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Innovation Behavior of Small and Medium Enterprises in the Philippines

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Abstract

Due to the emergence of technology, there has been a rapid transformation of the way things are done as a result of digitalization innovation for small and medium enterprises (SMEs) in the Philippines to remain competitive. The purpose of this study is to present an overview of innovative behavior and perception among SMEs surveyed from the 2015 World Bank Enterprise Survey and from the 2015 Survey of Innovation and Activities of Establishments for the Philippines. Analysis of the innovation components such as product innovation, process innovation, and mapping of the main innovative activities was examined. The results showed that SMEs spend less on formal research and development and have less purchase or license of any patented or non-patented inventions. Moreover, SMEs provide less formal training to any of its employees specifically for the development and/or introduction of new or significantly improved product services and processes. Innovation showed a negative covariance which means that innovation and R&D expenditures tend to move in inverse directions. This situation should allow the government to come up with national policy interventions that support and encourage innovation especially for the SMEs.

Keywords: Innovation, Product, Process, Research and Development, SME, Philippines

1. Introduction

National prosperity is not merely a result of a country's natural endowments, labor pool, interest rates, and currency value, but also on the capability of its industries to innovate and further develop themselves. Innovation is a crucial engine of productivity and long-term prosperity, as well as a tool for addressing societal issues (OECD, 2015). While innovation is important to achieve national prosperity, small- and medium-sized enterprises (SMEs) also play a crucial role in the economic and social development of a country. In 2015, SMEs made up 96% of total enterprises and contributed more than 50-80% of total employment for each Asian country. Furthermore, SMEs accounted for a significant component of their GDP ranging from 30-53% in their respective countries while SME exports accounted for 19-31% of all commodities exported by Asian countries (ASEAN Secretariat, 2015).

In the Philippines, the micro, small, medium scale enterprises (MSMEs) are considered as drivers of job creation and economic growth. According to the Philippines Statistics Authority (PSA) during the years 2010-2019, 99.5-99.6% of all business in the country falls under the MSME category. These firms can have a huge potential opportunity for considerable increased market access and tremendous growth with the ASEAN's current initiative towards regional market integration. For the Philippines to become a major player in the ASEAN market and in the regional production networks, these smaller businesses must be capable of facing the challenges and opportunities the economic integration brings. Limited access to finance, information gaps, lack of technology and skills, and poor product quality and poor marketing were some of the huge challenges that hampers the advantage of the SMEs to compete internationally and to market their products abroad (Aldaba & Aldaba, 2012).

To deliver to its international commitment in a highly competitive economic region and to align its goals to the ASEAN Strategic Action Plan for MSME Development 2016-2025 and to the ASEAN Economic Community (AEC) Blueprint through the ASEAN Common Market and the APEC partnership, the Philippines formulated the Micro, Small and Medium Enterprise (MSME) Development Plan 2017-2022 with the vision to be more globally competitive - regionally integrated, resilient, sustainable, and innovative. The MSME Development Plan 2017-2022 has three focus areas with corresponding themes of emphasis. First, business environment, with emphasis on improving the business regulatory requirements and procedures as well as maximizing access to finance. Second, business capacity, with the aim of strengthening human capital development and improving innovation and technological competitiveness of MSMEs to transform and create new business models and enterprises. Lastly, business opportunities whose aim is broadening access to markets (Department of Trade and Industry, 2018).

Innovation has always been regarded as the key to business growth and development. In this data age, there has been a rapid transformation of the way things are done as a result of innovation. Additionally, the unexpected occurrence of the COVID-19 pandemic late 2019 and virtually the whole year of 2020 has been a pronounced challenge to strive and continue to stay competitive despite volatile demand and supply.

Prior to the pandemic, the Philippine government has provided various financial incentives such as income tax holidays, tax deductions, duty-free importation, or value-added tax exemptions for raw materials and other capital inputs to encourage and foster innovation among SMEs (Albert, Serafica, Quimba, Vizmanos, & Bairan, 2018). In addition to financial incentives, the Department of Trade and Industry in partnership with the Philippine Center for Entrepreneurship (PCE) and Philippine Trade Training Center (PTTC) has provided training and seminars for MSEs to expand the country's trade and industry (Department of Trade and Industry, n.d.).

Despite these efforts, innovation among SMEs in the Philippine landscape remains to be low as innovation policies have not yet been fully integrated. According to the results of the 2015 Survey of Innovation Activities (SIA) conducted by the Philippine Institute for Development Studies (PIDS), only one out of every thirty (3.1%) firms reported some public support for their innovations, with the rate being higher among small and large firms than micro and medium ones. Furthermore, only two out of every five (18.4%) firms were aware of any government innovation policy or intervention (Albert, Quimba, Serafica, Llanto, Vizmanos, & Bairan, 2017).

Based on the global innovation surveys conducted by the Boston Consulting Group (2021), the top 10 most innovative companies were Apple, Alphabet, Amazon, Microsoft, Tesla, Samsung, IBM, Huawei, Sony, and Pfizer. These results were based on four variables namely: global "mindshare," industry peer review, industry disruption, and value creation. Out of these ten globally innovative companies, six belong to the technology industry while seven are headquartered in the United States.

The global innovation survey showed that most of the innovative companies are located in developed economies which implies that rich countries tend to develop product and technological innovations as compared to developing economies. According to a report by Cirera, Mason, de Nicola, Kuriakose, Mare, and Tran (2021) entitled "Innovation Imperative for Developing East Asia," most of the developing countries in East Asia, including the Philippines, have underperformed in terms of adopting new technologies and discovering new ones due to lack of information, company capacity, employee skills, and government support. In order to spur innovation in the region,

the World Bank has recommended country policymakers to reorient innovation policy objectives, strengthen key complementary factors for innovation, and reform innovation institutions and agencies to strengthen their capacity.

Although the Philippines performed well in innovating in terms of information and communication technology services exports due to its global reach in business process outsourcing, government support for research and development as well as innovation has been limited due to its focus on encouraging SMEs to innovate. Additionally, only a small percentage of businesses in the Philippines, Cambodia, and Malaysia have invested and engaged in R&D, and even the most intensive still fell short of Israel's standards. According to Rivera (2021), it is imperative to invest in research and development, either academic or applied research, to aid human resources and economic systems to adapt to the ever-changing demands of society as well as to the Fourth Industrial Revolution.

The purpose of the study is to gain understanding of the experiences and perceptions of SMEs in terms of innovation. Analysis of the innovation components such as product innovation, process innovation, and mapping of the main innovative activities was examined. According to the Oslo Manual (2005), the definition of product and process innovation are as follows:

- a) Product Innovation: A good or service that is new or significantly improved. This includes significant improvements in technical specifications, components and materials, software in the product, user friendliness or other functional characteristics.
- b) Process Innovation: A new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. The intention of this innovation is to decrease unit costs or increase quality of production.

An innovative firm is when it is able to introduce new or substantially improved goods or services, including processes or methods. In the questionnaire used by the World Bank, the following terms were defined:

- a) "Main new" means the establishment introduced new goods or services, including processes or methods, but not necessarily new to the market.
- b) "Significantly improved" means the establishment introduced substantially improved goods or services, including processes or methods.

These "main new" or "significantly improved" products or services represent the largest proportion of the firms' sales in value during the fiscal year. Additionally, another key indicator of an innovating firm is its spending on formal research and development activities, either in-house or contracted with other companies, excluding market research surveys.

2. Method

In order to describe the different ways Philippine SMEs are innovating, survey data collected by the World Bank for the 2015 Enterprise Survey for the Philippines was used. Business owners and top managers in 1,335 firms were interviewed from November 2014 to May 2016 where 905 were SMEs (5-99 employees). Most firms had January 2014 to December 2014 as their last complete fiscal year. Hence, the data collected covering the period "during the last 3 years" may refer to data as early as January 2014 depending on the survey period indicated, starting month of the last completed fiscal year.

The firms covered in the survey are limited to those firms in the manufacturing and services industries: food and beverages, garments, chemicals, rubber and plastics, fabricated metal, electronic products, other manufacturing, retail, and other services.

To supplement the results of the World Bank 2015 Enterprise Survey for the Philippines, the 2015 Survey of Innovation Activities of Establishments (SIAE) was used. There was a total of 891 establishments that participated in the survey coming from different industries such as food and manufacturing, information and communication technology, and business process outsourcing. Out of the 891 respondents, 471 are classified as SMEs.

Descriptive analysis was used to map the current innovation characteristics and activities of the SMEs. They provide simple summaries about the establishments such as frequencies, percentages, and averages. Moreover, a logistic regression was done to look into the key variables that provide greater likelihood for establishments to engage or perform evenly in terms of innovation in the context of research and development spending. Finally, in order to measure the relationship between innovation and research and development (R&D) expenditures, covariance was computed. A positive covariance indicates that two variables tend to move in the same direction while negative covariance means that two variables tend to move in inverse directions.

3. Results and Discussion

SMEs upgrading is manifested not only through the increase in workforce size but also in terms of qualitatively innovative changes. These innovative changes include product innovation or creating new products, process innovation or improving the process of creating products. Based on the analysis of Quimba and Rosellon (2019) using the 2015 SIAE, around a third of SMEs are product or process innovators and the majority of the innovations are mainly done in the establishment.

Among the key variables included in the logistic regression conducted, the size of the enterprise and its access to financial support or loans are the only significant factors that could influence SMEs to innovate. Therefore, it can be concluded that SMEs that are larger and have access to financial support or loans have greater likelihood of performing well in terms of innovation with R&D spending.

3.1 Product Innovation

Results of the study showed that one-third of the enterprises had introduced new or significantly improved products or services. More than half (56%) of these enterprises have new or significantly improved products or services that were also new for the establishment's main market. These main new or significantly improved their products or services also have completely new functions. Moreover, less than half (43%) of the main new or significantly improved products or services were cheaper to produce or offer. In terms of quality, the majority (94%) of the enterprises reported that the main new or significantly improved products or services were of better quality. SMEs have a higher average percentage of total sales (31%) that is represented by sales from the main new or significantly improved product or service while 21% only for large firms.

3.2 Process Innovation

In terms of process innovation, 31 percent of the enterprises are process innovators or have introduced any new or significantly improved methods of manufacturing products or offering services. Twenty percent of the enterprises have introduced new or significantly improved logistics, delivery or distribution methods for inputs, products or services. Moreover, 25 percent of the enterprises have introduced new or significantly improved supporting activities for their processes such as maintenance systems or operations for purchasing, accounting or computing. Eighty-two percent of the enterprises that have new or significantly improved processes were able to automate manual processes. While 63 percent which have new or significantly improved processes were able to introduce a new technology or method.

3.3 Innovation Activities

Out of the 905 SMEs that participated in the interview, 159 or about 17.57 percent, have spent their resources on research and development (R&D) activities amounting to approximately Php 336,626. In terms of providing formal training to any of its employees specifically for the development and/or introduction of new or significantly improved products or services and processes, 40 percent of the enterprises provided formal training.

Table 1: Participation of SMEs in Innovation Activities

Innovation Activities	SMEs	SMEs	%
	N	n	

Number of SMEs that have spent on formal research activities during the last three years excluding market research surveys	905	159	17.57
Number of SMEs that have provided formal training to any of its employees specifically for the development and/or introduction of new or significantly improved products or services and processes during the last three years	905	358	39.56
Number of SMEs that have purchased or licensed any patented or non-patented inventions, or other types of knowledge for the development of new or significantly improved products or services and processes during the last three years	905	62	6.85

Source: 2015 World Bank Enterprise Surveys for Philippines

3.4 Covariance Analysis

Covariance between product, process, organizational and marketing innovation and R&D expenditures. All kinds of innovations showed a negative covariance which means that innovation and R&D expenditures tend to move in inverse directions.

Table 2: Covariance

Innovation	Covariance
Product	-993,189,289
Process	-908,662,541
Overall	1,901,851,830

4. Conclusions and Policy Recommendations

Due to the need to remain competitive and survive, SMEs need to exert effort to innovate products or processes to provide improved products or services. Based on the results, SMEs were able to improve their total sales by introducing new or improved products or services to their market. As compared with large firms, they spend less on formal research and development (R&D) activities and have less purchase or license of any patented or non-patented inventions. Finally, they provide less formal training to any of its employees specifically for the development and/or introduction of new or significantly improved products or services and processes.

Business capacity is a key factor in innovation. Logistic regression showed that firm size, access to funding or credit line have a higher likelihood for a firm to innovate its product or service or process. Product, process, manufacturing and organizational innovation have negative covariance which means that innovation and R&D expenditures tend to move in inverse directions.

Government should come up with national policy interventions that support and encourage innovation especially for the small and medium enterprises (SMEs). Based on the Economic Research Institute for ASEAN and East Asia (2014), its ASEAN SME Policy Index in terms of the eight policy dimensions showed that Philippines barely average in the ASEAN in terms of policy and business environment for SMEs. These include spanning institutional framework, cheaper and faster start-up and better legislation and regulation for SMEs, access to information and supporting services, access to finance, technology and technology transfer, international market expansion, promotion of entrepreneurial education, and developing stronger, more effective representation for SMEs' interests.

In addition to implementing national policy interventions, the government should also create innovation hubs to spur innovation among enterprises in the Philippines. Similar to other states such as Barcelona, Paris, Buenos Aires, and New York, the government should put up multi-sector innovation hubs that span a range of business models, ownership structures, and physical layouts to build a motivating work environment where enterprises of

all sizes can learn from one another, make connections, gain new skills, and be encouraged to take their business to the next level. Through the creation of innovation hubs, the government will not only be able to attract innovators but also encourage start-ups or small enterprises to innovate.

Since access to credit has been identified as a key factor to influence firm's participation in innovate products and services, the government must intensify its program in this area. For existing government programs on SMEs specifically on financing SMEs, these must be evaluated in terms of scope and delivery with a view to improving and broaden support services for start-ups and especially for the most dynamic young enterprises. For instance, the SETUP program (Small Enterprise Technology Upgrading Program) launched by the Department of Science and Technology at the end 2018 is one government program supportive of the development of SMEs. This program was put up with the aim of providing funding assistance for adopting technology innovations, improving business operations, and boosting productivity and competitiveness. Furthermore, since the COVID-19 pandemic has had a significant impact on SMEs' financial situation, the government must encourage lenders to utilize more flexible policies when funding SMEs, such as low-interest loans and loan installments that consider the enterprise's financial situation.

Governments and policymakers should adopt more policies that involve money, advisory services, and training as part of their stimulus packages for SMEs. Governments should encourage non-governmental organizations (NGOs) to provide a variety of services to SMEs, including consultations, training, advice, assistance, and psychological support, to help SMEs cope with the problems posed by COVID-19.

The country must also strengthen the MSME Development Council of the Department of Trade and Industry (DTI) in its mandate to engage the government offices with vital contributions and to expand the private sector's role and participation. One of the priority areas of the ASEAN Strategic Action Plan for SME Development 2016-2025 is the integration of entrepreneurship values and skills in the educational system spanning all levels. The country's Department of Education can initiate the design of the K+12 curriculum to further develop human capital as well as instill entrepreneurship values for the young generation for them to be able to acquire entrepreneurship skills that can be put into practice.

The government may also look into incentive programs for innovators in the form of tax breaks, business promotion opportunities, and a recognition or awards system to attract and retain more local innovators in the country. In conjunction with the occurrence of the COVID-19 pandemic, it is recommended to continue the assistance program even after the pandemic has passed. This is to continue easing the burden brought by the unforeseen situation, and further assist these enterprises to get back on their feet.

With the ASEAN's movement toward a single market and production base under the ASEAN Economic Community (AEC), the country's SMEs should be able to level up its competition and standards with enough government efforts and initiatives to continue to create a culture and mindset of innovation, and secure an environment enabling all the SMEs to help them face the challenges and opportunities that lie ahead as they enter an increasingly global and competitive market.

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