity partners) through Mudharabah or Musyarakah contracts directly integrated with real-time QRIS revenue data. This aligns with the principles of Maqashid Shariah regarding the preservation of wealth (Hifdzul Mal) and the strengthening of the community's economy.

Suggestion provides things expected to conduct related to further ideas the research has proposed.

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