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# INNOVATIVENESS OF SMALL AND MEDIUM-SCALE FIRMS IN CALABAR METROPOLIS, CROSS RIVER STATE, NIGERIA: THE ROLE OF FINANCING CHOICES

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# ABSTRACT

Financing choices of firms are conscious decisions that are made concerning how it finances its activities which can either be beneficial or detrimental to firms' outcomes. Specifically, this study aimed at finding out the impact of financing choices (internal, external and debt-equity financing) on innovation of firms in Calabar Metropolis, Cross River State, Nigeria using logit regression model. The study used primary survey data collected from Micro Small and Medium Enterprises (MSMEs) in Calabar, Cross River State in a survey conducted between December 2021 and January, 2022. A non-probability sampling technique was adopted in selecting firms included in the study. The survey was conducted face-to-face using a questionnaire and data was collected from 142 MSMEs covering sectors such as trade, manufacturing, services, agriculture, education, and health. However, data from 134 eligible firms with complete information was coded and analysed. The study specified and estimated three equations on the effect of financing choices on innovation. It was discovered that internal and external financing had insignificant effect on innovation proxied by expenditure on research and development (R&D). The study recommends increased diversified investment portfolio for small and medium-scale enterprises as this has been found to increase the propensity of these firms to innovate especially in research and development.

**KEYWORDS**: Innovation, Financing choices, Small and Medium-Scale Enterprises, Cross River State **JEL Classification**: D24, G23, G21

### INTRODUCTION

Firms' contributions to output growth are important for national development however, the economic climate, particularly the business environment shapes their operations and determines how well they perform these roles. Innovation, infrastructure, regulatory policy framework, and financing are among such factors within the business environment that has been identified as the leading challenges faced by micro, small and medium-scale enterprises.

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These challenges form the focus of ongoing debate by government and policy makers given the indispensable place of MSMEs in employment generation, national productivity and growth and development. In a survey of SMEs, it was revealed that 71 per cent cited financing and infrastructure which are linked to innovation, as the biggest obstacles faced (World Bank, 2014) Africa had the highest percentage of SMEs that encounter this challenge i.e 21.4 per cent when compared to 18.1 per cent in East Asia and Pacific region, 15.3 per cent in The Caribbean and Latin America and 14.2 per cent in Central Asia and Europe.

The funding pattern shows that about 70 per cent of the world's firms, that is about 420-510 million Micro, Small and Medium enterprises do not utilize external financing obtained from financial institutions, and another 15 per cent are underfinanced (World Bank, 2018). Evidence from this survey for Nigeria (World Enterprise Survey) showed that more small firms (34.3 per cent) revealed that the challenge of accessing finance is a major constraint when contrasted with 6.9 per cent of firms that are large in 2014. This agrees with data from the same survey in 2007 which found 59.3 per cent for small firms and 13.2 per cent for large firms with finance as a constraint. A similar study earlier by Ekpenyong and Nyong (1992) had identified cost of capital via high interest rate as one major obstacle to the survival of small firms in Nigeria. Analysis based on those firms involved in export activity and non-export firms is that 14 per cent of export firms and about 40 per cent of firms in the latter category reported finance as a constraint.

The level of the financial development of any economy is a key factor which could determine the financing of firms. As noted by Mallick and Yang (2011), the sources of finance of firms are byproducts of the state of a nation's level of financial development since countries with developed financial system can easily ease external financing with bank loans given that information asymmetry exists between firms and banks. Firms, especially micro and small firms find it difficult to access capital for short term financing needs and long-term investment whether from formal or informal sources. This is so due to the high rate of interest and numerous unfavourable conditions and discriminatory policies by lending agencies and banks (Croce & Guerini, 2012; Ogechukwu, Akinlo & Goldman, 2015)

In 1986, Nigeria adopted the economic reform programme which marked a shift from an economy dominated by planned large scale and capital-intensive industrialization strategy which was heavily dependent on import substitution to that of export promotion driven by small scale local industries. These MSMEs, in addition to generating employment and promoting export were meant to reduce rural-urban migration, engender competitiveness and enhance growth and development of rural areas. In recognition of the vital role of finance in enhancing the performance of SMEs, the government set up various initiatives such as the then Central Bank of Nigeria credit guideline which stipulates 20 per cent target lending to MSMEs by deposit money banks (CBN, 1995), Small and Medium Industries Equity Investment Scheme (SMIEIS) in 1999, Bank of Industry in 2000, Small and Medium Enterprises Development Agency (SMEDA) in 2003 and Entrepreneurship Development Centres (EDC) in 2014, all of which were meant to increase SMEs access to finance and enhance performance.Other strategies put in place were the implementation of other several programmes which includes the National/State Councils on MSMEs. Entrepreneurship Development Programmes (Youth/Women/General), One Local Government One Product (OLOP), National MSMEs Policy, Conditional Grant Scheme (CGS), YOU-WIN and GEMS Project amongst others. These strategies were complemented with many access-to-credit schemes of Development Finance Institutions (DFIs) and the Central Bank of Nigeria (CBN).

However, despite these initiatives targeted at MSMEs improved performance, discrimination against SMEs by formal financial institutions still exist due to inability to back up their credit proposal with collateral and the long gestation period of investments in these enterprises when compared with trading activities. Thus, majority of these enterprises face daunting challenges in financing and the uptake of innovative processes and products which may have far reaching implications for their growth and performance. This discrimination in financing may affect the ability of these firms to acquire, adopt, and adapt new technology and production processes with adverse effects on their performance and competitiveness at the international level.

Innovation is a critical element for firm performance and growth. In light of these, this study analyses the effect of financing options on the innovation of firms in Cross River State., Nigeria.

The result of this study would also be useful to regulatory agencies in the financial, science and technology, and business sectors, state and federal governments as well as the organized private sector i.e. National and States Associations of Chambers of Commerce as well as manufacturers. The governments and regulatory agencies as policy makers would appreciate the role of financing in driving innovation in small and medium-scale enterprises in Nigeria. The remaining part of the paper is divided into conceptual literature and methodology in sections two and three, results in section four, and conclusion and recommendations in section five.

### **CONCEPTUAL LITERATURE**

Innovation is seen as a vital aspect of a company's development and productivity. The phrase innovare comes from the Latin word innovare, which means 'to create something new.' Joseph Schumpeter, a German economist and political scientist, defined innovation as "the introduction of a product that is new to consumers or of higher quality than existing products, new methods of production, the opening of new markets, the use of new sources of supply, and new forms of competition, that lead to the restructuring of an industry" in one of the earliest formulations of the concept (Schumpeter, 1934). According to him. innovation is a process of "creative destruction," or an act of "industrial mutation," in which new methods drive out (or "destroy") old ones. This process is fueled by innovation and understanding "how other nations attain affluence and underpin economic growth and progress" is crucial.

According to Vyas (2009), Schumpeter's definition prompted the five contributions to innovation, which include the creation of new products or significant improvements on existing products, the use of a modern industrial method, the opening of a new market, advancement in raw-material sources that include other new inputs, and modern industrial procedures. The UK Department of Trade and Industry (2007) defines innovation as "the process of transforming opportunities into newer, better ideas and then extensively implementing these new ideas." The Organisation for Economic Co-operation and Development's documentation about the concept was also frequently utilized and studied (OECD). "A new or enhanced product or process (or combination thereof) that varies substantially from the unit's prior products or processes and has been made accessible to prospective consumers (product) or brought into use by the unit (process)," according to the Oslo OECD Innovation handbook (2018). The handbook considers innovation as an action and a result of that activity. It defines innovation activities as all commercial, developmental, and financial actions carried out by businesses to produce an inventive output.

In contrast to the 2005 edition of the same handbook, which had four classifications namely: marketing innovation, process innovation. organizational innovation, and product innovation, and the updated Oslo manual in 2018 categorizes the concept into two which are: process and product innovation. The business process innovation, according to the manual, is the birthing of a novel or better business method for a single business activities which or group is consequentially different from the firm's former business methods which had been initiated for use in the organisation, whereas the innovation of a product entails the development of a novel or better product or service with a marked difference from the former one and is new to the market.

In another definition, the Innovation Union, an initiative of European Union's seven flagship initiatives aimed at achieving smart, sustainable, and inclusive growth through the Europe 2020 strategy, defined innovation as "change that accelerates and improves how new products, industrial processes, and services are conceived, developed, produced, and managed."

Drucker (1985) saw innovation as a fundamental pre-requisite for entrepreneurial growth and a tool for business owners, according to certain definitions of the idea proposed by famous academics in the area. Forsman (2010) defines innovation as "the creation and execution of new or enhanced processes, products/services, manufacturing techniques, or single acts targeted at boosting an enterprise's competitiveness."

The Enterprise Survey used five components to describe innovation: product, technique or process, organizational, usage of foreign-licensed technology, and research and development investment (R&D).

The process as well as product dimensions were used in this research to follow the Oslo manual's (2018) definition of innovation. In this research, product innovation is defined as the launch of a new or considerably enhanced product or service by a firm/establishment in the previous three years, as defined by the enterprise survey. On the other hand, process innovation assesses if the firm/establishment has implemented any new and/or substantially improved processes during the last three years. These include techniques of providing services or producing goods; input distribution methods, logistics, or product or service delivery; and process support activities.

Firms are seen as the primary movers and wheels that propel the innovation process; nevertheless, for innovation to flourish in any business, excellent supporting institutions for knowledge creation and dissemination are essential. A framework for innovation systems was created to ensure that all participants in the innovation framework are appropriately integrated. "This approach is founded on the concept that, in essence, corporations create and execute innovations in isolation, necessitating the input and participation of other system players" (Miika & Varis, 2010).

In this research, product innovation is elucidated to mean an establishment's development of new goods or services into the market over a period of time, or products or services that have seen major upgrades in capabilities, user friendliness, components, or sub-systems. Process innovation refers to new (current) or improved methods, such as the introduction of new methods of manufacturing products or providing services by an establishment during the reference period; logistics, delivery, or distribution methods for inputs, products, services, or supporting activities. Organizational innovation is the process of changing a firm's structure by forming, dissolving, or combining departments. Expenditure on R&D refers to the actual amount spent on R&D, i.e. how much money was spent on R&D in-house or via outside contractors. R&D refers to sorts of activities that a commercial firm selects to engage in whose main aim is to make an invention that may lead to the enhancement of current goods, services, or procedures or the creation of a new product, service, or method. While internet browsing or market research surveys are not considered R&D, research and development may be compared to a laboratory study of a novel chemical compound used in the creation of paint.

Financing choices has to do with how a corporation makes a conscious and intentional decision about how to fund its operations (Mallick & Yang 2011). A number of factors influence financing options, which change based on the legal and financial development of the nation as well as the business environment. Financing options, both internal and external, can be classified as formal or informal, short- or longterm. traditional or modern, or creative, Conventional sources of finance include commercial banks, government agencies, equity and debt, trade credit, business angels, and venture capitalists (Fatoki, 2014). Contrarily, new and creative financing possibilities like crowd funding-a new kind of financing in which investors and entrepreneurs are connected online are available.

Big business owners can obtain funds by accepting small proposals from several investors, especially wealthy individuals and private start-up companies, through an open invitation posted online to finance their ventures (Golic, 2014; Fatoki, 2014). The owner/savings, manager's retained earnings, trade credit, financial support from friends and family, and other associates are examples of internal sources of funding; banks, other commercial institutions, and the securities market are examples of external sources.

### METHODOLOGY

The study is based on a survey research design and uses a descriptive and quantitative research approach to analyze the features, incidence, distribution, and interrelationships between the dependent and independent variables.

Data for the study was collected from micro (firms with less than 10 employees) and small firms in Calabar Municipality in Cross River State, Nigeria. The data was collected evenly from firms across the 20 political council wards in the Municipal Council. A multi-stage, multiple-sampling technique which entails a mix of random, stratified, and purposive sampling techniques was applied in the study. Calabar Municipal Local Government Area was randomly selected from Calabar Municipal Council with ten council wards.

The LGA had 555, 732 residents in 2022 and a land area of 147.2 square kilometers. In the second stage, a total of fifteen micro and small firms were randomly selected from each of the ten council wards making a total of 150 firms, with 134 firms providing complete and usable information.

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Consent was obtained from the firm owner or senior management staff who also provided information about the firm. They were made to understand that participation was optional and could withdraw at any point during the interview. Participating firms were provided with phone contacts for further concerns and letters of introduction to authenticate the validity of the study. The firms were identified as those with legal status, had at least one employee, and had been operational for at least one year. Firms that denied consent were excluded from the study. The survey was conducted between December 2021 and March 2022. The growth and survival of MSMEs in developing countries have been recognized as a critical factor affecting these firms' ability to contribute to national development. Innovation is critical if MSMEs must fulfill this objective. Thus, this study examines whether financing options have implications for firms' innovation probability. Thus, following Segarra and Terruel (2009) and Adegboye and Iweriebor (2018), to capture the probability of a firm to innovate, a logistic regression is specified. The study assumes that probability to innovate depends on financing options (internal, external and debt-equity financing) in the baseline model and on other

specific characteristics of the firms that promote innovation or enhances access to finance through these financing options. The model is thus specified as:

Pr (innov = 1) = f (FINT, FENT, DEQR, FAGE, FSIZE, POUT, CAPU) (3.5) where:

Pr (innov = 1) = Probability of the firm to innovate

FINT, FENT, DEQR, FAGE, FSIZE, POUT and CAPU are as earlier defined.

Three innovation types are applied based on the World Bank categorization to the study and data collected in the survey and these are product innovation, process innovation and expenditure of Research and Development (R&D)

Product and Process Innovation: This was adopted as innovation variables in finding the impact of financing options and the firm performance. In line with Okumu et al (2019) who in investigating the interaction effect between innovation and firm-specific variables on employment growth, this study is finding out if innovation has any effect on financing options and firm performance. The study used three types of innovation; product (PDIN<sub>I</sub>) and process (PRIN<sub>I</sub>) of firms in line with the numerous studies that have investigated the role of innovation in firm growth i.e Adeqbove and Iweriebor (2018). Karabulut (2015) and King and Levine (1993).

# **TABLE 1: Operationalization and Measurement of variables**

Туре	Variable	Operationalization	Measurement	Hypothesized direction
Dependent	-	Internal financing (FINT)	Personal funds + retained earnings	Positive
Variable cho	choices	External financing (FENT)	Loan + family funds + co0operative/Esusu + Grants + money lenders + Funds from Friends	Positive
		Debt-equity financing (DEQR)	The ratio of external financing to internal financing of the firm	Positive
Independent Variables	Firm innovation	Product innovation (PDIN)	Dummy with value 1 if the firm introduced any new or significantly improved product or service and 0 otherwise	Positive
		Process innovation (PRIN)	Dummy with value 1 if any new or significantly improved process was introduced by this	Positive
		Expenditure on Research and Development (R&D)	establishment and 0 otherwise Firm's actual expenditure on research and development	
	Firm Characteristics	Size of firm (FSIZE)	The number of employees in firm	Positive
		Age of firm (FAGE)	The firm age is constructed by subtracting the reported year of establishment from the 2022	Positive
		Power outage (POUT)	The number of times in a typical month that the firm experienced power outage	Negative
		Capacity utilization (CAPU)	Percentage of actual production to maximum possible production	Positive

Source: Author compilation from survey, 2023

#### **RESULTS AND DISCUSSIONS**

The baseline outcome for the innovation model is shown in Table 2. It depicts the impact of the three financing choice variables and the three innovation outcomes utilized in the research without taking into account any firm-specific features that may influence innovation. However, the model's robustness is tested by including industry-specific fixed effects. The findings (with industry fixed effects) are given on the left-hand side of Table 1 and are the ones that have been interpreted.

An examination of the results reveals that the output of the model with industry fixed effects and the model without industry fixed effects are almost identical. Internal finance increased the likelihood of MSMEs undertaking product and process

innovation, but it had a negative and substantial influence on R&D investment. This demonstrates that the impact of internal finance varies depending on the level of innovation. External finance had a negative impact on the likelihood of a business pursuing product innovation, but a positive impact on the likelihood of pursuing process innovation and R&D spending. Debt-equity financing had an unambiguous negative impact on MSMEs' likelihood to innovate. particularly when it came to R&D spending. This indicates that a firm's choice to accept funding from external sources rather than internal ones considerably limits its potential to innovate and reduces its research and development spending. As a result, a company's capacity to acquire funding from a creditor or other relevant source will be contingent on the company engaging in less creative activities, which entails taking less risks.

Variables	PDIN	PRIN	EXPRD	PDIN	PRIN	EXPRD
FINT	1.20	0.38	-1.58**	1.33	0.49	1.37**
FENT	-0,02	0.30	0.68	0.15	0.36	0.83
DEQR	-0.42	-0.02	-0.55**	-0.39	-0.002	-0.51**
Constant	1.31**	0.93**	1.30**	1.34	0.94**	1.33***
Sector fixed effect	Yes	Yes	Yes	No	No	No
Wald test	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036

<b>TABLE 2:</b> Results of financing options and innovation baseline	TABLE 2:	Results of	financing	options ar	nd innovation	baseline
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\*, \*\* and \*\*\* denotes significance at 10%, 5% and 1% level, respectively. **Source:** Author's computation, 2023

The impact of financing choices on product innovation is shown in Table 3 with the addition of firm-level factors that influence product innovation. Internal finance has a beneficial influence on product innovation, but external financing and debt-equity financing hurt product innovation; nevertheless, these associations are negligible. The results for the control variables revealed that capacity utilization, firm age, and firm size all had a beneficial influence on a company's likelihood of pursuing product innovation. Only capacity utilization, with a very high co-efficient, has a substantial influence. According to the findings, companies with extremely high-capacity utilization or that run at full capacity are three times more likely to innovate than companies with lowcapacity utilization. Power outages, contrary to expectations, had a positive but small impact, indicating that businesses with more power outages engage in more product innovation than firms with fewer outages.

Variable	1	2	3	1	2	3
FINT	0.09			0.12		
FENT		-0.11			0.17	
DEQR			-0.25			-0.12
FAGE	0.01	0.01	0.008	0.03	0.03	0.02
FSIZE	0.17	0.16	0.17	0.14	0.13	0.14
POUT	0.02	0.02	0.03	0.02	0.02	0.03
SEXFE	-0.84	-0.84	-0.94	-0.79	-0.77	-0.82
CAPU	3.26**	3.29**	3.15**	3.42**	3.42**	3.41**
Sector f.e	Yes	Yes	Yes	No	No	No
Wald test	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024
Ν	133	133	133	133	133	133
Constant	-2.06	-2.02	-1.78	-2.05	-2.03	-1.87

TABLE 3: Results for product innovation

\*, \*\* and \*\*\* denotes significance at 10%, 5% and 1% level, respectively.

Source: Author's computation, 2023

Table 4 shows the results for process innovation, which show that the co-efficient of the financing alternatives factors differed somewhat from those found in the product innovation equation. While debt-equity financing is detrimental to product innovation, it is beneficial to process innovation. Furthermore, although firm age and power outages had a favorable impact on product innovation, they had a detrimental impact on process innovation. Large businesses are 19% more likely than small organizations to perform process innovation, indicating that company size has a considerable beneficial influence on process innovation. The impact of capacity utilization on process innovation grew as well, with high-capacity-utilization enterprises being 5.5 times more likely than low-capacity-utilization firms to perform process innovation.

Variable	1	2	3	1	2	3
FINT	0.50			0.54		
FENT		-0.11			0.11	
DEQR			0.15			0.22
FAGE	-0.03	-0.03	-0.03	-0.02	-0.02	-0.01
FSIZE	0.19**	0.17*	0/17*	0.16*	0.14*	0.14*
POUT	-0.02	-0.01	-0.02	-0.01	-0.01	-0.02
SEXFE	-0.63	-0.60	-0.55	-0.57	-0.54	-0.49
CAPU	5.19**	5.47**	5.57**	5.25***	5.57***	5.71***
Sector f.e	Yes	Yes	Yes	No	No	No
Wald test	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021
Ν	133	133	133	133	133	133
Constant	-3.15**	-3.07**	-3.20**	-3.04**	-2.97**	-3.18**

TABLE 4: Results for process innovation

\*, \*\* and \*\*\* denotes significance at 10%, 5% and 1% level, respectively. **Source:** Author's computation, 2023

The result for research and development (R&D) spending, as shown in Table 5, differed significantly from the result for product and process development innovation. Internal funding had a considerable negative influence on the likelihood of the business adopting innovation, according to this finding. It was shown that companies that use internal funding are 1.6 times less likely to invest in R&D than those that use

alternative finance. Other corporate factors that had a substantial impact on R&D spending were business size, power outage, and capacity utilization. Large businesses are 29% more likely than small firms to spend on research and development, whereas organizations that suffer power outages are 5% less likely than firms that do not experience power outages to spend on research and development. Firms with a greater capacity utilization rate are 6.4 times more likely to spend on research and development than those with a lower capacity utilization rate.

Variable	1	2	3	1	2	3
FINT	-1.62**			-1.61***		
FENT		0.90			1.12	
DEQR			-0.10			-0.001
FAGE	0.02	0.02	0.02	0.03	0.03	0.03
FSIZE	0.27**	0.28**	0.29**	0.23**	0.25***	0.26**
POUT	-0.04	-0.05*	-0.03	-0.04	-0.06*	-0.03
SEXFE	-0.51	-0.52	-0.62	-0.47	-0.48	-0.53
CAPU	6.40***	5.02**	4.88***	6.60***	5.18***	5.02***
Sector f.e	Yes	Yes	Yes	No	No	No
Wald test	0.002	0.002	0.002	0.002	0.002	0.002
Ν	133	133	133	133	133	133
Constant	-4.66**	-4.57***	-4.41***	-4.48***	-4.47***	-4.30***

**TABLE 5:** Results for expenditure on research and development (R&D)

\*, \*\* and \*\*\* denotes significance at 10%, 5% and 1% level, respectively. **Source:** Author's computation, 2023

The impact of different funding options on innovation

Three hypotheses were tested in the objective which sought to analyze the effect of financing choices on innovation including internal and external financing and debt-equity ratio have no significant effect on firm product innovation, internal and external financing and debt-equity ratio have no significant effect on process innovation, and internal, external, and debt-equity financing have no significant impact on R&D expenditure. Internal funding, therefore, had a considerable negative influence on the likelihood of the business adopting innovation. It was shown that companies that use internal funding are 1.6 times less likely to invest in R&D than those that use alternative finance. Other business factors that had a substantial impact on R&D spending were firm size and capacity utilization. Large businesses are 29% more likely than small firms to spend on research and development, whereas organizations that suffer power outages are 5%

less likely than firms that do not experience power outages to spend on research and development. Firms with a greater capacity utilization rate are 6.4 times more likely to spend on research and development than those with a lower capacity utilization rate. Internal finance has a negative impact on a company's capacity to spend money on research and development, as shown by the findings. Capacity utilization was a big component in determining a business's likelihood to innovate in all sorts of invention, but power outages have been found to have a large negative influence on firm productivity.

The outcome of the study revealed that null hypothesis for the first and second hypotheses were accepted while the third hypothesis was rejected based on the results of the study, and it was found that the debt-equity ratio had a substantial impact on corporate spending on research and development in Cross River State, Nigeria.

# CONCLUSION AND RECOMMENDATIONS

This empirical, policy-oriented study on innovations and financing choices in Cross River State, Nigeria, sought to determine the impact of financing options (internal, external, and debtequity financing) on the firm's likelihood to innovate.

The study used the logistic regression approach to investigate the impact of financing choices on innovation. Internal funding had a considerable negative influence on the likelihood of a corporation adopting innovation, according to the research. It was shown that companies that use internal funding are 1.6 times less likely to invest in R&D. Internal finance has a negative impact on a company's capacity to spend money on research and development, as shown by the findings.

Meduim-scale businesses are 29% more likely than small firms to spend on research and development, whereas organizations that suffer power outages are 5% less likely than firms that do not experience power outages to spend on research and development. Firms with a greater capacity utilization rate are 6.4 times more likely to spend on research and development than those with a lower capacity utilization rate. Capacity utilization was a big component in determining a business's likelihood to innovate in all sorts of invention, but power outages have been found to have a large negative influence on firm productivity. The study recommends increased diversified investment portfolio for small and medium-scale enterprises as this has been found to increase the likelihood of these firms to innovate especially in research and development. Thus, MSMEs and SMEDAN, as well as other relevant government agencies at the state level, should raise their R&D spending or set aside particular research funding for MSMEs in the state and nation.

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