

Access to Finance Sources and Innovation in Philippines: An Empirical Analysis of Small and Medium-sized Enterprises

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Abstract

This research investigates the impact of access to financial resources on SME innovation in the Philippines. We have employed a quantitative research design, utilising an ordered logistic regression model in STATA software to analyse data from 1002 SMEs in the Philippines. The data, collected by the World Bank's Enterprise Survey from April 2023 to February 2024, was used for this analysis. The results of the study indicate that SME innovation in this nation is highly influenced by access to internal, external, and total financing. The industry-wise result does vary. Studies, specifically in the East Asia and Pacific region, are limited in understanding how SMEs innovate, particularly in financing this innovation due to the limited availability of data about SMEs. A recent enterprise survey, conducted by the World Bank from April 2023 to February 2024, provides an opportunity to explore how access to finance impacts the SMEs' innovation aspect.

INTRODUCTION

Micro, small, and medium-sized businesses are recognised for their significant contribution to fostering innovation and economic growth. The vital role of SMEs in the economy is undeniable. (Ahmad et al., 2025). The relation of financial institutions, and economic growth has primarily established through resources they provide to enterprises. In developing economies, securing external finance can be particularly challenging, especially for small firms. In underdeveloped countries, where financial intermediation is less sophisticated, the issue of obtaining finance for innovative SMEs is evident (Bakhouché, 2022). In both developed and developing nations, SMEs make up the majority of the private sector (Beck & Kunt, 2006). In OECD countries, SMEs account for 60–70% of net employment creation (OECD, 2006a). Small and medium-sized enterprises in a formal sector account for around 45% of employment and 33% of GDP in developing countries; this contribution rises when the informal sector is considered (IFC, 2010). Small and medium-sized enterprises will certainly not be able to expand their operations, compete in international markets, or establish commercial relationships with larger enterprises without

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external finance. Furthermore, according to both current SMEs and prospective operators, the biggest obstacle to the growth of enterprises and start-ups is access to finance (Olomi & Urassa, 2008). Innovation is widely accepted as an essential factor for the competitiveness of economies and enterprises (Yen, et al. 2019, Kebede & Fikire, 2023). Innovation generates benefits for the profitability of enterprises (Bonanno, et al., 2023). However, the innovative success of small and medium enterprises significantly depends on external finance to support their innovation activities (Demirel & Parris, 2015). Recently, there has been considerable debate about the impact of financial constraints on innovation. By considering these challenges, it becomes necessary to look at the aspects that support innovation. This study provides empirical findings into the way in which access to financing promotes innovation in the Philippines, as well as the effect of internal, external, and total finance on innovation in the Philippines. Availability of credit is crucial for the success of SMEs (Vasilescu, 2014). SMEs offer the most efficient utilization of resources regarding employment creation and facilitate the most robust development and innovation (Vasilescu, 2014). Finance has a significant impact on an organisation's ability to innovate, whether it is small, medium, or large (Benfratello et al., 2008). Access to credit is a vital driver for innovation. Innovative enterprises, regardless of their level of success in innovation or their allocation of resources to creative activities, often consider access to financing to be a more significant challenge compared to non-innovative enterprises (Botrić & Božić, 2017).

The empirical research does not provide a clear indication of the relationship between finance and innovation in firms. Notably, Ayyagari et al. (2011) and Nicholas & Nanda (2014) found a direct correlation between a firm's financial accessibility and its level of innovation. Firms with successful innovation outputs appear to have better access to financial sources (Pham et al., 2023). There is an argument that managers may incur higher costs when using equity financing from public markets to finance innovation due to the public markets' poor tolerance for failure (Ferreira et al., 2011). Moreover, debt financing is inappropriate for funding innovation with unclear returns (Stiglitz, 1991). However, research by Beck & Demirgüç-Kunt (2006) demonstrates that adopting innovative strategies might be challenging for businesses with limited resources. Fomtang and Adjasi (2018) assert that capital structure and bank funding have a significant impact on an organisation's innovation outcomes.

The Philippines' economy grew by 7.4% in 2022, making it one

of the world's fastest-growing emerging economies, which was never experienced in the last 40 years (Reuters, 2023). The Philippines is one of the most dynamic economies in the Pacific region and East Asia (World Bank, 2024). Only developed nations are included in the empirical research on finance and innovation (Fulghier and Chemmanur, 2014; Baumol, 2002). Studies, specifically throughout the Pacific and East Asia, are limited in understanding how SMEs innovate, particularly in financing this innovation, due to the limited availability of data about SMEs. To the best of my knowledge, no empirical research has been done to investigate the effect of access to finance on innovation of SMEs in the Philippines. A recent World Bank enterprise survey conducted from April 2023 to February 2024, provides an opportunity to explore how access to finance impacts the innovation aspect of SMEs (small and medium-sized enterprises).

This research aims to contribute to the limited body of literature on the impact of financing availability on SMEs' innovation in emerging and developing nations. By carefully examining the funding sources utilized to support the various types of innovative activities carried out by the Philippines' SMEs. The article is organized in the following manner: Section 2 reviews the pertinent literature, Section 3 outlines the methodology, Section 4 presents the findings and implications, and Section 5 summarizes the study's conclusions.

REVIEW OF LITERATURE

While the majority of people believe that an effective financial system would promote economic development by helping investors choose investments wisely, opinions differ on the channels through which such effects are achieved. According to Schumpeter's theory, an economy's capacity for innovation is correlated through its capital and credit markets effectiveness. Schumpeter (1934, 1950) further revealed that Firms must seek external finance for the financial support of innovation if they cannot finance it from internal sources. On the topic of access to financial sources and innovation, there are different opinions. Schumpeter's "demand-pull" innovation theory (Verspagen & Kleinknecht, 1990) recommends that businesses initially fund innovative activities through internal sources, but if internal funds are limited, they turn to external sources. Pecking order theory (Myers 1984; Donaldson 1962) supports this position by arguing that Enterprises hierarchically allocate their financial resources, prioritizing internal sources of finance first and, if

needed the second option is external sources of finance. The literature concerning innovation and financial access is categorized into external and internal financing sources. SMEs in developing economies are facing difficulties in utilising internal finance for investment in innovation (see Yoshino, 2015; Dong et al., 2020). This offers a basis for research concentrating on external financing in these economies. In almost all studies, the characteristics of small and medium-sized firms either help or impede their capability to obtain external finance. As an example, Hall (2010), and Musamali and Tarus (2013) showed that large (SMEs) have better chance of getting external funding compared to smaller ones. According to Donaldson (1961), businesses with established funding sources are more likely to utilise them first to fund innovation before seeking outside funding sources, such as debt and equity. Therefore, the first hypothesis for the current study is:

H1a: Access to internal sources of finance is positively correlated with an enterprise's innovation.

Despite Ahmad and Kaur's (2025) empirical study showing that internal sources of finance significantly impact a firm's innovation, the impact of external financing is insignificant. Several empirical studies have investigated the relationship between financial accessibility and innovation. In their study, Girma et al. (2008) investigated the correlation between foreign direct investment and innovation activities in Chinese companies. Their findings indicated that private and collectively held enterprises, particularly those with foreign capital and access to domestic bank loans, exhibited higher levels of innovation compared to other firms. Effective access to both external and internal sources of finance is important for the successful implementation of innovative initiatives (Brown et al. 2009). Through a concentration on emerging economies, A study conducted by (Amadasun & Mutezo 2022) showed that Critical obstacles affecting access to financing for SMEs include banks' collateral needs, insufficient availability of financial information, and poor banking and business assistance services, which hinder their ability to get sufficient funding and impede their innovation potential. Ayyagari et al. (2011) examined the impact of access to finance and enterprise innovation, categorizing finance into internal, external, and foreign sources. Their results indicate that a greater percentage of external finance and a bigger share of foreign financing are associated with increased innovation capability of enterprises. According to Kaur et al. (2021), empirical evidence suggests that external finance

has a higher impact on innovative activities than any other sources of funding. Furthermore, the collateral requirement has a significant effect on the innovation of firms. The study also reveals that governmental banks and state agencies are deeply engaged in innovative endeavors. The size, ownership, and location of SMEs (small and medium-sized enterprises) indicate varying levels of innovation. The subsequent hypothesis of the present study is:

H1b: Access to external finance is positively correlated with SMEs innovation.

The third hypothesis of this research is

H1c: Access to total finance is positively correlated with enterprises' innovation.

Likewise, Lorenz's, (2014) finding showed that, Irrespective of a firm's size or age, external financing limitations generally diminished the probability of successful innovation across firms in specific African nations. Haruna, et al. (2024) study indicates that the Islamic mode of financing strengthens the capability of Cameroonian SMEs to innovate. While financing the innovative ventures, investors at first usually consider the firm size. As a result, medium-sized and larger businesses have an easier time obtaining external financing (Czarnitzki, 2006; Ughetto, 2009, Stoneman & Canepa, 2008;), indicating that micro-entrepreneurs are likely to face more financial constraints. This is due to medium-sized and big companies' superior financial backgrounds and outstanding credit ratings. According to "the pecking order theory," larger and more established businesses have fewer financial constraints than smaller and newer businesses because they have access to more information and can offer collateral (Udell & Berger 2006, Freel, 2007).

Differences in the performance of a firm's innovation across different firm characteristics have been observed. Research indicates that different firm features have varying effects and are linked to business innovation activities. Compared to subsidiary companies, standalone businesses seek funding more often (Mina et al., 2013). Firm innovation activity is favourably impacted by being part of a larger company. Focussing on ownership structure and innovative operations, Choi et al., (2011) concluded that concentrated ownership has no significant influence on a firm's innovation, but insider ownership deteriorates it. Government-owned businesses rarely lack capital, as domestic investors often view them as a reliable investment. In contrast, privately held businesses face more

challenges when seeking funding. Nonetheless, foreign ownership has a favorable correlation with innovation (Girma et al., 2009). This result agrees with the findings of Choi et al (2011). Financial restrictions are more prevalent for businesses run by women (Lee et al., 2015). Ayyagari et al. (2011) found that experienced enterprises are more involved in product innovation. Based on Ayyagari et al. (2011), more inventive companies have highly educated management and private ownership. However, Paunov, (2012) found that innovation initiatives are abandoned more often by recently created businesses and those receiving public assistance. When funding a business, investors usually take it to account the firm size but often overlook the age of the firm (Mina et al., 2013). According to Adjasi & Fombang (2018), Vahter & Efthyvoulou (2016), and Criscuolo et al. (2010), exporting businesses are influential innovators.

Innovation also varies across industries. (Ayalew, et al. 2020) Research demonstrates that Enterprise size, export intensity, competitiveness, foreign ownership, and resource-based factors (access to financing, research and development, employee training, and gender of senior management) mostly influence the likelihood of an entity to innovate. Research by Vahter & Efthyvoulou (2016) has shown that the rapidly expanding service sector enables companies to offer more convenience. The conclusions of Carreira and Silva (2016), who discovered that the service sector has a stronger financial limitation compared to the industrial sector, support our findings. Manufacturing companies seek financing more often than other types of businesses (Mina et al., 2013). Financial constraints and innovation activities in manufacturing and service organisations are shown to be inversely correlated by Gorodnichenko & Schnitzer (2013) and Savignac (2008). They do not discover any significant inverse relationships between access to external funding and innovative activity. One reason for this might be that creative businesses are likely to be more financially limited, as they often require more external funding. According to Hottenrott & Czarnitzki (2011), small-sized manufacturing enterprises face financial constraints when it comes to investing in research and development compared to larger firms. Savignac, (2008) confirms the differences in inventive efforts across sectors. He discovered that the likelihood of engaging in creative activities increases with business size; however, Silva & Carreira (2016) observed that this conclusion holds true only for manufacturing enterprises, rather than the service sector.

METHODOLOGY

We employed a quantitative research design, utilising an ordered logistic regression model in STATA to analyse data from 1002 small and medium-sized enterprises (SMEs) in the Philippines. The dependent variable's binary nature of demanded the use of ordered logit model. The present study utilised data from the World Bank Enterprise Survey, specifically focusing on innovation and access to funding among selected firms in the Philippines. The study used stratified random sampling. This article utilizes cross-sectional data from 1002 SMEs (small and medium-sized enterprises) in the manufacturing, retail, and service sectors. The data was extracted from the World Bank Enterprise Surveys conducted in the Philippines between April 2023 and February 2024.

A single innovation index has been created combining product and process innovation measurements. Our study uses the model below to examine the impact of financial access on the innovative activities of firms.

$$I_{innovation} = \alpha + \beta_1 IntFinance + \beta_2 X + \epsilon_i \quad (1)$$

$$I_{innovation} = \alpha + \beta_1 ExtFinance + \beta_2 X + \epsilon_i \quad (2)$$

$$I_{innovation} = \alpha + \beta_1 TotFinance + \beta_2 X + \epsilon_i \quad (3)$$

$$I_{innovation} = \alpha + \beta_1 CollReq + \beta_2 X + \epsilon_i \quad (4)$$

$$I_{innovation, Manufacturing} = \alpha + \beta_1 IntFinance_{Manufacturing} + \beta_2 X + \epsilon_i \quad (5)$$

$$I_{innovation, Retail} = \alpha + \beta_1 IntFinance_{Retail} + \beta_2 X + \epsilon_i \quad (6)$$

$$I_{innovation, Service} = \alpha + \beta_1 IntFinance_{Service} + \beta_2 X + \epsilon_i \quad (7)$$

$$I_{innovation, Manufacturing} = \alpha + \beta_1 ExtFinance_{Manufacturing} + \beta_2 X + \epsilon_i \quad (8)$$

$$I_{innovation, Retail} = \alpha + \beta_1 ExtFinance_{Retail} + \beta_2 X + \epsilon_i \quad (9)$$

$$I_{innovation, Retail} = \alpha + \beta_1 ExtFinance_{Retail} + \beta_2 X + \epsilon_i \quad (10)$$

$$I_{innovation, Manufacturing} = \alpha + \beta_1 TotFinance_{Manufacturing} + \beta_2 X + \epsilon_i \quad (11)$$

$$I_{innovation, Retail} = \alpha + \beta_1 TotFinance_{Retail} + \beta_2 X + \epsilon_i \quad (12)$$

$$I_{innovation, Service} = \alpha + \beta_1 TotFinance_{Service} + \beta_2 X + \epsilon_i \quad (13)$$

- $I_{innovation}$ = is an aggregate innovation index, combining product and process innovation.
- $IntFinance$ = Access to an internal source of finance
- $ExtFinance$ = Access to external finance
- $TotFinance$ = Access to total finance
- $Collreq$ = Need for collateral.
- $I_{innovation, manufacturing}$ = Innovation of firms in the manufacturing industry.
- $I_{innovation, Retail}$ = Innovation of firms in the retail industry.
- $I_{innovation, service}$ = Innovation of firms in the service industry.

X denotes control variables.

- The enterprise's size is categorized such as (1) for small, which have 5 to 19 employees; (2) for medium-sized firms, which have between 20 to 99 employees, and (3) for large firm, which has 100 or more than 100 employees.
- The age of the firm refers to the number of years since its establishment, which is calculated by subtracting the firm's establishment year from the date of the World Bank's enterprise survey.
- Is this city the main business hub? If yes, it is 1; otherwise, 0.
- For female ownership, if the firm has a female owner, it is 1; otherwise, 0.
- Sector: if the entity is manufacturing, it is 1; for retail, it is 2; and for services, it is 3.

Based on Schumpeter's (1934) initial conjecture, we hypothesize a positive correlation between enterprises' access to funds and their level of innovation. Any rise in the utilisation of various financial instruments (such as current or savings accounts, overdraft facilities, and loans or credits from financial institutions) is expected to result in a corresponding increase in enterprise innovation (Oakey, 1984; Brown et al., 2009; Ayyagari et al., 2011). Regarding the control variables in our study, we anticipate a positive correlation between the age of companies and their innovation, as older organisations are often more involved in innovation activities (Schumpeter, 1942; Hansen, 1992; Jaumandreu and Huergo, 2004). Likewise, in terms of size, larger firms are more inclined to engage in innovation (Pla-Barber and Alegre, 2007; Stock et al., 2002;). The level of female ownership significantly influences firm innovation. Our analysis also takes into account the firm's primary business location, government ownership status, and the industry in which it operates.

The data analysis in this study was conducted utilizing the Ordered Logit Model using STATA software. The findings suggest that the availability of external funding is strongly correlated with the innovation of small and medium-sized enterprises (SMEs) in the Philippines. Similarly, the availability of internal financing is also significantly correlated with the innovation of SMEs. However, the collateral required for acquiring a loan is insignificant to firms' innovation. The industry-wise analysis also showed variation, indicating that access to external sources of finance is significant for innovation

in the retail and manufacturing sectors. However, the relation is stronger in the manufacturing sector than in the retail industry, and the impact is insignificant in the service industry.

FINDINGS AND DISCUSSION

Before revealing the main findings on the major variables, we have provided the descriptive statistics for enterprises engaged in innovation activities. Table 1 shows the number of observations across industries: 430 in manufacturing, 156 in retail, and 416 in service industries. Table 2 presents the total innovation index by the SME's innovation status: 55 firms are highly innovative, 156 firms are somewhat innovative, and 767 firms are not innovative. The explanatory and control variables descriptive statistics are presented in Table 3.

In this section, we present the ordered logit regression output and discuss the results. Table 4 presents that access to funding, both internally and externally (i.e., credit or a loan from banks and an overdraft facility), as well as total finance, significantly impacts the innovation of firms. The effect of external finance is higher than that of internal finance on the innovation of SMEs in the Philippines. The findings support the outcomes of IFC, (2013) and Ayyagari et al. (2011) about the effect of financial access on enterprises' innovative capacities, having credit or a loan from banks and availability of overdraft facility drive innovation in small and medium enterprises, Adegboye and Iweriebor (2018) found that the availability of bank financing is the most crucial positive factor affecting entire types of innovation between small and medium-sized firms in Nigeria, while Regasa et al. (2021) established a strong positive correlation between a firm's access to external financing and its innovative efforts in Ethiopia. The study by Kaur et al. (2021) demonstrates that external finance has a more significant influence on innovative activity than other financial sources in India. Further analysis shows that out-of-control variables female ownership is also significantly impact the innovation of firms, which means that SMEs with female owners are more innovative. R&D (Research and Development) significantly impacts the innovation of SMEs in the Philippines, meaning that firms with R&D expenditure were more innovative than those without. Table 4 shows that collateral requirement is insignificant with the innovation of SMEs in the Philippines.

Table 1: Industry-wise observations

Industry	No. observation	Percentage
Manufacturing	430	42.90%
Retail	156	15.56%
Service	416	41.54%
Total	1002	100%

Table 2: Innovation level percentages

Innovation Index	Innovation level	No. observation	Percentage
0	No innovation	767	78.18%
1	Low innovation	159	16.2%
2	High innovation	55	5.62%
Total	-	981	100%

Table 3: Explanatory and control variables descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Explanatory Variables					
Ext finance	908	.334	.472	0	1
Int finance	970	.872	.334	0	1
Total finance	962	.893	.309	0	1
Collateral req	219	.594	.492	0	1
Control Variables					
Main business city	1002	.059	.236	0	1
Firm size	1002	.255	.436	0	1
Govt ownership	999	.004	.063	0	1
Female ownership	970	.567	.496	0	1
Firm age	973	22.805	17.098	1	128
R&D	980	.14	.347	0	1
Sector	1002	1.986	.919	1	3

Source: Authors Calculation, Database: World Bank enterprise survey

Table 4: Regression Models (Dependent Variable-Innovation)

Variables	Model (1)	Model (2)	Model (3)	Model (4)
Explanatory variables				
Int finance	.572*(.297)			
Ext finance		.686***(.184)		
Tot Finance			.922*(.3673)	
Collateral Req				-.3477(.312)
Control Variables				
Main business city	.122(.340)	.203(.342)	.128(.340)	.577(.542)
Size	-.119(.200)	-.304(.215)	-.105(.200)	-.0631(.334)
Govt Ownership	-13.836 (1191.144)	-11.409 (410.718)	-14.060 (1352.394)	Ommited
Female-ownership	.547**(.174)	.550**(.181)	.556**(.175)	.362(.328)
Age	.0030(.005)	-.002(.005)	.0009(.005)	-.0133(.009)
R&D	1.568***(.201)	1.598***(.209)	1.557***(.202)	1.577***(.352)
Sector	-.0126(.093)	-.0410(.096)	-.018(.093)	.009(.169)
Observations	900	852	893	211
Log-likelihood	-551.03233	-512.78651	-543.06144	-164.01953
LRchi2	81.60	88.32	85.68	25.52
PseudoR2	0.0689	0.0793	0.0731	0.0722

Table 4 presents the coefficients of the below regression Models, Robust standard errors in parentheses *** p<.01, ** p<.05, * p<.1

$$I \text{ innovation} = \alpha + \beta_1 \text{IntFinance} + \beta_2 X + \epsilon_i \quad (1)$$

$$I \text{ innovation} = \alpha + \beta_1 \text{ExtFinance} + \beta_2 X + \epsilon_i \quad (2)$$

$$I \text{ innovation} = \alpha + \beta_1 \text{TotFinance} + \beta_2 X + \epsilon_i \quad (3)$$

$$I \text{ innovation} = \alpha + \beta_1 \text{CollReq} + \beta_2 X + \epsilon_i \quad (4)$$

The industry-wise results are presented in Table 6, which indicates that access to external finance significantly impacts SME's innovation in the Philippines only on Manufacturing and retail industries the impact is higher in manufacturing than retail industry, this result is supported by Kaur, et al. (2022) that access to external finance is strongly and positively correlated among manufacturing enterprises. One possible reason is that the retail industry encompasses static operations and offers limited opportunities for innovation compared to other industries. Retail companies are perceived as supplier-dominated entities that

prioritize the adoption of other's discoveries rather than engaging in their own innovation (DeJong and Vermeulen, 2006). The impact of access to external finance on the innovation of SMEs is insignificant in the service industry. This result contradicts Efthyvoulou and Vahter's (2016) study, which demonstrates that the rapidly growing service industry in India easily secures financing. Kaur et al. (2022) study indicates that enterprises having access to external financial resources exhibit greater innovation compared to their counterparts in the service industry. The results for control variables indicate that the main business city and R&D expenditure effects are significant for the innovation of SMEs with the availability of external financing in the manufacturing industry. For the service sector female ownership and R&D expenditure effect is significant on innovation.

The ordered logistic regression results indicate that access to internal finance effect is insignificant on the innovation of SMEs in all, manufacturing, service and retail industries as shown in Table 5, This contradicts studies (Donaldson1962; Myers 1984; Paleari and Giudici 2000) firm use internal financial sources first, and then external sources are used if necessary. Baker et al. (2020) study shows that Indian companies choose internal financing above bank financing, government, and financial institution funding but for control Variables for those enterprises with access to internal finance in the manufacturing industry the main business city, female ownership and R&D expenditure impact innovation significantly, for entities having access to internal finance in retail industry only R&D effect is significant and entities with having access to internal finance in services industry only female ownership variable impact is significant on innovation as shown in Table 5.

The ordered logistic regression results indicate that access to total finance has an insignificant impact on SME innovation in the Philippines. The result is presented in Table 7. For control variables, the main business city and R&D in the manufacturing industry have a significant impact on the innovation of SMEs. In the retail industry, only the R&D expenditure effect is significant on innovation. In the service industry, female ownership and research and development expenditure impact the innovation of SMEs.

The results indicate that access to external financing substantially drives innovation in small and medium-sized enterprises, especially within the manufacturing and retail sectors, although

its effect is insignificant for service industries. This supports the findings of Ayyagari et al. (2011) and Adegboye and Iweriebor (2018), while diverging from the conclusions of Efthymoulou and Vahter (2016) regarding the service sector. The manufacturing sector derives the greatest advantage, as supported by Kaur et al. (2022), due to its capital-intensive nature and the need for innovation. Internal finance exhibits an insignificant effect across all sectors, contradicting pecking order theories (Donaldson, 1962; Myers, 1984), however, the overall effect of total finance remains limited, highlighting the significance of the source over the volume of finance. Control variables indicate that female ownership and R&D investment substantially boost innovation, with female-led SMEs outperforming in services and R&D fostering innovation across all sectors. Location in a main business city boosts manufacturing innovation. The findings suggest that governments should enhance external financing for SMEs, promote R&D investment, and support female entrepreneurship to effectively promote innovation.

Table 5: Industry-Wise Outcomes (Dependent Variable-Innovation)

Variables	Model (5)	Model (6)	Model (7)
Explanatory variables			
<i>Int finance</i>	.707(.564)	.321(.558)	.730(.468)
Control Variables			
<i>Main Business city</i>	1.047*(.492)	-.480(1.122)	-.655(.577)
<i>Size</i>	-.297(.275)	-.536(.684)	.384(.331)
<i>Govt Ownership</i>	-11.858(493.788)	Omitted	-11.502(654.362)
<i>Female-ownership</i>	.525*(.259)	.545(.4766813)	.548*(.279)
<i>Age</i>	.008(.007)	.003(.013)	-.0024(.008)
<i>R&D</i>	1.654***(.291)	1.654**(.680)	1.571(.320)
Observations	398	134	368
Log-likelihood	-244.05301	-81.17799	-218.27982
LRchi2	47.88	9.08	34.87
PseudoR2	0.0893	0.0529	0.0740

Table 5 presents the Industry-wise outcomes from the Model(5) to (7). Robust standard errors in parentheses *** p<.01, ** p<.05, * p<.1

Table 6: Industry-Based Results (Dependent Variable-Innovation)

Variables	Model (8)	Model (9)	Model (10)
Explanatory variables			
<i>Ext finance</i>	.735**(.269)	1.247*(.522)	.550(.303)

Control Variables			
<i>Main Business city</i>	1.042*(.509)	-.425(1.133)	-.347(.536)
<i>Size</i>	-.461(.294)	-1.580(.902)	.259(.354)
<i>Govt Ownership</i>	-13.772(1411.458)	Omitted	-10.865(581.423)
<i>Female-ownership</i>	.464(.268)	.805(.512)	.621*(.294)
<i>Age</i>	.004(.008)	-.008(.0149)	-.007(.009)
<i>R&D</i>	1.760***(.304)	1.069(.782)	1.624***(.326)
Observations	382	125	345
Log-likelihood	-230.7107	-73.105407	-201.0728
LRchi2	50.98	12.48	36.50
PseudoR2	0.0995	0.0786	0.0832

Table 6 presents the industry-based results from the Model (8) to (10). Robust standard errors in parentheses *** p<.01, ** p<.05, * p<.1

Table 5: Industry-Wise Outcome (Dependent Variable-Innovation)

Variables	Model (11)	Model (12)	Model (13)
Explanatory-Variables			
<i>Tot finance</i>	1.68(1.032)	.850(.665)	.787(.510)
Control-Variables			
<i>Main Business city</i>	1.000*(.492)	-.560(1.119)	-.616(.579)
<i>Size</i>	-.304(.275)	-.535(.689)	.460(.333)
<i>Govt Ownership</i>	-12.222(597.193)	Omitted	-12.596(1083.366)
<i>Female-ownership</i>	.506(.260)	.527(.479)	.581*(.283)
<i>Age</i>	.007(.007)	.002(.013)	-.007(.008)
<i>R&D</i>	1.608***(.291)	1.572*(.677)	1.593***(.322)
Observations	398	133	362
Log-likelihood	-242.71982	-80.235	-211.8378
LRchi2	50.54	10.41	36.48
PseudoR2	0.0943	0.0609	0.0793

Table 7 Presents the Industry-wise outcome from the Models (11-13). Robust standard errors in parentheses *** p<.01, ** p<.05, * p<.1

CONCLUSION

To investigate the impact of access to finance on firm innovation, this study analyzed cross-sectional data from a World Bank enterprise survey conducted from April 2023 to February 2024 on SMEs (small and medium-sized enterprises) in the Philippines. Access to finance refers to a firm's availability of internal, external, and total financial resources, as well as the need for collateral. Within the domain of firm innovation, an integrated innovation index has been developed by combining product innovation with process innovation. Using Ordered logit

regression with STATA software, we examined the correlation between access to finance and innovation among enterprises. We controlled for factors such as firm size, age, main business city, R&D spending, Government ownership, female ownership, and industry in which firms operate. Our analysis indicates that access to external finance is highly significant with the innovation of firms in the Philippines. Further analysis reveals that the availability of internal financing significantly affects the innovation of SMEs in the Philippines. Access to total sources of finance also impacts significantly the firms' innovation in the Philippines. Still, the collateral requirement does not impact SMEs' innovation in the Philippines.

The industry-wise results also indicate that access to external sources of finance has a significant influence on the innovation of entities in the manufacturing and retail industries in the Philippines. The impact is higher in the manufacturing sector than in the retail sector. Access to external finance on the innovation of SMEs is insignificant on the innovation of SMEs in the service industry. Access to internal-finance and total-finance is insignificant to the innovation of SMEs in retail, service, and manufacturing industries. Tax advantages should be provided to financial institutions that lend to financially constrained SMEs, thereby encouraging innovation. Furthermore, microfinance institutions can be encouraged and promoted to increase SMEs' access to credit. Cooperation of organizations ready to finance SMEs and start-ups could be supported.

In relation to the current economic and political development, Future studies could seek to further improve the empirical insights presented in this work by using data from a broader dataset that includes other countries from the Pacific region and East Asia. Additionally, in accordance with contemporary literature trends, future studies may explore the effect of financial system's and institutional environment, especially competition, on enterprise-level access to funding for innovation. Moreover, given the substantial magnitude of the informal section in the Pacific region and East Asia, it is crucial to examine the extent to which small and medium-sized firms (SMEs) depend on informal financial sources to enhance innovation and its implications for the growth. Future research may also investigate qualitative data about the funding attitudes of SMEs.

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