

Integrating Block chain Technology to Mitigate Trade Credit Risks and Boost SME Growth in Oman

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Abstract

In today's worldwide economy, industrial expansion and technology drive national development. Globalization's emphasis on entrepreneurship has spurred new graduates to start enterprises and boost economic growth. Due to Oman's high unemployment rate, the government promotes SMEs to create jobs and enhance the economy. SMEs struggle to get capital, limiting their growth. They have trouble getting bank loans due to their size and lack of collateral. SMEs rely on trade financing due to its flexibility and cash flow relief. This study addresses SMEs' trade credit management issues. It develops and implements a trade credit management plan to streamline credit operations, improve cash flow, eliminate bad debt, and improve financial health. This research also evaluates SMEs' profitability, trade credit risks, and ways to reduce cash flow and financial stress. It also examines how Blockchain Technology can help SMEs. This research examines trade credit risks, returns, and costs and uses blockchain technology to propose solutions for SMEs and decision-makers. This research uses quantitative and qualitative analysis to survey SME businesses and bank officials in Oman's South Al Batinah region about trade credit and Block chain technology usage. The experts suggested SMEs embrace Blockchain technology solutions matched to their size and business needs and hire an accountant for financial management.

Keywords: SMEs, Opportunities, Challenges, Trade Credits, Blockchain Technology.

Introduction

In the modern world, industrial growth and technological innovation are crucial to a country's development. Globalization has enabled free trade between nations, highlighting the importance of fostering entrepreneurship. Consequently, policymakers encourage recent graduates to cultivate their entrepreneurial skills and establish their own businesses, thereby propelling national economic growth. Conversely, unemployment has become a critical issue in Oman that requires attention from policymakers. Creating job opportunities by encouraging individuals to start their own businesses is essential. Consequently, the government's support for small and medium enterprises (SMEs) plays a significant role in economic development and reducing unemployment. As a result, the government is making necessary efforts to provide entrepreneurs with proper training and essential funding assistance through various banks (Nithya Ramachandran, 2019).

Business growth and development widely recognize capital maximization as a crucial factor (CM-SME Club - Kenya, 2023). SMEs often encounter difficulties in raising capital, which can hinder their ability to achieve their objectives. To address these challenges, SMEs should leverage entrepreneurial strategies to enhance economic development. Accessing traditional funding from banks can be particularly difficult for SMEs due to their smaller size and limited guarantees. Consequently, they often struggle to secure loans or favorable credit terms.

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Additionally, banks typically require tangible assets as collateral for loans, but many SMEs lack the necessary collateral to meet these requirements.

Trade credit has emerged as a vital source of financing for SMEs, particularly in the short term. It can be defined as an agreement to purchase goods or services on credit instead of making immediate cash payments (ACCA, n.d.). Establishing favorable terms with suppliers can serve as an effective tool for growing businesses, alleviating the cash flow pressure that rapid payment could create. This financing method helps minimize and manage a company's capital requirements.

In the UK, 80% of business-to-business transactions take place on credit, according to a recent study (Paul, 2021). Despite its significance, many educators and decision-makers overlook this concept, and its widespread implications remain underexplored and poorly understood. Trade credit benefits both buyers and sellers in the business environment: buyers gain increased purchasing power by receiving goods and services upfront, while sellers can expand their customer base and market share. By extending credit, suppliers trust that customers will settle their debts on time. However, issues can arise when buyers fail to make timely payments; late payments pose a significant risk of business failure today.

SMEs are particularly vulnerable to the risks associated with trade credit. Due to their smaller size, they are often less equipped to manage potential cash flow issues arising from unmet trade credit obligations, which can lead to insufficient risk management and credit control. Many small and medium enterprises may become overly focused on sales growth and delivery, neglecting essential activities like risk assessment and evaluating customer creditworthiness. This oversight can lead to poor credit management and, ultimately, business failure. Moreover, power imbalances between SMEs and larger enterprises complicate trade finance. SMEs often find themselves at a disadvantage, facing higher rates of late payments compared to their larger counterparts. They typically have looser trade credit standards and fewer personnel dedicated to managing trade credit (Paul, 2021).

Hence, this study aimed to provide a contribution to the existing literature by mitigating trade credit risks using blockchain technology. Blockchain technology has emerged as a transformative force in various sectors, particularly in addressing the trade credit risks faced by small and medium-sized enterprises (SMEs). Traditional financing mechanisms often impose significant barriers for SMEs, primarily due to their informational opacity and the associated credit risks, which can lead to credit rationing by banks (Wang et al., 2018). In this context, trade credit serves as a vital alternative financing source, enabling SMEs to manage cash flow and operational distress more effectively (Wang et al., 2021). However, mismanagement of trade credit can exacerbate financial instability, as many SMEs neglect their credit policies, leading to increased vulnerability to credit risks (Otto, 2023). The integration of blockchain technology into trade credit management can mitigate these risks by enhancing transparency and trust among trading partners, facilitating better credit decisions, and reducing the likelihood of defaults (Beck et al., 2018). Furthermore, blockchain's decentralized nature allows for real-time monitoring of transactions, which can significantly improve the accountability of SMEs in their financial dealings (Supriadi et al., 2020). As SMEs increasingly adopt blockchain solutions, they can leverage these technologies to not only streamline their trade credit processes but also to foster a more sustainable financial ecosystem that supports their growth and resilience against credit risks (Canto-Cuevas et al., 2019).

Finally, understanding the challenges and risks of commercial credit is crucial for SMEs to effectively plan and manage their finances (Gupta et al., 2024; Meenakshi & Ranjan, 2024). Knowledge of commercial credit helps control obligations, cash flow, and duties while aiding in spending control and profit distribution. Timely payment of credit obligations builds trust with suppliers and related institutions, fostering business relationships, expanding operations, and increasing services or products.

In Oman, the rise in job-seekers has led to more SMEs, benefiting the economy. However, entrepreneurs struggle with financing due to their small size and lack of guarantees (Musallami & Balushi, 2024). Trade credit

serves as an ideal short-term financing solution for SMEs (Del Gaudio et al., 2018). Hence, this article aims to fill this context gap and therefore proposes the following objectives for this study:

1. To assess the risk faced by small and medium enterprises (SMEs) to meet their long-term and short-term credits.
2. To examine how the new blockchain technologies (BCT) provide solutions to challenges faced by SMEs.

The intricate relationship between supplier trust and business dynamics within Oman's SMEs reveals a landscape ripe with potential yet fraught with challenges (Musallami & Balushi, 2024). The recent surge in job-seekers has invigorated these enterprises, providing them with a workforce eager to contribute. However, the persistent struggle for financing—exacerbated by their inherent small size and limited collateral—remains a significant hurdle for many entrepreneurs. In this context, trade credit emerges as a promising short-term financing solution, enabling SMEs to navigate financial constraints while fostering crucial supplier relationships grounded in trust. By addressing the complexities of these interdependencies, this study seeks to illuminate pathways that can empower Oman's SMEs, ultimately enhancing their resilience and capacity for growth in an evolving economic environment.

Literature Review

Abdullah Al Mahmud (2022) investigates the relationship between business performance and trade credit financing in an emerging economy, namely Bangladesh. While previously published research suggests that companies use trade credit finance to enhance their market valuation or performance of operation, the advanced study has provided various evidence on the relationship between trade credit and company performance. They have addressed this gap by examining the impact of trade credit on the performance of companies in developing economies. Researchers believe that trade credit may not be as attractive as financing foreign loans for business growth. By analyzing a large sample of listed companies in Bangladesh from 2011 to 2019, the results reveal a negative relationship between trade credit and corporate performance. The results were similar across different measures of corporate performance and trade credit. The study presents policy implications, contributes to the literature on trade credit and corporate performance, and highlights the importance of considering the individual characteristics of emerging economies.

According to Ishmael Tingbani (2022), in his article on "Trade Credit and Corporate Growth," the authors investigate the relationship between trade credit and business growth in order to identify the fundamental elements that affect this relationship. They suggest a positive relationship, which indicates that the effect of trade credit on growth is not linear but follows a concave pattern. The authors base their hypothesis on theoretical arguments regarding the benefits and costs associated with using supplier credit to promote firm growth. To test their hypothesis, the authors analyzed a data set of 23,023 non-financial firms operating in the UK during 10 years. As a result, the study reveals that there is indeed a positive relationship between commercial credit and business growth. In particular, the results indicate that when companies obtain low levels of trade credit, this has a positive impact on their growth. However, as the volume of trade credit received increases to higher levels, the impact on its growth becomes greater.

Kiran (2022) explores the impact of Islamic finance on the operations of small and medium enterprises in Oman. The study elucidates the connection between the operational efficacy of small and medium-sized businesses and trade financing via Islamic banks in the Sultanate of Oman. This study also used a qualitative approach, as it discovered that owners of small and medium-sized companies and their employees are widely aware of the principles of Islamic finance. This study was conducted with 40 employees, 20 managers, and 2 financial experts from various small and medium-sized companies. Many participants agreed to adopt Islamic

finance because it has a major role in attracting and growing small and medium enterprises and reducing future financial threats that these companies may face. Likewise, *Michael Machokoto (2022) explores* the changes in trade credit usage in around 72 regions from 1990 to 2019. This study found that trade credit declined significantly over time, especially in advanced economies compared to emerging economies. The company's characteristics alone cannot explain the decline in trade credit, as it remains relatively stable over a certain period. Rather, various factors such as the listing contract, institutional considerations, and financial development explain this declining tendency. The study also highlights the diminishing returns on trade credit, which appear more clearly in major economies. The outcomes were excellent when compared to other definitions of commercial credit and when macroeconomic and company-specific variables were considered. More generally, it highlights the evolving nature of trade credit and its effects on businesses in different economic contexts.

Emmaboles Rubunda's 2019 paper, "Trade Credit, Debt Finance Structure, and SMEs Growth in Rwanda," focuses on the impact of trade credit on manufacturing SMEs in Rwanda. The aim of this paper is to evaluate and identify the effect of a trade credit financing structure on SMEs growth. This research targeted a population of 868 SMEs and selected a sample size of 273 SMEs as a stratified random sampling method in Rwanda. In order to distinguish between trade credit, debt finance, and the growth of SMEs, a questionnaire was administered, and multiple analyses were conducted using the collected data. The study's findings indicate a positive correlation between trade credit and the growth of SMEs in Rwanda's manufacturing sector. The relationship between debt finance and the growth of SMEs in Rwanda is negative. In light of the findings, the authors recommend diversifying financing alternatives when financing SMEs. Francisco-Javier Canto-Cuevas (2019) explored how trade credit helps SMEs make financing decisions at different life cycle stages. This study examines EU industrial SMEs from 2008 to 2014. Research reveals that the business life cycle, particularly in new enterprises, influences corporate credit. The link between trade credit and business age is nonlinear. This analysis also shows that trade credit determinants fluctuate in magnitude over the life cycle. Researchers stress the necessity of considering the firm life cycle when addressing financial issues and encouraging SME economic growth.

Koreen (2019) highlights SMEs' attempts to enter the global economy in her article, "SME Policy in the Face of the Development of Financial Technology." It shows that SMEs have less trade and employment potential than large firms. With global value chains and technological advancements, SMEs can now trade internationally and globally, benefiting from flexibility, customization, and operational efficiency and effectiveness. However, financial concerns, institutional constraints, and government regulations hinder SMEs. Challenges include building capital, operating capital, and access to knowledge, technology, and expertise. This study further illuminates regulatory requirements by proposing to help SMEs comply with all of them. This report also underlines the need to improve SMEs' international economic engagement to overcome their limits.

Albarriki (2018) used small and medium companies' technology adoption and application funds. This lets SMEs keep up with commercial sector developments despite laws and processes. The research paper also surveyed over 257 Oman-based SMEs. This analysis found that many companies have delayed launching due to lack of finance and not covering all costs. SMEs also request technical support from authorities at the start of their business and set up IT infrastructure. Financial help from financial institutions and the General Authority for Small and Medium Enterprises can reduce delays in implementing their work and avoid the most hurdles and impediments, according to the report. The research also confirmed the Omani government's efforts to promote and support small and medium enterprises through training and educational programs and other initiatives to create the right environment for them, given their importance to the national economy and investment diversification. Similarly, Boschmans (2018) investigated the financing issues faced by SMEs. The 2008–2009 global economic crisis also influenced the financing decisions of banks and financial companies. The economic crisis has resulted in SMEs receiving less trade credit due to their increased need for cash and funding from financial institutions, which poses significant risks. Financing new small and medium enterprises, whether they sell products or provide services, presents a significant risk to the entity providing the capital, as there are no real guarantees to recover it, particularly for innovative, new-to-market institutions. Thus, revenue and cash

flow fall. Trade financing is crucial for emerging and medium-sized firms to grow, expand, and prosper; therefore, diversifying their trade financing sources and alternatives helps them reach their goals.

Furthermore, the study examined net trade credit, which is the difference between trade credits obtained and extended. This study uses the General Method of Moments (GMM) to evaluate trade credit data and determine its correlation with various variables. Data was gathered from the Central Statistical Office's (GUS) yearly reports of around 50,000 Polish firms from 1995 to 2011 (Anna Bialek-Jaworska, 2016). The study selects companies whose financial report was available at that time as respondents. Poor sale profitability, long-term outstanding debt, poor debt-paying ability, and a lengthy fund life cycle indicate an increase in trade credit usage. For high growth and surplus cash flow, provide trade credit. Large corporations expand their extended trade credits and decrease the amount of trade credits they obtain, leading to an increase in net trade credits and a boost in company growth. They determined trade credit is crucial in Poland. They also talked about the implications of trade credit and monetary policy. Likewise, SANTIAGO CARBÓ-VALVERDE (2016) emphasized trade credit's role as a substitute financing source for SMEs experiencing credit restrictions during financial crises. The study seeks to determine if trade credit may replace bank loans for Spanish SMEs. They explain how trade credit will affect credit-restricted enterprises' investment decisions. They collected around 40,000 Spanish financial statements and banking connection data from 1994 to 2010. They are using disequilibrium model methodology to investigate different financing sources and identify SMEs with credit restrictions. SMEs with limited credit use trade credit more than bank loans. SMEs without credit restrictions can use bank loans instead of trade credit.

The study by Cristina Martínez-Sola (2014) analyzed the profitability of 11,337 Spanish manufacturing SMEs from 2000 to 2007 when they offered credit to consumers for financial, operational, or commercial reasons. The research also links trade credit to corporate profitability. Trade credit improves firm profitability. The firm recommends investing more in trade receivables to boost profitability. The study emphasizes the significance of taking into account company features like economic limits, demand volatility, and market percentage when evaluating the profitability of trade credit score provision. Additionally, trade credit matters in short-term financial market transactions—approximately 80% of commercial transactions. Trade credit levels vary by country, with medium accounts receivable representing 13% to 40% of revenues. Industries differ in loan terms, but customers vary little. Too many credit conditions create challenges for suppliers when it comes to extending credit, enhancing competitive advantages, and managing trade credit (Daniel Seifert, 2013). The study also highlights the importance of implementing flawless credit policies, maintaining a balance between working capital and bad debt, and determining the best payment periods to minimize inventory costs. To gather articles from a large sample, the study picked 27 related search terms and keywords to represent existing knowledge based on literature sources. Operations-finance research is booming. Based on current models, future studies should concentrate on internal operations management and external issues. This article reviews trade credit motives, order quantity decisions, credit term decisions, and settlement period decisions, assesses conflicting results, and suggests future research. This article reviews the literature on trade credit motivation and suggests future research topics.

Finally, Nihat Aktas (2012) forecasts a favorable association between trade credit use and a firm's investment quality based on the useful information it provides to outside investors. This analysis shows the significant real and implicit cost of trade credit in US-listed corporations, including renounced cash reimbursements for payment delays. Previous literature suggests that trade credit allows price discrimination, guarantees product quality, encourages suitable investments, builds long-term customer relationships, and optimizes inventory management. Agents, actions, desires, information structure, equilibrium, and model implications are described in a strategic game with imperfect information for trade credit decisions. The framework addresses managers' private information, unobservable investment decisions, Proposition 2's impact on financially healthy enterprises, and strong industry trade credit patterns. The three tables of multivariate studies focus on businesses that are financially stable and have high Z-scores, four-factor model alpha, and return on assets.

This gets rid of the risk of credit being limited or a bankruptcy happening soon. According to the study, financially healthy firms with economically motivated CEOs, inadequate governance systems, and opaque firms can lessen knowledge asymmetry between insiders and investors by using trade credit. After reviewing the literature on the topic, the researcher discovered a paucity of related research. There are many reviews published outside the country, but there are only a few reviews in Oman. The researchers sought to determine if the BCT could offer a solution for the sustainable expansion of SMEs, a crucial question to address given the novelty of this technology in Oman.

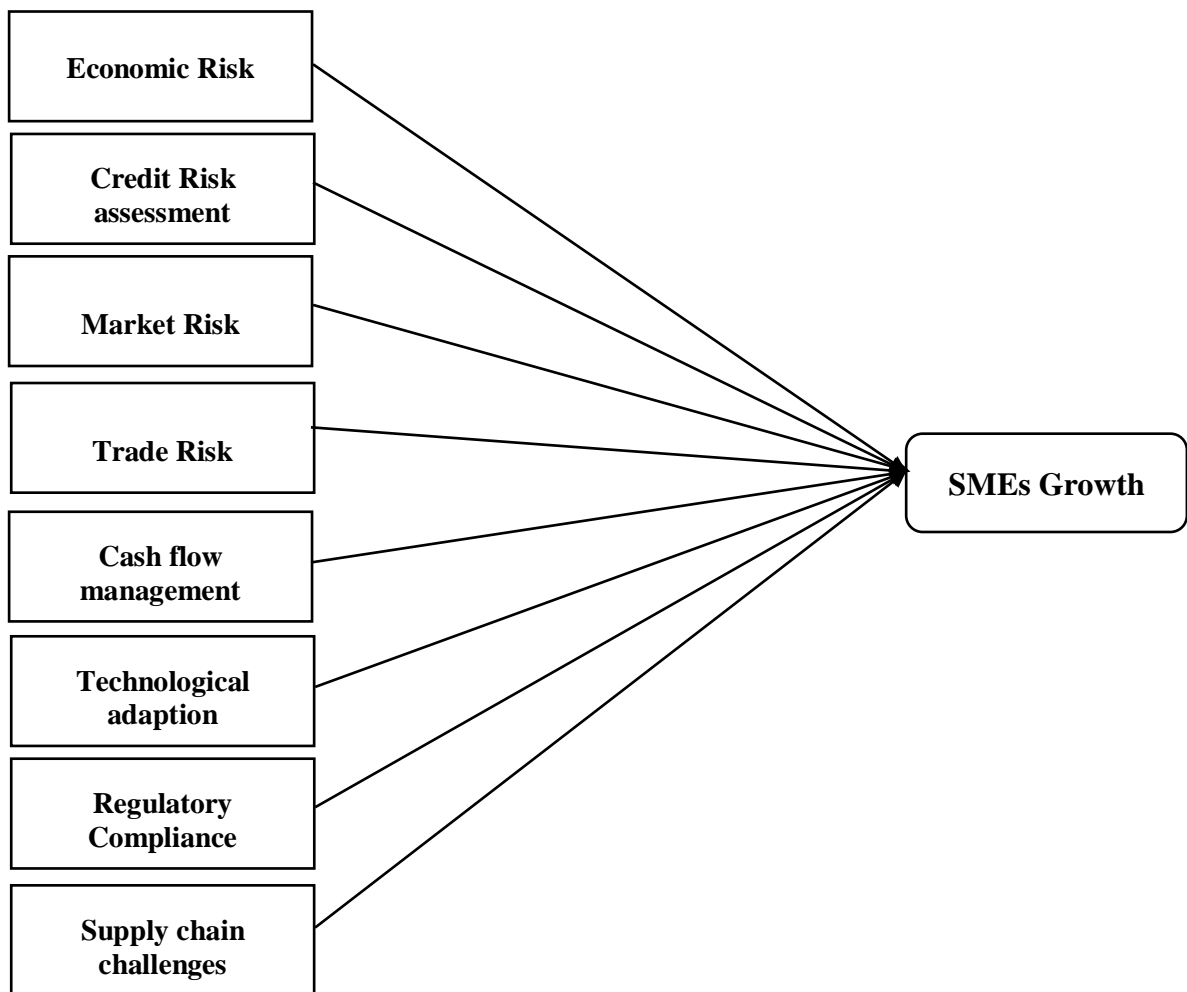
Conceptual Framework

Fig. 1. Conceptual Framework

Figure 1 demonstrates the dependent variable, which is SMEs growth. Therefore, SMEs growth depends on economic risk, credit risk assessment, market risk, trade risk, cash flow management, technological adaptation, compliance with regulations, and supply chain challenges. We derived these determinants from the inventories identified in the cited article (Taha Redha Al Qubtan, 2020).

Analysis Risk assessment

To address objective 1, the authors conducted a survey. This section will provide an explanation of the level of risk that SMEs face when meeting their long-term and short-term credit obligations through a ranking system. Through this ranking system, the authors aim to highlight the varying degrees of financial vulnerability among SMEs, ultimately shedding light on the factors that contribute to their credit challenges. Understanding these risks is crucial for developing strategies that can enhance the financial resilience of these businesses in both the short and long term.

Table 1: SMEs' Perspective on Risk Assessment

SMEs	Economic Risk		Credit Risk		Market Risk		Trade Risk	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SA	6	30%	5	25%	7	35%	6	30%
A	7	35%	4	20%	6	30%	3	15%
NADA	3	15%	7	35%	4	20%	6	30%
DA	1	5%	2	10%	2	10%	3	15%
SDA	3	15%	2	10%	1	5%	2	10%
Total	20	100%	20	100%	20	100%	20	100%

[Source: Primary Data; SA- Strongly Agree, A-Agree, NADA- Neither agree nor disagree, DA- Disagree, SDA- Strongly Disagree]

The above table illustrates the factors that impact risk assessment from the perspective of small and medium enterprises (SMEs), including economic, credit, market, and trade risks. The majority of respondents (65%) strongly agree that economic and market risks are impacting SMEs. It is evident that credit risk has less influence in the SME's trade because SMEs usually deal with small transactions and with limited resources. In addition, these SMEs have close relationships with their clients; this will lead to enhanced assessment of creditworthiness. Moreover, the effect of one default on small-scale businesses is less intense compared to large corporations.

Table 1A: Ranking the SMEs' Perspective on Risk Assessment

Risk Associated	Rank 1	Rank 2	Rank 3	Rank 4	Total Score	Weighted Avg	Ranking
Economic Risk	5	3	8	4	49	4.9	3
Credit Risk	6	5	4	5	52	5.2	2
Market Risk	4	10	4	2	56	5.6	1
Trade Risk	5	2	4	9	43	4.3	4

Table 1A represents the ranking of risk assessment from the SME's point of view. Market risk comes in first, followed by credit risk in second place, economic risk in third place, and trade risk in fourth place. We conclude that SMEs need demand for their products and appropriate trade credit facilities to manufacture and sell them in the market.

Table 2: Bank Officials' Perspective on Risk Assessment

Banks	Economic Risk		Credit Risk		Market Risk		Trade Risk	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SA	2	40%	3	60%	2	40%	0	0%
A	2	40%	1	20%	1	20%	3	60%
NADA	1	20%	0	0%	2	40%	2	40%
DA	0	0%	1	20%	0	0%	0	0%
SDA	0	0%	0	0%	0	0%	0	0%

Total	5	100%	5	100%	5	100%	5	100%
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[Source: Primary Data; SA- Strongly Agree, A-Agree, NADA- Neither agree nor disagree, DA- Disagree, SDA- Strongly Disagree]

The most respondents. The majority of respondents strongly agree that credit risks and economic risks are associated with the growth of SMEs, as shown in table 2. This suggests that SMEs are likely to pay greater attention to any potential debt default from the perspective of bank officials, leading them to strive for the development of more borrowing facilities. Furthermore, SMEs take into account macroeconomic factors that will influence their business. SMEs consider the gross domestic product and any alterations in government policies, including fluctuations in the interest rate or exchange rate. However, trade and market risks are not significantly impacting the growth of small and medium enterprises (SMEs). Bank officials hold the belief that small-scale businesses do not engage in complex transactions that significantly impact their operations. Also, there is an optimistic market in Oman, so the entrepreneurs do not bother about trade or market risks.

Table 2A: Ranking Bank Officials' Perspective on Risk Assessment

Risk Associated	Rank 1	Rank 2	Rank 3	Rank 4	Total Score	Weighted Avg	Ranking
Economic Risk	3	1	1	0	17	1.7	1
Credit Risk	2	2	1	0	16	1.6	2
Market Risk	0	0	2	3	7	0.7	4
Trade Risk	0	2	1	2	10	1	3

Table 2A shows the ranking of risks from bank officials' points of view. The result shows that economic risks rank first as the highest risk for SMEs, credit risk ranks second, while trade risk ranks third. From a bank official's perspective, market risk ranks lowest among the risks that SMEs may encounter. It is evident that economic and credit risks exist, as there is no encouragement for the establishment of new small-scale businesses. Additionally, business owners may harbor concerns about uncertainty.

Table 3: SMEs' Perspective on Challenges Assessment

	Cash flow management		Regulatory compliance		Supply chain challenges		Technological adaptation	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SA	6	30%	2	10%	3	15%	1	5%
A	7	35%	8	40%	3	15%	7	35%
NADA	1	5%	5	25%	6	30%	6	30%
DA	2	10%	4	20%	4	20%	5	25%
SDA	4	20%	1	5%	4	20%	1	5%
Total	20	100%	20	100%	20	100%	20	100%

Source: Primary Data; SA- Strongly Agree, A-Agree, NADA- Neither agree nor disagree, DA- Disagree, SDA- Strongly Disagree]

Table 3 explains the challenges faced by the SMEs from the perspective of business owners. The challenges are cash flow management, regulatory compliance, supply chain, and technological adaptation. Table 3 indicates that a majority of small and medium enterprises (SMEs) strongly agree or agree with cash flow management and regulatory compliance, accounting for over 50% of responses. Additionally, 35 percent of respondents strongly endorse technological adaptation. This is because small-scale businesses tend to manage their cash flow for smooth business operation and prompt payment. Furthermore, due to the existence of competition among SMEs, which has led to government policies and regulations that must be adhered to, business owners pay more attention to regulatory compliance. The reason why SMEs agree that technological adaptation is one of the major challenges is that seeking to catch up with modern technology in order to facilitate business, such as online payment or the use of advanced accounting systems for

inventory management, is a major challenge. However, supply chain challenges are agreed to be less significant. Business owners prioritize controlling internal operations such as sales and purchasing management over addressing the supply chain challenges that SMEs face.

Table 3A: Ranking the SMEs' Perspective on Challenges

Risk Associated	Rank 1	Rank 2	Rank 3	Rank 4	Total Score	Weighted Avg.	Ranking
Cash flow management	3	0	0	2	14	1.4	2
Regulatory compliance	0	1	4	0	11	1.1	3
Supply chain challenges	0	2	1	2	10	1	4
Technological adaptation	2	2	0	1	15	1.5	1

Table 3A presents the ranking of challenges from the perspective of SMEs, derived from primary data collected through a questionnaire. Technological adaptation ranks first, with a total score of 15 and a weighted average of 1.5. Cash flow management comes in second, achieving a total score of 14 and a weighted average of 1.4. The third ranking is regulatory compliance, with a total score of 11 and a weighted average of 1.1. The fourth ranking is supply chain challenges, with a total score of 10 and a weighted average of 1. As a result, SMEs tend to incorporate more technologies into their business operations, such as online payment systems and advanced accounting software. Additionally, they prioritize cash flow management to ensure robust liquidity and solvency.

Table 4: Bank Officials' Perspective on Challenges Assessment

	Cash flow management		Regulatory compliance		Supply chain challenges		Technological adaption	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SA	1	20%	0	0%	0	0%	3	60%
A	2	40%	1	20%	0	0%	1	20%
NAD								
A	1	20%	4	80%	1	20%	0	0%
DA	1	20%	0	0%	3	60%	0	0%
SDA	0	0%	0	0%	1	20%	1	20%
Total	5	100%	5	100%	5	100%	5	100%

[Source: Primary Data; SA- Strongly Agree, A-Agree, NADA- Neither agree nor disagree, DA- Disagree, SDA- Strongly Disagree]

Table 4 highlights significant challenges faced by bank SMEs, with a majority expressing agreement in technological adaptation. Additionally, more than 40 percent agree on the challenges of cash flow management. Regulatory compliance emerges as another major concern. From the perspective of bank officials, supply chain challenges receive less attention. Bank officials perceive technological adaptation as a significant challenge, with 60% strongly agreeing and 20% agreeing. It is concluded that bank officials believe that SMEs have developed some technologies to encourage their business. Moreover, their primary focus is on internal business operations, rather than external operations such as the supply chain. Additionally, entrepreneurs of small and medium-sized enterprises (SMEs) may be responsible for regulatory compliance, even though they have less control over the growth of their businesses. In other words, they adhere to government regulations without coercion and within a clear framework.

Table 4A: Ranking of Bank Officials' Perspective on Challenges

Risk Associated	Rank 1	Rank 2	Rank 3	Rank 4	Total Score	Weighted Avg	Ranking
Cash flow management	0	4	0	1	13	1.3	2
Regulatory compliance	0	0	2	3	7	0.7	4
Supply chain challenges	1	1	2	1	12	1.2	3
Technological adaptation	4	0	1	0	18	1.8	1

Notably, technological adaptation emerges as the top-ranked challenge, with a weighted average score of 1.8, indicating its significance in the eyes of bank officials (table 4a). This underscores the critical need for banks to embrace technological advancements to stay competitive and meet evolving customer expectations. Cash flow management follows closely behind, with a weighted average score of 1.3, highlighting the importance of maintaining financial stability and liquidity. The ranking of supply chain challenges, with a weighted average score of 1.3, reflects the inherent complexities involved in effectively managing supply chains. Regulatory compliance, although ranked last with a weighted average score of 0.7, indicates that compliance with regulation has less influence on the SMEs than bank officials' point of view.

Mitigating Trade credit using Blockchain Technology (BCT)

As a continuation, the present study aimed to address objective 2 by providing solutions for mitigating trade credit risks through the use of blockchain technology. Blockchain technology offers a promising solution to various challenges across multiple sectors. Its decentralized nature enhances transparency and security, making it particularly effective in industries like finance, supply chain management, and healthcare. By enabling secure and immutable records, blockchain can reduce fraud and improve traceability, which are critical issues in these fields. Additionally, the use of smart contracts facilitates automated processes, thereby increasing efficiency and reducing operational costs. However, while BCT presents significant advantages, it is essential to consider potential limitations such as scalability and regulatory hurdles that may arise as the technology continues to evolve.

Table 5: SMEs' Knowledge of Block chain Technology (BCT) - SMEs' Perspective

SMEs	Freq.	%
Yes	13	65%
No	7	35%
Total	20	100%

Research shows that 65 percent of business owners possess knowledge about BCT. 35 percent of them were unaware of BCT. Hence, it is concluded that the majority of them have an idea about BCT.

Table 5A: Is BCT the best solution for the challenges faced by SMEs? (SME's Perspective)

SMEs	Freq.	%
Strongly Agree	5	25%
Agree	9	45%
Neither Agree nor Disagree	4	20%
Disagree	0	0%
Strongly Disagree	1	5%
I don't know	1	5%
Total	20	100%

Table 5A shows that 45 percent of SME owners are in agreement, and another 25 percent strongly agree. However, only 5 percent of them disagree or strongly disagree that BCT could be a viable solution for SMEs. On the other hand, 20 percent of them neither agree nor disagree. This indicates that the majority of SMEs are optimistic about implementing BCT in their business, which will provide them with more solutions in terms of credit facilities and reliable platforms for international trade.

Table 6: Bank Officials' Knowledge of BCT – (Bank Officials' Perspective)

Banks	Freq.	%
Yes	4	80%
No	1	20%
Total	5	100%

Table 6 shows that 80 percent of bank officials are aware of BCT. Only 20% of the bank officials were unaware of BCT. This means most bank officials have more knowledge regarding BCT. This means most bank officials have more knowledge regarding BCT, which could potentially lead to more effective implementation of blockchain technology within their institutions. Consequently, increased awareness may enhance their ability to leverage BCT for improving operational efficiency and customer service.

Table 7: Is BCT the best solution for the challenges faced by SMEs? (Banks Perspective)

Banks	Freq.	%
Strongly Agree	2	40%
Agree	2	40%
Neither Agree nor Disagree	0	0%
Disagree	0	0%
Strongly Disagree	0	0%
I don't know	1	20%
Total	5	100%

The above table reveals that 40% of bank officials agree with BCT, with another 40% strongly agreeing. On the other hand, 20% (1 out of 5) of the bank officials had no prior knowledge. It is evident that bank officials develop numerous BCT software programs to encourage business owners to acquire credit facilities, which in turn leads to the growth of SMEs in terms of capital acquisition. The following are the reasons for each risk and challenge associated with the growth of SMEs. Entrepreneurs of SMEs extract this information from a questionnaire to understand the significance of a particular risk or challenge compared to others.

Reasons for the Risks

Adding to it, Figure 2 represents the responses we received from SMEs regarding the economic risks. The majority of respondents consider economic recession to be the most significant risk, accounting for 10 percent of the total. This perception is likely due to its potential to cause widespread economic downturn and business disruption. The majority of respondents respond to the financial crisis risk, which accounts for approximately 11 percent of the total.

Figure 2: Reasons for Economic Risks

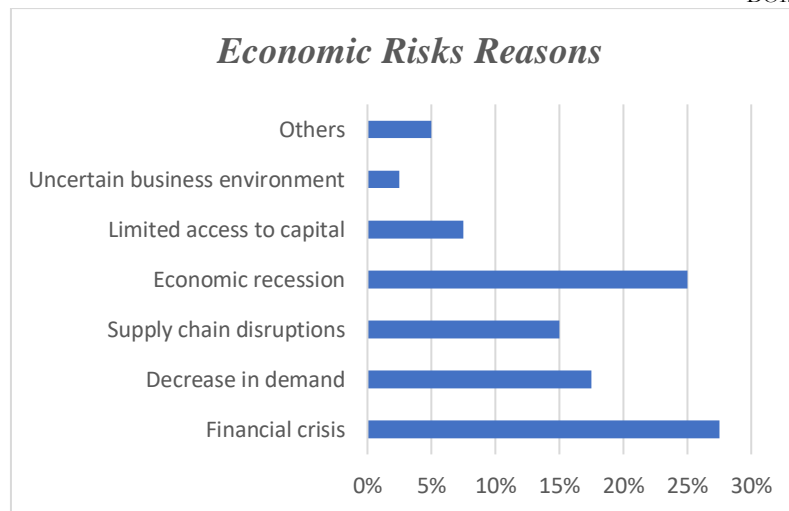
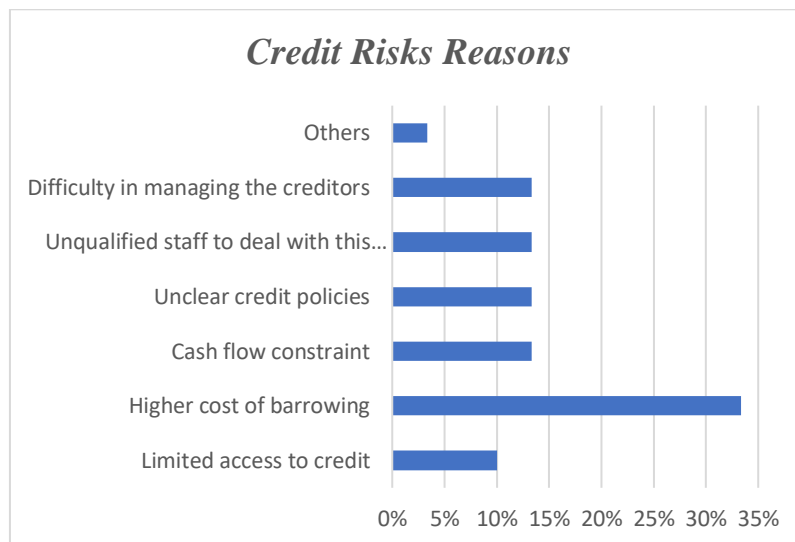


Figure 3: Reasons for Credit Risk



As shown in figure 3, based on the questionnaire, we received responses from SMEs regarding credit risk. The majority of respondents viewed the higher cost of borrowing at 10 percent as the most significant credit risk, indicating concerns about the financial burdens associated with borrowing. However, respondents equally rank cash flow constraints, unclear credit policies, difficulty in managing creditors, and unqualified staff to deal with credit risks at 4 percent, indicating a shared concern regarding operational and procedural challenges in credit management.

As shown in the graph based on the questionnaire, the responses from SMEs provide information about market risks (figure 4). The majority of respondents perceive stagnation in the market, which represents 12 percent of the credit risk, indicating concerns about reduced growth opportunities and potential revenue stagnation. On the other hand, losing customers is also considered significant, highlighting the importance of customer retention and stable supplier relationships.

Figure 4: Reasons for Market Risk



Figure 5: Reasons for Trade Risk



As shown in the chart (figure 5) based on the questionnaire, we got responses from SMEs concerning trade risks. The highest answers indicate that respondents perceive trade costs, which represent around 11% of the highest credit risk, as likely due to concerns about the financial burdens associated with international trade activities. However, trade barriers, to which 6% of people responded, follow closely, indicating apprehensions regarding regulatory hurdles and tariffs that impede smooth trade operations. These insights highlight the significant challenges SMEs face in navigating the complexities of global markets. Addressing these concerns through targeted support and resources could help mitigate risks and foster a more favorable trade environment for small and medium enterprises.

Figure 6: Reasons for Cash flow management

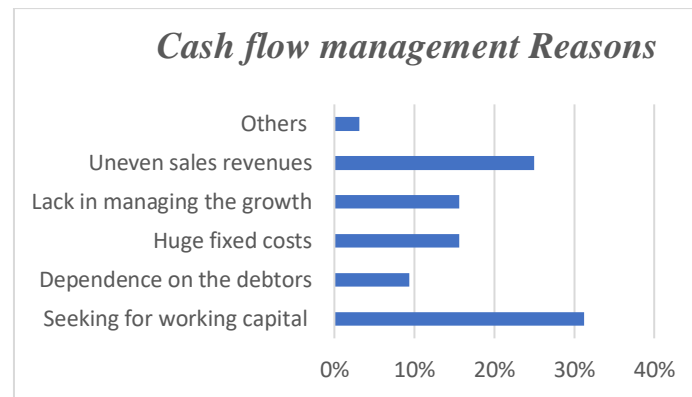


Figure 6 visualizes the challenges small and medium-sized enterprises (SMEs) encounter in managing cash flow, based on their feedback. The most frequently cited reasons for these challenges are the need for working capital (32 percent) and inconsistent sales revenue (25 percent). However, the graph illustrates that the lack of growth management and high fixed costs share the same line, accounting for approximately 16 percent of the challenges. Moreover, a few of them answered that the reason that cash flow management is challenging is because of dependence on the debtors; 9 percent of them and 2 percent said none of these reasons are challenging.

Figure 7, which is based on the questionnaire responses we received from SMEs, illustrates why regulatory compliance poses challenges for them. 48 percent of them stated that the complexity of regulations and policies presents challenges in adhering to certain rules. However, other respondents expressed varying opinions regarding the risk of non-compliance and the uncertainty of rules and regulations, with the percentages varying between 17 percent and 20 percent. Additionally, 7% of them expressed that they find management's responsibility to be more challenging, while 8% stated that none of these reasons present a challenge, citing other factors.

Figure 7: Reasons for Regulatory Compliance

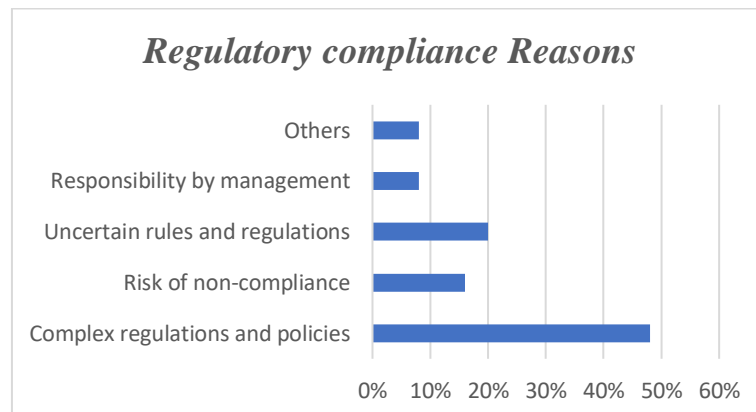
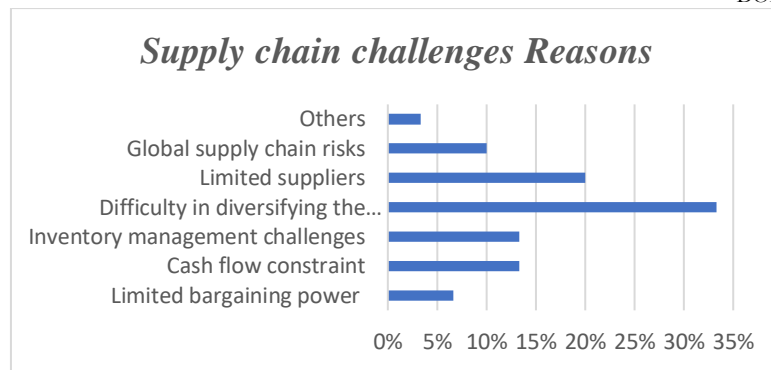
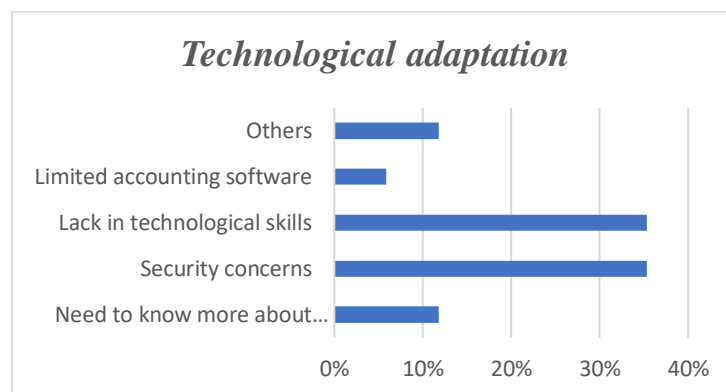


Figure 8: Reasons for Supply chain challenges



Based on the questionnaire responses, Figure 8 illustrates why SMEs find the supply chain challenging. Of these, 33 percent cited the difficulty in diversifying their suppliers, while 20 percent cited the limited availability of suppliers as the second most common reason. However, the same percentage of respondents ranked inventory management challenges and cash flow constraints as the most challenging, at 13 percent. Additionally, 7% of respondents cited limited bargaining power as the most challenging factor, while 10% identified global supply chain risks as the most challenging factor. Four percent of respondents indicated that none of these factors pose a significant challenge, citing other factors as the primary motivators.

Figure 9: Technological adaptation



The chart (figure 9) illustrates the responses we received from Small and Medium Enterprises (SMEs) regarding the challenges they face in regulatory compliance due to technology. 35 percent of them said that it was because of both a lack of technological skills and security concerns. However, 12 percent of them stated that they needed to learn more about online payment methods, while the same percentage indicated that there were other reasons. Furthermore, 6 percent of respondents stated that the challenge of regulatory compliance stems from the limited availability of accounting software.

Findings of the study

- After assessing the risks SMEs face when using trade credits, we found that most SMEs' owners agree that market and trade risks require more attention. Therefore, we found that SMEs need increased demand for their products and adequate trade credit facilities to manufacture and sell them in the market.
- According to bank officials' perspectives, it is evident there are economic and credit risks because there is no encouragement to establish new businesses. Additionally, business owners lack knowledge about credit and the associated risks it carries.

- Both SMEs and bank officials agreed that technological adaptation and cash flow management pose significant challenges for business growth. This demonstrates that SMEs often incorporate advanced technologies into their operations, such as online payment systems and advanced accounting software for inventory management. This allows them to concentrate more on generating an inflow of cash to meet their short-term liabilities effectively.
- Both entrepreneurs of small and medium-sized enterprises and bank officials are increasingly optimistic about blockchain technology. We conclude that banks are developing numerous BCT software programs to incentivize business owners to secure credit facilities, thereby facilitating the growth of SMEs in obtaining capital.

The majority of respondents suggest that BCT will help the business in meeting their objectives and finding the best financial solution for speeding up the purchase and payment process, security, customer satisfaction, and minimizing credit risks. This positive outlook highlights the potential of blockchain technology to revolutionize financial services for small and medium-sized enterprises. As banks continue to innovate and enhance their BCT offerings, it is likely that we will see a significant shift in how SMEs access funding and manage their financial transactions.

Practical Implications

SMEs are encouraged to adopt Blockchain Technology (BCT) tailored to their size and operational needs. This technology provides significant benefits, such as tracking invoices, expenses, and the credibility of buyers and sellers while enabling seamless integration with other business operations. Implementing such tools can streamline financial management processes and enhance transparency, ultimately contributing to better decision-making and operational efficiency.

Additionally, SMEs should maintain accurate and up-to-date financial records, including details of sales, purchases, expenses, and payroll. Proper financial tracking allows businesses to assess performance effectively, plan strategically, and make informed decisions. Opening a separate bank account exclusively for business transactions is another essential step to ensure clarity and accuracy in financial reporting. This practice prevents the mixing of personal and business funds, simplifying tax compliance and financial management.

Finally, SMEs must prioritize their financial health by monitoring cash flow, expenses, and profitability regularly. Identifying cash flow gaps early and addressing them proactively ensures the business remains sustainable. Staying informed about tax obligations—such as income tax, sales tax, and payroll tax—is also crucial, and consulting tax professionals can reduce liabilities and ensure compliance. For growing businesses, hiring accountants or bookkeepers provides valuable expertise in managing complex financial forms, thereby fostering stability and supporting long-term growth.

Conclusion

Thus, this study clearly explains the data analysis and interpretation of SMEs in the South Al Batinah region. The chapter primarily focuses on assessing the risks and challenges faced by SMEs, as well as examining their financial position and performance. The analysis includes the calculation of the gross profit ratio, net profit ratio, and cash flow ratio for selected companies. The results indicate variations in profitability and financial performance among the SMEs. The researcher utilizes tables and graphs to present the findings. Furthermore, among the five SMEs analyzed, three had a significant gross profit, while two struggled to obtain a gross profit. The net profit for the SMEs was generally low, primarily due to higher tax payments and limited access to external financing. Most SMEs had a healthy cash flow ratio, indicating excellent cash generation and financial positions. However, some faced challenges in generating sufficient cash flow. Only one SME relied on long-term loans, while others preferred trade credit for business growth. The majority of SMEs used equity (retained earnings) rather than debt (bank loans) to finance their growth. Three out of five SMEs had a strong liquidity position, as indicated by a higher current ratio and quick ratio. SMEs

relied more on equity financing, leading to high proprietary ratios and less external debt. However, working capital ratios were generally lower, indicating lower sales revenue compared to larger corporations. The questionnaire responses highlighted the importance of market risks, trade risks, technological adaptation, and cash flow management for SMEs. Both SME entrepreneurs and bank officials expressed optimism about blockchain technology, viewing it as a potential solution to meet business objectives, improve financial processes, and minimize credit risks. SMEs should adopt blockchain technology solutions that align with their business size and needs, enabling tasks such as invoice management, expense tracking, and integration with other operations. Keeping detailed and up-to-date records of financial transactions, including sales, purchases, expenses, and payroll, is crucial for tracking financial performance and making informed decisions. Opening separate bank accounts for business transactions helps avoid the commingling of personal and business funds and ensures accuracy in accounting. SMEs should stay informed about their tax obligations and seek assistance from tax professionals to ensure compliance and minimize tax liabilities. Hiring an accountant or bookkeeper, especially during business growth, can provide valuable expertise in managing financial forms and processes. Monitoring financial health by closely tracking cash flow, expenses, and profitability is essential, allowing SMEs to identify cash flow gaps and issues early and take appropriate steps to address them. Implementing these recommendations will enable SMEs to leverage technology, maintain accurate financial records, ensure compliance, and make informed financial decisions for sustainable growth.

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