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Business environment and corporates performance: The mediating role of technological innovation among Chinese private listed companies

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Abstract

Purpose: To test the effect of business environment on private corporates performance and how technical innovation mediates this relationship.

Design/methodology/approach: Using 3,512 private listed corporates in China from 2012 to 2021 is for panel evaluation by using fixed effect model. Besides, the replacement variable method, the two-stage least squares (2SLS) as well as the censored time method are used as robustness tests.

Findings: This paper finds that business environment is positively correlation with corporate performance, and technological innovation serves as a positive mediator between these relationships.

Research limitations/implications: The theoretical frameworks of transaction costs and resource bases are given an empirical grounding in this article. Besides, it offers theoretical support for the application of mediation effect.

Practical implications: Private corporates are provided with a fairer public administration, a well-developed legal construction, a convenient foreign trade, and a good financial service. Besides, this study alleviates the problem of difficult financing and stimulate innovation in private companies.

Originality/value: This work makes a significant contribution by being the first to combine transaction cost theory with resource-based theory to deepen our understanding of the connection between business environment and performance of enterprises through technological innovation. In addition, the theory it offers is quite helpful in practice when it comes to mitigating effects.

Keywords: Business environment, Corporate performance, Technological innovation, Mediation effect

Introduction

The Chinese economy has evolved from one dominated by the state to one based on free market principles (Hou et al., 2020). Non-public enterprises, including private enterprises, have grown in significance in China's socialist market economy. When it comes to China's investment, employment, and economic growth, private firms play a crucial role (Zhang, 2018). More than half of China's tax revenue, seventy percent of technologically innovative products, eighty percent of urban and rural labour force employment units, and ninety percent of the total number of firms in 2022 all come from private enterprise sources (Wang et al., 2023; Zhang, 2020).

However, due to the recent impact of the new crown epidemic and the rise of world trade protectionism, the world economic downturn has directly or indirectly affected the business environment for private enterprises, which has brought significant difficulties to the production and operation of private enterprises in China (Wang and Pan, 2022; Piekutowska and Konopka, 2023). For instance, in 2022, private businesses in China had record lows in net asset margin (3.74%), net sales margin (4.51%), and return on net assets ratio (11.44%), all according to the Research and Analysis Report on Top 500 Private Enterprises in China. As a result, the fundamental issue with this research is the declining success of private firms.

Since private firms stand to gain the most from business environment optimization, China has focused on this front with particular intensity in recent years. Notably, from 2019 to 2022, good outcomes have resulted from the annual introduction of initiatives aimed at improving the business environment (Zhong and Chen, 2023). For instance, China's business environment score of 77.9 rose 15 spots to 31st in the world (World Bank, 2020). According to Chetty et al. (2020), a rise in operational efficiency among private enterprises in China may have resulted from the country's business environment reforms, which in turn boosted company performance. This is because a reduction in the company's payback period can have a beneficial effect on its profits. Therefore, the main objective is to investigate how private corporations' performance is affected by various external influences.

Technological innovation is an important symbol for enterprises to keep pace with the times, and it's the primary impetus behind the continuous expansion of enterprises, the sustained upgrading of industries, as well as the prosperity of the country (Zhu et al., 2021). In 2023, Xi Jinping emphasised the need for capable private enterprises to strengthen their independent innovation, and to promote the self-reliance of enterprise science and technology in an ever-improving business environment, so as to facilitate the improvement of enterprise performance (Brødsgaard and Beck, 2023). This also hints at a link between business environment and performance of private corporations, which could serve as a vehicle for technological innovation within corporations. So, the other aim of this study is to see if technological innovation mediates the connection between business environment and performance of corporations.

Additionally, three distinct contributions to the literature are made by this investigation. Firstly, this paper's research has found that prior literature on the topic of what factors affect firm performance has primarily focused on studying internal firm factors like shareholding (Reddy and Wellalage, 2023; Tsafack and Guo, 2021), organisational culture (Gamage and Tajeddini, 2022) and CSR-practices (Cao et al., 2023; Salam et al., 2022).

When it comes to the external business environment, however, these studies fall short. Second, this research reveals the results of a deep exploration of the impact of the business environment on enterprise performance, which gives the theoretical framework for optimising business environment. Finally, it provides a fresh perspective on the study of technological innovation in businesses by looking into how that topic functions as a bridge between business environment and enterprises performance.

So, this study aims to answer two questions. First, does the business environment affect private firm performance? Second, does corporate technological innovation mediate between business environment and firm performance?

Literature Review

Corporates Performance

Academic interest in financial performance has exploded in current era (Balon et al., 2022). Yang et al. (2011) consider financial performance as the performance and achievement of an organization or firm in financial terms, which is usually measured through financial statements. There are more current articles studying the field of performance, but most of them study the effect on firm performance from a micro perspective, such as corporate governance (Belyayeva et al., 2019; Maali et al., 2021), leadership capability (Lisdiono et al., 2022; Ren et al., 2020), human capital (Aman-Ullah et al., 2022; Ghi et al., 2022).

The purpose of this research is to aid private companies in achieving financial stability by examining the effects of private financial performance. For example, Ukko et al. (2019) reckon that in order to make better strategic decisions and reform business procedures, corporate management can gain valuable information from the company's financial performance. For suppliers, they want to work with financially stable firms because it reduces payment risk and increases order reliability (Gu et al., 2022). Therefore, the study of financial performance is crucial for private enterprise stakeholders.

Regarding the selection of financial performance indicators, previous studies have been categorized into market-based and accounting-based indicators (Camisón and Villar-López, 2014). However, this paper mainly uses accounting indicators. The reason is that market indicators lack a certain stability, which reflects the timeliness of the capital market.

Business Environment

The World Bank was the first to define "business environment" as the external conditions that affect the ease with which various business-related tasks, from formation to dissolution, can be accomplished (World Bank, 2004). However, previous studies have not defined business environment uniformly. From an institutional economics perspective, Stern (2002) considers business environment as the actual and desired set of policies, institutions, and norms in which to operate. From a firm's life cycle perspective, Akpoviroro and Owotutu (2018) view business environment as external environment that may affect a firm's operations, such as the economy, customers, and suppliers.

Several factors in the business environment have been the subject of prior research, such as economic growth (Dong et al., 2012), factor productivity (Wei et al., 2017), outward foreign direct investment (Contractor et al., 2020), and high-quality development (Du et al., 2022; Zhong and Chen, 2023). So, it lacks an effect on private sectors performance.

In this paper, business environment is mainly divided into four aspects: public administration environment, legal construction environment, financial service environment and foreign trade environment. The reason is that, like Yuan and Yang (2021) said, it can be found that these four factors have been highlighted in prior research as having particular relevance to the long-term success of businesses in the private sector.

Technological Innovation

Enterprise innovation refers to the process by which an enterprise introduces new knowledge or improves and integrates existing technologies in order to promote progress and change in products, services, production processes, and management modes (Liu and Xie, 2020).

According to resource base theory, it is an irreplaceable and valuable scarce resource (Hami et al., 2015). Dai et al. (2020) claim that private companies and economic growth are the primary drivers of innovation, which in turn will spur more technological innovation. Similarly, Zhou (2021) reflects that innovation is a strategic support for building a modernized economic system in China.

In past studies, previous researchers have analysed the connection between market environment and firm performance via technological innovation as a mediator. For example, a sampling of 116 small and SMEs in the United Kingdom is used by Bagheri et al. (2019) to conduct an empirical study from the angle of internationalisation. The research reported that technological innovation bolstered the beneficial impact of internationalisation on business performance. Jin and Lee (2020) apply sample data from 105 SMEs in South Korea to do an econometric analysis from the perspective of government subsidies. This study shows that technological innovation within businesses reinforces the effect of government R&D spending on the performance of small and medium-sized enterprises (SMEs). Therefore, this paper regards technological innovation as a mediator and tries to analyse its influence on private enterprise performance from various perspectives, such as business environment and government support.

Hypothesis Development

Business Environment and Corporate Performance

The profitability of private enterprises in China is strongly influenced by the local business environment, and transaction cost theory can shed light on this relationship (Cheng et al., 2023; Huang, 2022). Transaction cost theory aims to explain the various costs involved in market transactions and explores how transaction costs affect the choice of transaction methods and the way markets are organized (Masten, 1993). First, from a public administration perspective, Cheng et al. (2023) claim that according to transaction cost theory, when the government simplifies the procedures for handling business start-ups and improves the efficiency of administrative approvals, it reduces the transaction costs of firms at the institutional level, which is conducive to the performance of private firms. From the legal environment, Maulidia et al. (2019) state that a stable legal environment reduces the cost of monitoring private firms and improves firm performance. This is because when the level of regional regulation is high, there is no need to invest excessive resources in monitoring the partner's compliance with the contract, thus saving management costs.

From the financial services environment, DeMiguel et al. (2020) reckon that from the perspective of financing costs, if financial services institutions can reduce transaction costs with firms when providing financing and provide more financing opportunities for private firms, private firms can have easier access to the funds they need and borrow at more competitive rates. From the aspect of foreign trade environment, Cieslik and Kaciak (2009) according to the transaction cost theory, in the internationalized environment private enterprises will face different transaction costs, such as contract negotiation costs because of the demand for transactions across national borders. And it demonstrates that private sector productivity increases as a result of a more conducive internationalisation setting.

Continuously emphasizing the development of private enterprises is conducive to stimulating the endogenous momentum of economic growth, clearing obstacles for the development of private enterprises, and improving the competitive advantage of enterprises; it is also conducive to increasing employment opportunities for the people and improving the people's living standards (Hu et al., 2023). Therefore, considering the foregoing, this study examines the relationship between public administration, legal construction, foreign trade, financial services

and the performance of private enterprises respectively. Besides, the hypotheses are proposed as follows:
H1a: Public administration has positive correlation with corporate performance.
H1b: Legal construction has positive association with corporate performance.
H1c: Financial service has positive correlation with corporate performance.
H1d: Foreign trade has positive association with corporate performance.

Corporate Technological Innovation as a Mediator

Baron and Kenny (1986) and Anning-Dorson (2018) ponder that if the independent variable (IV) influences DV, and the IV has an effect on a third variable that is not the DV, and the third variable also has an effect on the DV, this third variable can be used as a mediator between the IV and DV. Therefore, this study determines whether corporate innovation can be used as a mediator between business environment and corporate performance according to their ideas. In addition, the preceding section of this study investigated how external business environment affected company performance, and the present section will focus on the other two associations (how business environment affects innovation technologically and how such innovation in turn affects company performance).

Resource base theory seeks to explain the ways in which firms gain a lasting competitive advantage in a competitive environment (Grant, 1991). The theory provides a more complete explanation of businesses environment that influences technical innovation. Specifically, with the perspective of public administration environment, Lee and Chen (2022) suspect from the resource-based theory that the government can provide market information and facilitate access to market resources for private firms in various ways. Based on the perspective of legal construction environment, Wu and Hu (2020) suppose that legal construction provides legal resources for the innovation of private enterprises. Good resources for protecting intellectual property, for example, are crucial to ensuring that private companies will continue to innovate technologically. Based on financial service aspects, Yu et al. (2022) assume that financial service environment provides important financial resources for private enterprises, thus slowing down financing discrimination. Based on the aspect of foreign trade environment, Chen et al. (2023) deem that the internationalization environment provides private enterprises with broad international market resources for technological innovation, such as advanced knowledge and sales channels. These resources also promote the technological level of enterprise innovation.

According to the resource base theory, technological innovation is considered a scarce resource with some positive effects on firm performance and competitive advantage (Lukovszki et al., 2021). For example, using a sample of 708 Portuguese low-technology enterprises, Gallegos and Seclen-Luna (2022) employ empirical research to analyse the connection between technological innovation and firm performance. The results show a positive correlation between the two. Similarly, innovation is of vital importance for private firms as it is one of the important paths to achieve sustained competitive advantage (Onileowo et al., 2021). Similarly, Ren et al. (2015) ponder firms can efficiently combine resources and rapidly transform technological innovations into products or services are more likely to gain competitive advantage in the marketplace and contribute to firm performance.

To summarize, this paper predicts that a high-quality business environment will promote corporate technological innovation, which indirectly affects private firm performance. Therefore, this paper takes corporate technological innovation as a mediator and examines the relationship between public administration, legal construction, foreign trade, financial services and the performance of Chinese private firms, respectively. And it is proposed as follows:

H2a: The relationship between public administration and corporate performance is mediated in a positive way by technological innovation within firms.
H2b: The relationship between legal construction and corporate performance is mediated in a positive way by technological innovation within firms.
H2c: The relationship between foreign trade and corporate performance is mediated in a positive way by technological innovation within firms.
H2d: The relationship between financial service and corporate performance is mediated in a positive way by technological innovation within firms.

Methods

Sample Selection and Data Source

Using a study sample of private enterprises listed in China's Shanghai and Shenzhen from 2012 to 2021, this paper analyses the effect of business environment on the financial performance of private firms. This study handles the sample as follows: (1) excluding listed companies labelled with ST; (2) deleting samples of SOEs and other non-private enterprises (3) excluding companies for which relevant financial data are not available; and (4) removing sample data from financial industries. After the above screening, the final sample size is 3,512 private enterprises, totalling 20,646 observations. The data on business environment used in this paper come from the Comprehensive Evaluation Index of Business Environment prepared by Wang Xiaolu and the statistical yearbooks of each province. The information about businesses comes from CSMAR's database. The collected sample data are organized using stata17 and EXCEL 2019.

Variable Design and Measurement

This study initially utilises panel regression to examine the association between variables. Return on assets (ROA) is the most widely utilised metric in empirical studies of company performance. This is because it is a comprehensive measure that reflects, to some extent, the overall operational performance of the firm. A higher ROA implies that the firm generates more profit in a given period, which shows that the firm is more profitable (Wu and Huang, 2022).
Second, this study contains four independent variables, which are public administration (GOV), legal construction (LAW), foreign trade (TRADE), and financial services (FIN). (1) The natural logarithm of the general budget expenditure of local finance is used as a proxy variable for public administration. This indicator reflects the quality and effectiveness of the government's public management, which in turn may affect corporate performance (Sun and Liu, 2006). (2) The development of market intermediary organizations and legal environment as a measure for legal construction (Zou and Lei, 2023). This indicator reflects the level of legal construction as well as social justice in the region (Abel, 2018). (3) The natural logarithm of total import and export trade as a measure of foreign trade. It refers to the sum of the value of imports and exports of goods and services in a certain period of time in a region (Zhang et al., 2023). (4) The natural logarithm of the total amount of all loans in RMB by financial institutions as a measure of financial services. In China, various loans in RMB from financial institutions indicates some RMB loans issued by financial institutions to economic entities (Yonghong et al., 2019). It measures, to some extent, the support of financial institutions to corporates.
In addition, this study uses corporate technological innovation (PAT) as a mediator, and measured by the natural logarithm of the number of patents granted for technological innovation plus one. This is because of the time lag of patents and the existence of a zero value

for the number of patents granted are taken into account. Therefore, lag one period is conducted according to Wang and Hagedoorn (2014).

In addition, the control variables in this study are firm size (SIZE), leverage ratio (LEV), growth rate of revenue (GROWTH), number of board of directors (BOARD), percentage of independent directors (INDEP), and age of the firm (AGE). The control variables are selected to minimize the impact of factors other than business environment on firm performance. Moreover, this study selects control variables with corporate characteristics based on corporate behavior, consisting of internal explanatory factors that have the most significant impact on corporate performance. (1) The natural logarithm of total firm assets as a measure of firm size (Gong and Jin, 2023). (2) Total liabilities divided by total assets as a measure of leverage ratio (Dong and Zhang, 2022). (3) The value of current operating income minus one period's operating income divided by the previous period's operating income was used as a proxy variable for operating income growth rate (Sun and Wang, 2022). (4) The natural logarithm of the total number of board members as a measure of board size (Poletti-Hughes and Briano-Turrent, 2019). (5) Dividing the number of independent directors by the number of board members as a measure of the proportion of independent directors (Kao et al., 2019). (6) The reporting period of the firm minus the year of the firm's establishment was taken as the age of the firm after taking the natural logarithm of the value (Qi et al., 2022).

Regression Model

In order to test hypothesis 1, this study will use panel regression model for estimation and analysis. The direct correlation between the business environment and the performance of private corporations was evaluated using Equation 1.

$$ROA_{ijt} = \alpha_0 + \alpha_1 BE_{jt} + \sum (\varphi CV_{ijt}) + \sum year + \sum ind + \varepsilon_{ijt} \quad \text{(Equation 1)}$$

$ROA_{ijt}$is financial performance of the *i*th corporate in *j* province in year *t*. BE_{jt} means business environment, and includes GOV_{jt}, LAW_{jt}, FIN_{jt}, $TRADE_{jt}$. Where CV represents control variable, including $SIZE_{ijt}$, LEV_{ijt}, $GROWNTH_{ijt}$, $BOARD_{ijt}$, $INDEP_{ijt}$, and AGE_{ijt}.

Based on the above analysis, current study further analyses the mediating effect. According to the first stage in applying the stepwise regression method developed by Baron and Kenny (1986) is to examine how the business environment affects corporate performance. This relationship has been verified in equation 1 above. The second step verifies the effect of business environment on corporate technological innovation, so this study proposes equation 2 with the following formula.

$$PAT_{ijt} = \beta_0 + \beta_1 BE_{jt} + \sum (\varphi CV_{ijt}) + \sum year + \sum ind + \varepsilon_{ijt} \quad \text{(Equation 2)}$$

PAT_{ijt} is the number of patents awarded to the *i*th firm in *j* province in year *t*. The third step is to analyse the business environment, corporate technological innovation and corporate performance by putting them into the same model, and the formula of equation three is as follow.

$$ROA_{ijt} = \theta_0 + \theta_1 BE_{jt} + \theta_2 PAT_{ijt} + \sum (\varphi CV_{ijt}) + \sum year + \sum ind + \varepsilon_{ijt}$$

(Equation 3)

Findings

According to Table I, the descriptive statistics found that the number of samples for the values of each variable is 20,646. The median ROA was 0.0471, meaning that businesses in the sample returned 4.7% of their assets in the form of earnings. The std for ROA is 0.0717, with a wide range for the interval fluctuation between 0.2327 and -0.2751. Values range from a low of 7.3296 to a high of 9.8118, with a mean of 8.9685. Evidence that the logarithm data smooths out the variation between values may be seen in the fact that the mean value is tilted to the minimum value. The average of LAW is 11.1046, the minimum is 2.7100 and the maximum is 17.1389. They show that the data mean is more skewed towards the maximum value. The fluctuations of both TRADE and FIN are modest, with standard deviations much smaller than the mean. The mean value of PAT is 1.6184, which is skewed towards the minimum value.

Table 1 Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	20646	0.0471	0.0717	-0.2751	0.2327
GOV	20646	8.9685	0.5009	7.3296	9.8118
LAW	20646	11.1046	2.9963	2.7100	17.1389
TRADE	20646	9.7586	1.2946	5.7865	11.3212
FIN	20646	11.1243	0.7301	8.7736	12.3115
PAT	20646	1.6184	1.4740	0.0000	5.4681
SIZE	20646	21.8370	1.0877	19.7351	25.3504
LEV	20646	0.3740	0.1940	0.0482	0.8590
GROWTH	20646	0.1921	0.4174	-0.5721	2.6010
BOARD	20646	2.0818	0.1872	1.6094	2.4849
INDEP	20646	0.3789	0.0526	0.3333	0.5714
AGE	20646	2.8644	0.3280	1.9459	3.4965

Notes: ROA means return on asset. GOV is public administration. LAW means legal construction. TRADE is foreign trade, and FIN means financial services. PAT is technological innovation. GROWTH means the growth rate of income from operations. SIZE means corporate size, and LEV is leveraging rate. BOARD is amount of director committee. INDEP means percentage of independent directors. AGE is corporate age.

Correlation Analysis

Pearson correlation analysis is mainly to examine the relevance among different variables. Besides, only an initial judgment of the variables relationship can be made, but not as a final result. As a result of the outcomes in Table 2, the correlation coefficient between GOV and ROA is 0.0160, which passes the correlation test at the significance level of 5%. It indicates that there is a significant positive correlation between the public administration and the performance of private corporations. The correlation coefficients for LAW, TRADE, FIN, and ROA are 0.0293, 0.0326, and 0.0327. This demonstrates that the legal construction, foreign trade, and financial services have favourable and statistically significant relationships with firm performance. Since there is no control year and industry effect, the correlation coefficient can only initially determine the association between variables.

Table 2 Correlation Analysis

Variables	ROA	GOV	LAW	TRADE	FIN	PAT	SIZE	LEV	GROWTH	BOARD	INDEP	AGE
ROA	1											
GOV	0.0160**	1										
LAW	0.0293***	0.5804***	1									
TRADE	0.0326***	0.7555***	0.6708***	1								
FIN	0.0327***	0.9043***	0.7658***	0.8979***	1							
PAT	0.1235***	0.2159***	0.1818***	0.1789***	0.2253***	1						
SIZE	0.0016	0.0371***	0.0287***	-0.0426***	0.0196***	0.0543***	1					
LEV	-0.3602***	0.0013	-0.0315***	-0.0375***	-0.0188***	-0.0519***	0.4838***	1				
GROWTH	0.2517***	0.0012	-0.0066	0.0038	0.0019	0.0025	0.0845***	0.0479***	1			
BOARD	0.0203***	-0.0955***	-0.0904***	-0.0866***	-0.0927***	0.0039	0.1934***	0.0936***	0.002	1		
INDEP	-0.0189***	0.0424***	0.0431***	0.0500***	0.0409***	0.0044	-0.0704***	-0.0231***	-0.0002	-0.6426***	1	
AGE	-0.0979***	0.1134***	0.1348***	-0.0323***	0.0868***	-0.1125***	0.1757***	0.1668***	-0.0383***	0.0342***	0.0006	1

Note: ROA means return on asset. GOV is public administration. LAW means legal construction. TRADE is foreign trade, and FIN means financial services. PAT is technological innovation. GROWTH means the growth rate of income from operations. SIZE means corporate size, and LEV is leveraging rate. BOARD is amount of director committee. INDEP means percentage of independent directors. AGE is corporate age.

Multicollinearity Test

If the VIF value of an independent variable (IV) is greater than 10, in other words the other independent variable has a goodness of fit of 0.9 or more for that IV, then there is some correlation between the two IVs. The reliability of the model declines if the explanatory variables are highly correlated with one another (Alin, 2010). Stepwise regression prevents the adverse effects of multicollinearity on the model results (O'brien, 2007). According to the results of VIF test in Table 3, the VIF values of all variables are less than 10. It demonstrates that the model's multicollinearity is negligible and has no bearing on the outcomes. Moreover, there is no serious multicollinearity among the control variables. Therefore, this study can include all variables in the regression analysis.

Table 3 VIF Tests

	ROA		ROA		ROA		ROA	
Variable	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
GOV	1.0300	0.9741						
LAW			1.0300	0.9675				
TRADE					1.0100	0.9908		
FIN							1.0200	0.9803
BOARD	1.7900	0.5591	1.7900	0.5600	1.7800	0.5624	1.7900	0.5598
INDEP	1.7100	0.5832	1.7100	0.5834	1.7100	0.5837	1.7100	0.5833
SIZE	1.3800	0.7269	1.3800	0.7265	1.3700	0.7285	1.3700	0.7274
LEV	1.3200	0.7580	1.3200	0.7555	1.3200	0.7585	1.3200	0.7575
AGE	1.0600	0.9452	1.0700	0.9389	1.0500	0.9567	1.0500	0.9496
GROWTH	1.0100	0.9895	1.0100	0.9895	1.0100	0.9895	1.0100	0.9895
Mean VIF	1.3300		1.3300		1.3200		1.3300	

Note: ROA means return on asset. GOV is public administration. LAW means legal construction. TRADE is foreign trade, and FIN means financial services. PAT is technological innovation. GROWTH means the growth rate of income from operations. SIZE means corporate size, and LEV is leveraging rate. BOARD is amount of director committee. INDEP means percentage of independent directors. AGE is corporate age.

Regression Results

The analysis results of benchmark regression in Table 4 shows that model (1) has an adjusted R-squared of 0.2516, with a goodness of fit of 25.16%.This is because private firm performance data is notoriously unstable, making a loose fit acceptable in this case. The F-value of 211.3499

indicates that the entire model is statistically significant at the 1% level. At this time, the impact coefficient of GOV is 0.0036, which is passed the significance test of the coefficient at 1% significance level. It shows that every 1% increase in government budget expenditure causes an average increase in ROA by 0.0036%. The control variables SIZE, LEV, GROWTH, BOARD, AGE all have a significant effect on the existence of ROA. And LEV, AGE all have significant negative effect on ROA presence. SIZE, GROWTH, BOARD have significant positive effect on ROA presence.

Similarly, model (2)'s results suggest that LAW has a strong positive influence on ROA, with a coefficient of 0.0009 that is statistically significant at the 1% level. The impact coefficients of TRADE and FIN in models (3) and (4) are 0.0014 and 0.0037, respectively, and all have a significant contribution to the existence of ROA. Therefore, all sub-dimensions of business environment have a positive and significant impact on corporate performance, and Cui et al. (2022), Wang et al. (2023), Xiong (2021) reach the same conclusion. This supports the first hypothesis, which states that private sector performance improves in tandem with the degree to which the business environment is optimised.

Table 4 Benchmark Model Estimates

VARIABLES	(1) ROA	(2) ROA	(3) ROA	(4) ROA
GOV	0.0036***			
	(3.5293)			
LAW		0.0009***		
		(4.8527)		
TRADE			0.0014***	
			(4.0456)	
FIN				0.0037***
				(5.3464)
SIZE	0.0143***	0.0143***	0.0143***	0.0143***
	(29.8764)	(29.9306)	(29.9064)	(29.9416)
LEV	-0.1767***	-0.1763***	-0.1765***	-0.1766***
	(-66.3091)	(-66.1911)	(-66.2596)	(-66.3344)
GROWTH	0.0438***	0.0438***	0.0438***	0.0438***
	(41.4449)	(41.4461)	(41.4343)	(41.4531)
BOARD	0.0074**	0.0073**	0.0074**	0.0075**
	(2.3785)	(2.3558)	(2.3970)	(2.4273)
INDEP	0.0033	0.0032	0.0029	0.0035
	(0.3110)	(0.3013)	(0.2700)	(0.3225)
AGE	-0.0083***	-0.0081***	-0.0082***	-0.0080***
	(-5.6883)	(-5.5729)	(-5.5806)	(-5.4909)
Constant	-0.2409***	-0.2188***	-0.2245***	-0.2503***
	(-14.6156)	(-15.7103)	(-15.6933)	(-15.8470)
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Observations	20,646	20,646	20,646	20,646
R-squared	0.2528	0.2532	0.2530	0.2534
r2_a	0.2516	0.2520	0.2518	0.2522
F	211.3499***	211.7995***	211.5084***	212.0036***

*Note： *** p<0.01, ** p<0.05, * p<0.1. t-values in parentheses.*

Analysis of Mediation Effects

The evaluation of the mediating impact is a three-stage process. The first stage of the mediating impact has been incorporated into the benchmark model regression to further confirm the mediating effect of corporations' technical innovation. Steps 2 and 3 of the mediation effect analysis are then performed to check for validity of hypotheses 2a and 2d. The second phase is to look into how business environment affects technical innovation within corporations, and the results are obtained as shown below:

Table 5 Second Step of the Mediated Effect Test

	(1)	(2)	(3)	(4)
VARIABLES	PAT	PAT	PAT	PAT
GOV	0.4822***			
	(22.7466)			
LAW		0.0623***		
		(15.1452)		
TRADE			0.1541***	
			(21.1029)	
FIN				0.3366***
				(23.2105)
SIZE	0.1838***	0.1825***	0.1844***	0.1844***
	(18.3208)	(18.0717)	(18.3454)	(18.3926)
LEV	-0.1827***	-0.1378**	-0.1530***	-0.1671***
	(-3.2632)	(-2.4448)	(-2.7279)	(-2.9870)
GROWTH	-0.0281	-0.0284	-0.0296	-0.0286
	(-1.2654)	(-1.2703)	(-1.3305)	(-1.2893)
BOARD	0.3222***	0.2828***	0.3158***	0.3138***
	(4.9330)	(4.3027)	(4.8257)	(4.8067)
INDEP	0.9482***	0.9165***	0.8905***	0.9436***
	(4.1917)	(4.0237)	(3.9300)	(4.1732)
AGE	-0.5872***	-0.5942***	-0.5775***	-0.5729***
	(-19.1260)	(-19.2132)	(-18.7571)	(-18.6498)
Constant	-6.7288***	-3.0578***	-4.1060***	-6.1711***
	(-19.4241)	(-10.3710)	(-13.6345)	(-18.5961)
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Observations	20,646	20,646	20,646	20,646
R-squared	0.2184	0.2076	0.2158	0.2192
r2_a	0.2172	0.2064	0.2145	0.2180
F	174.5756***	163.6814***	171.8495***	175.3821***

Note： *** $p<0.01$, ** $p<0.05$, * $p<0.1$. t-values in parentheses.

Table 5 shows that the positive effect of GOV on PAT is rather clear. In other words, the public administration environment will boost the survivability of technical innovation in private corporates, as determined by the results of the second step of the mediation effect analysis. Also, at the 1% level of significance, the coefficients for LAW, TRADE, and FIN are 0.0623, 0.1541, and 0.3366, respectively. So, it represents the second step of the mediation effect is passed. Overall, this demonstrates that a more progressive business environment is associated with private corporations' increased propensity for technological innovation. Moreover, Wang et al. (2023) and Xiong (2021) also come to the same conclusion.

Table 6 The Third Step of Mediated Effect Test

VARIABLES	(1) ROA	(2) ROA	(3) ROA	(4) ROA
GOV	0.0017*			
	(1.6920)			
LAW		0.0007***		
		(3.6345)		
TRADE			0.0008**	
			(2.3459)	
FIN				0.0024***
				(3.5004)
PAT	0.0038***	0.0038***	0.0038***	0.0037***
	(11.5347)	(11.5025)	(11.4793)	(11.2376)
SIZE	0.0136***	0.0136***	0.0136***	0.0136***
	(28.2707)	(28.3541)	(28.3041)	(28.3611)
LEV	-0.1760***	-0.1758***	-0.1759***	-0.1760***
	(-66.2419)	(-66.1962)	(-66.2394)	(-66.2875)
GROWTH	0.0439***	0.0439***	0.0439***	0.0439***
	(41.6775)	(41.6780)	(41.6701)	(41.6782)
BOARD	0.0062**	0.0062**	0.0063**	0.0064**
	(1.9886)	(2.0177)	(2.0176)	(2.0572)
INDEP	-0.0003	-0.0002	-0.0005	-0.0000
	(-0.0248)	(-0.0201)	(-0.0434)	(-0.0032)
AGE	-0.0061***	-0.0059***	-0.0060***	-0.0059***
	(-4.1333)	(-4.0155)	(-4.0639)	(-4.0140)
Constant	-0.2153***	-0.2073***	-0.2089***	-0.2273***
	(-12.9834)	(-14.8906)	(-14.5872)	(-14.3199)
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Observations	20,646	20,646	20,646	20,646
R-squared	0.2576	0.2580	0.2577	0.2580
r2_a	0.2564	0.2568	0.2565	0.2567
F	210.3612***	210.7710***	210.4658***	210.7331***

Note： *** $p<0.01$, ** $p<0.05$, * $p<0.1$. t-values in parentheses.

In Table 6, business environment diversity and corporation technology innovation are both found to be significant in the third stage of mediation effect analysis. So, it represents the third step of the test of the mediation effect is passed. Therefore, technical innovation in corporations has a mediating effect. So, technological innovation mediates the influence of business environment on corporates performance, hypotheses 2a-2d test passed.

The First Robustness Test

The return on equity (ROE) is established as a proxy variable for the financial performance of private corporations after further examining the robustness of the empirical investigation. This is because a higher ROE indicates that the company realizes higher profits with less net capital, which indicates a higher profitability. Due to assess whether the model results are stable or not, ROA (DV) is replaced with ROE which is similar and also represents the performance. If the model findings remain consistent, it suggests that the outcome of this research are likewise more stable. Table 7 shows that at the 1% level of significance, the impact coefficients for GOV, LAW, TRADE, and FIN are 0.0075, 0.0016, 0.0029, and 0.0072, respectively. This

demonstrates that the public administration environment, the legal construction environment, the international trade environment, and the financial service environment all have a significant and considerable impact on private corporation performance.

Table 7 The First Robustness Test

VARIABLES	(1) ROE	(2) ROE	(3) ROE	(4) ROE
GOV	0.0075***			
	(3.8310)			
LAW		0.0016***		
		(4.2864)		
TRADE			0.0029***	
			(4.2674)	
FIN				0.0072***
				(5.3907)
SIZE	0.0317***	0.0317***	0.0317***	0.0318***
	(34.1993)	(34.2255)	(34.2280)	(34.2585)
LEV	-0.2492***	-0.2484***	-0.2487***	-0.2490***
	(-48.1289)	(-47.9909)	(-48.0635)	(-48.1328)
GROWTH	0.0822***	0.0822***	0.0822***	0.0822***
	(40.0870)	(40.0828)	(40.0753)	(40.0934)
BOARD	0.0105*	0.0102*	0.0106*	0.0107*
	(1.7430)	(1.6902)	(1.7575)	(1.7794)
INDEP	0.0019	0.0016	0.0010	0.0021
	(0.0910)	(0.0757)	(0.0467)	(0.0999)
AGE	-0.0134***	-0.0133***	-0.0132***	-0.0129***
	(-4.7364)	(-4.6696)	(-4.6295)	(-4.5516)
Constant	-0.6109***	-0.5605***	-0.5753***	-0.6244***
	(-19.0768)	(-20.7078)	(-20.7028)	(-20.3518)
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Observations	20,646	20,646	20,646	20,646
R-squared	0.1894	0.1895	0.1895	0.1900
r2_a	0.1881	0.1882	0.1882	0.1887
F	145.9422***	146.0803***	146.0742***	146.4795***

Note： *** $p<0.01$, ** $p<0.05$, * $p<0.1$. t-values in parentheses.

The Second Robustness Test

In addition, the years 2020 and 2021, which may be affected by the epidemic in China, are removed due to the possible impact of the epidemic on the profitability of private corporates. If the results continue to show that the effect of the business environment on the performance of private corporations is positive and active, as previously demonstrated by the regression consequence, these models are fairly stable. The second robustness analysis is conducted as Table 8 showed. Table 8 shows that the impact coefficients of GOV, LAW, TRADE, and FIN are 0.0035, 0.0011, 0.0015, and 0.0038, respectively, which are significant at the 1% significance level. This reveals that public administration, legal construction, foreign trade, and financial service environments all have a considerable favourable impact on the performance of private firms, even after excluding the epidemic time period. In other words, improving business environment optimization leads to improved private corporate performance.

Table 8 The Second Robustness Test

VARIABLES	(1) ROA	(2) ROA	(3) ROA	(4) ROA
GOV	0.0035***			
	(2.9910)			
LAW		0.0011***		
		(5.5540)		
TRADE			0.0015***	
			(4.0040)	
FIN				0.0038***
				(4.7518)
SIZE	0.0132***	0.0132***	0.0132***	0.0132***
	(23.9368)	(24.0299)	(23.9891)	(24.0002)
LEV	-0.1661***	-0.1656***	-0.1659***	-0.1660***
	(-54.3895)	(-54.2644)	(-54.3489)	(-54.3931)
GROWTH	0.0368***	0.0368***	0.0368***	0.0368***
	(31.2559)	(31.2805)	(31.2651)	(31.2820)
BOARD	0.0104***	0.0104***	0.0105***	0.0105***
	(2.9309)	(2.9466)	(2.9685)	(2.9674)
INDEP	0.0016	0.0016	0.0011	0.0019
	(0.1323)	(0.1313)	(0.0884)	(0.1579)
AGE	-0.0067***	-0.0064***	-0.0065***	-0.0064***
	(-4.0688)	(-3.9195)	(-3.9404)	(-3.8591)
Constant	-0.2256***	-0.2062***	-0.2114***	-0.2365***
	(-11.9505)	(-13.0081)	(-12.9816)	(-13.1046)
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Observations	15,062	15,062	15,062	15,062
R-squared	0.2281	0.2292	0.2284	0.2288
r2_a	0.2265	0.2276	0.2268	0.2272
F	143.2342***	144.1488***	143.5301***	143.8036***

Note： *** *p<0.01, ** p<0.05, * p<0.1*. t-values in parentheses.

The Third Robustness Test

Next, the two-stage least squares estimation method (2SLS) is used to assess the effectiveness of the instrumental factors in mitigating endogeneity. In Table 9, this paper finds that there is statistical significance between the explanatory factors and the variables they explain when endogeneity is taken into account and the model results are stable. All three robustness tests proved that the association between business environment and performance of private corporates is positive and active.

Table 9 The Third Robustness Test

VARIABLES	(1) ROA	(2) ROA	(3) ROA	(4) ROA
GOV	0.0028**			
	(2.4616)			
LAW		0.0011***		
		(4.8223)		
TRADE			0.0014***	
			(3.5099)	

FIN				0.0036***
				(4.6866)
	(32.2933)	(32.3947)	(32.3473)	(32.3786)
LEV	-0.1741***	-0.1738***	-0.1740***	-0.1742***
	(-58.5641)	(-58.5180)	(-58.5739)	(-58.6342)
GROWTH	0.0445***	0.0444***	0.0444***	0.0444***
	(38.4500)	(38.4401)	(38.4413)	(38.4465)
BOARD	0.0121***	0.0123***	0.0123***	0.0124***
	(3.4989)	(3.5546)	(3.5496)	(3.5761)
INDEP	0.0123	0.0125	0.0120	0.0126
	(1.0294)	(1.0495)	(1.0082)	(1.0608)
AGE	-0.0043**	-0.0040**	-0.0041**	-0.0040**
	(-2.5374)	(-2.3656)	(-2.4155)	(-2.3312)
Constant	-0.3326***	-0.3244***	-0.3220***	-0.3504***
	(-17.4389)	(-20.1420)	(-19.7448)	(-19.1379)
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Observations	16,996	16,996	16,996	16,996
R-squared	0.2498	0.2503	0.2501	0.2505
r2_a	0.2484	0.2489	0.2486	0.2490

Note： **** p<0.01, ** p<0.05, * p<0.1*. t-values in parentheses.

Discussion and Conclusion

The first major idea presented here is that the external business environment significantly contributes to the performance of privately owned firms. The findings of analysis are in agreement with the hypothesis after applying regression to the fixed effect model. When competing in the market, private corporates must deal with a variety of different environments, each of which can have a significant impact on how well those businesses do. These include public administration, legal construction, financial services, and foreign trade. Second, enterprise technology innovation is an indirect medium via which the business environment amplifies its association with private firm performance, according to the report. The research findings are compatible with the hypothesis, as shown by further stepwise regression of the mediating effect. The eastern, central, and western parts of the country are all affected by these environments differently.

In conclusion, a conducive business environment is a reliable assurance of the flourishing development of independent businesses. It might be argued that the business environment serves as a crucial stepping stone for the expansion of privately held companies. Thus, the enterprise's fundamental competitiveness is developed or enhanced over a specific time period, with the express goal of achieving more financial success. The end goal is to ensure the company's long-term viability.

Theoretical Implications

To begin, this research gives credence to the application of transaction cost theory. Since there is a positive association between these two variables, we may infer from transaction cost theory that private enterprise productivity increases as business environments get more optimised. Second, this paper's research demonstrates, through the lens of the resource base theory, that business environment and company technology innovation are valuable resources for enhancing firm performance. Third, the positive correlation between an organization's operating environment and its performance can be strengthened by technological innovation

within the enterprise. Due to the fact that technological innovation in the corporate world significantly improves company performance, the value included in technological advancements made by firms is crucial.

Practical and Social Implications

First, this research is useful for bringing the expansion of private firms to the attention of municipal authorities. It also promotes a fairer public management environment for private firms, which in turn improves the free competitive advantage of enterprises. Second, this research can help raise the degree to which trade is facilitated and promote a healthy development of the legal construction in an atmosphere favourable to private firms. Third, the research contributes to a solution for the problems of costly finance and difficulty obtaining financing for private firms. Finally, this research is helpful for supporting private enterprise innovation, advancing supply-side structural transformation in society, and fostering high-quality economic growth.

Limitations and Suggestions for Future Research

First, it was not possible to collect all private firms as well as the most recent years. Future researchers can expand the sample size, such as by adding new time as well as expanding to unlisted private enterprises in China. Secondly, the Chinese business climate, specifically its "soft environment," is the primary subject of this article. In the future, however, if the hard environment also has significant issues, researchers will be able to examine the connection between the business environment and enterprise performance from the angle of the soft environment and the combination of the hard environment. For example, the impact of poor network infrastructure and transportation infrastructure on the performance of private enterprises.

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References

Abdullah, H., & Tursoy, T. (2021). *Capital structure and firm performance: A panel causality test*.

Abel, R. L. (2018). What does and should influence the number of lawyers? In *Too Many Lawyers?* (pp. 23–38). Routledge.

Acemoglu, D., Antràs, P., & Helpman, E. (2007). Contracts and technology adoption. *American Economic Review*, *97*(3), 916–943. https://doi.org/10.1257/aer.97.3.916

Akpoviroro, K. S., & Owotutu, S. O. (2018). Impact of external business environment on organizational performance. *International Journal of Advance Research and Innovative Ideas in Education*, *4*(3), 498–505.

Alin, A. (2010). Multicollinearity. *Wiley Interdisciplinary Reviews: Computational Statistics*, *2*(3), 370–374. https://doi.org/10.1002/wics.84

Aman-Ullah, A., Mehmood, W., Amin, S., & Abbas, Y. A. (2022). Human capital and organizational performance: A moderation study through innovative leadership. *Journal of Innovation & Knowledge*, *7*(4), 100261. https://doi.org/10.1016/j.jik.2022.100261

Anning-Dorson, T. (2018). Customer involvement capability and service firm performance: The mediating role of innovation. *Journal of Business Research, 86*, 269–280. https://doi.org/10.1016/j.jbusres.2017.07.015

Balon, V., Kottala, S. Y., & Reddy, K. S. (2022). Mandatory corporate social responsibility and firm performance in emerging economies: An institution-based view. *Sustainable Technology and Entrepreneurship*, *1*(3), 100023. https://doi.org/10.1016/j.stae.2022.100023

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173. https://doi.org/10.1037/0022-3514.51.6.1173

Belyayeva, I. Y., Kharchilava, K. P., & Bashindzhagyan, A. A. (2019). Influence of Corporate Governance on Financial Performance of Russian State-Owned Companies. In V. Mantulenko (Ed.), *Gcpmed 2018—International Scientific Conference Global Challenges and Prospects of the Modern Economic Development* (Vol. 57, pp. 1115–1125). Future Acad. https://doi.org/10.15405/epsbs.2019.03.112

Brødsgaard, K. E., & Beck, K. I. (2023). *The 14th NPC Meeting: Work Report, New Government, and Institutional Reform*. https://doi.org/10.22439/101061700_2

Camisón, C., & Villar-López, A. (2014). Organizational innovation as an enabler of technological innovation capabilities and firm performance. *Journal of Business Research*, *67*(1), 2891–2902. https://doi.org/10.1016/j.jbusres.2012.06.004

Cao, S., Yao, H., & Zhang, M. (2023). CSR gap and firm performance: An organizational justice perspective. *Journal of Business Research*, *158*, 113692. https://doi.org/10.1016/j.jbusres.2023.113692

Chen, Y.-A., Guo, S.-L., & Huang, K.-F. (2023). Antecedents of internationalization of Taiwanese SMEs: A resource-based view. *International Journal of Emerging Markets*. https://doi.org/10.1108/IJOEM-05-2022-0875

Cheng, B., Guo, Z., Xiong, T., & Qiu, B. (2023). Does the administrative approval reform impact firm's investment decisions? *International Review of Economics & Finance*. https://doi.org/10.1016/j.iref.2023.07.034

Chetty, R., Friedman, J. N., Hendren, N., & Stepner, M. (2020). Real-time economics: A new platform to track the impacts of COVID-19 on people, businesses, and communities using private sector data. *NBER Working Paper*, *27431*, 36–46.

Contractor, F. J., Dangol, R., Nuruzzaman, N., & Raghunath, S. (2020). How do country regulations and business environment impact foreign direct investment (FDI) inflows? *International Business Review*, *29*(2), 101640. https://doi.org/10.1016/j.ibusrev.2019.101640

Cui, X., Yao, Y., Bian, Y., & Cui, L. (2022). Can better business environments promote trade partners' economic growth? *Applied Economics Letters*, *29*(6), 540–544. https://doi.org/10.1080/13504851.2021.1875115

Dai, M., Liu, H., & Lin, L. (2020). How innovation impacts firms' export survival: Does export mode matter? *The World Economy*, *43*(1), 81–113. https://doi.org/10.1111/twec.12847

DeMiguel, V., Martin-Utrera, A., Nogales, F. J., & Uppal, R. (2020). A transaction-cost perspective on the multitude of firm characteristics. *The Review of Financial Studies*, *33*(5), 2180–2222. https://doi.org/10.1093/rfs/hhz085

Dong, Z., Wei, X., & Tang, C. (2012). Institutional soft environment and economic development: An empirical study of the business environment in 30 major cities. *J. Manag. World*, *4*, 9–20.

Dong, Z., & Zhang, Z. (2022). Does the Business Environment Improve the Sustainable Development of Enterprises? *Sustainability*, *14*(20), 13499. https://doi.org/10.3390/su142013499

Du, Y., Liu, Q., Chen, K., Xiao, R., & Li, S. (2022). Ecosystem of Doing Business, Total Factor Productivity and Multiple Patterns of High-quality Development of Chinese Cities: A Configuration Analysis Based on Complex Systems View. Manag. *World*, *38*, 127–145.

Gallegos, J. F. D. C., & Seclen-Luna, J. P. (2022). The effect of technological innovation on low-tech Peruvian manufacturing firms' performance: The role of external sources of knowledge. *Academia-Revista Latinoamericana De Administracion*, *35*(3), 366–379. https://doi.org/10.1108/ARLA-08-2021-0164

Gamage, T. C., & Tajeddini, K. (2022). A multi-layer organizational culture framework for enhancing the financial performance in tourism and hospitality family firms. *Tourism Management*, *91*, 104516. https://doi.org/10.1016/j.tourman.2022.104516

Ghi, T. N., Thu, N. Q., Huan, N. Q., & Trung, N. T. (2022). Human capital, digital transformation, and firm performance of startups in Vietnam. *Management-Poland*, *26*(1), 1–18. https://doi.org/10.2478/manment-2019-0081

Gong, X., & Jin, M. (2023). The Impact of Business Environment and Government Support on Enterprise Digital Transformation: An Empirical Study Based on Text Mining of Annual Reports of Listed Companies. *Science & Technology Progress and Policy*, *40*(2), 90–99. https://doi.org/10.6049/kjjbydc.2021080294

Gu, J., Shi, X., Wang, P., & Xu, X. (2022). Examining the impact of upstream and downstream relationship stability and concentration on firms' financial performance. *Journal of Business Research*, *141*, 229–242. https://doi.org/10.1016/j.jbusres.2021.12.018

Hou, L., Hsueh, S.-C., & Zhang, S. (2020). Does formal financial development crowd in informal financing? Evidence from Chinese private enterprises. *Economic Modelling*, *90*, 288–301. https://doi.org/10.1016/j.econmod.2020.05.015

Hu, L., Chen, Y., & Fan, T. (2023). The Influence of Government Subsidies on the Efficiency of Technological Innovation: A Panel Threshold Regression Approach. *Sustainability*, *15*(1), 534. https://doi.org/10.3390/su15010534

Huang, Y. (2022). Research on Government Regulation: From the Perspective of Business Environment Governance. *Open Journal of Social Sciences*, *10*(7), 33–42. https://doi.org/10.4236/jss.2022.107004

Kao, M.-F., Hodgkinson, L., & Jaafar, A. (2019). Ownership structure, board of directors and firm performance: Evidence from Taiwan. *Corporate Governance: The International Journal of Business in Society*, *19*(1), 189–216. https://doi.org/10.1108/CG-04-2018-0144

Lisdiono, P., Said, J., Yusoff, H., & Hermawan, A. A. (2022). Examining Leadership Capabilities, Risk Management Practices, and Organizational Resilience: The Case of State-Owned Enterprises in Indonesia. *Sustainability*, *14*(10), 6268. https://doi.org/10.3390/su14106268

Liu, J., & Xie, J. (2020). Environmental Regulation, Technological Innovation, and Export Competitiveness: An Empirical Study Based on China's Manufacturing Industry. *International Journal of Environmental Research and Public Health*, *17*(4), Article 4. https://doi.org/10.3390/ijerph17041427

Lukovszki, L., Rideg, A., & Sipos, N. (2021). Resource-based view of innovation activity in SMEs: An empirical analysis based on the global competitiveness project. *Competitiveness Review: An International Business Journal*, *31*(3), 513–541. https://doi.org/10.1108/CR-01-2020-0018

Maali, K., Rakia, R., & Khaireddine, M. (2021). How corporate social responsibility mediates the relationship between corporate governance and sustainability performance in UK: A

multiple mediator analysis. *Society and Business Review*, *16*(2), 201–217. https://doi.org/10.1108/SBR-12-2020-0143

Masten, S. E. (1993). Transaction costs, mistakes, and performance: Assessing the importance of governance. *Managerial and Decision Economics*, 119–129. https://doi.org/10.1002/mde.4090140205

Maury, B. (2022). Strategic CSR and firm performance: The role of prospector and growth strategies. *Journal of Economics and Business*, *118*, 106031. https://doi.org/10.1016/j.jeconbus.2021.106031

Melo, N. A. P., & Velasquez, B. D. la G. (2022). The mediating role of structural capital in the relationship between human capital and performance in the public administrations of Mexico and Peru. *Estudios Gerenciales*, *38*(164), 320–333. https://doi.org/10.18046/j.estger.2022.164.5087

O'brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity*, *41*, 673–690. https://doi.org/10.1007/s11135-006-9018-6

Onileowo, T. T., Muharam, F. M., Ramily, M. K., & Khatib, S. F. (2021). The nexus between innovation and business competitive advantage: A conceptual study. *Universal Journal of Accounting and Finance*, *9*(3), 352–361. https://doi.org/10.13189/ujaf.2021.090309

Piekutowska, A., & Konopka, P. (2023). How to Measure Protectionism in International Trade in Xxi Century? The Regional Barometer of Protectionism-Case of Poland. *Technological and Economic Development of Economy*, *29*(3), 775–795. https://doi.org/10.3846/tede.2023.18345

Poletti-Hughes, J., & Briano-Turrent, G. C. (2019). Gender diversity on the board of directors and corporate risk: A behavioural agency theory perspective. *International Review of Financial Analysis*, *62*, 80–90. https://doi.org/10.1016/j.irfa.2019.02.004

Qi X., Quan F., & Li L. (2022). Business Environment, Risk-taking and Firm Performance: An Empirical Study of 35 Large and Medium-Sized Urban Firms. *Friends of Accounting*, *8*, 38–45.

Qu, Q., Li, Z., Tang, J., Wu, S., & Wang, R. (2019). A trend forecast of import and export trade total volume based on LSTM. *IOP Conference Series: Materials Science and Engineering*, *646*(1), 012002. https://doi.org/10.1088/1757-899X/646/1/012002

Reddy, K., & Wellalage, N. H. (2023). Effects of family ownership and family management on the performance of entrepreneurial firms. *Research in International Business and Finance*, *65*, 101977. https://doi.org/10.1016/j.ribaf.2023.101977

Ren, Q., Xu, Y., Zhou, R., & Liu, J. (2020). Can CEO's Humble Leadership Behavior Really Improve Enterprise Performance and Sustainability? A Case Study of Chinese Start-Up Companies. *Sustainability*, *12*(8), 3168. https://doi.org/10.3390/su12083168

Ren, S., Eisingerich, A. B., & Tsai, H.-T. (2015). How do marketing, research and development capabilities, and degree of internationalization synergistically affect the innovation performance of small and medium-sized enterprises (SMEs)? A panel data study of Chinese SMEs. *International Business Review*, *24*(4), 642–651. https://doi.org/10.1016/j.ibusrev.2014.11.006

Salam, M. A., Jahed, M. A., & Palmer, T. (2022). CSR orientation and firm performance in the Middle Eastern and African B2B markets: The role of customer satisfaction and customer loyalty. *Industrial Marketing Management*, *107*, 1–13. https://doi.org/10.1016/j.indmarman.2022.09.013

Scaliza, J. A. A., Jugend, D., Chiappetta Jabbour, C. J., Latan, H., Armellini, F., Twigg, D., & Andrade, D. F. (2022). Relationships among organizational culture, open innovation, innovative ecosystems, and performance of firms: Evidence from an emerging economy

context. *Journal of Business Research, 140,* 264–279. https://doi.org/10.1016/j.jbusres.2021.10.065

Stern, N. H. (2002). *A strategy for development*. World Bank Publications.

Sun, Y., & Wang, T. (2022). Can an Improved Business Environment Improve Firm Performance? - Based on the Empirical Evidence of China's A-Share Listed Companies From 2008 to 2020. *Journal of Hohai University, 6*(24), 121–128. https://doi.org/10.3876/j.issn.16714970.2022.06.014

Sun, Z., & Liu, Q. (2006). Market Environment, Entrepreneurial Ability and Firm Performance. *Economist, 4*, l10–l18. https://doi.org/10.16158/j.cnki.51-1312/f.2006.04.017

Tsafack, G., & Guo, L. (2021). Foreign shareholding, corporate governance and firm performance: Evidence from Chinese companies. *Journal of Behavioral and Experimental Finance*, *31*, 100516. https://doi.org/10.1016/j.jbef.2021.100516

Ukko, J., Nasiri, M., Saunila, M., & Rantala, T. (2019). Sustainability strategy as a moderator in the relationship between digital business strategy and financial performance. *Journal of Cleaner Production*, *236*, 117626. https://doi.org/10.1016/j.jclepro.2019.117626

Wang, M., & Pan, X. (2022). Drivers of Artificial Intelligence and Their Effects on Supply Chain Resilience and Performance: An Empirical Analysis on an Emerging Market. *Sustainability*, *14*(24), 16836. https://doi.org/10.3390/su142416836

Wang, N., Cui, D., & Dong, Y. (2023). Study on the impact of business environment on private enterprises' technological innovation from the perspective of transaction cost. *Innovation and Green Development*, *2*(1), 100034. https://doi.org/10.1016/j.igd.2023.100034

Wang, N., & Hagedoorn, J. (2014). The lag structure of the relationship between patenting and internal R&D revisited. *Research Policy*, *43*(8), 1275–1285. https://doi.org/10.1016/j.respol.2014.03.010

Wei, J. T., Ge, P., & Wang, J. (2017). Institution environment, Institution dependence and enterprise TFP. *Stat. Res*, *34*, 38–48.

World Bank. (2020). *Doing Business 2020: Comparing Business Regulation in 190 Economies*. Washington, DC: World Bank. https://doi.org/10.1596/978-1-4648-1440-2

Wu, H., & Hu, S. (2020). The impact of synergy effect between government subsidies and slack resources on green technology innovation. *Journal of Cleaner Production*, *274*, 122682. https://doi.org/10.1016/j.jclepro.2020.122682

Wu, Y., & Huang, S. (2022). The effects of digital finance and financial constraint on financial performance: Firm-level evidence from China's new energy enterprises. *Energy Economics*, *112*, 106158. https://doi.org/10.1016/j.eneco.2022.106158

Xiong, K. (2021). Business Environment**,** Government Support and Enterprise Innovation Output Efficiency———Based on the Perspective of Technological Advantage Comparative. *Journal of Capital University of Economics and Business*, *22*(6), 83–93. https://doi.org/10.13504/j.cnki.issn1008-2700.2020.06.006

Yang, M. G. M., Hong, P., & Modi, S. B. (2011). Impact of lean manufacturing and environmental management on business performance: An empirical study of manufacturing firms. *International Journal of Production Economics*, *129*(2), 251–261. https://doi.org/10.1016/j.ijpe.2010.10.017

Yonghong, T., Yulin, Y., Jiaqing, W., Chen, R., Xiao, X., Yafeng, L., Weihua, D., Hang, Z., Renfei, G., & Junhui, M. (2019). Current situation of the internationalization of the RMB. In *Internationalization of the RMB* (pp. 37–69). Routledge.

Yu, H., Song, C., & Song, Z. (2022). Impact of state ownership as political capital on the technological innovation of private sector enterprises: Evidence from China. *Asian Journal*

of Technology Innovation, *30*(1), 158–177. https://doi.org/10.1080/19761597.2020.1835501

Zhang, C. (2020). Clans, entrepreneurship, and development of the private sector in China. *Journal of Comparative Economics*, *48*(1), 100–123. Scopus. https://doi.org/10.1016/j.jce.2019.08.008

Zhang, Y., Zhang, Y., & Sun, Z. (2023). The Impact of Carbon Emission Trading Policy on Enterprise ESG Performance: Evidence from China. *Sustainability*, *15*(10), Article 10. https://doi.org/10.3390/su15108279

Zhao, T., & Jiao, F. (2022). Business environment, spatial spillover, and urban–rural income gap——An empirical test based on provincial panel data in China. *Frontiers in Environmental Science*, *10*. https://www.frontiersin.org/articles/10.3389/fenvs.2022.933609

Zhong, Z., & Chen, Z. (2023a). Business environment, technological innovation and government intervention: Influences on high-quality economic development. *Management Decision*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/MD-08-2022-1073

Zhong, Z., & Chen, Z. (2023b). Business environment, technological innovation and government intervention: Influences on high-quality economic development. *Management Decision*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/MD-08-2022-1073

Zhou, Y. (2021). The Advantages of Innovation and the Innovative Development of the Special Economic Zones of Guangdong in the New Era. *Studies on China's Special Economic Zones 4*, 183–197. https://doi.org/10.1007/978-981-16-5632-3_10

Zhu, E., Zhang, Q., & Sun, L. (2021). Enterprise Financing Mode and Technological Innovation Behavior Selection: An Empirical Analysis Based on the Data of the World Bank's Survey of Chinese Private Enterprises. *Discrete Dynamics in Nature and Society*, *2021*, 8833979. https://doi.org/10.1155/2021/8833979

Zou, W., & Lei, H. (2023). Business Environment and Resource Allocation Based on the Perspective of the National Value Chain. Journal of Systems Science and Complexity, 36(1), 294–327. https://doi.org/10.1007/s11424-023-2357-8