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## Article

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# Factors influencing the resilience of rural agricultural and retail Micro, Small and Medium Enterprises in Midlands Province of Zimbabwe

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## ABSTRACT

Factors influencing the resilience of rural agricultural and retail Micro, Small and Medium Enterprises (MSME) in Zimbabwe have received less research focus. To address this gap in the literature, this article analyzes factors influencing the resilience of rural agricultural and retail MSMEs. Data used in this article is drawn from a survey of 492 MSME owners/managers from Chirumanzu, Gweru, Shurugwi and Mberengwa districts of Midlands Province, Zimbabwe. Principal component analysis was used to compute the resilience index and multivariate linear regression was used for statistical data analysis. The regression results show that MSME internal resources proxied by asset value increased MSME resilience by 0.22 index points. A conducive environment improved the MSME resilience by 1.88 index points. Entrepreneurial orientation manifested through MSME support increased MSME resilience by 0.81 index points. Robustness tests using FinScope data also show that MSME internal resources, denoted by access to credit and financial capital, increased MSME resilience. Risk-taking and conflict resolution, which measure entrepreneurial, increased MSME resilience. Policymakers and business owners need to promote initiatives that improve access to MSME finance to increase their resilience. The public sector should nurture a conducive business environment with sound and predictable macroeconomic policies that foster business stability. MSME owners must constantly scan their business environment to identify opportunities to enhance their resilience capabilities. The government and private sectors should offer entrepreneurship training to MSMEs to build their resilience.

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Economics; Business, Management and Accounting; Finance; Development Studies

## Introduction

Micro, Small and Medium Enterprises (MSMEs) are globally recognized as the key cog to the economic and social development of many countries (Dlamini & Schutte, 2020; Fatoki, 2018; World Bank, 2023). MSMEs constitute most of the private sector globally, representing about 90% of businesses and contributing in excess than 50% employment (World Bank, 2023). They play a critical role in a country's economic growth, as they act as centers for entrepreneurship and innovation (World Bank, 2023). In Zimbabwe, MSMEs play a pivotal role in propelling economic growth and serve as the primary driver of the economy. They account for over 70% of all economic activities, create more than 60% of employment opportunities, and contribute to over 50% of the country's Gross Domestic Product (Dlamini & Schutte, 2020). This suggests that MSMEs play a crucial role in society by delivering essential public goods and services, fostering employment opportunities, and mitigating poverty and inequality (World Bank, 2023).

MSMEs are key in resuscitating the economy of Zimbabwe, which has been declining for the past two decades (Chundu, 2020; Dlamini & Schutte, 2020). They create employment and act as a cushion for those who lose employment through retrenchment and downsizing (Makanyeza et al., 2023). Following massive disinvestment in Zimbabwe and the significant informalization of the economy, MSMEs have

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become a major source of livelihood for 80% of the Zimbabwean population. They are safety nets where Zimbabweans who lost their jobs in the formal sector can find a source of livelihood (Chundu, 2020), and they alleviate poverty and provide opportunities for women and youths to participate in the economy (Bomani, 2017).

In Zimbabwe, while the contribution of MSMEs to the national economy is well acknowledged, they have not been spared from the economic and climatic challenges currently facing the nation (Chundu et al., 2020), including a lack of financial resources, entrepreneurship, an uncondusive operating environment, and recurrent droughts (Pellegrino & Abe, 2022). The challenges confronting MSMEs in Zimbabwe call for the adoption of resilience strategies for their survival and growth. Micro Small- and medium-sized businesses (MSMEs) have been argued to lack resilience and are disproportionately affected by a variety of external shocks (Branicki et al., 2018). Rural MSMEs are the worst affected, as financial institutions and major businesses are opting out of these areas because of communication challenges. These rural areas are now hugely marginalized, and operating a business undertaking in such an environment is an uphill task. This calls for MSMEs to foster strategies for building resilience to enable them to survive various shocks and stresses.

Researchers, policymakers, and development partners are focusing on MSMEs resilience as a driver for socioeconomic development (Agarwal et al., 2022; Baghel, 2023). MSME resilience is defined as the ability to resist, absorb, accommodate, adapt to, transform and recover from effects of a hazard or shock in a timely and efficient way (Iyer-Raniga & Vahanvati, 2021; Morsut et al., 2022). According to theory of internal and external enablers of MSME resilience by Ghufuran et al. (2022), the internal factors include (e.g. organisational behaviour, managerial characteristics, quality), external (globalisation) and enabling (e.g. use of technology, generation of capital, location and marketing, supply chain integration (Alberti et al., 2018; Ghufuran et al., 2022). Although, increased attention has been paid to the understanding of resilience of MSMEs' in other countries (Agarwal et al., 2022; saad et al., 2021; Zighan et al., 2022), little is known on the determinants of MSME resilience in Zimbabwe. Few studies, conducted in other countries have shown that internal resources, conducive external environments, and entrepreneurship influence the resilience of MSME (Alberti et al., 2018; Ozanne et al., 2022; saad et al., 2021). In addition, resilience was found to positively and significantly influence MSME performance (Ozanne et al., 2022; saad et al., 2021; Zighan et al., 2022).

The majority of studies on MSMEs in Zimbabwe focus on examining the performance of MSMEs (Musabayana et al., 2022), innovativeness (Mabenge et al., 2022; Makanyeza & Dzvukeye, 2015; Makanyeza et al., 2023), and formalization (Mukorera, 2019) of MSMEs, and little is known on factors influencing the resilience of MSMEs. Therefore, the primary objective of this study is to investigate factors influencing the resilience of rural agricultural and retail MSMEs in the Midlands Province of Zimbabwe. The research study is guided by the hypothesis that internal resources, a conducive external environment, and entrepreneurship influence the resilience of MSMEs (Ghufuran et al., 2022; saad et al., 2021; Zighan et al., 2022). The findings of this study, therefore, potentially inform efforts by policymakers and other stakeholders involved in supporting rural MSMEs to develop suitable policies and strategies to strengthen their resilience. The study, aside from the above, more importantly extends the body of knowledge on factors influencing the resilience of MSMEs in a developing country context. In doing so, the research empirically extends the theoretical foundations of internal and external enablers of MSME resilience.

## Methodology

### Study context

Zimbabwe has a total of 2.7 million MSMEs, of which only 14% are registered (FinMark Trust, 2022). In terms of national distribution, Midland Province constitutes 16% of the MSMEs, which translates to 432,000 registered and unregistered MSMEs in the Midlands Province. The majority of MSME in Zimbabwe are operating in the agriculture (39.2%) and retail sectors (37.5%) (FinMark Trust, 2022). These businesses employ 3 million adults and contributes approximately USD 8.6billion to the country Gross Domestic Product (FinMark Trust, 2022). Hence, this sector is important for creating employment and economic growth in the country. This study examines the factors influencing resilience of micro, small, and medium enterprise (MSMEs) in Midlands Province of Zimbabwe.

## **Research design**

The study employed a quantitative research design that entailed collecting data from rural agricultural and retail MSME owners and management staff. The survey used closed- and open-ended questions. Quantitative research is anchored on positivism and objective information collected (Bryman, 2012; Cecez-Kecmanovic & Kennan, 2018) from MSME to assess their resilience.

## **Sampling and sample size calculation**

The data for this study were drawn from the quantitative survey of rural agricultural and retail MSME in Midlands Province of Zimbabwe. A multi-stage sampling technique was used in this study. The first stage of sampling involved purposive sampling of four districts in Midlands, which included Chirumanzu, Gweru, Shurugwi and Mberengwa, chosen randomly from each district. MSME were randomly selected from each ward, and lists were obtained from each business centre, agricultural extension officers, and district leadership.

The population size of MSME in the Midlands Province was estimated to be 432000, and this constitutes our population size (FinMark Trust, 2022). The sample size calculation for the quantitative survey was computed using the Raosoft formula (Raosoft, 2023). The simplified version of the formula:

$$n = \frac{Z^2 * p * (1 - p)}{e^2}$$

where  $n$  = sample size; ( $Z$ ) is confidence level value of 1.96, ( $p$ ) = the estimated proportion of the population (if unknown, 0.5 used to provide maximum sample size), and ( $e$ ) is margin of error 0.05 (Raosoft, 2023). This formula yields a total sample of 384 rural agricultural and retail MSMEs, and the study increased the sample size to approximately 492 rural agricultural and retail MSMEs to account for the non-response rate.

## **Data collection**

The data collection procedure entailed collecting quantitative data, complemented by document analysis. The main data collection was conducted in May 2023. MSME quantitative data were collected through the administration of survey questionnaires. Trained research assistants, led by the author, collected data from rural agricultural and retail MSME business owners and management staff using Kobo Collect. The quantitative survey collected information on MSME owners' socioeconomic status, resilience, enterprise performance, economic activities, and COVID-19 status. The study was complemented and triangulated by quantitative data analysis of Zimbabwe FinScope MSME 2022 Survey. The FinScope MSME 2022 clean survey dataset was provided by FinMark Trust, South Africa (FinMark Trust, 2022) to the first author upon application, signing of data access forms and associated approval. The Zimbabwe FinScope MSME 2022 Survey was conducted by FinMark Trust. The survey interviewed a sample of 3265 adult business owners selected at the enumeration area level across the whole country (FinMark Trust, 2022). Sampling for the survey was done by Zimbabwe National Statistics Agency (ZIMSTAT) and the inclusion characteristics were business owners 18 years or older, generating an income through small business activities and employing no more than 75 employees. The sampling was done to ensure its representative at the national, provincial and urban/rural level (FinMark Trust, 2022). The survey collected information on the size and scope of MSMEs in Zimbabwe, levels and landscape of access, usage and quality to financial products and services, constraints to MSMEs, and drivers and barriers to financial access for MSMEs (FinMark Trust, 2022).

## **Ethics statement**

The study was submitted to Midlands State University Ethics Review Committee and approved prior to data collection. The following important ethical considerations were taken. Permission was obtained from the local authorities. The survey respondents gave verbal informed consent and assent to participate in the study. Issues of privacy, anonymity, confidentiality, and do no harm were all ensured.

## Measurement of variables

### MSME resilience

There is a fragmented understanding of resilience and its measurements. The study noted that the main characteristics of resilience in the MSME context include adaptability, responsiveness, maintaining positive performance, competitiveness, and the MSMEs' ability to minimize vulnerabilities and recover from shocks and stresses (Brown et al., 2022; Nan & Park, 2022; Ozanne et al., 2022; saad et al., 2021). There is a huge debate on how to measure resilience; for instance, some authors have focused on qualitative (subjective), while others have used quantitative (objective) measurement of resilience (Ozanne et al., 2022). For objective measurement, some authors have used survival rate, retrenchment, and time to recover from a shock as indicators of resilience. Resilience is a multidimensional concept that includes various managerial attributes and performance; however, (Ferrón-Vílchez & Leyva-de la Hiz, 2023; Ozanne et al., 2022; saad et al., 2021) noted that its measurement is not straightforward. Resilience was computed using the survey variables shown in Table 1 (Ferrón-Vílchez & Leyva-de la Hiz, 2023), and the responses were measured on a 7-point Likert scale, from 1 = completely disagree, 2 = slightly disagree, 3 = disagree, 4 = neutral, 5 = slightly agree, 6 = agree, and 7 = completely agree.

Each of the 12 variables was converted into a dichotomous variable, where the responses slightly agree, agree, and completely agree were coded as one and zero otherwise. Principal component analysis was used to compute the resilience index from 12 dichotomous variables. According to Field (2013), the first principal component with an eigenvalue greater than one was used as the construct of MSME resilience index. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was used to assess the appropriateness of PCA (Field, 2013). The KMO value above 0.9 indicates that it is very suitable for factor analysis (0.8–0.9) is suitable; (0.7–0.8) is fair; (0.6–0.7) is acceptable; (0.5–0.6) is not suitable while less than 0.5 is very unsuitable (Field, 2013).

### Entrepreneurship characteristics

These are grouped into owner background, human capital, social capital, and entrepreneurial orientation (saad et al., 2021; Zighan et al., 2022). Enterprises' owner backgrounds included age, sex, and marital status. Human capital (HC) was measured by the owner's education and business records. Entrepreneurial orientation (EO) was measured using the entrepreneurship index computed using principal component analysis using seven variables: (a) sought acceleration services (e.g., mentoring, coaching, loans), (b) formalized operations through registration, (c) increased productive assets (e.g. equipment and machinery), (d) sought and received support from the Government, Non-Governmental Organization (NGOs), and other organizations on skills training; (e) engaged with value chain players in purchasing and selling activities; (f) undergone business development training (e.g., opportunity identification, business planning, marketing, financial literacy), and (g) established viable market linkages. Zighan et al. (2022) noted that entrepreneurship orientation is important in building resilience.

**Table 1.** Variables used to compute level of resilience from own survey data.

Item/Variable
1.This MSME is able to adapt to changes due to various shocks
2.This MSME is able to cope with unfavourable situations including various shocks
3.My MSME tries to take the problems related to shocks with a good disposition and see its positive side
4.Dealing with the stress generated by shocks is making my organization stronger.
5.After a serious difficulty or setback, such as the COVID-19 or other shocks, my organization is able to recover
6.The MSME has capacity to achieve its objectives despite the current obstacles.
7.This MSME is able to function despite pressure due to shocks
8.This MSME does not easily succumb to problems or failures.
9.This MSME is strong in the face of difficulties related to shocks
10.This MSME may face setbacks and unstable or unpleasant situations, such as COVID-19 or other shocks.
11.This MSME is able to recover from significant damage, such as that caused by COVID-19 or other shocks, and be successful
12.This MSME is capable of being successful against all odds, as is the case during COVID- 19 or other shocks

Source. Modified and adapted from Ferrón-Vílchez and Leyva-de la Hiz (2023).

### **MSME internal resources**

MSME internal resources were captured by MSME financial capital (asset value), MSME age, type, and whether MSME is licenced.

### **Business operating environment**

The business operating environment typically includes institutions, infrastructure, location, and macro-economic conditions. Macro-economic conditions include legal and bureaucratic restrictions, favourable tax systems, rules, regulations, and political stability. The business environment can be defined as the set of conditions outside a firm's control, which have a significant influence on how businesses behave throughout their life cycle. Respondents were asked to characterize their business operating environment. A highly conducive business operating environment with limited challenges was coded as one and zero otherwise.

### **COVID-19**

The predominant shock affecting MSME in the past two years was COVID-19. This study included a dummy variable to measure whether COVID-19 had a negative effect on MSME performance. Shock exposure was measured using the respondents' own reports of the effect of COVID-19 on MSME. Ozanne et al. (2022) also used this shock variable and found that COVID-19 had a negative impact on MSME performance.

### **Econometric analysis of factors influencing resilience**

The econometric analysis focused on factors influencing the resilience of rural agricultural and retail MSMEs in Midlands Province. Descriptive and econometric data analyses were performed using STATA version 18 and SPSS 25. For descriptive analysis, quantitative data were presented as means and standard deviation, and Student's *t*-test was used for comparisons of quantitative data between resilient and less resilient MSME. Statistical significance was set at  $p < 0.05$  was considered statistically significant. In this section, we outline the econometric data analysis for resilience. The factors influencing the resilience of rural agricultural and retail MSMEs were estimated using the following linear regression model.

$$RC_h = \alpha h + \beta EO_h + \delta FIR_h + \theta NV_h + \gamma X_h + \varepsilon_h \quad (1)$$

where RC is resilience of rural agricultural and retail MSME  $h$ ; EO is a vector of entrepreneurial factors of these MSMEs  $h$  (age, gender and marital status, education of the owner, business records, risk taking, taking charge of decisions, resolves and implements decisions, business premises licenced or approved, whether these MSME receives support from Government, NGOs, and other organizations); FIR is a vector of internal resources of rural agricultural and retail MSME  $h$ : (financial capital, size, MSME age, and type); NV is a vector of the external environment of MSME  $h$ : (institutions, infrastructure, location, macro-economic conditions, shocks);  $X$  is a vector of other variables included in the equation;  $\varepsilon$  is the error term and  $\alpha h$  are MSME fixed effects. Linear regression was used to estimate Equation (1), given that RC is a continuous variable (Wooldridge, 2010).

### **Reliability and validity analysis**

This study checked the reliability and validity of the computed entrepreneurship and resilience indices of rural agricultural and retail MSME. Reliability analysis assessed the internal consistency of the resilience indices, that is, whether different items could measure the same content or concept independently (Shan & Tian, 2022). Cronbach's alpha coefficient was used to investigate the internal consistency of the entrepreneurship and resilience indices. Cronbach's alpha coefficient is between 0 and 1, and if the coefficient does not exceed 0.6, the internal reliability is considered inadequate (Shan & Tian, 2022). Cronbach's alpha coefficient of 0.6 and 0.9 were obtained, denoting the internal consistency and reliability of the entrepreneurship and resilience variables, respectively.

Validity is concerned with the accuracy of the survey method, data obtained, and results (Shan & Tian, 2022). The main validity tests include content and construct validity. To enhance content validity, the completed draft questionnaire was peer-reviewed and revised by a supervisor and classmates to ensure that the questions determined the subject under study. Before the survey, the questionnaire was pre-tested with a sample of five rural agricultural and retail MSME, and repetitive and ambiguous questions were revised and modified to achieve good content validity. Principal component analysis was used to compute and measure the validity of the entrepreneurship and resilience indices. For entrepreneurship, the first principal component with an Eigenvalue of 1.4 was assumed to be the entrepreneurship index and the KMO measure of sampling adequacy of 0.6, indicating that principal component analysis was appropriate (Field, 2013). With regard to resilience, the first principal component with an Eigenvalue of 5.6 was taken as the construct of resilience index, and the KMO measure of sampling adequacy was 0.9, demonstrating that principal component analysis was appropriate (Field, 2013).

### **Multicollinearity**

Multicollinearity occurs when two or more explanatory variables are highly correlated in a multiple regression analysis. If multicollinearity is high, the regression model estimates of the coefficients can be unstable, and the standard errors for the coefficients can be inflated significantly. The variance inflation factor (VIF) was estimated to detect multicollinearity. As a rule of thumb, a variable whose VIF value is greater than 10 or whose tolerance value, defined as  $1/VIF$ , is lower than 0.1 should be further investigated. Tolerance, defined as the  $1/VIF$ , has been used by many researchers to determine the degree of collinearity. The variance inflation factors were less than 10 and the tolerance values ( $1/VIF$ ) were greater than 0.1 for own survey and FinScope data showing that multicollinearity does not seem to affect the model.

### **Heteroscedasticity test**

To ensure efficient estimates, one of the assumptions in the regression analysis is the homogeneity of variance, known as homoscedasticity. Homoscedasticity describes the situation in which the error terms are constant and shows that the residuals and fitted values of this model are uncorrelated. Heteroscedasticity (heterogeneity of variance) is a major challenge in regression analysis, because it results in inefficient estimates (Manning, 1998). Heteroscedasticity was tested using the Breusch-Pagan/Cook-Weisberg test with the *estat hettest* function in STATA. A common approach to address heteroscedasticity is to transform the variables using log, Box-Cox, and other transformation techniques (Manning, 1998). The Chi-square test yielded a value of 364\*\*\*,  $p=0.000$  for own survey data and 1278\*\*\*,  $p=0.000$  for FinScope data. The  $p$ -values of 0.000 are less than the chosen significance value of 0.05, indicating a statistically significant Chi-square test. This result indicates the presence of heteroskedasticity in the dependent variable of annual income of both survey datasets.

A common approach to addressing heteroscedasticity is to transform the variables using log, Box-Cox, and other transformation techniques (Manning, 1998). In this study, annual income was log transformed. The Breusch-Pagan/Cook-Weisberg heteroskedasticity test of the log annual income regression returned a  $p$ -values of 0.27 and 0.73. This test is no longer significant as the  $p$ -value is greater than the 0.05 cut-off. This suggests that the log transformation of the dependent variable annual income has successfully eliminated problems of heteroscedasticity for own survey and FinScope data, respectively.

## **Results**

### **Descriptive results**

Table 2 shows the descriptive statistics of rural agricultural and retail MSME based on survey data. On average, the MSME realized an annual income of US\$3658 with a maximum of US\$64800. About 77% of the surveyed MSME subjectively rated their enterprises as successful and performed well in the face of shocks. Fifty-eight percent of the MSME acknowledged that the business operating environment was conducive to success. About 75%, 50%, and 53% of the MSME were solely owned, focused on agriculture, and licensed, respectively.

### MSME characteristics by resilience status from survey data

An individual MSME in the sample with a positive resilience score was considered to have high resilience capacity and was assigned a score of 1; otherwise, a score of 0 was assigned. Approximately 55% of the MSME had higher resilience. Table 3 compares MSME performance, asset value, firm characteristics, and entrepreneurship characteristics differentiated by resilience status, presenting the differences in means and *t*-test results. There were some notable differences between the two groups. The results showed that resilient MSMEs had a relatively higher income than their counterparts and indicated that they were likely to be successful. A higher proportion of resilient MSMEs highlighted that they experienced a conducive operational environment and were more educated than less resilient ones. On average, resilient MSMEs have more employees and are more entrepreneurial than less resilient ones.

### Descriptive results of FinScope data

Table 4 shows the descriptive statistics of the MSME based on the FinScope data. On average, the MSME realized an annual turnover of US\$18,384 with minimum of US\$20 and a maximum of US\$24000. Average annual expenses were US\$3784. About 26% of the surveyed MSME subjectively rated their enterprises as successful and performed well in the face of shocks. Seventy-four percent of the MSME acknowledged that COVID-19 had a negative effect on their businesses. To measure entrepreneurship, we considered whether owners were risk takers and problem solvers and determined. About 81%, 94%, and 92% of the owners were risk takers, problem solvers, and determined and as such were considered entrepreneurial.

### Econometric results

#### Factors influencing resilience of MSME

In this subsection, we estimate the factors influencing the resilience of rural agricultural and retail MSME (Table 5) based on the survey data. We used owner background, entrepreneurial, MSME internal resources, and external environmental factors as variables influencing resilience in the regression analysis. MSME internal resources measured by asset value had a positive influence on the resilience of rural agricultural and retail MSME. For example, asset value is associated with an increase in the resilience of rural agricultural and retail MSME by 0.22 index points. The external environment was captured by the variable of

**Table 2.** Descriptive statistics based on survey data.

Variable	Description	Mean	Std. Dev	Min	Max
Annual income	Annual income (US\$)	3658	5549	36	64800
Log annual income	Log annual income (US\$)	7.67	1.01	3.58	11.08
Success	Business successful (1 = yes, 0 = no)	77	42	0	100
Resilience	Resilience index	0.0	2.36	-4.6	2.47
Conducive	Business environment conducive (1 = yes, 0 = no)	58	49	0	100
Asset value	Asset value (US\$)	1881	5938	0	60000
Log asset value	Log asset value (US\$)	6.0	1.8	1.1	11
Age	Age of owner (years)	41.3	12.2	18	96
Gender	Business female owned (1 = yes, 0 = no)	72	45	0	100
Education	Owner has secondary education and above (1 = yes, 0 = no)	61	49	0	100
Married	Owner married (1 = yes, 0 = no)	72	45	0	100
Enterprise	Agricultural enterprise (1 = yes, 0 = no)	50	50	0	100
Owner	Sole ownership (1 = yes, 0 = no)	75	43	0	100
Employees	Number of employees	1.6	3.5	0	29
License	Business licenced (1 = yes, 0 = no)	53	50	0	100
Business age	Year's business operating	5.8	7.7	0.1	100
Entrepreneur	Entrepreneur index	0.0	1.2	-1.7	3.66
Number of observations		493			

Note. All dummy variables are in percent.

**Table 3.** MSME statistics by resilience status.

	Resilient	Less resilient	Differences
Annual income	4816.19	2225.95	-2590.25***
Log annual income	7.97	7.29	-0.67***
Success	0.94	0.55	-0.40***
Conductive	0.80	0.30	-0.50***
Asset value	2517.18	1094.00	-1423.17***
Log asset value	6.28	5.56	-0.72***
Age	40.67	42.05	1.38
Gender	0.72	0.73	0.01
Educate	0.65	0.56	-0.09**
Married	0.72	0.73	0.01
Enterprise	0.51	0.49	-0.02
Owner	0.71	0.81	0.10**
Employees	1.97	1.15	-0.82**
Licence	0.59	0.46	-0.13***
Business age	6.45	5.05	-1.40**
Entrepreneur	0.17	-0.21	-0.38***
Number of observations	272	220	

\*, \*\*, \*\*\* indicates the corresponding differences are significant at the 10%, 5%, and 1% levels, respectively (t-test).

**Table 4.** Descriptive statistics for FinScope data.

Variable	Description	Observations	Mean	Std. Dev	Minimum	Maximum
Annual turnover	Annual turnover (US\$)	2995	18383.47	446724.25	20	600,000
Log annual turnover	Log annual expenses (US\$)	2995	7.98	1.31	3	13.3
Success	Business successful (1=yes, 0=no)	3265	26	44	0	100
Resilience	Resilience index	3265	0.0	1.12	-2.4	2.35
COVID-19	COVID-19 negative effect on business (1=yes, 0=no)	3265	74	44	0	100
Age	Age of owner (years)	3265	40.34	12.3	18	91
Female	Business female owned (1=yes, 0=no)	3265	64	48	0	100
Education	Owner has secondary education and above (1=yes, 0=no)	3265	73	45	0	100
Age business	Age of business (years)	3258	6.8	7.43	0	58
Sector	Wholesale/retail sector (1=yes, 0=no)	3265	51	50	0	100
Credit	Accessed credit (1=yes, 0=no)	3265	36	48	0	100
Urban	Business located in urban area (1=yes, 0=no)	3265	60	49	0	100
Risk taker	Owner is risk taker (1=yes, 0=no)	3265	81	39	0	100
Charge	Owner takes charge of things (1=yes, 0=no)	3265	94	25	0	100
Resolve	Owner determined (1=yes, 0=no)	3265	92	27	0	100

Note. All dummy variables are in percent.

a conducive environment. A conducive environment improved the resilience of rural agricultural and retail MSME by 1.88 index points. *Entrepreneurial orientation* is measured using three variables: acceleration, MSE support, training, and viability. The variable MSME support, which is a proxy measure of entrepreneurial, is positive and significant, and increases the resilience of rural agricultural and retail MSME by 0.81 index points. These results demonstrate that entrepreneurial orientation plays a crucial role in driving the resilience of rural agricultural and retail MSME. These results are in tandem with Zighan et al. (2022) and Esubalew and Raghurama (2020) who highlight that entrepreneurship orientation is important for resilience building.

**Table 5.** Factors influencing the resilience of rural agricultural and retail MSME based on survey data.

Domain	Resilience	Coef	St.Err	t-value	p-value	[95% Conf Interval]	Sig
Owner background	Age	-.001	0.01	-1.06	0.29	-0.03 0.01	
	Gender	0.23	0.21	1.07	0.29	-0.19 0.64	
	Educate	0.26	0.19	1.36	0.18	-0.12 0.64	
	Married	-0.20	0.21	-0.96	0.34	-0.62 0.21	
MSME internal resources	Log asset value	0.22	0.06	3.96	0.00	0.11 0.33	***
	Business age	0.02	0.01	1.54	0.13	-0.01 0.04	
	Enterprise	-0.25	0.20	-1.25	0.21	-0.64 0.14	
	Owner	-0.20	0.23	-0.90	0.37	-0.65 0.24	
	Employees	0.02	0.03	0.69	0.49	-0.04 0.08	
	Licence	0.10	0.20	0.51	0.61	-0.3 0.50	
	Conducive	1.88	0.21	9.15	0.00	1.47 2.28	***
	Accelerate	0.08	0.20	0.39	0.70	-0.32 0.47	
	MSE support	0.81	0.21	3.96	0.00	0.41 1.22	***
	Train	-0.18	0.23	-0.77	0.44	-0.63 0.28	
Business environment	Viable	-0.17	0.20	-0.87	0.38	-0.56 0.22	
	Constant	-2.18	0.60	-3.64	0.00	-3.36 -1.00	***
	Mean dependent var		0.19		SD dependent var		2.27
	R-squared		0.31		Number of obs		453
	F-test		12.83		Prob > F		0.00
	Akaike crit. (AIC)		1893.68		Bayesian crit. (BIC)		1959.53

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

**Table 6.** Factors influencing MSME resilience based on FinScope data.

Domain	Variable	Coef	St. Err	t-value	p-value	[95% Conf Interval]	Sig
Owner background	Age	0.00	0.00	-1.51	0.13	-0.01 0.00	
	Female	-0.23	0.04	-5.28	0.00	-0.32 -0.14	***
	Education	0.29	0.05	6.28	0.00	0.20 0.38	***
MSME characteristics	Age business	0.01	0.00	2.65	0.01	0.00 0.01	***
	Sector	0.00	0.04	0.01	0.99	-0.08 0.08	
	Credit	0.14	0.04	3.50	0.00	0.06 0.22	***
	Log turn over	0.22	0.02	14.15	0.00	0.19 0.24	***
Business environment	Urban	-0.14	0.04	-3.50	0.00	-0.22 -0.06	***
	COVID-19	0.14	0.04	3.09	0.00	0.05 0.22	***
Entrepreneurial orientation	Risk taker	0.19	0.05	3.43	0.00	0.08 0.29	***
	Charge	0.00	0.08	0.05	0.96	-0.16 0.17	
	Resolve	0.38	0.08	4.98	0.00	0.23 0.52	***
	Constant	-2.31	0.18	-13.15	0.00	-2.65 -1.96	***
	Mean dependent var		-0.01		SD dependent var		1.13
	R-squared		0.14		Number of obs		2988
	F-test		40.74		Prob > F		0.00
Akaike crit. (AIC)		8770.24		Bayesian crit. (BIC)		8848.27	

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

### **Robustness checks on factors influencing resilience of MSME using FinScope data**

In this subsection, the study follows Saad et al. (2021) includes owner background, entrepreneurial, MSME internal resources, and external environmental factors as variables influencing resilience in the regression analysis. Table 6 presents the factors that determine the resilience of the MSME. The female gender variable was negative and statistically significant. Regarding the *Owner's background*, two variables of gender and education were significant. Female-owned MSME tended to be associated with a reduction in resilience by 0.23 index point. Human capital, measured by the education of the owner, was positive and significantly increased resilience by 0.29 index points. *MSME internal resources* measured by access to credit and financial capital (annual turnover), have a positive influence on MSME resilience. For example, access to credit is associated with an increase in MSME resilience of 0.14 index points. The *external environment* was captured by whether the MSME was in urban or rural areas and by the COVID-19 pandemic effects. Being in urban areas reduced the MSME resilience by 14 index points. The results showed that COVID-19 had a positive effect on MSME resilience. *Entrepreneurial orientation* was measured using three variables: risk-taking, taking charge of decisions, and resolving and implementing decisions. The variables risk taker and resolve, which are proxy measures of entrepreneurial orientation, were positive and significant. Risk taking and resolve increases MSME resilience by 0.14 and 0.39 index points respectively. These results demonstrate that entrepreneurial orientation plays a crucial role in driving

MSME resilience. These results resonate with Zighan et al. (2022) those who noted that entrepreneurship orientation is important for building resilience.

## Discussion

This subsection discusses the results of the study and how they help answer the research objectives and whether they are consistent with the hypotheses and the literature. The discussions also reveal how the study's findings compare with the main arguments of the theories upon which this research was based, the research objectives, questions, and hypotheses. Survey data showed that asset value (*MSME internal resources*) increased the resilience of rural agricultural and retail MSMEs. A conducive environment (*external environment*) improved the resilience of rural agricultural and retail MSMEs. MSME support, which is a proxy measure of entrepreneurial, was positive and significantly increased the resilience of rural agricultural and retail MSMEs. These results demonstrate that entrepreneurial orientation plays a crucial role in driving the resilience of rural agricultural and retail MSMEs. The results of the robustness analysis and triangulation from the FinScope data also reveal quantitatively and qualitatively similar results. The *MSME internal resources* measured by access to credit and financial capital (annual turnover), saw these two variables to have a positive influence on MSME resilience. Regarding the *external environment* in urban areas, MSME resilience was reduced, while COVID-19 had a positive effect on the resilience of MSME. The variables risk taker and resolve, which are proxy measures of *Entrepreneurial orientation* were positive and significant. Risk-taking and resolving challenges increase the resilience of MSME. The study results show that MSME internal resources, in particular firm financial resources, a conducive external environment, and entrepreneurship orientation are important factors influencing the resilience of MSME.

MSME financial resources, measured as the monetary value of assets, are associated with an increase in MSME resilience. These findings are in tandem with various studies that acknowledge that MSME's financial resources are a good predictor of resilience (saad et al., 2021). A conducive business environment improves the resilience of MSME. A conducive business environment characterized by certainty and stability enables decision-makers to predict how the environment is evolving and develop future MSME growth and performance plans. The study findings converge with those of the previous literature and have practical implications. The business signals and intelligence gathered through environmental scanning must be assessed and translated into strategic MSME growth insights (Yahia Marzouk & Jin, 2022). Entrepreneurial orientation measured by MSME support was positive and significantly improved MSME resilience and agree with, Zighan et al. (2022) who highlighted that entrepreneurship orientation is important for resilience building. These empirical findings support the hypothesis that entrepreneurship is positively associated with MSME resilience.

## Conclusion and policy recommendations

This study aimed to examine factors influencing the resilience of rural agricultural and retail MSMEs in four districts of Midland Province, Zimbabwe. Through the analysis of the survey and FinScope data, several key findings emerged. Improved internal financial resources and a conducive business environment were found to positively increase the resilience of rural agricultural and retail MSMEs. These findings converge with the previous literature and show the importance of investing in MSME financial resources and gathering business signals and intelligence through environmental scanning to guide strategic MSME growth. Entrepreneurial orientation positively and significantly improved the resilience of rural agricultural and retail MSMEs. These empirical findings support the hypothesis that entrepreneurship is positively associated with resilience of rural agricultural and retail MSMEs. The following programming and policy implications emerge from the study's findings.

### **MSME financial resource**

MSME financial resources are associated with an increase in the resilience of rural agricultural and retail MSMEs. Business owners and policymakers need to be aware that improving business financial resources

through various mechanisms, including improved labor productivity, asset utilization, and reducing losses, is necessary to have more resilient MSMEs in a developing county context.

### ***Conducive business environment***

A conducive business environment characterized by certainty and stability enables decision-makers to predict how the environment is evolving and develop future MSME growth and performance plans. The public sector should nurture macroeconomic policies and regulations to foster business certainty and stability. In addition, the study recommends that MSME owners constantly scan the business environment to identify, gather, and analyze information about business environmental trends to enhance the development of innovation and resilience capabilities. Rural agricultural and retail MSMEs should continue to scan the environment, and signals and intelligence should be used to guide the MSME strategy.

### ***Entrepreneurial orientation***

Entrepreneurial orientation improved the resilience of rural agricultural and retail MSME. There is a need for the government and private sectors to offer entrepreneurship training to MSMEs, given that entrepreneurship is a key driver of MSME resilience. These trainings can be offered through various platforms, including face-to-face complemented with awareness and guidance through print and electronic media. Apart from capacity building, the government can also make favourable MSME regulations and policies, such as tax deductions, to spur MSME resilience.

### ***Study limitations***

The main strength of this study is that it investigates factors influencing the resilience of rural agricultural and retail MSME. However, this study had some limitations. First, all data were based on recall and potentially suffered from recall bias. Second, the choice of variables used to compute the entrepreneurship and resilience index pillars was limited and not exhaustive. Resilience is a complex, multidimensional concept that is difficult to measure. Third, the study used cross-sectional data, which are not sufficient to estimate causality, but rather associations. Future studies using panel data are recommended to account for causality and heterogeneity. In addition, the results from the survey data are not generalizable to the country owing to the small sample size used in the analysis.

### ***Areas for further research***

While this study provides valuable insights into factors influencing the resilience of rural agricultural and retail MSMEs in Midlands Province of Zimbabwe, several areas warrant further investigation. These areas for future studies can help deepen our understanding and address certain limitations of the current research. Conducting a comparative analysis of different provinces or regions within Zimbabwe can provide a broader and spatial perspective on factors influencing the resilience of MSMEs. In addition, conducting longitudinal or panel studies over an extended period can help track the changes in MSME resilience over time.

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### ***Author contributions***

Conceptualization, F.T.; methodology, F.T, L.C, C.M.; software, C.M.; validation, F.T, L.C, C.M., formal analysis, F.T, L.C, C.M.; data curation, F.T.; writing - original draft preparation, F.T, C.M, L.C., writing - review and editing. All authors have read and agreed to the published version of the manuscript.

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## Data availability statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

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