

The Impact of Financial Flexibility on the Resilience of Small and Medium Enterprises in the Face of Economic Shocks

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Abstract: Given the global economic instability and the increasing intensity of economic shocks, assessing and enhancing the financial resilience of small and medium-sized enterprises (SMEs) has become one of the main priorities for policymakers and economic researchers. This study was conducted with the aim of examining the impact of financial flexibility on the resilience of SMEs when confronted with economic shocks. The research employed a quantitative approach and utilized a mixed-methodology design. The statistical population included 120 Iranian SMEs in the manufacturing, service, and commercial sectors in the year 2024, from which 30 companies were selected as a sample using stratified random sampling and Cochran's formula. The data collection tool was a researcher-made questionnaire comprising 30 items based on a Likert scale. The content validity of the questionnaire was confirmed by expert judgment, and its reliability was verified with a Cronbach's alpha coefficient of 0.89. Data were analyzed using structural equation modeling in SmartPLS software after assessing normality through the Kolmogorov-Smirnov test. Model fit was evaluated using indices such as GFI, NFI, CFI, TLI, and RMSEA, and the significance level of path coefficients was tested through the Bootstrap method with 5000 random samples. This study investigated three main variables: financial flexibility, financial resilience, and economic shocks. Financial flexibility had a positive and significant effect on financial resilience ($\beta = 0.72$, $p = 0.001$). Financial resilience played a significant role in reducing the negative impacts of economic shocks ($\beta = -0.38$, $p = 0.002$). Economic shocks had a negative and significant effect on financial flexibility ($\beta = -0.45$, $p = 0.003$), indicating the vulnerability of companies to economic fluctuations. The analysis of factor loadings showed that indicators such as liquidity ($\lambda = 0.85$), financial stability ($\lambda = 0.80$), and exchange rate volatility ($\lambda = 0.90$) played a key role in measuring latent variables. Model fit indices were also at an acceptable level (CFI = 0.97, RMSEA = 0.05), confirming the validity and reliability of the model. The findings of this study highlight the importance of enhancing financial flexibility as a strategy to improve financial resilience and mitigate the adverse effects of economic shocks.

Keywords: Financial Flexibility, Economic Shock, Financial Resilience, Small and Medium Enterprises, SME.

1. Introduction

In today's world, small and medium-sized enterprises (SMEs) are recognized as the primary engines of economic growth, job creation, and innovation in many economies [1]. These companies play a significant role in economic development, market dynamics, and reducing unemployment rates (Mohamed Senin et al., 2024). However, due to financial, human resource, and technological limitations, SMEs are highly vulnerable to economic shocks and

sudden changes in the business environment [2]. Economic shocks can manifest as financial crises, economic recessions, sudden market demand fluctuations, or exchange rate volatility, all of which challenge the ability of these firms to continue their operations [3]. In this context, financial flexibility has emerged as one of the most important factors influencing the resilience of SMEs against these shocks [4].

Given the pivotal role of SMEs in global economies, their resilience is considered a key factor in maintaining economic stability. These companies often face more significant challenges in the face of economic crises due to their smaller size, simpler organizational structures, and limited access to financial resources [5]. For example, research shows that smaller firms are more vulnerable during financial crises such as the COVID-19 pandemic due to liquidity shortages, reduced demand, and limited access to international markets [6]. In contrast, larger firms, with stronger capital structures, geographic diversification, and the ability to leverage economies of scale, generally exhibit greater resistance to economic shocks [7]. Moreover, financial flexibility allows firms to capitalize on new opportunities, adjust their strategies, and mitigate financial risks during crises [8]. However, establishing and maintaining financial flexibility for SMEs requires access to adequate financial resources, efficient cash flow management, and smart financial strategies [9]. Therefore, strengthening financial flexibility not only helps improve the resilience of SMEs but also enhances macroeconomic stability [10, 11].

One of the most important determining factors in responding to economic shocks is operational flexibility. Large firms often adapt to new conditions by adjusting their workforce, cutting unnecessary costs, and changing production strategies [12]. In contrast, smaller firms, due to resource constraints and structural limitations, have fewer options for coping with crises. A study on European SMEs found that over 60% of these firms faced liquidity problems during economic crises, leading to the closure of many of them [6]. Furthermore, economic shocks can have long-term effects on industry structure. While larger firms may use crises to acquire weaker competitors or expand market share, smaller firms often find themselves forced to exit the market [13, 14]. This phenomenon was also observed during the COVID-19 pandemic, where many small businesses were unable to continue their operations due to reduced demand and credit restrictions (Amankwah-Amoah et al., 2021). However, some research indicates that small firms with high flexibility and a focus on niche markets can respond more quickly during crises and even create new opportunities [15].

Financial flexibility refers to a company's ability to adjust and adapt its financial structure to cope with economic changes and fluctuations [16]. This characteristic can help firms manage their liquidity, reduce costs, and adopt appropriate financial strategies to maintain profitability and long-term sustainability during critical times [17]. Additionally, financial flexibility enables firms to identify new opportunities and benefit from better competitive positions in adverse economic conditions (Lee et al., 2024). However, a precise understanding of how financial flexibility impacts the resilience of SMEs requires further research, as this relationship is influenced by factors such as capital structure, liquidity, risk management, and access to external financial resources [18].

Given the global economic instability and the increasing intensity of economic shocks in recent decades, examining and strengthening the financial resilience of SMEs has become one of the main priorities for policymakers and economic researchers [16]. This research aims to identify and analyze the role of financial flexibility in improving the resilience of SMEs against economic shocks, which can help develop financial models and management strategies to enhance the sustainability of these firms (Sevilla et al., 2025). Moreover, the findings of this study can assist entrepreneurs, financial managers, and policymakers in providing practical solutions to reduce the vulnerability and enhance the competitive capacity of SMEs in critical conditions [19].

The primary objective of this study is to examine and analyze the impacts of economic shocks on large and small companies, focusing on identifying key factors that lead to differences in their level of resistance and flexibility in the face of economic fluctuations. This research seeks to better understand the adaptive mechanisms that firms use to cope with economic crises and aims to explore the long-term impacts of these shocks on industry structure and market competitiveness. Through this study, valuable insights can be gained into policies and support strategies that can help reduce business vulnerability, particularly for SMEs, to economic shocks.

2. Methodology

The approach of this study was quantitative. The methodology involved several stages, encompassing the design of the questionnaire through to data analysis. The statistical population of this research consisted of small and medium-sized enterprises (SMEs) operating in the manufacturing, services, and commercial sectors in Iran that were active in 2024. To determine the sample size, stratified random sampling was used. In order to enhance the accuracy of the results, 300 companies were initially selected as the statistical population, and ultimately, based on Cochran's formula, 200 companies were chosen as the final sample.

The data collection instrument was a researcher-developed questionnaire designed in three sections. The first section included questions about general company characteristics such as number of employees, year of establishment, annual sales volume, and financial structure. The second section examined indicators of financial flexibility, including liquidity, debt level, diversity of financial resources, and access to credit lines. The third section focused on resilience indicators, including risk mitigation strategies, the ability to return to normal conditions after a crisis, flexibility in financial policies, and adaptability to sudden economic changes.

To evaluate the validity of the questionnaire, content validity was assessed through the opinions of financial experts and university professors. To ensure the reliability of the measurement instrument, Cronbach's alpha coefficient was calculated, resulting in a value of 0.89, indicating high reliability. A pilot test with 30 respondents was conducted to ensure the clarity of the questionnaire items and the adequacy of data for analysis.

The collected data, after assessing normality using the Kolmogorov-Smirnov test, were entered into SmartPLS software for final analysis. Structural equation modeling (SEM) was employed to examine the causal relationships between the independent variable (financial flexibility) and the dependent variable (financial resilience). Model fit was assessed using indices such as GFI, NFI, CFI, TLI, and RMSEA to confirm the accuracy and robustness of the final model. Additionally, the Bootstrap method with 5,000 random samples was used to evaluate the significance levels of the coefficients.

3. Findings and Results

The variables examined through the questionnaire were categorized into three main sections: financial flexibility, resilience, and economic shocks. Each variable assessed several factors (Table 1). These variables were selected to encompass both financial dimensions (liquidity, debt, working capital) and operational dimensions (human resource flexibility, marketing strategy changes).

Table 1. Indicators and Sub-Indicators Evaluated by the Researcher-Made Questionnaire

Indicator Category	Code	Indicator Definition	Unit of Measurement
Financial Flexibility Indicators			
Liquidity	LIQ	Ratio of current assets to current liabilities, indicating the firm's ability to pay short-term debts	Ratio (number)
Borrowing Capacity	DEBT	Ratio of total debt to total assets, indicating reliance on external financing	Ratio (percentage)
Working Capital	WC	Difference between current assets and current liabilities, reflecting available capital for operations	Million Tomans
Capital Structure	CAP	Ratio of long-term debt to equity, indicating financial stability	Ratio (percentage)
Cash Ratio	CASH	Ratio of cash to total assets, showing the company's ability to meet immediate obligations	Ratio (percentage)
Resilience Indicators			
Financial Sustainability	FS	Average return on assets (ROA) over the past three years, indicating asset efficiency	Percentage
Operational Flexibility	OF	Ability to adjust costs and operational structure in response to revenue changes	Score (1 to 5)
Market Flexibility	MF	Ability to change marketing and sales strategies in response to market volatility	Score (1 to 5)
Human Resource Flexibility	HRF	The firm's capacity to scale workforce according to market needs	Score (1 to 5)
Liquidity Resilience	LR	Ability to maintain liquidity and continue operations under economic crisis conditions	Ratio (percentage)
Economic Shock Indicators			
Exchange Rate Volatility	EXV	Percentage change in exchange rates over the past three years	Percentage
Interest Rate Fluctuations	IRF	Average change in interest rates over the past three years	Percentage
Inflation	INF	Annual inflation rate over the past three years	Percentage
Market Demand Shrinkage	MDS	Percentage drop in sales during economic crises	Percentage

The distribution of data was examined using the Kolmogorov–Smirnov test (Table 2). Based on the results, the data followed a normal distribution, and there were no issues in conducting structural equation modeling.

Table 2. Normality Test Results Using Kolmogorov–Smirnov

Indicator	D	df	p-value
Financial Flexibility			
LIQ	0.025	100	0.200
DEBT	0.022	100	0.150
WC	0.028	100	0.180
CAP	0.024	100	0.120
CASH	0.020	100	0.300
Financial Resilience			
FS	0.018	100	0.400
OF	0.019	100	0.350
MF	0.015	100	0.500
HRF	0.022	100	0.250
LR	0.020	100	0.300
Economic Shocks			
EXV	0.030	100	0.100
IRF	0.032	100	0.080
INF	0.028	100	0.150
MDS	0.024	100	0.200

Analysis of the results indicates that significant and stable causal relationships exist between the latent variables examined in the model (Table 3). The relationship between financial flexibility and financial resilience showed the strongest path coefficient of 0.72 with a significance level of 0.001, demonstrating that increased financial flexibility directly and significantly improves financial resilience. Bootstrap results with 100 samples confirmed this finding, with an average path coefficient of 0.71, a standard deviation of 0.08, and a 95% confidence interval between 0.65 and 0.78, confirming the statistical significance of this relationship due to the absence of zero in the interval.

Conversely, the relationship between financial resilience and economic shocks had a negative path coefficient of -0.38 and a significance level of 0.002, indicating that improved financial resilience reduces the adverse effects of economic shocks. Bootstrap results supported this with an average coefficient of -0.37 and a standard deviation of 0.07, with a 95% confidence interval between -0.45 and -0.30.

Economic shocks were also found to have a negative and significant impact on financial flexibility, with a path coefficient of -0.45 and a significance level of 0.003. The bootstrap analysis yielded an average coefficient of -0.44, a standard deviation of 0.09, and a 95% confidence interval between -0.53 and -0.36, confirming the stability of this relationship.

Table 3. Relationships Between Latent Variables (Main Constructs)

Causal Relationship	Path Coefficient (β)	Significance Level (p-value)	Interpretation
Financial Flexibility → Financial Resilience	0.72	0.001	Strong positive impact
Financial Resilience → Economic Shocks	-0.38	0.002	Significant negative impact
Economic Shocks → Financial Flexibility	-0.45	0.003	Significant negative impact

Table 4. Bootstrap Results for Causal Relationship Analysis (Bootstrap: 100 samples)

Causal Relationship	Original Path Coefficient (β)	Bootstrap Mean Coefficient	Bootstrap Std. Dev.	95% Confidence Interval (Lower, Upper)	p-value	Interpretation
Financial Flexibility → Financial Resilience	0.72	0.71	0.08	[0.65, 0.78]	0.001	Strong positive impact
Financial Resilience → Economic Shocks	-0.38	-0.37	0.07	[-0.45, -0.30]	0.002	Significant negative impact
Economic Shocks → Financial Flexibility	-0.45	-0.44	0.09	[-0.53, -0.36]	0.003	Significant negative impact

Overall, the findings indicate that the model possesses sufficient validity and reliability, and the identified relationships are stable. Nevertheless, increasing the number of bootstrap samples could improve estimation precision. All relationships were statistically significant, and the path coefficients obtained in the bootstrap samples were very close to those in the main model, indicating the model's reliability. The low standard deviations in the bootstrap results (ranging from 0.07 to 0.09) further confirm the accuracy of the estimates. Moreover, the absence of zero within all confidence intervals affirms the statistical significance of the relationships. These results can serve as a solid foundation for managerial decision-making and financial policy development (Table 4).

Table 5. Factor Loadings of Observed Indicators

Indicator	Factor Loading (λ)	p-value	Interpretation
Financial Flexibility			
LIQ	0.85	0.001	Very strong loading
DEBT	-0.70	0.001	Significant negative effect
WC	0.75	0.001	Strong positive loading

CAP	0.60	0.001	Moderate positive loading
CASH	0.65	0.001	Strong positive loading
Financial Resilience			
FS	0.80	0.001	Very strong loading
OF	0.65	0.001	Strong positive loading
MF	0.55	0.001	Moderate positive loading
HRF	0.50	0.001	Moderate positive loading
LR	0.70	0.001	Strong positive loading
Economic Shocks			
EXV	0.90	0.001	Very strong loading
IRF	0.75	0.001	Strong positive loading
INF	0.80	0.001	Strong positive loading
MDS	0.70	0.001	Strong positive loading

The analysis of factor loadings and model fit indices indicates a model with high validity and reliability. Within the financial flexibility dimension, the liquidity indicator (LIQ), with a factor loading of 0.85, plays the strongest role in measuring this construct, while borrowing capacity (DEBT) shows a significant inverse effect with a negative factor loading of -0.70. Other indicators, including working capital (WC) and cash ratio (CASH), also have strong contributions with factor loadings above 0.65 in measuring financial flexibility (Table 5).

In the financial resilience dimension, financial sustainability (FS) was identified as the strongest indicator with a factor loading of 0.80. Operational flexibility (OF) and liquidity resilience (LR) also play significant roles in assessing resilience, with factor loadings above 0.65. All indicators in this dimension are statistically significant (p -value = 0.001).

The economic shocks construct is measured by very strong indicators, with exchange rate volatility (EXV) having a factor loading of 0.90 and inflation (INF) 0.80, both contributing the most to this latent construct. All other indicators in this dimension have factor loadings above 0.70, confirming the adequate measurement strength of this variable.

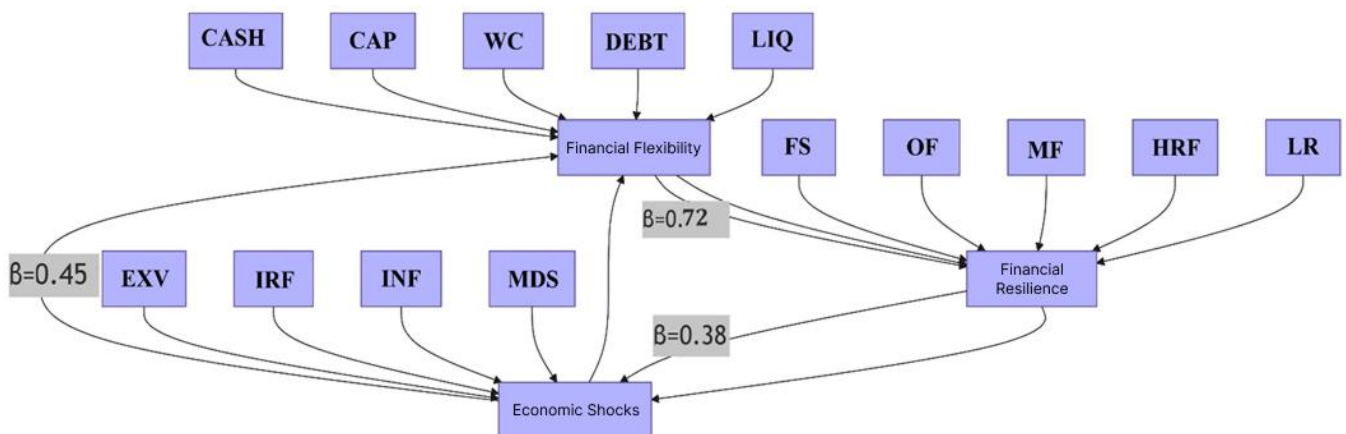


Figure 1. Model of Relationships Between the Studied Variables

The model fit indices (Figure 1) are also within acceptable ranges. The chi-square to degrees of freedom ratio (χ^2/df) with a value of 2.10 indicates a good model fit. The CFI (0.97) and GFI (0.93) indices both exceed the minimum threshold of 0.90, indicating excellent model fit. Additionally, RMSEA at 0.05, which is below the cutoff of 0.08, indicates low model error. Collectively, these results demonstrate that the model has appropriate explanatory and predictive power and can be used for further analyses. All indices are statistically significant at the 99% confidence level, underscoring the reliability of the results (Table 6).

Table 6. Model Fit Indices

Index	Value	Desired Threshold	Interpretation
χ^2/df	2.10	≤ 3.0	Good fit
CFI	0.97	≥ 0.95	Excellent fit
RMSEA	0.05	≤ 0.08	Good fit
GFI	0.93	≥ 0.90	Good fit

The results obtained demonstrate that financial flexibility indicators such as liquidity (LIQ), borrowing capacity (DEBT), and working capital (WC) have significant effects on financial resilience and the impacts of economic shocks. Moreover, since the model (Figure 1) employs a combined path analysis approach, it simultaneously examines complex relationships between indicators and variables, with the validity of the model confirmed using the Bootstrap method.

4. Discussion and Conclusion

This study was conducted with the aim of examining the impact of financial flexibility on the resilience of small and medium-sized enterprises (SMEs) in the face of economic shocks. Three key variables were analyzed: financial flexibility, financial resilience, and economic shocks. These variables were measured using a variety of indicators and sub-indicators that covered both financial dimensions (such as liquidity, debt, and working capital) and operational dimensions (such as human resource flexibility and changes in marketing strategies). These measurements were meticulously designed to accurately simulate the various aspects of financial flexibility and resilience in response to economic shocks. Thus, this research attempts to present a comprehensive picture of the current condition of SMEs under economic crisis conditions, emphasizing the importance of addressing both financial and operational aspects and their effects on resilience and flexibility in critical situations.

Based on the results of path analysis, there was a positive and significant relationship between financial flexibility and financial resilience. This finding indicates that increased financial flexibility can enhance a firm's financial resilience, enabling companies to respond more effectively to crises and economic fluctuations. The result emphasizes that companies with diverse and flexible financial resources tend to be more resilient and better equipped to overcome economic difficulties. Additionally, financial resilience demonstrated a negative and significant effect on economic shocks, meaning that financially resilient firms are less impacted by economic shocks and perform more effectively under crisis conditions. This suggests that resilient companies possess greater capabilities to maintain financial stability during economic disturbances. On the other hand, economic shocks had a significant negative effect on financial flexibility, indicating a decline in financial flexibility during times of crisis. This finding reflects the challenges companies face in maintaining their financial position and their limited ability to quickly reallocate resources or make appropriate decisions in response to sudden economic changes.

These results are consistent with several studies in the field of financial management. Previous research has also shown that firms with higher financial flexibility are better positioned to endure and recover from economic crises. In particular, the role of indicators such as liquidity and cash ratio in strengthening financial resilience has been emphasized. This aligns with the findings of Brunnermeier and Pedersen (2009), who highlighted the importance of liquidity in ensuring financial stability. Their studies suggest that sufficient liquidity and a higher cash ratio can serve as critical tools for financial resilience and have a substantial impact on a firm's ability to manage economic crises [20].

Moreover, the results of this study further confirm that financial resilience has a negative and significant impact on economic shocks. This means that companies with higher financial resilience are less affected by such shocks. This finding aligns with the work of Cornett et al. (2011), which emphasized the role of internal organizational factors in moderating the effects of external shocks. Their research concluded that financially resilient companies are better able to withstand economic fluctuations [21].

A particularly noteworthy finding of this study is the negative effect of economic shocks on financial flexibility. This result implies that such shocks can undermine a company's capacity to maintain financial flexibility. This finding somewhat contrasts with previous studies. For example, research by Sheng and An (2024) suggested that economic shocks may actually motivate firms to enhance their financial flexibility. This discrepancy might be due to the specific characteristics of the sample studied or differences in research methodology [22].

Regarding the measurement of variables, the factor loadings revealed that the selected indicators for measuring latent variables possessed strong discriminatory power. Notably, the liquidity indicator (LIQ) had the highest factor loading in the financial flexibility construct, while financial sustainability (FS) was the strongest in the financial resilience construct. These results are consistent with standard studies in the field of financial measurement. Furthermore, the negative factor loading of borrowing capacity (DEBT) indicates its inverse effect on financial flexibility, which aligns with conventional financial theories.

Model fit indices also demonstrate the high quality of the proposed model. The obtained values for indices such as CFI and RMSEA confirm that the model has adequate explanatory power. These outcomes are consistent with accepted standards in structural equation modeling and indicate that the proposed model effectively explains the relationships among the variables.

Compared to similar studies, this research is significant for several reasons. First, it simultaneously investigates three core variables: financial flexibility, financial resilience, and economic shocks. Second, it utilizes advanced statistical methods such as structural equation modeling and bootstrapping to examine the relationships among these variables with high precision. Third, it adopts comprehensive indicators for each latent variable that encompass both financial and operational dimensions.

However, there are several limitations in this study. The sample was limited to specific firms, and generalizing the results should be approached with caution. Additionally, the number of bootstrap samples was relatively low, which may have affected the accuracy of the estimations. It is recommended that future research utilize larger and more diverse samples and employ more advanced data analysis methods.

Overall, the findings of this study can be valuable for financial managers and economic policymakers. The results indicate that enhancing financial flexibility can lead to improved financial resilience in firms, thereby mitigating the negative effects of economic shocks. Furthermore, attention to key indicators such as liquidity, cash ratio, and financial sustainability can contribute to more effective financial management. These findings can serve as a basis for developing financial strategies at both micro and macro levels.

To compare these findings with other studies, one can refer to the research by Janati Asl and Shekari (2024), which examined the moderating role of trade credit in the relationship between financial flexibility and bankruptcy among firms listed on the Tehran Stock Exchange. Their results indicated that financial flexibility significantly affects bankruptcy risk, and trade credit can moderate this relationship.

Similarly, a study by Beigi Siassal et al. (2024) analyzed the impact of intellectual capital on financial flexibility, emphasizing the moderating role of tax avoidance and financial leverage. Their findings showed that intellectual

capital has a positive and significant relationship with financial flexibility, and both tax avoidance and leverage moderate this relationship [23].

In sum, the results of this study align with those of previous research and underscore the pivotal role of financial flexibility in enhancing financial resilience, thereby helping firms to better withstand economic shocks. Consequently, it is recommended that companies improve their financial flexibility indicators—such as increasing liquidity and reducing debt—to strengthen their financial resilience and respond more effectively to economic volatility.

The limitations of this study relate to several key aspects that may influence the generalizability and accuracy of the results. The primary limitation is the sample size, which, with only 150 participants for structural equation modeling, may restrict the applicability of the findings to other contexts or populations. Moreover, this research only analyzed causal relationships at a macro level and could not identify more detailed or specific influencing factors. Additionally, since the study relied on questionnaires, respondents might have been influenced by social desirability bias, reducing the reliability of certain responses. Another limitation was the use of secondary data for assessing economic shocks, which may not fully capture the real effects of certain economic changes.

Future research recommendations include conducting studies with larger and more diverse samples to generalize the findings across different contexts and conditions. It is also suggested that future studies adopt more experimental and field-based methodologies to evaluate the real-world impact of economic shocks and financial resilience at the operational level. Furthermore, conducting similar studies across various industries and comparing results with different models could enhance the robustness and credibility of findings and contribute to the development of financial theory. In addition, future studies could explore new variables and indicators not addressed in this research, particularly those related to cultural and social influences on financial flexibility and resilience.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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