INNOVATIVE BEHAVIOR OF LOCAL FIRMS

RESULTS OF THE 2009 PILOT SURVEY OF INNOVATION ACTIVITIES CONDUCTED UNDER THE DOST-IDRC PROJECT: TOWARDS AN INNOVATION-LED DEVELOPMENT PATH IN THE PHILIPPINES

Department of Science and Technology

IDRC International Development Research Centre

CRDI Centre de recherches pour le développement international

PIDS Philippine Institute for Development Studies

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Foreword

In this fast-paced and seamless world, the DOST began to advance the notion of "a smarter way of doing things" as a measure to leverage our standing in the global arena. As the lead agency tasked to nurture science, technology and innovation that will reap socio-economic benefits for the Filipino people, the DOST strives to create a culture of innovation by directly and regularly engaging our human resource in technology development and acquisition to calibrate with world-class standards.

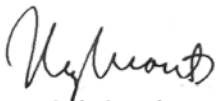
The promise of innovation is exhilarating because the possibilities are immense and breath-taking. At the firm level, innovations in products and processes increase productivity, create new markets and drive revenue growth. It cannot be overemphasized that innovation is seen as a key to increase aggregate productivity and a path to national competitiveness and exponential growth. Above all this, innovation is a key to deliver "world-class technology solutions" to the hands of every Filipino.

Towards this end, the innovation survey project had been implemented and was nearing completion when I took over as the DOST Secretary in 2010. The resulting information and insights are relevant inputs to policy-making and program design. It is my honour to present to you the "Results of the 2009 Innovation Survey Project" under the auspices of the International Development Research Centre (IDRC). Let me commend the forerunners of the innovation survey for initiating the project, especially the leadership of DOST Undersecretary Fortunato T. De La Peña and the support of the project management team. The wisdom of the Project Steering Committee members from the following agencies: the National Economic Development Authority (NEDA), Philippine Institute for Development Studies (PIDS), National Statistical and Coordination Board (NSCB), Bureau of Investments (BOI), University of the Philippines – College of Engineering, and the Ayala Foundation, Inc., have guided the project implementation. Let me also thank the valuable contribution of the Local Project Steering Committees in Davao City, Metro Cebu and Quezon City, as well as the DOST Regional Offices in NCR, Region VII and XI. Most especially, let me commend the participation of hardworking team from the National Statistics Office (NSO) and Philippine Economic Zone Authority (PEZA) and the diligent consultants from the PIDS, University of South Eastern Philippines (USEP), and Hydronet Consultants, Inc.

The results of the innovation survey deserve great attention because to some extent it reflects the views, attitude and relationship of the selected industries towards the academe and the government. It is important to know the general state of innovation, more importantly, the sentiments and issues that surround the situation. This initiative does not end in knowing, but in moving all the stakeholders that we could all work and

contribute to make this country conducive for doing business, research and development, and collaborative engagement with the industry. The improving stance of the country in various international rankings raises the bar for the Philippines. We should all seize this momentous break; prove that we deserve it, and soar high through innovation. Challenges would surely get in the way, but with good governance, determination, collaboration, and strategy, we are one step closer to our goals.

Mabuhay tayong lahat! Paunlarin natin ang Pilipinas.



MARIO G. MONTEJO
DOST Secretary

Foreword

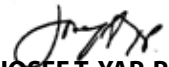
"Creativity is thinking up new things. Innovation is doing new things."—Theodore Levitt

Innovativeness is an innate human trait that has spurred human progress. A derivative of human intellect and creativity, this ability to turn ideas into concrete products and path-breaking processes has enabled mankind to survive and thrive. In today's rapid changing and ever uncertain world, the significance of innovation as a driver of prosperity and development is ever more perceptible. Recent scientific and technological innovations have changed the social, economic and political landscape, altering even the world's development trajectory hopefully toward a more inclusive and sustainable future.

As part of the Philippines' national competitiveness strategy dubbed as "Filipinnovation", this volume takes a critical look at the current level of innovativeness by industrial firms in the country. It aims to provide a framework for such strategy by identifying critical policy issues and areas for improvement. While it is true that the country lags behind more developed countries in terms of innovation activities, results from this survey show that majority of our industrial firms are engaged in innovation activities primarily to improve their market competitiveness and prospects for growth and profitability.

Yet, despite this positive finding, challenges remain. As this report will show, there is a paucity of collaboration among industry, government, academia, and research institutions. Encouraging more innovation activities entails linking knowledge generators and enterprise developers. Innovation, after all, is a process by which knowledge is transformed into goods and services. In addition, an innovation and competitiveness policy like the Filipinnovation strategy cannot be viable and successful unless other related issues are concurrently addressed. These include the promotion of a research and development culture in academic institutions and the improvement of mechanisms for knowledge transfer and technical diffusion among firms and other stakeholders.

Beyond competitiveness and profitability, the end goal of instituting an innovation system is to achieve inclusive and sustained economic growth. Some of our neighbors in the Asia-Pacific region have successfully implemented their own national innovation and competitiveness policies and are now reaping their fruits through reduced poverty and higher standards of living. It is high time that we, too, put our acts together. We need to challenge ourselves to think and do new things in order to latch on to a higher development trajectory. In other words, we should learn to be innovative.



JOSEF T. YAP, Ph.D.
PIDS President

Preface

The term innovation is associated with improvement and novelty. Traditionally, innovation has always been at the heart of human and economic development. There is growing recognition that innovation is a major driver of economic output, productivity, and competitiveness. Innovation, however, is the dissemination of new knowledge in a given context, not necessarily new knowledge in absolute terms.

While rich countries work on the technology and information frontier, developing countries like the Philippines have opportunities for tapping into knowledge and technology available in the world, but for dissemination in their respective context. This will entail initiating new activities, notably in services (which is currently the biggest source of economic activity and employment in the country), as well as in improving agriculture and industrial productivity. While the private sector is clearly the main driver of innovation, as it responds to the needs of its clients, the government has a key role in laying the necessary climate for innovation which includes conditions in the economy, governance, education, and infrastructure.

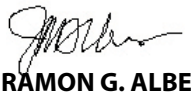
Today, more than ever, in the midst of a serious economic crisis in the world, innovation can be a means of recreating economic activities. In addition, major challenges in attaining food security and adapting to climate change require vast changes in patterns of production and consumption. The digital age has also had a profound transformation in our ways of doing things in the world.

Putting in place the foundations of innovation policy on a rather large scale is no easy task given the scarce resources, including requisite human resources, the competing aims of public policy, and institutional challenges in the country. Innovation policy should go beyond science and technology policy, with which it is usually merged; it should be a component of an overall strategy of continually transforming the country into a knowledge-based economy through concerted action in many different public policy arenas—including basic and higher education, trade and investment, and finance. Setting a pragmatic innovation agenda and adopting policy initiatives to foster innovation will first require stakeholders to have a firm understanding about current innovation practices in different types of firms in the country.

This volume examines results of the 2009 Survey of Innovation Activities (SIA) conducted by the Department of Science and Technology (DOST) with the National Statistics Office (NSO). Conduct of the SIA was supported by the International Development Research Centre (IDRC) of Canada. The Philippine Institute for Development Studies (PIDS),

on the other hand, was tasked to examine the results of the 2009 SIA, in the hope of providing empirical basis for designing innovation policies as well as of helping mainstream an innovation-system approach in national policymaking. The PIDS was also tasked to come up with survey results pertaining to two study sites, viz., Quezon City and PEZA. For Cebu and Davao, the DOST regional offices selected a local consultant from a research/academic institution to examine the survey results in their study site as well as to advocate for innovation issues within their locality.

The DOST and its partners for the conduct and analysis of the SIA wish to express their thanks to all survey participants and to the local steering committees in Quezon City, Cebu, and Davao headed by their respective local chief executives. Thanks also go to the management of the Philippine Economic Zone Authority (PEZA) for encouraging sampled firms in PEZA to fully cooperate in the conduct of the SIA.



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Introduction

The term innovation is associated with improvement and novelty. Traditionally, it was equated with inventions; thus, the measurement of innovation involved the estimation of scientific or technological outputs through expenditures in research and development (R&D). The most commonly used indicators to monitor the resources devoted to R&D are: (a) gross domestic expenditure on R&D; and (b) R&D intensity as measured by the percentage of gross domestic product (GDP) devoted to R&D.

Table 1 presents these two indicators for the Philippines and its neighbors in Southeast Asia. As gleaned from the table, research intensity is low in the Philippines, with investment in R&D declining from 0.15 percent in 2002 to 0.12 percent in 2005. Singapore is the most research intensive as shown in its almost doubled ratio between 1996 and 2007, from 1.37 to 2.61. In terms of R&D expenditures per capita, the Philippines and Indonesia registered the lowest figures, with the expenditures in the Philippines declining from PPP$4 in 2002 to PPP$3 in 2005.

Expenditure data on R&D from the private sector are sourced in the Philippines from a Research and Development Survey on Expenditures and Personnel conducted by the National Statistics Office (NSO) for the Department of Science and Technology (DOST). The R&D survey is conducted as a rider to the NSO's Annual Survey of Philippine Business and Industry (ASPBI). Information from this survey complements expenditure information on R&D generated from a similar survey of government and higher education institutions.

Table 1. R&D as percentage of GDP and R&D per capita in selected ASEAN countries

Gross Domestic Expenditure on R&D as a Percentage of GDP												
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Philippines	...	...	...	...	...	...	0.15	0.14	...	0.12	...	...
Singapore	1.37	1.48	1.81	1.90	1.88	2.11	2.15	2.11	2.20	2.30	2.31	2.61
Thailand	0.12	0.10	...	0.26	0.25	0.26	0.24	0.26	0.26	0.23	0.25	...
Malaysia	0.22	...	0.40	...	0.49	...	0.69	...	0.60	...	0.64	...
Indonesia	...	...	...	...	0.07	0.05	...	...	...	0.05	...	...
Gross Domestic Expenditure on R&D per capita (in PPP$)												
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Philippines	...	...	...	...	...	...	4	4	...	3	...	...
Singapore	384	440	520	578	632	696	747	764	882	996	1104	1342
Thailand	6	5	...	12	12	13	13	15	16	16	18	...
Malaysia	18	...	32	...	45	...	67	...	66	...	80	...
Indonesia	...	...	...	...	2	1	...	...	...	2	...	...

Source: UNESCO Institute for Statistics

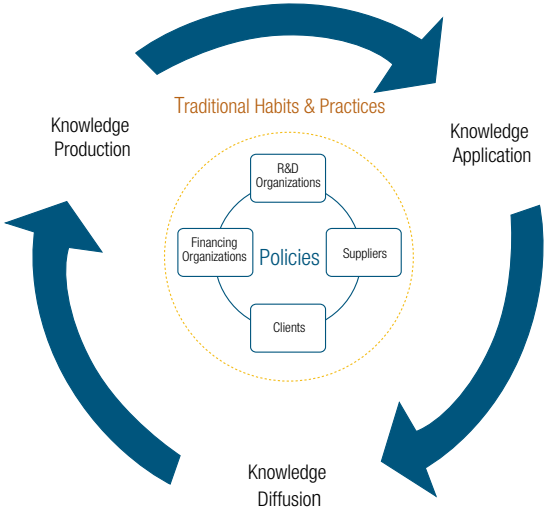
The current view of innovation is not confined to being a global first (i.e., the introduction or application of technology for the first time in the world) but rather includes the introduction or application of technology for the first time in a new environment (OECD Secretariat 2007). This process is commonly called as adoption, absorption, and adaptation of new or significantly improved products (goods and services), production processes, marketing, or organizational methods in a firm. That is, innovation is viewed as "the application of (new) knowledge in production" (Nelson and Winter 1982; Lundvall 1988; Freeman 1995; Mytelka and Smith 2001). This knowledge might be acquired through learning, research, or experience. Until such new knowledge is applied in the production of goods or services, however, it cannot be considered as innovation.

Measuring innovation requires a framework, explicit or not, which makes it possible to organize and understand the data collected. It presupposes ideas about the nature of innovation, its essential features, and what is important and what is not. An innovation system involves pioneers in the application of new knowledge, whether individuals or R&D organizations, and may be followed by others. When this new knowledge is diffused well, the traditional habits and practices may be revised, influenced, or replaced. Innovative companies will typically be working on the new knowledge and emerging technology that will eventually replace current technologies. The whole process of innovation thus starts from the origination of the new knowledge to its transformation into something useful, to its implementation, and then to its diffusion on the entire production system, with the policy environment at the core of an innovation system (Figure 1).

More concisely, innovation can be viewed as "good ideas put to work." Knowledge and information flows are at the core of an innovation system. These flows are multidirectional. In an innovation system, four major categories of factors relate to innovation, namely: (a) the R&D institutions; (b) "firms;" (c) processes involved in the transfer and absorption of technology, knowledge, and skills; and (d) the surrounding context and environment of institutions, legal arrangements, macroeconomic settings, and other conditions that exist regardless of whether or not innovation takes place.

In an innovation system, firms and other economic agents, with institutions and policies that influence their innovative behavior and performance, bring new products, new processes, and new forms of organization into economic use. Innovation may either be supply pushed (based on new technological possibilities) or demand led (based on client needs and market requirements). Innovation results, however, may not only depend on demand- and supply-side factors but also on the processes that link many different "actors" together in an innovation system. It is thus crucial to understand the dynamics in organizations and economies that influence innovative behavior and performances of the "actors" in order to create a climate that is conducive to innovative behavior.

Figure 1. Innovation System



Davao City Innovation Forum held on July 12, 2011 in Davao City. (Standing) DOST Region XI Dir. Anthony C. Sales, DOST Usec. Fortunato T. Dela Peña, and PIDS Senior Research Fellow Dr. Ramon Jose G. Albert.

In many areas of life, something better must be substantially different to be considered innovative. From an economics standpoint, an innovation must increase value, whether customer or producer value. Innovations comprise both radical changes and many small improvements in (a) product design and quality; (b) production processes or the way in which production is organized; and (c) management, marketing, or maintenance routines that collectively modify products and processes, bring costs down, increase efficiency, enhance welfare, and ensure environmental sustainability. Innovation activities thus go beyond R&D; they involve the implementation of new or significantly improved product or process (technological innovation), or new marketing or organizational methods (nontechnological innovation).

As Gonzales and Yap (2011) point out, "the development of new technology and new products (and new knowledge) is an internally driven process that is endogenous to every economy." That is, when firms innovate, these innovations become successful when they involve lessening costs of production, responding to client demands, improving product quality, and upgrading into higher value-added production. Such innovations undoubtedly yield increased output and productivity for firms. In the aggregate, innovation is a major driver of the economy, especially when innovations result in new product categories or in increasing productivity. In view of this, there has been much interest in studying determinants of innovation as well as the bottlenecks to innovation (Macasaquit 2008; Llanto 2010; Gonzales and Yap 2011; Macasaquit 2011). A proper policy environment can clearly stimulate innovation and result in increased economic growth which, in turn, can reinforce the climate for innovation.

Recognizing that innovation is a major driver of economic output, productivity, and competitiveness, a number of representatives of government, academe, and industry formulated a national innovation strategy called "FILIPINNOVATION." This national strategy involves developing partnerships toward making the Philippines competitive with its Asian neighbors and at par with innovation leaders in the region (Villafania 2007; Velasco 2009). The goals of this strategy include: (a) strengthening human capital; (b) supporting business incubation and acceleration; (c) regenerating the innovation environment; and (d) upgrading the Filipino mindset (to be open to new ideas). But while there is much interest in promoting a climate conducive to innovation since innovation promotes economic growth and competitiveness, there is, however, scant information regarding innovation activities in the Philippines.

Previous studies have pointed to the meager expenditures on R&D activities (Cororaton et al. 1998; Macapanpan 1999; Patalinghug 2003) and the lack of innovation among small and medium enterprises (SMEs), especially due to the latter's lack of financial capital (Llanto 2010) required for engaging in innovation.

About two decades ago, Macapanpan (1999) looked into the innovative activities of Filipino firms engaged in food processing, textile and garments, metals and metal fabrication, chemicals, and electronics and electrical goods. Among the firms that responded, about two-thirds claimed to have conducted some form of innovation activities while one-half reported to have high-technology types of innovation activities. Many of these innovators were large firms, considered as industry leaders, with large assets. A majority of these firms also suggested that government standards, regulations, and environmen-

Metro Cebu Innovation Forum on July 15, 2011 in Cebu City. Usec. Fortunato T. Dela Peña explains the background study.

tal concerns were not important drivers for innovation activities. In addition, government research institutions were rated poorly as sources of innovation ideas, and were also perceived to be lagging even in monitoring technology developments. Responding firms identified financial constraints such as risk and rate of return, lack of financing and taxation as barriers to innovation. They also mentioned that Philippine schools do not provide the requisite technical and technological skills and knowledge to meet demands. Firms that practice innovation, however, employ only college graduates or lower to conduct their innovation activities.

Macasaquit (2008; 2011), meanwhile, discusses the results of a survey of 205 manufacturing establishments across the CALABARZON (Cavite, Laguna, Batangas, Rizal, and Quezon) area conducted in 2008 by the NSO for the Philippine Institute for Development Studies (PIDS) under the auspices of the Economic Research Institute for ASEAN and East Asia (ERIA). Macasaquit highlighted the weak linkages between industries and R&D-generating institutions such as universities, technology resource centers, government agencies, and the private institutions. She pointed out that although the institutional structures exist and the legal and policy frameworks are in place, the process of diffusion, technology transfer, and adaptation remains wanting. Why this may be happening warrants investigation.

In recognition of the need for innovation data that will provide indicators for benchmarking national performance as well as describe innovation and its relation to economic growth, the DOST planned for the conduct of the 2009 Survey of Innovation Activities (SIA), a systems-oriented and policy-relevant survey on innovation. The 2009 SIA, conducted by the NSO in collaboration with the DOST and with funding support from the International Development Research Centre (IDRC), was aimed at generating information on innovative behavior of establishments in selected areas and industries in the Philippines. In particular, the objectives of the SIA are: (a) to describe the types of innovations engaged in by firms; (b) to provide information regarding the environments in which these innovative activities are conducted; and (c) to determine the factors that drive their innovation performance, the barriers to innovation, and the effects of innovation on the firms.

The major data items collected from the SIA include: (1) type of products/process innovation; (2) expenditures by type of innovation activity; (3) sources of information and cooperation for innovation activity; (4) effects of innovation activity; (5) factors hampering innovation activity; (6) intellectual property rights for goods; (7) type of organizational/marketing/knowledge management innovation introduced; (8) response to government innovation-related policies; and (9) general information about the establishments, including total turnover, employment by sex, capital participation.

Sampling scheme

The SIA involved the targeting of 500 establishments to be surveyed across four study areas: Quezon City, Metro Cebu (Cebu City, Lapu-lapu City, and Mandaue City), Davao City, and the Philippine Economic Zone Authority (PEZA) areas in Cavite and Laguna. The choice of these study areas was purposive and meant to provide a semblance of a national picture, with the areas representing the nation's capital and a balance of Luzon, Visayas, and Mindanao. The survey covers three major industries: (a) food manufacturing; (b) electronics manufacturing; and (c) information and communication technology (ICT). The latter industry includes IT manufacturing, ICT trade, software publishing, telecommunications services, hardware consultancy, other software and consultancy supply, other computer-related activities, data processing, hosting and related activities, database activities and online distribution of electronic content, repair of computers and communication equipment, publishing activities, animated film and cartoons production, motion picture, video and television program production, sound recording and music publishing activities, call center, and medical transcription activities.

The sampling frame covered 1,824 establishments across the three major industries in the four study areas. Target establishments were stratified into food and nonfood industry clusters with a 40:60 distribution. From the 500 targeted establishments, 474 responded, of which the distribution by major sector and area is provided in Table 2.

Table 2. Distribution of sample establishments by major sector

Area	Major Sector			
	Food Manufacturing	Electronics Manufacturing	IT	All Sectors
Cebu	71	6	52	129
Davao	35	0	10	45
Quezon City	75	6	82	163
PEZA	10	30	97	137
All areas	191	42	241	474

As in standard establishment surveys, target respondents for the SIA were the owners and managers of the sampled establishments. Reference period for the SIA was set at January 2009–June 2010. The survey was self administered.

Following best practices in measuring innovative behavior and activities, the SIA questionnaire was adapted from the European Union's Community Innovation Survey Version 4 with some refinements to consider the Philippine setting.

Pretesting of the SIA instrument was conducted to determine whether the questions were easily understood by respondents and examine if the question sequence is in order (to avoid confusion in the full conduct of the survey). Ten days after distributing the questionnaires, 13 successful pretested questionnaires were obtained (from 2 micro, 1 small, 3 medium, and 7 large establishments), 2 refusals were noted (1 food manufacturing establishment and 1 motion picture production establishment), and 3 questionnaires were still to be collected.

Training activities were conducted to ensure consistency in the collection of information from the respondent establishments and uniformity in applying the data quality checks in data editing. A total of 65 field personnel in the four study areas were provided training on staggered dates as shown in Table 3.

Table 3. Summary of NSO field personnel training

Study Area	Date	Venue	Number of Participants
Quezon City	21 June 2010	NCR-Regional Office, Manila	13
CALABARZON (Cavite and Laguna)	5 July 2010	Region IV-A Regional Office, Lipa City	10 (Cavite) ; 9 (Laguna); 3 (Regional Office)
Metro Cebu	17 July 2010	Region VII, Regional Office, Cebu City	18
Davao City	17 July 2010	Region XI, Regional Office, Davao City	12

The full sets of SIA questionnaire were distributed and collected from August to November 2010. The distribution of targeted samples was set to cover more of medium and large enterprises (80%) than small (10%) and micro (10%) establishments. By definition, micro establishments have employment size less than 10 while employment size for small, medium, and large establishments range from 10 to 99, 100 to 199, and 200 and above, respectively. Table 4 presents the distribution of responding establishments by size and by sector.

Table 4. Distribution of sample establishments by size and major sector

Size	Major Sector			
	Food Manufacturing	Electronics Manufacturing	IT	All Sectors
Micro	76 (39.8)	2 (4.8)	28 (11.6)	106 (22.4)
Small	62 (32.5)	6 (14.3)	39 (16.2)	107 (22.6)
Medium	23 (12.0)	15 (35.7)	42 (17.4)	80 (16.9)
Large	30 (15.7)	19 (45.2)	132 (54.8)	181 (38.2)
Total	191 (100.0)	42 (100.0)	241 (100.0)	474 (100.0)

Note: Column percentages in parentheses.

Establishments not responding received follow-up communications from the NSO field offices. Aside from nonresponses, there were also other problems encountered in the field operations such as closure of firms, particularly microsized ones, cases of "cannot be located" due to transfers outside of the survey area, outright refusal, and consolidated reporting. These problems led the NSO to further select 45 replacement establishments, with the following prioritization:

- Replacement would be located in the same city and engaged in the same industry stratum or employment size; and
- Replacement would be located in the same city, but engaged in another industry stratum or employment size.

Of the 500 establishments targeted for the SIA, 474 establishments provided valid responses (for an effective response rate of 94.8%). Effective response rate is 100 percent for Cebu and Davao, 97.5 percent for Cavite, 94.8 percent for Quezon City, and 80.0 percent for Laguna.

The accomplished questionnaires underwent manual editing and verification by NSO staff before data entry. Completeness and consistency checks were undertaken be-

fore tabulation (based on tabular plans developed from the questionnaire). Figures generated in this report were not weighted owing to the purposive nature of the survey. Data evaluation by the NSO was finalized in late December 2010 while submission of microdata files to the DOST was done by 25 January 2011.

Given its vast experience in the conduct of policy-oriented studies on innovation, the PIDS was tasked to assist the DOST in summarizing the results of the 2009 SIA, in the hope of providing empirical basis for designing innovation policies consistent with the Filipinnovation strategy as well as of helping mainstream an innovation-system approach in national policymaking.[1] The PIDS was also tasked to come up with the survey results pertaining to two sites, i.e., Quezon City and PEZA. For Cebu and Davao, the DOST Regional Offices selected a local consultant from a research/academic institution to analyze the survey results and advocate for innovation issues at the local sites. Local experts had writeshops for data familiarization and standardization of the design of survey tabulation formats and survey data analysis. Local steering committees were also convened in Quezon City, Cebu, and Davao, with the respective local chief executives as chair of these committees. For PEZA, the DOST requested PEZA management to encourage sampled firms in the zone to cooperate in the conduct of the survey. The coordination efforts were also meant to advocate for local interventions aimed at promoting innovation activities. Results of the survey were also presented before focus groups to obtain views regarding the survey toward improving the measurement of innovation in the future.

In order to monitor innovation activities in the country and measure the impact of innovation policies over time, the DOST is aiming to have the SIA institutionalized and conducted on a regular basis, as is currently done in some countries. Toward this end, the results of this pilot survey, including the questionnaire used, will have to undergo some review in order to ensure that innovation is measured well and consistently across time.

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[1] Note that the examination of the SIA data performed here has its limitations. The 474 sampled firms in the SIA do not cessarily represent the entire country since sample selection was based on a listing of the firms in the four study areas, with a goal of adequately representing the three major sectors across the study areas. As such, in one study area (Davao), very few firms (45) were interviewed (and none of them was in the electronics manufacturing sector). Consequently, the survey results may not strictly be considered baseline information for the innovation activities in the country. Nonetheless, the SIA data still provide useful insights on how the sampled firms view their innovative practices, on what determinants to innovation are as well as on the barriers and bottlenecks to innovation. An econometric model (see Table 12) was used to identify the important factors that drive innovation although some of the factors undoubtedly are endogenous. The typical way of addressing endogeneity through the use of instrument variables was employed, but there were simply too few instruments to consider. Further attempts to address this will have to await the conduct of a new survey.

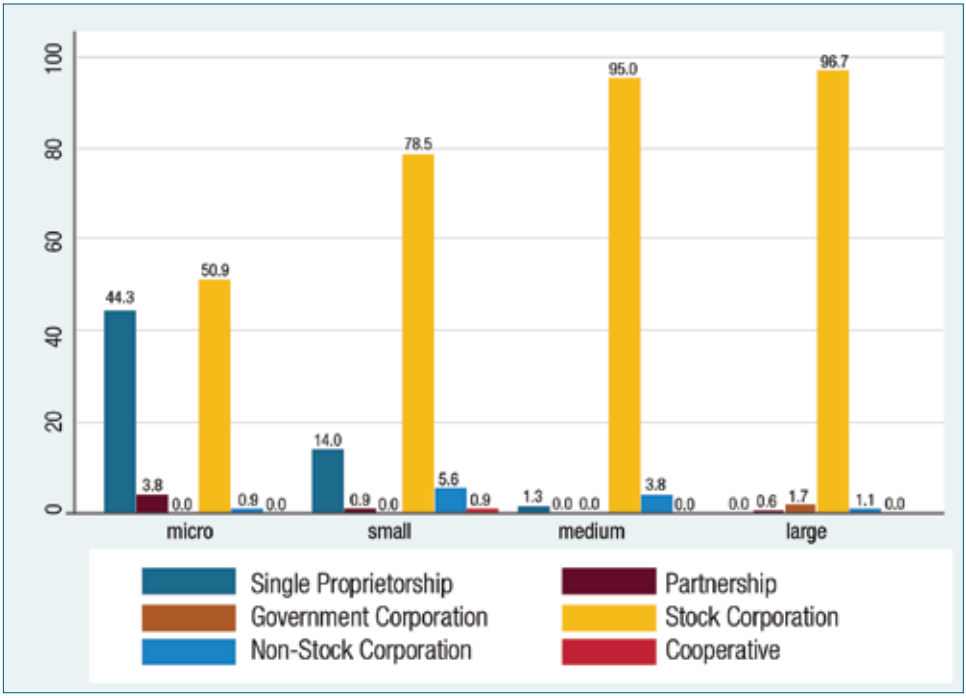
Profile of establishments

About four in five of the 474 responding establishments in the SIA or around 80 percent are stock corporations. Among micro (small) establishments with 9 or fewer employees (10–99 employees), slightly over 50 percent are stock corporations while single proprietorships rank next at around 45 percent. For medium and large firms that have employment size 100–199, and 200 and above, respectively, about 19 in 20 or roughly 95 percent are stock corporations as gleaned in Figure 2.

About two-thirds of the respondent establishments are single establishments (Figure 3), with the share varying by industry: food manufacturing (slightly over half), electronics (about four-fifths), and IT (close to three-fourths).

Geographic markets that responding establishments sold goods or services to from January 2009 up to the survey period vary by study area (Figure 4). Overall, about half of the surveyed firms have local markets, a third have national markets, nearly three in twenty have markets in other ASEAN countries, while a third have markets in countries outside the Association of Southeast Asian Nations (ASEAN). The latter region is the dominant market for establishments in the PEZA zone. Firms in PEZA had other ASEAN countries as the next dominant geographic market. In contrast to PEZA firms, Cebu, Davao, and Quezon City establishments largely have local or national markets. In particular, about three out of five establishments (60%) in Davao have local markets as compared to about half or 50 percent in Quezon City and 40 percent in Cebu.

Figure 2. Percentage distribution of sample establishments by size and legal organization



Note: Percentages across size of establishment.

Figure 3. Distribution of respondent establishments by economic organization

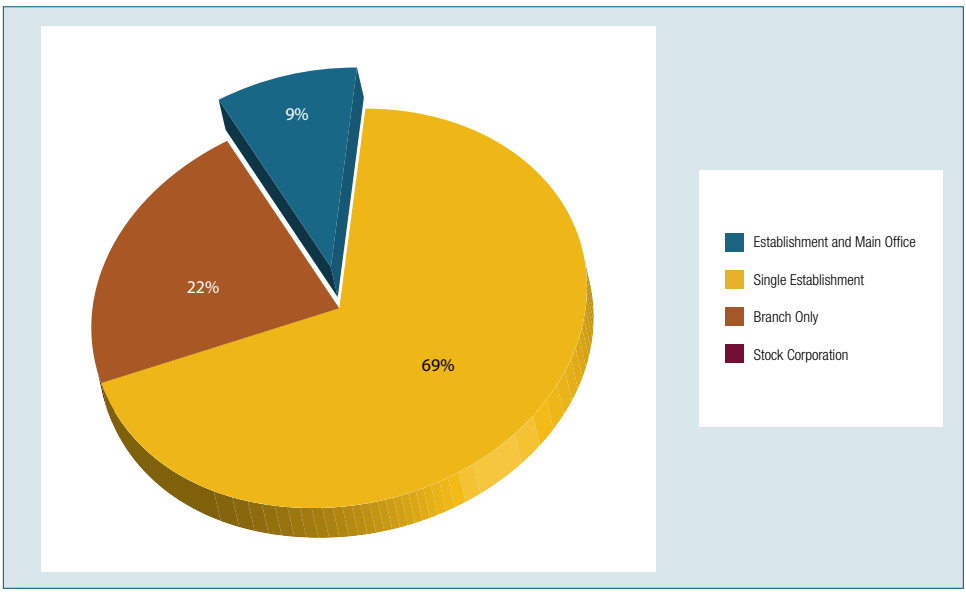
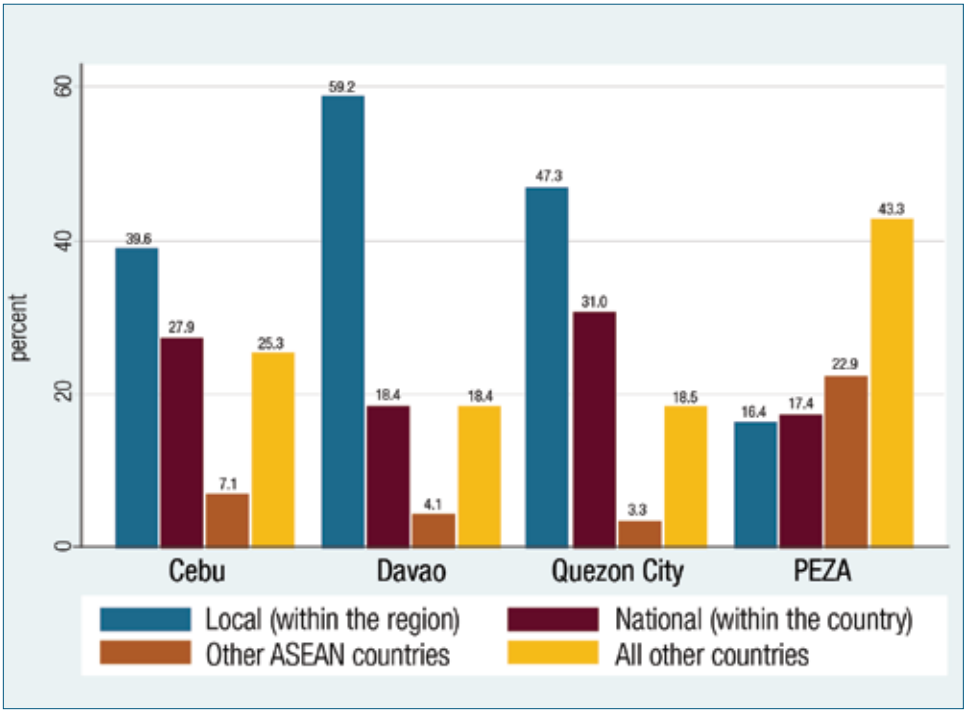


Figure 4. Percentage of establishments in each study area by geographic market



Meanwhile, as indicated in Table 5, the biggest concentration of capital/equity of the surveyed establishments is from local investors. In the PEZA zone, however, the average share of capital participation across the establishments among local investors is only about 25 percent, with Japanese investors having almost double the share of local investors. Among micro establishments, capital participation practically comes from local investors. Among small establishments, local investors still dominate capital participation. Across areas, however, the distribution varies. In Cebu, Filipinos have about 90 percent share of capital among small firms while Americans practically have the remaining 10 percent; in PEZA, the dominant nationalities for small firms are Filipinos (about two-thirds), Koreans (about a fourth), and Japanese (about a tenth); in Davao and Quezon City, practically all small firms are capitalized by local investors. Among medium establishments, the dominant investors are Filipinos, Japanese, and Americans, with the Japanese outranking the locals in PEZA, and the Americans having almost similar shares as the Japanese in Cebu. Among large firms, Filipinos and Japanese have the largest shares of capital overall, but when examining distributions across areas as well, the study notes that Americans have similar capital shares as Filipinos in Cebu; Filipinos have the majority shares in Davao although considerable shares from Americans, British, and Chinese may also be found there; Filipinos and Americans dominate the Quezon City shares; while in PEZA, Japanese have half the share and about 30 percent is equally shared by Filipinos and Koreans.

Table 5. Capital participation across nationality by size of establishment and area

Size	Nationality	Area				
		Cebu	Davao	Quezon City	PEZA	Total
Micro	Filipino	94.81	96.88	99.14		97.49
	American	1.25	0.00	0.00		0.38
	British	0.00	0.00	0.00		0.00
	Chinese	0.00	3.13	0.86		0.94
	German	0.00	0.00	0.00		0.00
	Japanese	0.00	0.00	0.00		0.00
	Korean	0.81	0.00	0.00		0.25
	Singaporean	0.00	0.00	0.00		0.00
	Taiwanese	0.00	0.00	0.00		0.00
	Others	3.13	0.00	0.00		0.94
Small	Filipino	83.03	95.79	96.05	64.20	88.16
	American	9.60	0.00	2.63	0.00	4.52
	British	0.00	2.11	0.00	0.00	0.37
	Chinese	0.00	0.00	1.32	0.00	0.47
	German	0.00	0.00	0.00	0.00	0.00
	Japanese	2.48	0.00	0.00	9.90	1.85
	Korean	0.00	2.11	0.00	25.90	2.79
	Singaporean	0.00	0.00	0.00	0.00	0.00
	Taiwanese	0.00	0.00	0.00	0.00	0.00
	Others	4.90	0.00	0.00	0.00	1.83
Medium	Filipino	41.00	100.00	85.21	34.34	54.08
	American	18.09	0.00	0.01	3.23	6.23
	British	2.31	0.00	0.00	0.00	0.64
	Chinese	2.27	0.00	0.00	1.61	1.25
	German	0.00	0.00	0.00	3.22	1.25
	Japanese	22.63	0.00	4.35	45.24	25.01
	Korean	0.00	0.00	4.35	9.61	4.98
	Singaporean	0.00	0.00	0.00	2.58	1.00
	Taiwanese	0.00	0.00	6.09	0.00	1.75
	Others	13.69	0.00	0.00	0.16	3.83
Large	Filipino	35.66	35.00	69.31	19.89	35.45
	American	35.92	20.00	16.72	3.22	13.38
	British	0.00	16.50	0.01	0.00	0.55
	Chinese	2.86	16.67	0.00	0.00	1.10
	German	1.71	1.67	2.27	1.98	1.99
	Japanese	11.43	6.83	0.00	49.45	28.67
	Korean	0.00	1.67	0.09	14.86	7.96
	Singaporean	0.00	1.67	1.59	0.97	0.96
	Taiwanese	2.86	0.00	4.52	4.33	3.95
	Others	9.56	0.00	5.49	5.29	5.99
All sizes	Filipino	65.93	88.44	88.40	26.39	64.37
	American	16.12	2.67	5.13	2.99	7.27
	British	0.39	3.09	0.00	0.00	0.40
	Chinese	1.16	3.33	0.61	0.36	0.95
	German	0.47	0.22	0.61	2.12	0.97
	Japanese	7.73	0.91	0.61	45.61	15.58
	Korean	0.20	1.11	0.64	14.48	4.57
	Singaporean	0.00	0.22	0.43	1.26	0.53
	Taiwanese	0.78	0.00	2.08	3.04	1.80
	Others	7.22	0.00	1.48	3.74	3.56

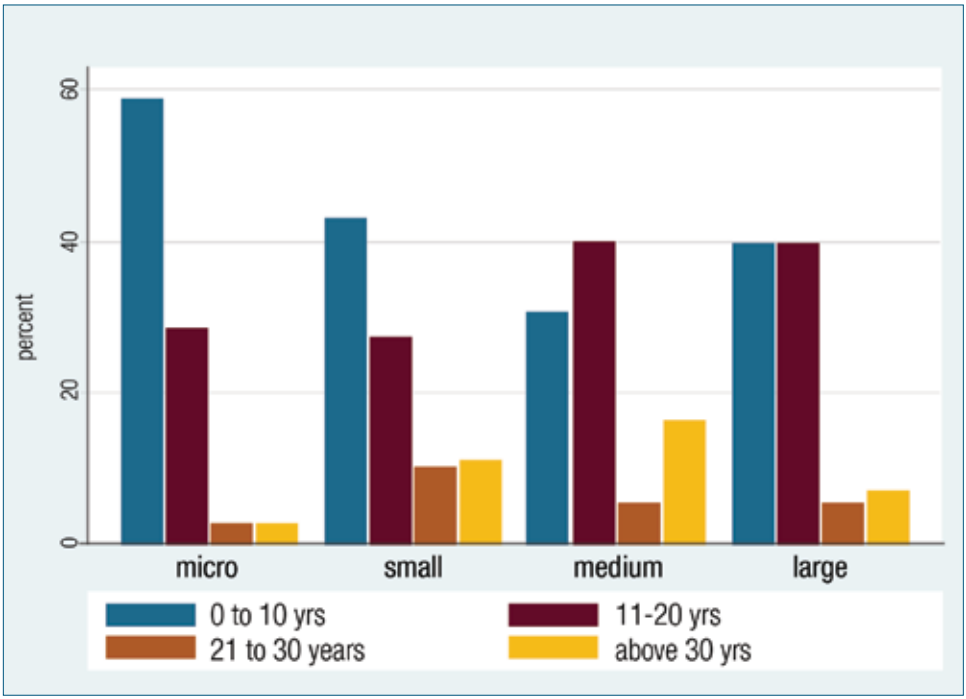
Table 6. Share of female employment to total employment across areas by major industry and size of establishment

Major Industry	Area and Size				
	Cebu				
	Micro	Small	Medium	Large	Total
Food manufacturing	48.81	39.16	29.52	35.67	40.79
Electronics manufacturing		21.21	21.59	46.13	29.71
IT	42.86	50.54	59.25	54.51	52.86
Total	47.51	42.41	41.95	48.11	45.14
Major Industry	Area and Size				
	Davao				
	Micro	Small	Medium	Large	Total
Food manufacturing	61.10	42.77	13.52	31.03	44.01
Electronics manufacturing					
IT	47.50	33.22	42.86		41.32
Total	56.85	40.76	20.86	31.03	43.42
Major Industry	Area and Size				
	Quezon City				
	Micro	Small	Medium	Large	Total
Food manufacturing	34.70	42.95	32.93	40.19	37.22
Electronics manufacturing	80.00	41.67	16.51		41.86
IT	37.09	43.14	39.99	46.61	43.07
Total	36.92	43.00	34.47	45.59	40.33
Major Industry	Area and Size				
	PEZA				
	Micro	Small	Medium	Large	Total
Food manufacturing		63.64	33.47	18.57	27.55
Electronics manufacturing		32.39	40.18	74.56	58.62
IT		70.63	65.32	70.26	69.31
Total		54.63	54.94	67.79	63.92
Major Industry	Area and Size				
	All Areas				
	Micro	Small	Medium	Large	Total
Food manufacturing	43.16	41.65	29.13	32.38	39.29
Electronics manufacturing	80.00	32.07	31.73	71.57	52.10
IT	40.39	48.11	56.10	61.01	55.67
Total	43.12	43.47	43.78	57.37	48.75

Sampled firms are relatively young as can be seen in Figure 5. About half of the firms were established during the past 10 years (this is especially true among micro establishments [63%]) while about 80 percent of the medium and large firms were established in the past 20 years.

Overall, the share of female employment among sampled establishments is practically equal to that of males (Table 6) although variations exist across area, size of the establishment, and major industry. Sampled establishments engaged in food manufacturing (except for micro establishments in Davao) substantially employ fewer females than males. Micro establishments in the electronic manufacturing industry located in Quezon City employ about four-fifths (80%) of females among their total employment while large firms in either electronic manufacturing industry or IT located in the PEZA also employ a considerable proportion of females. Said data are the only sex-disaggregated information that can be generated from the SIA.

Figure 5. Distribution of respondent firms by age and size



Innovation activity

As earlier mentioned, innovation occurs in establishments when new knowledge is put to work in the production process. The SIA asks a sufficient range of questions to probe on the activities conducted by firms, the level of effort employed, and the achievement of new or improved products and/or processes. Establishments are defined as innovation active if they are:

- product innovators that introduced new or significantly improved products, i.e., goods and/or services;

- process innovators that introduced (a) new or significantly improved methods of manufacturing or producing goods or services; (b) new or significantly improved logistics, delivery or distribution methods for their inputs, goods, and services; (c) new or significantly improved supporting activities for their processes such as maintenance systems or operations for purchasing, accounting, or computing;

- engaged in innovation projects that are either not yet complete or abandoned; and engaged in expenditure of innovation activities for

    (a) internal or outsourced R&D;
    (b) training;
    (c) acquisition of external knowledge, machinery, equipment, or software linked to innovation activities;
    (d) market introduction of innovations; and
    (e) other preparations to implement innovations.

Tables 7, 8, and 9 provide key statistics on innovation activity by size, major sector, and study area, respectively. Overall, more than half (54%) of the sampled establishments were classified as being innovation active during the period January 2009–June 2010. Both medium and large establishments were observed to be more likely to engage in some sort of innovation activity, with about two-thirds being innovation active, as compared to a third for micro establishments, and half for small establishments. About two in five establishments (about 40%) were product innovators, which is about similar to the proportion of process innovators (44%). Of the establishments that had product innovations, a bigger share also had process innovations than those that only had product innovations. Similarly, among those that had process innovations, a bigger share also had product innovations than those that had process innovations alone. About one in ten establishments (10%) had projects to develop product or process innovations that had to be abandoned between January 2009 and the survey period while about two out of five establishments (40%) had innovation projects that were ongoing up to the end of 2009. Only one in twenty establishments, meanwhile, mentioned public support for their innovations, with the rate highest among medium-sized firms. For wider forms of innovation which include marketing innovation, about one in five (20%) had some form of government support. A bigger share of medium-sized firms reported having government support for marketing innovation than small and micro establishments.

The larger the establishment, the more likely that it innovates. Even average expenditures in innovation rise with the size of establishments. Micro establishments spend only an average of PHP 50,000 in a year, small and medium establishments both have average annual innovation expenditures at PHP 3 million while large establishments spend an average of PHP 30 million.

Quezon City Innovation Forum held on July 22, 2011. (L-R) DOST-NCR Dir. Teresita C. Fortuna, Quezon City Mayor Herbert M. Bautista, and PIDS Senior Research Fellow Dr. Ramon Jose G. Albert.

Table 7. Key statistics on innovation activity by size of establishments

Proportion of establishments that are/have:	Micro (%)	Small (%)	Medium (%)	Large (%)	All Firms (%)
Innovation active	34.0	48.6	65.0	65.2	54.4
Product innovators	23.6	32.7	42.5	46.4	37.6
Of which share with new-to-market products	60.0	57.1	73.5	53.6	59.0
Process innovations	23.6	38.3	50.0	56.4	43.9
Of which share of those that developed process innovation within the establishment or enterprise	84.0	92.7	90.0	92.2	90.9
Both product and process innovators	17.0	25.2	33.8	42.0	31.2
Either product or process innovator	30.2	45.8	58.8	60.8	50.2
Ongoing innovation activities	24.5	36.4	43.8	51.9	40.9
Abandoned innovation activities	6.6	10.3	20.0	13.8	12.4
Innovation-related expenditure	20.8	37.4	43.8	51.9	40.3
Memo Note					
Average annual expenditures for innovation activities (in '000 PHP)	51.2	2955.9	3227.3	30168.2	12367.6
Proportion of establishments that have/are:					
Public financial support for innovation	0.0	1.9	7.5	4.4	3.4
Innovation cooperation	46.2	32.5	16.7	38.9	34.5
Organizational innovations	38.7	52.3	70.0	66.9	57.8
Memo Note					
Average percentage of employees affected by establishment's organizational innovations	68.7	63.2	46.5	54.3	56.7
Proportion of establishments that are/with:					
Marketing innovators	43.4	50.5	53.8	53.0	50.4
Knowledge management practices	46.2	55.1	71.3	71.8	62.2
Government support or assistance to innovation	15.1	15.0	28.8	26.0	21.5

Table 8. Key statistics on innovation activity by major industry

Proportion of establishments that are/ have:	Food Manufacturing (%)	Electronics Manufacturing (%)	IT (%)	All Firms (%)
Innovation active	47.1	64.3	58.5	54.4
Product innovators	33.5	50.0	38.6	37.6
Of which share with new-to-market products	65.6	66.7	52.7	59.0
Process innovations	37.2	54.8	47.3	43.9
Of which share of those that developed process innovation within the establishment or enterprise	93.0	87.0	90.4	90.9
Both product and process innovators	26.7	42.9	32.8	31.2
Either product or process innovator	44.0	61.9	53.1	50.2
Ongoing innovation activities	35.1	45.2	44.8	40.9
Abandoned innovation activities	13.1	2.4	13.7	12.4
Innovation-related expenditure	34.0	45.2	44.4	40.3
Memo Note				
Average annual expenditures for innovation activities (in '000 PHP)	2646.7	25494.6	18385.2	12367.6
Proportion of establishments that have/ are:				
Public financial support for innovation	1.0	4.8	5.0	3.4
Innovation cooperation	32.4	26.3	37.4	34.5
Organizational innovations	47.1	66.7	64.7	57.8
Memo Note				
Average percentage of employees affected by establishment's organizational innovations	63.5	49.5	54.1	56.7
Proportion of establishments that are/with:				
Marketing innovators	49.7	45.2	51.9	50.4
Knowledge management practices	51.3	73.8	68.9	62.2
Government support or assistance to innovation	19.9	21.4	22.8	21.5

Table 9. Key statistics on innovation activity by area

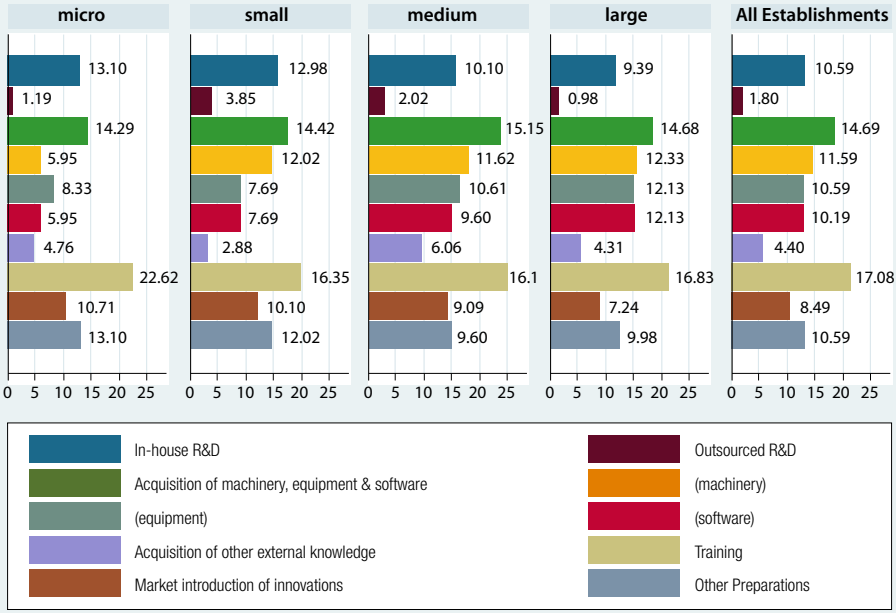
Proportion of establishments that are/ have:	Metro Cebu (%)	Davao (%)	Quezon City (%)	PEZA (%)	All Firms (%)
Innovation active	55.8	42.2	42.3	71.5	54.4
Product innovators	38.0	33.3	26.4	51.8	37.6
Of which share with new-to-market products	81.6	53.3	53.5	47.9	59.0
Process innovations	47.3	31.1	30.7	60.6	43.9
Of which share of those that developed process innovation within the establishment or enterprise	91.8	85.7	94.0	89.2	90.9
Both product and process innovators	33.3	24.4	18.4	46.7	31.2
Either product or process innovator	51.9	40.0	38.7	65.7	50.2
Ongoing innovation activities	47.3	26.7	29.4	53.3	40.9
Abandoned innovation activities	18.6	6.7	8.0	13.9	12.4
Innovation-related expenditure	43.4	28.9	29.4	54.0	40.3
Memo Note					
Average annual expenditures for innovation activities (in '000 PHP)	13701.1	47.6	5655.7	25612.8	12367.6
Proportion of establishments that have/ are:					
Public financial support for innovation	2.3	6.7	0.0	7.3	3.4
Innovation cooperation	30.6	61.5	29.2	36.5	34.5
Organizational innovations	61.2	51.1	44.8	72.3	57.8
Memo Note					
Average percentage of employees affected by establishment's organizational innovations	57.20	53.3	69.2	47.80	56.7
Proportion of establishments that are/ with:					
Marketing innovators	55.0	46.7	44.2	54.7	50.4
Knowledge management practices	69.0	51.1	49.7	74.5	62.2
Government support or assistance to innovation	21.7	28.9	12.3	29.9	21.5

Across industries, establishments in electronics manufacturing and IT are the most innovation active. In addition, average annual expenditures in innovation activities are also highest for electronics manufacturing at PHP 25 million, in contrast to food manufacturing where innovation expenditures average only PHP 2.7 million a year.

Across study areas, establishments in the PEZA zone lead in innovation activity, with average annual expenditure in innovation activities at PHP 25.6 million. Quezon City and Davao establishments have the least innovation activities, with average annual innovation expenses at PHP 5.7 million and PHP 47,000, respectively. Davao, however, leads in innovation cooperation. None of the establishments in Quezon City had public financial support in innovation although one out of ten or a little over 10 percent received government support or assistance for wider forms of innovation.

Forty percent of all establishments had some innovation-related expenditure in 2009. As shown in Figure 6, the most commonly reported activities were in investment in training, followed by acquisition of computer software and hardware, in-house R&D, and other preparations.

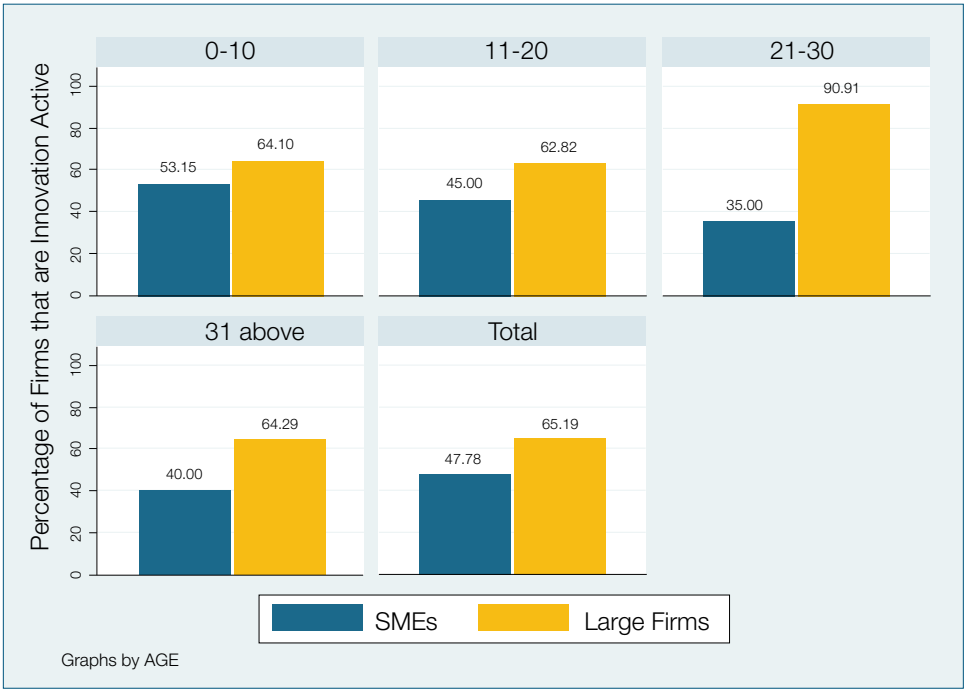
Figure 6. Breakdown of innovation activities in establishments by size of establishment



Graphs by Establishment Size

Innovative behavior varies across the size and age of the establishments (Figure 7). Among large firms, those that have been established within 21 to 30 years are the most innovative, while among establishments that are not large (SMEs), those fairly young (established in the last ten years or so) appear to be the most innovative.

Figure 7. Innovation activity by age and size of establishment



As shown in Table 10, innovation-active firms also vary considerably across industry groups. Sixty-seven percent of firms in IT manufacturing were innovation active compared with 33 percent of enterprises in the publishing activities and motion picture industry, and with 47 percent in food manufacturing. Large firms tend to be more innovation active than small firms, except in the publishing activities and motion picture industry where the rates are practically similar.

More than 10 percent among innovation-active firms filed for intellectual property rights (IPRs), especially in registering for a trademark. The filing of IPRs is three to four times better among innovation-active establishments than among firms that did not innovate (Table 11).

Table 10. Distribution of establishment by innovation activity across industry group and size of establishments (in percent)

Industry Group	SME*	Large	All Establishments
Food manufacturing	42.9	70.0	47.1
Electronics manufacturing	56.5	73.7	64.3
IT	53.2	62.9	58.5
IT manufacturing	58.1	70.1	66.7
ICT service industries	61.4	56.3	60.0
Publishing activities and motion picture	34.8	30.0	33.3
Business process outsourcing	45.5	58.6	55.0
Total	47.8	65.2	54.4

**SME= micro, small and medium establishments*

Table 11. Percentage of establishments that filed for intellectual property rights by innovation activity status (in percent)

Intellectual Property Rights	Innovators	Noninnovators	All Firms
Apply for a patent	10.1	2.3	6.5
Register an industrial design	7.8	2.3	5.3
Register a trademark	14.7	4.6	10.1
Claim a copyright	6.2	2.3	4.4
At least one of the above	21.7	5.6	14.3

Determinants of innovation and constraints on innovation

While the profile obtained from cross-tabulations and/or figures, as shown in the previous section, provides meaningful information about factors that may influence innovative behavior among firms, they do not however account for the effects of these factors in the presence of other factors. In order for government to formulate and implement evidence-based policy interventions, it is important to examine more carefully the determinants of innovation as well as to understand the barriers and bottlenecks to innovation. Toward this end, it is helpful to employ an econometric model such as a (binary) probit regression that enables one to identify whether or not a target variable helps explain innovative behavior. Variables examined in a probit regression model to explain how likely establishments are to be product innovators, process innovators, and innovators in general include:

- employment size (in logarithmic form); age of the firm;
- geographic market (in particular, whether or not the firm's geographic market is limited to the local market only);
- share of foreign capital participation;
- share of female employment;
- major industry (whether the firm is in food manufacturing or electronics manufacturing or IT sectors);
- location (whether the firm is located in Cebu, Davao, Quezon City, or PEZA); and
- engagement in knowledge management.

The latter variable, however, may be an endogenous variable, which means that innovation may itself be causing knowledge management practices. To handle such endogeneity issues, the study uses a standard econometric tool, the use of an instrumental variable. The instrument used in the probit model is an indicator on whether or not the firm receives some kind of government support. This variable by itself does not explain innovation activity and does not itself belong in the explanatory equation but it is correlated with the endogenous explanatory variable (the indicator on whether or not the firm is engaged in knowledge management practices) conditional on the other covariates.

Table 12 shows the regression results. In sum, the practice of knowledge management is a good determinant of product innovation, process innovation, and being an innovator in general. Employment size matters, but only significantly for process innovation: the larger the firm, the more likely it is a process innovator. Location matters: firms in PEZA, all other things equal, are more likely to be innovators than firms in other areas. The evidence is strongest for product innovation and innovation activity in general when comparing PEZA with Cebu firms. This result is consistent with what is found in the literature which indicates that firms within economic zones are more likely to be innovators. While it seems that having a geographic market limited to the local market puts the firm at risk of not being a product innovator and innovator in general, the evidence is rather weak. A gender disparity indicator such as the share of women employees to total employment likewise does not contribute to explaining innovative behavior. All other things being equal, firms across sectors appear to be equally likely to innovate. Age of the firm also does not matter as far as innovative behavior is concerned. Neither does it appear that the share of foreign capital participation significantly explains the propensity to innovate.

Filipinnovation Forum: Towards an Innovation-led Development Path in the Philippines held on November 26, 2010 in Makati City. (L-R) Dr. Jose Ramon G. Albert of the Philippine Institute for Development Studies (PIDS), Dr. Pun-Arj Chairatana, project consultant, Mr. Simon Ellis of UNESCO Institute for Statistics, USec. Fortunato T. Dela Peña of the Department of Science of Technology (DOST), and Engr. Ramon I. Castillo of Innovatronix.

Table 12. Determinants of product innovation, process innovation, and innovation activity

Variable	Remarks	Product Innovator	Process Innovator	Innovator
Km	Indicator variable whether or not firm engages in knowledge management	2.007017***	2.0708336***	2.2958185***
local market only	Indicator variable whether or not firm's geographic market is only local market	-0.12314	0.109687	-0.0917
Foreign	Share of foreign capital participation in establishment	-0.00267	-0.00179	-0.00267
fem_share_emp	Share of women employment to total employment	0.001187	-0.0008	0.000483
Age	In years since establishment of firm	-0.00369	0.001258	-0.00139
sectorgp1	Whether or not firm in food manufacturing (base)	0.262935	0.273028	0.392788
sectorgp2	Whether or not firm in electronics manufacturing			
sectorgp3	Whether or not firm in IT	-0.09802	0.016801	0.074976
logsize	Log of employment size	0.043169	.10081286*	0.056978
loc1	Whether or not located in Cebu	-.33721563*	-0.3039	-.3972632*
loc2	Whether or not located in Davao	-0.18589	-0.41769	-0.3576
loc3	Whether or not located in Quezon City	-0.24872	-0.33312	-0.25011
loc4	Whether or not located in PEZA (base)			
_cons		-1.2176161***	-1.487917***	-1.03412***
Diagnostics				
Number of data		474	474	474
Overall chisquare				
Wald chi2(11)		175.44	164.53	356.52
p-value		0.0000	0.0000	0.0000
Wald test of exogeneity pvalue		0.0017	0.0264	0.0009
Probit classification from using predicted probabilities to classify innovation activity using a threshold of 50 percent				
sensitivity	Proportion of innovation active firms correctly classified	83.15%	85.58%	82.95%
specificity	Proportion of noninnovation-active firms correctly classified	52.36%	56.39%	62.50%
correctly classified		63.92%	69.20%	73.63%

*Legend: * p<.05; ** p<.01; *** p<.001*

Barriers, on the other hand, can be obstacles within the establishment. These may include human resources, financial resources, or external factors that prevent innovation. The SIA asked establishments, both innovators and noninnovators, about a wide range of issues that constrain their ability to innovate. The human and financial bottlenecks could be removed by policy interventions, coupled with the cooperation of various stakeholders in the national innovation system.

Tables 13 and 14 show the proportion of responding establishments (by size as well as across innovators and noninnovators by sector, respectively) that gave a 'high' rating to some potential constraints. Cost factors were commonly identified by the responding establishments as significant barriers to innovation. Direct costs of innovation were viewed as being too high (one out of four or 25 percent of responding establishments associated a high degree of importance to this; this is especially true among 30 percent of micro establishments and 28 percent of small establishments). A similar proportion of establishments also mentioned lack of funds within the establishment or enterprise as a barrier to innovation. While cost factors were the most commonly reported significant barrier to innovation among all establishments, about one in ten establishments or roughly 10 percent also reported knowledge and market factors as significant barriers to innovation. Note that perceptions on barriers to innovation did not depend on whether or not a firm innovates. That is, establishments engaged in innovation activity were equally likely to perceive barriers as being highly important compared with those that did not attempt to innovate.

Table 13. Percentage of establishments that regarded potential barriers to innovation as "high" by size of establishments

Factors Hampering Innovation Activities		Micro	Small	Medium	Large	All Firms
1. Cost factors	a. Lack of funds within your establishment or enterprise	34.9	22.4	20.0	19.3	23.6
	b. Lack of finance from sources outside the enterprise	23.6	17.8	12.5	8.8	14.8
	c. Innovation costs too high	30.2	28.0	22.5	21.6	25.1
2. Knowledge factors	a. Lack of qualified personnel	16.0	14.0	12.5	6.1	11.2
	b. Lack of information on technology	13.2	11.2	12.5	7.2	10.3
	c. Lack of information on markets	11.3	13.1	8.8	6.1	9.3
	d. Difficulty in finding cooperation partners for innovation	16.0	6.5	11.3	8.3	10.1
3. Market factors	a. Market dominated by established enterprises	21.7	16.8	13.8	7.2	13.7
	b. Uncertain demand for innovative goods or services	12.3	13.1	8.8	7.2	9.9

Table 14. Percentage of establishments that regarded potential barriers to innovation as "high" among Innovators and noninnovators by major sector

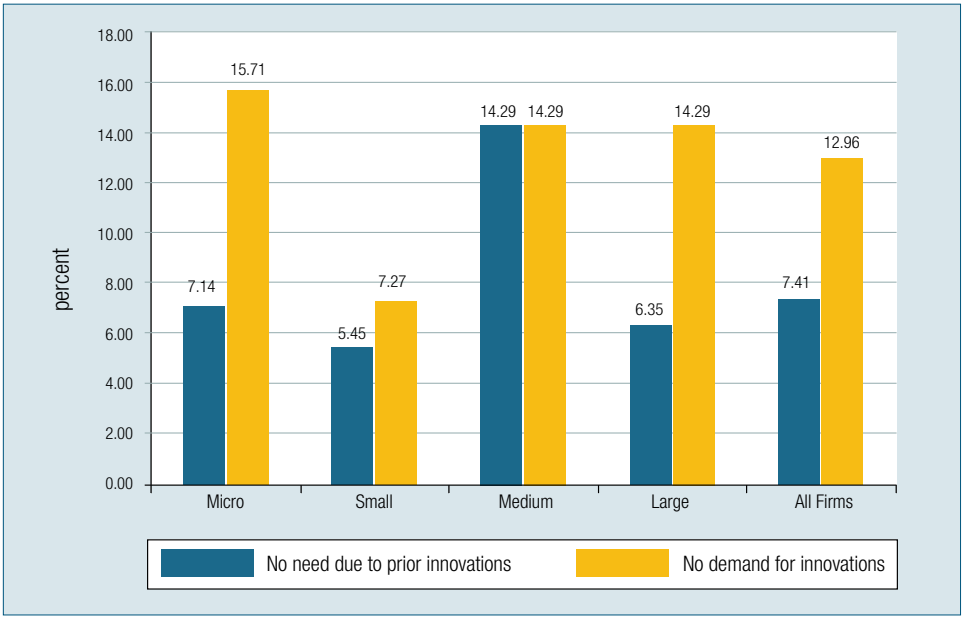
Factors Hampering Innovation Activities		Food Manufacturing			Electronics Manufacturing			IT			All Firms
		Non-innovator	Innovator	All Firms	Non-innovator	Innovator	All Firms	Non-innovator	Innovator	All Firms	
1. Cost factors	a. Lack of funds within your establishment or enterprise	32.7	30.0	31.4	20.0	7.4	11.9	19.0	19.9	19.5	23.6
	b. Lack of finance from sources outside your enterprise	23.8	13.3	18.8	6.7	3.7	4.8	13.0	13.5	13.3	14.
	c. Innovation costs too high	29.7	23.3	26.7	26.7	11.1	16.7	21.0	28.4	25.3	25.1
2. Knowledge factors	a. Lack of qualified personnel	14.9	13.3	14.1	6.7	11.1	9.5	7.0	10.6	9.1	11.2
	b. Lack of information on technology	11.9	8.9	10.5	20.0	3.7	9.5	8.0	12.1	10.4	10.3
	c. Lack of information on markets	8.9	8.9	8.9	6.7	11.1	9.5	9.0	9.9	9.5	9.3
	d. Difficulty in finding cooperation partners for innovation	15.8	3.3	9.9	0.0	0.0	0.0	10.0	13.5	12.0	10.1
3. Market factors	a. Market dominated by established enterprises	18.8	14.4	16.8	20.0	18.5	19.0	9.0	11.3	10.4	13.7
	b. Uncertain demand for innovative goods or services	13.9	5.6	9.9	13.3	14.8	14.3	9.0	9.2	9.1	9.9

Across sectors (Table 15), noninnovators cite market conditions slightly more as the reason for no innovations. About three in twenty (13%) of responding noninnovative establishments felt they did not need to innovate due to market conditions (no demand) while a slightly smaller proportion felt they did not need to innovate due to prior innovations. The difference in rates is most evident among large firms as seen in Figure 8.

Table 15. Reasons for no innovation activity by major sector (noninnovators only)

Major Sector	Reasons Not to Innovate	
	No Need Due to Prior Innovations (%)	No Demand for Innovations (%)
Food manufacturing	8.91	13.86
Electronics manufacturing	6.67	13.33
IT	6	12
All Noninnovative firms	7.41	12.96

Figure 8. Percentage of noninnovating establishments that regarded potential reasons not to innovate as "high" by establishment size



Wider forms of innovation

Innovation can transcend the development or use of technology or other forms of product or process change. There is a wider sense of innovation, particularly when firms change their behavior or marketing and business strategies to make themselves more competitive, often in conjunction with product or process innovation, but also as an independent means of improving competitiveness.

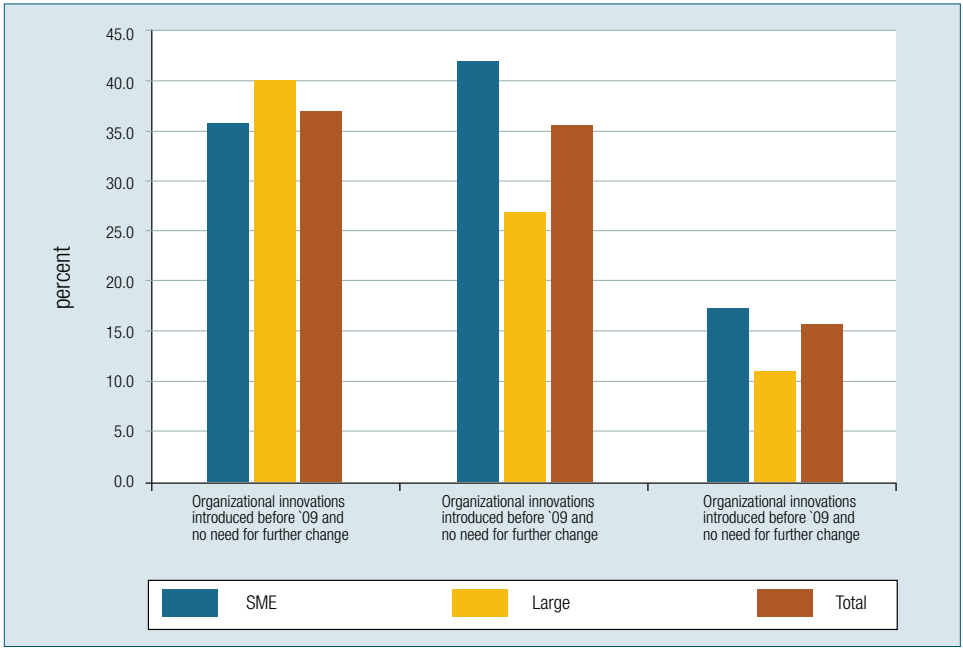
Responding firms in the national innovation survey (NIS) were asked whether or not they had made major changes to their organizational structure and business practices in the reference period. As might be expected, the key results as summarized in Table 16 shows a greater proportion of large firms engaged in one or more of these changes (83% of large firms compared to 71% of SMEs). In IT, though, the difference between the rates of the SMEs and the large establishments that have introduced a wider form of innovation is not as big as in the other two sectors. In electronics manufacturing and IT firms, much of the changes implemented in wider forms of innovation are in the realm of knowledge management systems and organizational innovation. As far as marketing innovation is concerned, meanwhile, large-sized firms in food manufacturing (70%) take the lead in implementing marketing innovation.

Among establishments that signified that they did not conduct organizational innovation, about half (43%) of the SMEs reported funding issues as a reason, as compared to a much smaller rate (28%) for large firms. About half of firms, both SMEs and large firms, reported no need for current organizational innovation as a result of innovations conducted before 2009. Only about one in ten noninnovators mentioned human resource problems as a reason for not engaging in organizational innovation (Figure 9).

Table 16. Percentage of establishments that introduced wider forms of innovation by major industry and by size of establishment

	Food Manufacturing			Electronics Manufacturing			IT			All Industries		
	SME	Large	All Firms	SME	Large	All Firms	SME	Large	All Firms	SME	Large	All Firms
Wider form of innovation (any of the changes below)	64.6	76.7	66.5	73.9	84.2	78.6	79.8	84.1	82.2	71.0	82.9	75.5
Changes to organizational structure or business strategy	44.1	63.3	47.1	60.9	73.7	66.7	62.4	66.7	64.7	52.2	66.9	57.8
Changes to marketing concepts or strategies	46.0	70.0	49.7	47.8	42.1	45.2	53.2	50.8	51.9	48.8	53.0	50.4
Changes in knowledge management	49.7	60.0	51.3	65.2	84.2	73.8	64.2	72.7	68.9	56.3	71.8	62.2

Figure 9. Reasons for no organizational innovation by establishment size (among non-innovating firms only)



Effects of innovation

The survey also sought information about the effects of innovation on the establishments. Respondents were asked to rank a number of likely effects of innovation on a scale from 'not relevant' (4) to 'low' (3), to 'medium' or 'high' perceived effects. Table 17 provides the proportion of innovation-active respondents who answered 'high' in each category.

Product-related effects were more often cited than process (cost) effects, especially among large firms. About three-fifths (60%) of innovation-active firms rated "improving the quality of goods or services" as highly important. "Increasing the range of goods or services" was also a widely reported product-related effect, particularly in the food manufacturing industry. The least commonly reported effect was "reducing materials and energy per unit output."

Even for organizationally innovative firms or for firms that engaged in organizational innovation (Table 18), quality ranked highest across size and industries, confirming a strongly customer-focused approach to innovation. Across firms, the least commonly reported effect of organizational innovation appears to be improved employee satisfaction and/or lower employee turnover.

As far as firms that engaged in marketing innovations are concerned, the most highly ranked effect is also customer-related, i.e., improved customer satisfaction or strengthened customer relationship (Table 19).

Table 17. Percentage of innovation-active establishments rating effects of the product and process innovation as 'high'

Effects of the Product and Process Innovation		Food Manufacturing			Electronics Manufacturing			IT			All Establishments
		SME	Large	All Firms	SME	Large	All Firms	SME	Large	All Firms	
Product-oriented effects	Increased range of goods or services	60.0	73.3	62.9	37.5	36.4	36.8	38.5	47.1	44.0	50.0
	Entered new markets or increased market share	40.0	73.3	47.1	37.5	36.4	36.8	38.5	44.3	42.2	43.4
	Improved quality of goods or services	56.4	80.0	61.4	75.0	72.7	73.7	46.2	62.9	56.9	60.1
Process-oriented effects	Improved flexibility of production or service provision	47.3	73.3	52.9	50.0	63.6	57.9	41.0	52.9	48.6	51.0
	Increased capacity of production or service provision	47.3	73.3	52.9	37.5	63.6	52.6	41.0	47.1	45.0	48.5
	Reduced labor costs per unit output	27.3	46.7	31.4	25.0	45.5	36.8	28.2	40.0	35.8	34.3
	Reduced materials and energy per unit output	32.7	40.0	34.3	12.5	27.3	21.1	20.5	34.3	29.4	30.3
Other effects	Reduced environmental impacts or improved health and safety	43.6	53.3	45.7	25.0	45.5	36.8	25.6	47.1	39.4	41.4
	Met regulatory requirements	50.9	66.7	54.3	12.5	27.3	21.1	33.3	54.3	46.8	47.0

Table 18. Effects of organizational innovation by major sector and size of firm (organizational innovators only)

Effects of Organizational Innovation	Food Manufacturing			Electronics Manufacturing			IT			All Establishments (%)
	SME (%)	Large (%)	All Firms (%)	SME (%)	Large (%)	All Firms (%)	SME (%)	Large (%)	All Firms (%)	
Reduced time to respond to customer or supplier needs	37.1	68.4	43.8	42.9	50.0	46.4	33.8	39.8	37.2	40.3
Improved quality of goods or services	57.7	78.9	62.2	57.1	64.3	60.7	52.9	63.6	59.0	60.2
Reduced costs per unit output	29.6	63.2	36.7	35.7	35.7	35.7	29.4	45.5	38.5	37.6
Improved employee satisfaction and/or lower employee turnover	33.8	57.9	38.9	28.6	28.6	28.6	35.3	29.5	32.1	33.9
Improved communication or information sharing	39.4	68.4	45.6	42.9	35.7	39.3	45.6	43.2	44.2	44.2
Increased ability to develop new products or processes	32.4	78.9	42.2	42.9	57.1	50.0	29.4	35.2	32.7	37.6
Others	80.0	0.0	66.7	100.0			29.4	35.2	32.7	34.5

Table 19. Effects of marketing innovation by major sector and size of firm (marketing innovators only)

Effects of Marketing Innovation	Food Manufacturing			Electronics Manufacturing			IT			All Establishments (%)
	SME (%)	Large (%)	All Firms (%)	SME (%)	Large (%)	All Firms (%)	SME (%)	Large (%)	All Firms (%)	
Sales growth for your goods and services	31.1	52.4	35.8	45.5	50.0	47.4	29.3	41.8	36.0	36.8
Increased visibility of products or business	35.1	66.7	42.1	36.4	37.5	36.8	25.9	37.3	32.0	36.4
Strengthened relationships with customers	45.9	66.7	50.5	72.7	37.5	57.9	37.9	55.2	47.2	49.4
Improved customer satisfaction	52.7	71.4	56.8	72.7	37.5	57.9	44.8	58.2	52.0	54.4

Second meeting of the Project Steering Committee held on February 12, 2010 at the Asian Institute of Management Policy Center, Makati City. (L-R) Mr. Cebuma of NEDA, Dr. Virola of NSCB, Dir. Ericta of NSO, Dr. Josef Yap of PIDS and Ms. Barcelon of the Ayala Foundation.

Sources of information and cooperation

Introducing innovation is an increasingly complex process that requires coordination of multiple inputs. Firms can gain technical advice, guidance, or even some inspiration for their prospective innovation activities from a variety of sources of information. It is thus essential to know how far firms engage with external sources of technology as well as with other innovation-related knowledge and information. To gain understanding about sources of information and cooperation on innovation, establishments were asked to rank a number of potential information sources on a scale from 'no relationship' to 'high importance.' Table 20 shows the proportion of respondents who answered "high" for each category of the following sources:

- Internal: from within the establishment itself or from other establish ments within the enterprise;
- Market: from suppliers, customers, clients, consultants, competitors, other businesses, commercial laboratories, or private research and development institutes;
- Institutional: from the public sector such as government research organizations and the academe; or
- Other sources: from conferences, trade fairs, exhibitions, scientific journals, trade/technical publications, professional or industry associations or technical, industry, or service standards.

Table 20. Establishments rating information sources as of 'high' importance by size of establishment

Information Source		Micro	Small	Medium	Large	All Firms
1. Internal	a. Within your establishment or enterprise	61.5	70.0	66.7	75.0	70.7
2. Market source	a. Suppliers of equipment, materials, components, or software	30.8	57.5	55.6	49.0	49.5
	b. Clients or customer	65.4	62.5	66.7	67.7	66.2
	c. Competitors or other enterprises in your sector	38.5	45.0	36.1	35.4	37.9
	d. Consultants, commercial laboratories, or private R&D institutes	11.5	27.5	19.4	21.9	21.2
3. Institutional source	a. Universities or other higher education institutions	7.7	12.5	11.1	9.4	10.1
	b. Government or public research institutes	3.9	12.5	5.6	6.3	7.1
4. Other sources	a. Conferences, trade fairs, exhibitions	34.6	37.5	13.9	14.6	21.7
	b. Scientific journals and trade/technical publications	15.4	22.5	16.7	14.6	16.7
	c. Professional and industry associations	19.2	17.5	16.7	13.5	15.7

Firms reported internal and market sources (especially clients) as most important for information on innovation. This suggests that establishments tend to rely on their own experience and knowledge coupled with information from suppliers, customers, and clients. The institutional sources, especially government or public research institutes, were considered to be of lowest importance.

About a third (34.5%) of innovation-active firms had cooperation arrangements on innovation activities (Figure 10). Cooperation is higher among smaller firms in the food manufacturing and electronics manufacturing industries.

Among innovation-active collaborators, most had agreements that operated at a local/regional level while firms were least likely to cooperate on an other ASEAN level. As

shown in Table 21, the most frequent partners for cooperation among innovation-active firms were clients (94%), followed by suppliers (93%), and other establishments within the enterprise (91%). The least likely cooperation arrangement was with universities (47%) and government organizations (50%). Clients are also found to be the most valuable cooperation partners for innovation (Figure 11).

Figure 10. Percentage of establishments with cooperation arrangements on innovation activities by size of establishment and major industry

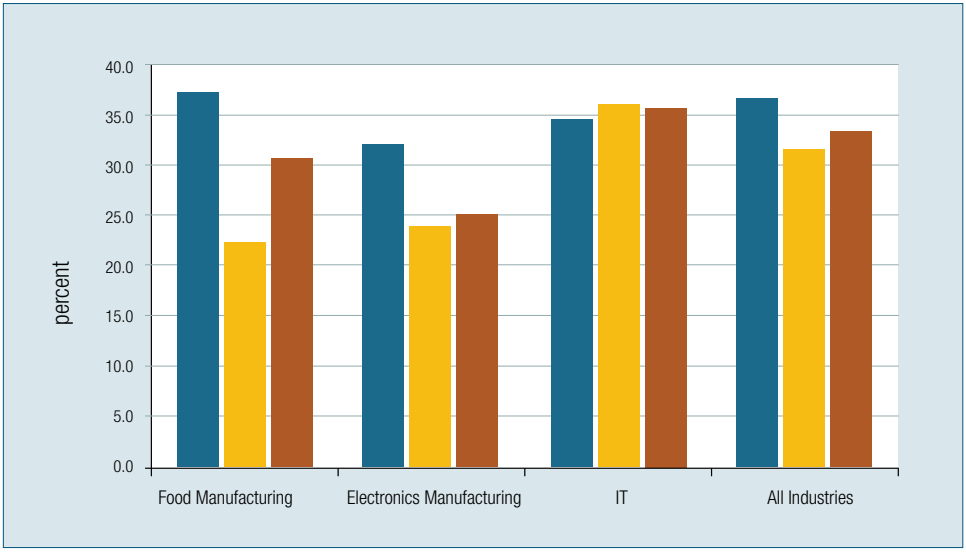
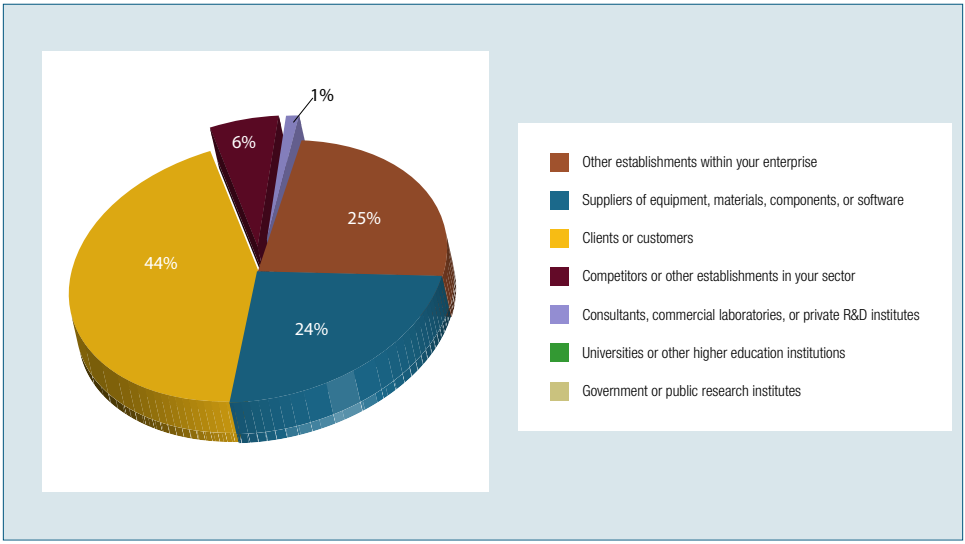


Table 21. Cooperation partners (innovation-active, collaborative establishments only)

Type of Cooperation Partner	Local (%)	Other ASEAN (%)	All Other Countries (%)	Any (%)
Other establishments within your enterprise	77.9	10.3	23.5	91.2
Suppliers of equipment, materials, components, or software	73.5	16.2	42.6	92.6
Clients or customers	69.1	16.2	45.6	94.1
Competitors or other establishments in your sector	58.8	4.4	14.7	67.6
Consultants, commercial laboratories, or private R&D institutes	57.4	0.0	10.3	64.7
Universities or other higher education institutions	45.6	0.0	1.5	47.1
Government or public research institutes	50.0	0.0	1.5	50.0

Figure 11. Cooperation partner found most valuable for innovation (innovation-active, collaborative establishments only)



Second meeting of the Project Steering Committee held on February 12, 2010 at the Asian Institute of Management Policy Center, Makati City. (L-R) Gov. Ferrer of BOI, Usec. Dela Peña of DOST, Dean Guevarra of UP College of Enginering, Dir. Justimbaste, Ms. Estela, Ms. Abalos and Mr. Sancho of DOST.

Policy issues and key findings of survey

Only about one out of every five firms has availed of government support or assistance in its innovation activity since January 2009, with the rate highest among large firms in the food manufacturing industry as seen in Figure 12. Table 22 illustrates that micro and small firms tend to consider technical support and training to be very important government programs while large firms value training, tax rebates, and technical support. Programs least cited to be highly important include R&D funding, subsidies, and loans and grants.

In summary, the 2009 SIA suggests that innovations are taking place in selected firms in the country, especially in a wider sense. The key findings include:

- Major determinants to innovative behavior include: whether or not the firm engages in knowledge management practices, the size of the firm, and location. Firms in PEZA appear to be more likely than firms in other areas to be innovators. The evidence for this is strongest for product innovation and innovation activity, in general, for PEZA firms versus Cebu firms.

- Effects of innovation are largely customer driven.

- Firms suggest cost factors to be the most important barrier to innovation. Government support is found to be limited for medium-sized firms, particularly for product innovations.

- Knowledge networks are rather weak. Firms do not access technical assistance from the government and research institutions. Cooperation is also low between the establishments and academe. Firms tend to cooperate more with establishments within their enterprise, their cus tomers and suppliers. This suggests that firms tend to rely more on those they have easy access to and long-term relations with.

The survey results suggest the need to further strengthen the policy framework for innovation and aggressively pursue Filipinnovation by fostering knowledge sharing and dissemination by academe and industry. It is also important to articulate the innovation strategy to firms, which seem to be generally of the view that government and research institutions are not key partners in their innovative practices. Information dissemination on programs available to assist firms may need to be improved.

Firm size is a determinant to innovation. Evidently, barriers and bottlenecks faced by SMEs to innovate are not similar to those of large firms. SMEs need to be strengthened, with the aim of having them grow and develop into larger firms, since SMEs seem to continue to face the same major development constraints as before such as access to finance, technology, and skills and difficulties with product quality and marketing. Public interventions to encourage innovation have to be adapted to the specific needs of firms.

Figure 12. Proportion of firms that availed of public support for their innovation activities by major industry and size of the establishment

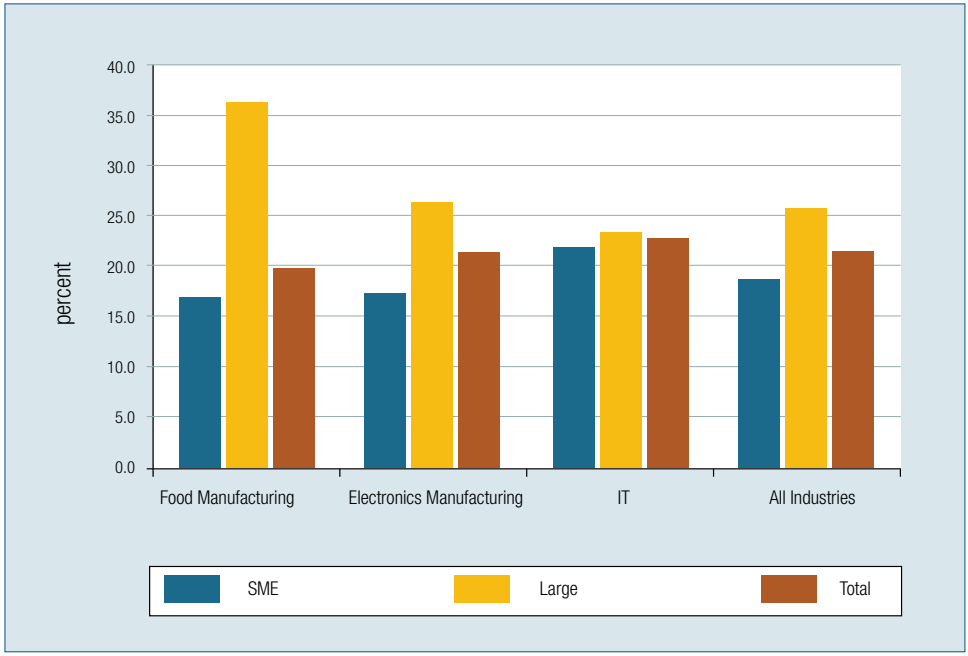


Table 22. Percentage of firms that considered government support programs that they received highly important for innovation by establishment size

Government Support Programs	Micro	Small	Medium	Large	All Firms
R&D funding	33.33	0	0	17.39	14.71
Training	33.33	50	16.67	34.78	32.35
Subsidies	0	0	0	17.39	11.76
Tax rebates	33.33	0	16.67	34.78	29.41
Technical support/advice	33.33	50	0	43.48	35.29
Infrastructure support	33.33	0	0	26.09	20.59
Loans and grants	33.33	0	0	17.39	14.71

Innovation varies across study areas. With firms in PEZA being more innovative than firms in other areas, there is something to learn from the business climate and incentive structures in PEZA that may be leading firms there to innovate more than in other areas.

Knowledge and cooperation networks, especially at the local areas, will have to be developed and when they exist, strengthened to promote innovation. The scope for partnerships to promote innovation is wide. Given the shift toward a more open system of innovation and the importance of knowledge management practices as a determinant of innovation, the government must promote the free exchange of ideas and flow of knowledge from outside the companies. Improving networking, linkages, and collaboration between the government, industry associations, and universities and research institutions must be pursued. Likewise, information should be disseminated through the effective use of information communication technology (ICT). Firms also need to be stimulated to cooperate for innovation rather than be averse to networking with their competitors. The national government and local government units (LGUs) need to work in tandem with academe and the business sectors to advocate for innovation, providing more leadership, bringing people and institutions together.

Cost factors have been cited by firms as barriers to innovate. These cost factors can be brought down with partnerships strengthened across national and local governments as well as business associations. Firms currently do not identify business associations, research and public institutions as a source of cooperation and information for innovation. Most firms appear to be of the mindset that they are left on their own to implement innovation activities, with very little support from networking arrangements.

In this regard, a strong innovation networking system should be fostered through the setting up and support of innovation clusters, which involve a group of interconnected firms in a particular field that cooperate with research centers and higher education institutions (HEIs) in the conduct of knowledge-intensive activities for greater competitiveness.

National Innovation Forum: Understanding Innovations, A Benchmark for Economic Growth and Competitiveness held on October 17, 2011 in Makati City. (L-R) DOST Sec. Mario G. Montejo, PIDS President Josef T. Yap, Sen. Edgardo J. Angara, DOST USec. Fortunato T. Dela Peña, and PIDS Senior Research Fellow Dr. Jose Ramon G. Albert.

An example would be the proposal of Senator Edgardo Angara in the Senate bill that he sponsored, calling for the provision of PHP 322 million for 2012 to fund activities of selected innovation clusters that would address challenges on food security, climate change, energy use, and sustainable exploitation of resources. The funds to be earmarked are meant to encourage firms and research institutes/HEIs to cooperate for innovation and to solve emerging practical concerns.

This initiative is indeed laudable. Nevertheless, the government should carefully draw up its plan of support for said innovation clusters. Institutions like the DOST, Department of Agriculture (DA), Commission on Higher Education (CHED), and other stakeholders should clearly spell out for how long the funds for such clusters are to be made available. At the same time, monitoring and evaluation mechanisms should be put in place to be able to closely and regularly monitor the performances of the firms in the clusters, and ascertain whether they are making an impact or not. And if so, what are these?

Finally, given the limited resources available, it will be wise for government to prioritize the firms that could be supported by public resources; it is also important to monitor the extent of innovation activities being undertaken at a regular basis since after all, innovation system management cannot be effectively done if what is being managed is not being measured. ■

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Annex A
Questionnaire

NATIONAL STATISTICS OFFICE

DEPARTMENT Of SCIENCE and TECHNOLOGY

SIA Form 1
NSCB Approval No. NSO-1018-01
Expires: 30 June 2011

SURVEY OF INNOVATION ACTIVITIES BY ESTABLISHMENTS

OBJECTIVE

The ***Survey of Innovation Activities by Establishments*** aims to generate information on the innovative behavior of establishments in selected Philippine areas and to determine the factors that drive their innovation performance. The data will serve as basis for mainstreaming the innovation system approach into the center-stage of national policy-making through the establishment of a systems-oriented, policy-relevant and internationally comparable innovation survey and indicator system in the country.

AUTHORITY

The information sought is collected under the authority of ***COMMONWEALTH ACT 591***. The Act authorizes the ***National Statistics Office*** to collect information from businesses and industries. Any person who fails or refuses to accomplish this questionnaire shall, upon conviction, be punished as provided for in ***Section 3*** of this same ***Act***.

CONFIDENTIALITY

Section 4 of ***CA 591*** provides that all information furnished the ***National Statistics Office*** will be kept strictly ***CONFIDENTIAL*** and shall not be used for purposes of taxation, investigation or regulation.

REFERENCE PERIOD

Reference period for the information should be from **January 2009 to June 2010**.

DUE DATE

Duly accomplished form should be submitted to NSO or to the authorized representative ***ON*** or ***BEFORE***

____

CARMELITA N. ERICTA
Administrator

FORTUNATO T. DE LA PEÑA
Undersecretary

INQUIRIES

For inquiries please contact:

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E-mail Address: k.esclamad@census.gov.ph / d.regala@census.gov.ph or e.deguzman@census.gov.ph

GENERAL INSTRUCTIONS

- Provide best estimates if exact figures are not available in your records. Indicate N.A. for items not applicable.
- Refer to the relevant explanatory notes and definitions provided in specific items when providing responses for each item.
- Mark (☒) only **one box**, unless instructed otherwise.

FOR NSO USE ONLY

FN	QN	QR	ECN

IND	PROV-MUN	BGY	SZ	LO	EO

Innovation is defined as the act of introducing something new. This may be introduced through a number of activities which may include improvement of product, the implementation of improved processes, logistics and distribution methods as well as organizational and marketing.

Innovation activities include the acquisition of machinery, equipment, software, and licenses; engineering and development work, training, marketing and research and development (R&D, including basic R&D) when they are specifically undertaken to develop and/or implement a product or process innovation.

R&D is defined as the creative work undertaken within your establishment to increase knowledge and its use to devise new and improved products and processes (including software development).

1. GENERAL INFORMATION ABOUT THE ESTABLISHMENT

A. Business and Registered Name in 2009, Establishment Website, Establishment Email Address and Tax Identification Number (TIN)

1. **Business Name** : _____
2. **Registered Name** : _____
3. **Establishment Website** : _____
4. **Establishment Address** : _____
5. **TIN** : _____

DO NOT FILL (For NSO use only)						
1994 PSIC						
2009 PSIC						

B. Economic Activity or Business in 2009

Describe in detail the main and other activities of this establishment.

1. **Main Activity**

   Refers to the activity that contributes the biggest or major portion of the gross income or revenue of this establishment

   _____

2. **Major products/goods produced or sold and/or type of service rendered** *(specify)*

   _____

C. Legal Organization in 2009

Mark (✓) the box corresponding to the best description of the establishment.

LN NO
01

1 ☐ Single Proprietorship
2 ☐ Partnership
3 ☐ Government Corporation
4 ☐ Stock Corporation
5 ☐ Non-stock Corporation
6 ☐ Cooperative
7 ☐ Others, *specify:* _____

D. Economic Organization in 2009

Mark (✓) the box corresponding to the best description of the establishment.

LN NO
02

1 ☐ Single Establishment
2 ☐ Branch only
Provide details of Main Office below
3 ☐ Establishment and main office
Both located in the same address and with branches elsewhere
4 ☐ Main Office only
5 ☐ Ancillary unit other than Main Office
Provide details of Main Office below

Single Establishment is an establishment which has neither branch nor main office.
Branch is an establishment which has a separate main office located elsewhere.
Main office is the unit which controls, supervises and directs one or more establishments of an enterprise.
Ancillary unit is the unit that operates primarily or exclusively for a related establishment or group of related establishments and provides goods or services that support but do not become part of the output of those establishments.

D.1 Main Office

1. **Name of Main Office** _____
2. **Address of Main Office** _____
3. **Contact Person in Main Office** _____
   a. Name _____ d. Fax No. _____
   b. Title/Designation _____ e. Email Address _____
   c. Tel. No. _____

D.2 Name and Address of Parent Company

If box 1, 3 or 4 is marked in ITEM 1.D, provide Name and Address of parent company. If no Parent Company write "NONE"

1. Name _____
2. Address _____

1. GENERAL INFORMATION ABOUT THE ESTABLISHMENT (Cont.)

E. In which geographic markets did your establishment sell goods or services from January 2009 up to the June 2010?

Mark (✓) applicable box/es.

		LN NO
1 ☐ Local (within the region)	3 ☐ Other ASEAN countries (Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Singapore, Thailand, Vietnam)	03
2 ☐ National (within the country)	4 ☐ All other countries	

2. CAPITAL PARTICIPATION AS OF 31 DECEMBER 2009

Capital participation *refers to the claims of individuals against capital/equity by foreign and/or local investors*

Indicate the percent share of the nationality of the stockholder.

Nationality	%	LN NO	Nationality	%	LN NO	Nationality	%	LN NO
1. Filipino	___%	01	5. German	___%	05	9. Taiwanese	___%	09
2. American	___%	02	6. Japanese	___%	06	10. Others, *specify* _____	___%	10
3. British	___%	03	7. Korean	___%	07			
4. Chinese	___%	04	8. Singaporean	___%	08			

3. EMPLOYMENT AS OF 15 NOVEMBER 2009

INCLUDE:

- Directors of corporations working for pay
- Executives/managers and other officers of the same category
- Working owners
- Full-time/part-time employees working in or for the establishment and receiving pay
- Employees working away from this establishment paid by and under the control of this establishment
- Employees on sick or maternity leave
- Employees on paid vacation or holiday
- Employees on strike
- Persons working for at least 1/3 of the time normal to the establishments without regular pay
- Apprentices and learners
- Any other employee receiving regular pay not reported above

EXCLUDE:

- Directors paid solely for their attendance at meetings of Board of Directors
- Silent or inactive business partners
- Consultants
- Members of cooperatives who do not receive regular pay
- Workers receiving commissions only
- Workers on indefinite leave
- Homeworkers

Report the employment of this establishment as of November 15, 2009.

Total Employment by Sex	Number	LN NO
a. Male		01
b. Female		02
c. Total (sum of a and b)		03

4. PRODUCT INNOVATION (GOODS OR SERVICE)

A product innovation is the market introduction of a new good and/or service or a significantly improved good or service with respect to its capabilities, such as improved software, user friendliness, components or sub-systems. The innovation (new or improved) must be new to your establishment, but it does not need to be new to your sector or market. It does not matter if the innovation was originally developed by your establishment or by other establishment.

A. Since January 2009, did your establishment introduce,

	YES	NO	LN NO
1. New or significantly improved goods. *(Exclude the simple resale of new goods purchased from other establishments and changes of a solely aesthetic nature.)*	1 ☐	2 ☐	01
2. New or significantly improved services.	1 ☐	2 ☐	02

If NO to both options, go to question 5.A, otherwise proceed to 4.B

4. PRODUCT INNOVATION (GOODS OR SERVICE) (Cont.)

B. Since January 2009, were any of your product innovations…

	YES	NO	LN NO
1. New to your market Your establishment introduced a new or significantly improved good or service onto your market before your competitors (it may have already been available in other markets)	1 ☐	2 ☐	03
2. Only new to your firm Your establishment introduced a new or significantly improved good or service that was already available from your competitors in your market	1 ☐	2 ☐	04

C. Which unit developed these product innovations?

Mark (✓) the appropriate box.

	LN NO
1 ☐ Mainly your establishment 2 ☐ Your establishment together with your main office and/or establishment within the enterprise 3 ☐ Other establishments or institutions	05

D. What was your establishment's total turnover 2009?

Turnover is defined as the market sales of goods and services. *Include all taxes except VAT*

	2009	LN NO
1. Total turnover		06

E. What were the percentages to the establishment's total turnover in 2009 of:

	Percentage Distribution	LN NO
1. Product innovations introduced during 2009 that were <u>new to your market</u>	_____%	07
2. Product innovations introduced during 2009 that were <u>only new to your firm</u>	_____%	08
3. Product that were <u>unchanged or only marginally modified</u> during 2009 *(include the resale of new goods and services purchased from other enterprises)*	_____%	09
4. Total turnover in 2009 (sum of 1 to 3)	_____%	10

5. PROCESS INNOVATION

A process innovation is the implementation of new or significantly improved production process, distribution method, or support activity for your goods or services. The innovation (new or improved) must be new to your establishment, but it does not need to be new to your sector or market. It does not matter if the innovation was originally developed by your establishment or by other establishments. *Exclude purely organizational innovations.*

A. Since January 2009, did your establishment introduce…

Type of Process Innovation	YES	NO	LN NO
1. New or significantly <u>improved methods</u> of manufacturing or producing goods and/or services.	1 ☐	2 ☐	01
2. New or significantly <u>improved logistics, delivery or distribution</u> methods for your inputs, goods and/or services.	1 ☐	2 ☐	02
3. New or significantly <u>improved supporting activities</u> for your processes, such as maintenance systems or operations for purchasing, accounting, or computing	1 ☐	2 ☐	03

If NO to all options, go to item 6. Otherwise, proceed to question 5.B.

5. PROCESS INNOVATION (Cont.)

B. Which unit developed these process innovations?

Mark (✓) the appropriate box.

	LN NO
1 ☐ Mainly your establishment 2 ☐ Your establishment together with your main office and/or establishment within the enterprise 3 ☐ Other establishments or institutions	04

6. ONGOING OR ABANDONED PRODUCT AND PROCESS INNOVATION ACTIVITIES

Since January 2009, if your establishment had no product or process innovation,

	YES	NO	LN NO
A. Did your establishment have any innovation activities to develop product or process innovations that are <u>still ongoing</u>?	1 ☐	2 ☐	01
B. Did your establishment have any innovation activities to develop product or process innovations that <u>were abandoned</u> from January 2009 to June 2010?	1 ☐	2 ☐	02

If "NO" to 6.A and 6.B, go to question 10.A. Otherwise, go to question 7.A.

7. INNOVATION ACTIVITIES AND EXPENDITURES

A. Since January 2009, did your establishment engage in the following innovation activities:

Type of Innovation Activity	YES	NO	LN NO
1. In-house R&D Creative work undertaken within your establishment to increase knowledge and its use to devise new and improved products and processes (including software development)	1 ☐	2 ☐	01
a. If yes, did your establishment perform R&D from January 2009 to June 2010: 1 ☐ Continuously? 2 ☐ Occasionally?			02
2. Outsourced R&D Same activities as above, but performed by other establishments or by public or private research organizations and acquired by your establishment	1 ☐	2 ☐	03
3. Acquisition of machinery, equipment and software to <u>produce new or significantly improved products and processes</u>			
a. Machinery and equipment	1 ☐	2 ☐	04
b. Computer hardware	1 ☐	2 ☐	05
c. Computer software	1 ☐	2 ☐	06
4. Acquisition of other external knowledge Purchase or licensing of patents and non-patented inventions, know-how, and other types of knowledge from other enterprises or organizations	1 ☐	2 ☐	07
5. Training Internal or external training for your personnel specifically for the development and/or introduction of new or significantly improved products and processes	1 ☐	2 ☐	08
6. Market introduction of innovations Activities for the market introduction of your new or significantly improved goods and services including market research and launch advertising	1 ☐	2 ☐	09
7. Other preparations Procedures and technical preparations to implement new or significantly improved products and processes that are not covered elsewhere	1 ☐	2 ☐	10

7. INNOVATION ACTIVITIES AND EXPENDITURES (Cont.)

B. How much is the expenditure for each of the following four innovation activities in 2009?

*Report the expenditure including personnel and related costs in 2009. If your establishment had no expenditures in 2009, mark (✓) in column "**None**".*

Innovation Activity	VALUE IN PESOS	None	LN NO
1. In-house R&D Includes salaries, operating expenses and capital expenditures on buildings and equipment specifically for R&D		☐	11
2. Outsourced R&D		☐	12
3. Acquisition of machinery, equipment and software *Exclude expenditures on equipment for R&D*		☐	13
4. Acquisition of other external knowledge *Purchase of Patents, Prototypes, Designs, Consultants*		☐	14
5. Total expenditures (sum of 1 to 4)			15

C. Since January 2009, did your establishment receive any public financial support for innovation activities from the following levels of government?

Include financial support via tax credits or deductions, grants, subsidized loans, and loan guarantees. Exclude research and other innovation activities conducted entirely for the public sector under contract.

Level of Government	YES	NO	LN NO
1. Local government unit	1 ☐	2 ☐	16
2. National government (Including National Government Agencies or Departments)	1 ☐	2 ☐	17
3. Foreign government	1 ☐	2 ☐	18

8. SOURCES OF INFORMATION AND CO-OPERATION FOR INNOVATION ACTIVITIES

A. Since January 2009, how important to your establishment's innovation activities were each of the following information sources?

Identify information sources that provided information for new innovation projects or contributed to the completion of existing innovation projects.

*Mark (✓) the appropriate box. Mark (✓) in column "**Not Used**" if no information was obtained from a source.*

Information Source		Degree of Importance				LN NO
		High	Medium	Low	Not Used	
1. Internal	a. Within your establishment or enterprise	1 ☐	2 ☐	3 ☐	4 ☐	01
2. Market source	a. Suppliers of equipment, materials, components, or software	1 ☐	2 ☐	3 ☐	4 ☐	02
	b. Clients or customer	1 ☐	2 ☐	3 ☐	4 ☐	03
	c. Competitors or other enterprise in your sector	1 ☐	2 ☐	3 ☐	4 ☐	04
	d. Consultants, commercial laboratories, or private R&D institutes	1 ☐	2 ☐	3 ☐	4 ☐	05
3. Institutional source	a. Universities or other higher education institutions	1 ☐	2 ☐	3 ☐	4 ☐	06
	b. Government or public research institutes	1 ☐	2 ☐	3 ☐	4 ☐	07
4. Other sources	a. Conferences, trade fairs, exhibitions	1 ☐	2 ☐	3 ☐	4 ☐	08
	b. Scientific journals and trade/technical publications	1 ☐	2 ☐	3 ☐	4 ☐	09
	c. Professional and industry associations	1 ☐	2 ☐	3 ☐	4 ☐	10

8. SOURCES OF INFORMATION AND CO-OPERATION FOR INNOVATION ACTIVITIES (Cont.)

		LN NO
B. Since January 2009, did your establishment co-operate with other establishments or non-commercial institutions on any of your innovation activities? Innovation co-operation is active participation with other establishment or non-commercial institutions on innovation activities. Both partners do not need to commercially benefit. *Exclude pure contracting out of work with no active co-operation.*	1 ☐ YES 2 ☐ NO	11

If NO, go to question 9.A. Otherwise, proceed to 8.C.

C. Indicate the type of co-operation partner and location

Mark (✓) applicable box/es.

Type of Co-operation Partner	Your Country	Other ASEAN*	All other countries**	LN NO
1. Other establishments within your enterprise	1 ☐	2 ☐ _____ _____ _____	3 ☐ _____ _____ _____	12
2. Suppliers of equipment, materials, components, or software	1 ☐	2 ☐ _____ _____ _____	3 ☐ _____ _____ _____	13
3. Clients or customers	1 ☐	2 ☐ _____ _____ _____	3 ☐ _____ _____ _____	14
4. Competitors or other establishments in your sector	1 ☐	2 ☐ _____ _____ _____	3 ☐ _____ _____ _____	15
5. Consultants, commercial laboratories, or private R&D institutes	1 ☐	2 ☐ _____ _____ _____	3 ☐ _____ _____ _____	16
6. Universities or other higher education institutions	1 ☐	2 ☐ _____ _____ _____	3 ☐ _____ _____ _____	17
7. Government or public research institutes	1 ☐	2 ☐ _____ _____ _____	3 ☐ _____ _____ _____	18

		LN NO
D. Which type of co-operation partner did you find the most valuable for your establishment's innovation activities? *Give corresponding number from the list in 8.C.*		19

9. EFFECTS OF INNOVATION

A. How do you perceive the effects of your product and process innovations introduced during 2009?

Mark (✓) the appropriate box.

Effects of the Product and Process Innovation		Degree of Perceived Effects				LN NO
		High	Medium	Low	Not relevant	
1. Product oriented effects	a. Increased range of goods or services	1 ☐	2 ☐	3 ☐	4 ☐	01
	b. Entered new markets or increased market share	1 ☐	2 ☐	3 ☐	4 ☐	02
	c. Improved quality of goods or services	1 ☐	2 ☐	3 ☐	4 ☐	03
2. Process oriented effects	a. Improved flexibility of production or service provision	1 ☐	2 ☐	3 ☐	4 ☐	04
	b. Increased capacity of production or service provision	1 ☐	2 ☐	3 ☐	4 ☐	05
	c. Reduced labor costs per unit output	1 ☐	2 ☐	3 ☐	4 ☐	06
	d. Reduced materials and energy per unit output	1 ☐	2 ☐	3 ☐	4 ☐	07
3. Other effects	a. Reduced environmental impacts or improved health and safety	1 ☐	2 ☐	3 ☐	4 ☐	08
	b. Met regulatory requirements	1 ☐	2 ☐	3 ☐	4 ☐	09

10. FACTORS HAMPERING INNOVATION ACTIVITIES

A. Since January 2009, were any of your innovation activities or projects…

	YES	NO	LN NO
1. Abandoned in the concept stage	1 ☐	2 ☐	01
2. Abandoned after the activity or project had begun	1 ☐	2 ☐	02
3. Delayed seriously	1 ☐	2 ☐	03

B. Since January 2009, how important were the following factors for hampering your innovation activities of projects or influencing a decision not to innovate?

Factors Hampering Innovation Activities		Degree of Importance				LN NO
		High	Medium	Low	Factor not experienced	
1. Cost factors	a. Lack of funds within your establishment or enterprise	1 ☐	2 ☐	3 ☐	4 ☐	04
	b. Lack of finance from sources outside your enterprise	1 ☐	2 ☐	3 ☐	4 ☐	05
	c. Innovation costs too high	1 ☐	2 ☐	3 ☐	4 ☐	06
2. Knowledge factors	a. Lack of qualified personnel	1 ☐	2 ☐	3 ☐	4 ☐	07
	b. Lack of information on technology	1 ☐	2 ☐	3 ☐	4 ☐	08
	c. Lack of information on markets	1 ☐	2 ☐	3 ☐	4 ☐	09
	d. Difficulty in finding cooperation partners for innovation	1 ☐	2 ☐	3 ☐	4 ☐	10
3. Market factors	a. Market dominated by established enterprises	1 ☐	2 ☐	3 ☐	4 ☐	11
	b. Uncertain demand for innovative goods or services	1 ☐	2 ☐	3 ☐	4 ☐	12
4. Reasons not to innovate	a. No need due to prior innovations	1 ☐	2 ☐	3 ☐	4 ☐	13
	b. No demand for innovations	1 ☐	2 ☐	3 ☐	4 ☐	14
5. Others, *specify:* _____		1 ☐	2 ☐	3 ☐	4 ☐	15

11. INTELLECTUAL PROPERTY RIGHTS

A. Since January 2009, did your establishment…

Intellectual Property Rights	YES	NO	LN NO
1. Apply for a patent	1 ☐	2 ☐	01
2. Register an industrial design	1 ☐	2 ☐	02
3. Register a trademark	1 ☐	2 ☐	03
4. Claim a copyright	1 ☐	2 ☐	04

12. ORGANIZATIONAL INNOVATION

An organizational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations.

A. Compared to other foreign-based establishment of a similar size and sector, how close was your establishment's organizational structure to international best practice.

Best practice is defined as an organizational structure that maximized productivity, quality, and customer service.

Mark (✓) the appropriate box.

		LN NO
1 ☐ Close to or at best practice	4 ☐ Below average	01
2 ☐ Above average	5 ☐ Well below average	
3 ☐ Average	6 ☐ Do not know	

B. Since January 2009, did your establishment introduce…

Mark (✓) the appropriate box.

Organizational Innovation	YES	NO	LN NO
1. New or significantly improved knowledge management systems to better use or exchange information, knowledge and skills within your establishment	1 ☐	2 ☐	02
2. New management systems for the production and/or supply operations of your establishment	1 ☐	2 ☐	03
3. Significant changes to the organization of work in your establishment that:			
a. Increased employee decision making and responsibility for their work	1 ☐	2 ☐	04
b. Decreased employee decision making and responsibility for their work	1 ☐	2 ☐	05
c. Had no effect on employee decision making and responsibilities	1 ☐	2 ☐	06
4. A significant change to the management structure of your enterprise, such as creating new divisions or departments, integrating different departments or activities, adoption of a networked structure, etc.	1 ☐	2 ☐	07
5. New or significant changes in your relations with other firms or public institutions, such as through alliances, partnerships, outsourcing or sub-contracting.	1 ☐	2 ☐	08

Go to question 12.G if your establishment answered NO to all organizational innovation since January 2009. Otherwise, proceed to 12.C.

C. What was the source of the ideas for your establishment's organizational innovations?

Mark (✓) the appropriate box.

		LN NO
1 ☐ Mainly your establishment	3 ☐ Other establishments or institutions	09
2 ☐ Your establishment together with your main office and/or establishment within the enterprise		

12. ORGANIZATIONAL INNOVATION (Cont.)

D. How do you perceive the effects of your establishment's organizational innovations since January 2009?

If your establishment introduced several organizational innovations, make an overall evaluation.

Mark (✓) the appropriate box.

Effects of Establishment's Organizational Innovation	Degree of Perceived Effects				LN NO
	High	Medium	Low	Not relevant	
1. Reduced time to respond to customer or supplier needs	1 ☐	2 ☐	3 ☐	4 ☐	09
2. Improved quality of goods or services	1 ☐	2 ☐	3 ☐	4 ☐	10
3. Reduced costs per unit output	1 ☐	2 ☐	3 ☐	4 ☐	11
4. Improved employee satisfaction and/or lower employee turnover	1 ☐	2 ☐	3 ☐	4 ☐	12
5. Improved communication or information sharing	1 ☐	2 ☐	3 ☐	4 ☐	13
6. Increased ability to develop new products or processes	1 ☐	2 ☐	3 ☐	4 ☐	13
7. Others, *specify:* _____	1 ☐	2 ☐	3 ☐	4 ☐	13

	LN NO
E. Approximately what percent of your employees were directly affected by your establishment's organizational innovation in 2009? ☐ %	17

F. Were any of these organizational innovations essential to the implementation of other types of innovations introduced by your establishment in 2009?

*Mark (✓) "**Not relevant** if your establishment did NOT introduce one of the following innovations.*

Types of innovation	YES	NO	Not relevant	LN NO
1. Product innovation for a new or improved good	1 ☐	2 ☐	3 ☐	18
2. Product innovation for a new or improved service	1 ☐	2 ☐	3 ☐	19
3. Process innovation	1 ☐	2 ☐	3 ☐	20

G. Why did your establishment not introduce an organizational innovation since January 2009?

Reasons for Not Introducing Organizational Innovation	YES	NO	LN NO
1. Organizational innovations were introduced before January 2009 and no need for further change	1 ☐	2 ☐	21
2. Lack of funds or staff to implement an organizational innovation	1 ☐	2 ☐	22
3. Resistance of staff or management to organizational change	1 ☐	2 ☐	23

13. MARKETING INNOVATION

A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.

A. Since January 2009, has your establishment introduced the following marketing innovations:

Mark (✓) the appropriate box.

Types of Marketing Innovation		YES	NO	LN NO
1. Design	a. Introduce significant changes to the design of a good or service *(Exclude routine/seasonal changes such as clothing fashions)*	1 ☐	2 ☐	01
	b. Introduce significant changes to the packaging of a good	1 ☐	2 ☐	02
2. Promotion	a. Implement a new marketing strategy to target new customer groups or market segments	1 ☐	2 ☐	03
	b. Use new media or techniques to promote products, such as new advertising concepts, a new brand image or new techniques to customize promotion to individual customers or groups	1 ☐	2 ☐	04
3. Placement	a. Use new sales channels, such as direct selling, internet sales, or product licensing	1 ☐	2 ☐	05
	b. Introduce new concepts for product presentation in sales outlets (e.g. sales rooms, websites, other types of outlets)	1 ☐	2 ☐	06
4. Pricing	a. Use new pricing methods to market goods or services	1 ☐	2 ☐	07

Go to question 14 if your establishment answered NO to all marketing innovation since January 2009. Otherwise, proceed to 13.B.

B. Which unit developed these marketing innovations?

Mark (✓) the appropriate box.

	LN NO
1 ☐ Mainly your establishment 2 ☐ Your establishment together with your main office and/or establishment within the enterprise 3 ☐ Other establishments or institutions	08

C. How do you perceive the effects of your establishment's marketing innovations since January 2009?

If your establishment introduced several marketing innovations, make an overall evaluation.

Mark (✓) the appropriate box.

Effects of Marketing Innovation	Degree of Perceived Effects				LN NO
	High	Medium	Low	None/Not relevant	
1. Sales growth for your goods and services	1 ☐	2 ☐	3 ☐	4 ☐	09
2. Increased visibility of products or business	1 ☐	2 ☐	3 ☐	4 ☐	10
3. Strengthened relationships with customers	1 ☐	2 ☐	3 ☐	4 ☐	11
4. Improved customer satisfaction	1 ☐	2 ☐	3 ☐	4 ☐	12
5. Others, *specify:* _____	1 ☐	2 ☐	3 ☐	4 ☐	13

13. MARKETING INNOVATION (Cont.)

D. How important were the following market-related activities for your establishment's innovation projects since January 2009?

Mark (✓) the appropriate box.

Market-Related Activities	Degree of Importance				LN NO
	High	Medium	Low	None/Not used	
1. Maintaining close links between your marketing department and departments or groups involved in developing or implementing your innovations	1 ☐	2 ☐	3 ☐	4 ☐	14
2. Systematic analysis of your customer's needs by your marketing division	1 ☐	2 ☐	3 ☐	4 ☐	15
3. Systematic analysis of the effectiveness of your marketing techniques	1 ☐	2 ☐	3 ☐	4 ☐	16
4. Others, *specify:* _____	1 ☐	2 ☐	3 ☐	4 ☐	17

E. If your establishment introduced a marketing and product innovation since January 2009…

	YES	NO	LN NO
1. Were any of these marketing innovations an integral part of any of your establishment's product innovations? *For example, a design change was an essential part of a technical innovation, or a new marketing method was part of a process innovation*	1 ☐	2 ☐	18
2. Were any of these marketing innovations necessary for the successful introduction of your establishment's product innovation/s?	1 ☐	2 ☐	19

14. KNOWLEDGE MANAGEMENT

Knowledge management involves activities related to the capture, use and sharing knowledge by the organization. It involves the management both of external linkages and of knowledge flows within the enterprise, including methods and procedures for seeking external knowledge and for establishing closer relationships with other establishments (suppliers, competitors), customers or research institutions.

A. Has your establishment used any of the following knowledge management practices since January 2009?

Mark (✓) the appropriate box.

Knowledge Management Practices	YES	NO	LN NO
1. A written knowledge management policy	1 ☐	2 ☐	01
2. Incentives for employees to share knowledge within your establishment	1 ☐	2 ☐	02
3. Dedicated resources to monitor and obtain knowledge from outside your establishment	1 ☐	2 ☐	03
4. A policy to bring in external experts from universities, research institutes, or other establishments to participate in project teams, as needed	1 ☐	2 ☐	04
5. Regular updates of internal databases or manuals of good work practices, lessons learned, or expert advice	1 ☐	2 ☐	05

15. RESPONSE TO GOVERNMENT INNOVATION-RELATED POLICIES

A. Does this establishment know of any government innovation policy or initiative?	YES	NO	LN NO
	1 ☐	2 ☐	01

If the answer is no, go to question 15.D. Otherwise, proceed to 15.B.

15. RESPONSE TO GOVERNMENT INNOVATION-RELATED POLICIES (Cont.)

B. Has your establishment availed any government support or assistance in its innovation activity since January 2009?	YES	NO	DON'T KNOW	LN NO
	1 ☐	2 ☐	3 ☐	02

If the answer is no or don't know, go to question 15.D. Otherwise, proceed to 15.C.

C. Rate the importance of the following government support programs for innovation in your establishment since January 2009.

Mark (✓) the appropriate box.

Programs	Degree of Importance				LN NO
	High	Medium	Low	None/Not used	
1. R&D funding	1 ☐	2 ☐	3 ☐	4 ☐	03
2. Training	1 ☐	2 ☐	3 ☐	4 ☐	04
3. Subsidies	1 ☐	2 ☐	3 ☐	4 ☐	05
4. Tax rebates	1 ☐	2 ☐	3 ☐	4 ☐	06
5. Technical support/advice	1 ☐	2 ☐	3 ☐	4 ☐	07
6. Infrastructure support	1 ☐	2 ☐	3 ☐	4 ☐	08
7. Loans and grants	1 ☐	2 ☐	3 ☐	4 ☐	08
8. Others, *specify*_____	1 ☐	2 ☐	3 ☐	4 ☐	10

D. Give any suggestion on how government can encourage innovation in your establishment.	LN NO
_____ _____	11

16. OTHER INFORMATION

17. CERTIFICATION

I hereby certify that this report for the period _____ to _____ has been completed as accurately as the records of this establishment allow and with the best estimates in some instances.

Name: _____ Signature:_____
Position Title:_____ Date:_____

18. CONTACT PERSON

Person to be contacted for queries regarding this form:

Name: _____
Position Title:_____
Address:_____
Tel No.:_____ Fax No.: _____
Email Address:_____

DO NOT FILL ***(FOR NSO USE ONLY)***

Activity	Name	Signature	Number of Items	Date
Distributed by				
Collected by				
Field Edited by				
Manually Edited by				
Edited/Coded by				
Verified by CO				

THANK YOU FOR ACCOMPLISHING THIS FORM

ANNEX B

Highlights of Proceedings of the Survey of Innovation Activities (SIA) National Forum on Understanding Innovations: A Benchmark for Economic Growth and Competitiveness
October 17, 2011, Dusit Thani Hotel, Makati City

Welcome remarks

Dr. Josef T. Yap, President, Philippine Institute for Development Studies (PIDS)

Starting off with Paul Krugman's idea that "competitiveness is a dangerous obsession," Dr. Yap explained that while competitiveness is often attributed to competition among countries, it is actually firms that compete in the actual global market. As such, competitiveness should be a firm-level concept wherein in order to compete, technological capability should be present in a firm. It is thus necessary for policymakers from developing countries to craft policies in upgrading and acquiring technological capabilities. One way to attain these is through innovation. With this, he then introduced the scope of the project and its main proponents.

Dr. Yap also introduced the keynote speaker of the program–Honorable Senator Edgardo J. Angara.

Keynote message

Hon. Edgardo J. Angara, Senator, Republic of the Philippines

Senator Angara lamented on the fact that our government is practically a passive actor toward undertaking innovation activities in the country. He thus underscored the need for a National Innovation Program (NIP) which should be spearheaded by the government. Although there are many councils or offices promoting competitiveness and innovation, he said that the country lacks a single conductor leading the efforts in a coordinated and dedicated manner. The efforts should lead to outcomes that would make us proud of our country again.

According to him, in order to achieve this, the Philippines should be able to cope up with the changing global economic structure. He cited two studies relating to Asian economies – one done by the European Commission (Asia by 2025), and another done by the Asian Development Bank (Asia by 2050). The study by the European Union (EU) reveals that Asia would be the most dynamic region by 2025 and shall be producing

practically 25 percent of the global output by then. The same study says that by 2025, innovation would originate in Asia and not in the Western world. On the other hand, the ADB study projects that by 2050, Asia will be producing 50–54 percent of overall global output, and new inventions would also originate in Asia. However, ADB classifies the Philippines as one of the bottom-performing countries in the region.

The senator also mentioned some disheartening indicators that show the Philippines as really lagging behind other Asian countries. For example, in the ease of doing business, the country is ranked 148th out of 183 countries. The direct consequence of this, according to him, is the low foreign investments entering the country. Looking at the global innovation index, the country ranked 91 out of 125 countries.

In this regard, he emphasized that government support is critical in achieving successful innovation programs. Specifically, financial and policy support should be provided religiously by the government. Moreover, he called for the agents of innovation such as universities and the academe to spearhead innovation. He said that universities should serve as incubators of research and development inasmuch as imparting technological, behavioral, and analytical skills is their very mandate. He said that there is a need to adjust and upgrade higher education in the country. For instance, he said that although there is a high demand for business process outsourcing (BPO) and information technology (IT) employees, only 48 percent of the graduates are qualified in these industries. Hence, there may be a need for state universities and colleges (SUCs) to receive financial as well as system support for this purpose.

In addition, Sen. Angara said that there is a need to establish business incubation parks within universities. As land-grants universities, the SUCs in the country should be able to earn income from their lands and establishing incubation parks could be a way to attain this. Business incubation should also be a tripartite partnership among government, academe, and industry. In order to do this, the Congressional Commission on Science, Technology, and Engineering (COMSTE), which the senator chairs, proposes the creation of innovation clusters in the areas of: i) internet and cloud computing based in Cebu, ii) food and alternative energy, iii) eco-friendly mining, and iv) disaster science and management. He shared that there are already existing universities, public and private entities that have been successful in these endeavors and he reiterated that with a committed national innovation program and cooperation among the stakeholders, the country can be successful again.

Background of the project

Hon. Fortunato T. Dela Peña, Undersecretary, Department of Science and Technology (DOST)

Undersecretary Dela Peña assured the cooperation and support of the Department of Science and Technology (DOST) on the major proposals of Sen. Angara, particularly on the national innovation strategy. In fact, DOST had launched a particular strategy under

the Filipinnovation program as early as 2007. The first strategy of the Filipinnovation program, which is investing in human capital support, is very much aligned to the call of Sen. Angara to support SUCs as well as private colleges and universities. The second strategy under the Filipinnovation program, which is expanding the business incubation and acceleration efforts, is consistent with the idea of Sen. Angara regarding incubation parks and innovation clusters. The third strategy is the regeneration of an innovation environment in the country while the fourth strategy is changing the mindset of the people.

According to Usec. Dela Peña, the project was actually conceived when they learned that some of our neighboring countries have already been doing national innovation surveys for years. They then proposed a pilot study to be supported by the DOST and the International Development Research Centre (IDRC) of Canada. He elaborated on the planning stage constituting the survey wherein leading national agencies and organizations such as the National Economic and Development Authority (NEDA), Department of Trade and Industry (DTI), National Statistical Coordination Board (NSCB), among others, participated in the discussions. They adopted the OECD Innovation Indicator Survey instrument with slight changes such as adding the age variable of the firms as well as employment gender structure. The National Statistics Office (NSO) was commissioned to perform the survey while the PIDS, together with local coordinators in Cebu and Davao, was tasked to interpret and analyze the results. There have been regional and local forums to disseminate the survey results.

Usec. Dela Peña and the rest of the DOST are very positive that the results of this innovation survey would be very beneficial especially in policymaking. He noted that the ASEAN Economic Community (AEC) by 2015 is a challenge the country is facing and, hopefully, the survey would provide insights on how to make our firms more competitive.

DOST Secretary message

Hon. Mario G. Montejo, Secretary, DOST

Secretary Montejo also gave a brief message with regard to the innovation project. He shared his recent visit to Davao wherein he sees innovation as a key factor in transforming sago starch into something more usable. He said that a local wild palm that is endemic in the area contains sago which is almost 100 percent starch. Roughly 20–25 tons of starch can be harvested from a hectare of sago plantation as compared to rice which only produces 5.5 tons per hectare.

Another project viable in said area is the production of hardwood from rubber trees which is also endemic in Mindanao. A rubber lumber is considered hardwood but it de-

cays faster, making it less superior to other hardwood. Sec. Montejo said that we should be able to come up with a technology or treatment to these rubber trees to make them marketable as other hardwoods.

Research presentation

Dr. Jose Ramon Albert, Senior Research Fellow, PIDS

Dr. Albert, the lead researcher of the Survey of Innovation Activities (SIA) project, presented the overall results and policy recommendations of the study. He described the general profile of the firms as well as the major characteristics of innovative firms. In addition, he showed the different forms of innovation such as knowledge management and organizational innovation with respect to firms.

One of the most interesting results he presented is that research and development (R&D) funding is not that important to firms. Moreover, only few firms availed of government support for their innovation activities. He explained that it is possible that firms are not aware of various government programs related to innovation or there could be too many programs that lack focus.

For more detailed results, attached to this proceeding is the slide presentation of Dr. Albert during the national forum [Annex C].

Reaction – first discussant

Mr. Jerry Clavesillas, Executive Director, Rural Micro-Enterprise Promotion Program, DTI - on behalf of DTI Undersecretary Merly M. Cruz

Mr. Clavesillas and DTI's response to the study is focused on innovation as an important aspect of micro, small, and medium enterprises (MSME) development. He cited the four major outcomes aimed by the 2011–2016 MSME Development Plan, namely: business-enabling environment, access to finance, access to market, and productivity and efficiency. According to him, innovation will play a critical role in achieving these MSME outcomes. He said it is not only in the attainment of productivity and efficiency that innovation would have an impact but also on the other key outcomes. For example, he said that through the Business Registry System (which in a way is a form of innovation), business registration will be easier and faster. Equally important, according to him, is that to facilitate access to finance for small firms, innovation can play a key role with various platforms and programs to address the supply and demand in this financial market. He called on the study team to look into these aspects of innovation which can be relevant to MSMEs.

In strengthening the policy framework for innovation, Mr. Clavesillas opined that there is a need to harmonize the small and medium enterprises (SME) development plan and the DOST National Innovation Strategy. There is a need to encourage participation of stakeholders in fostering MSMEs as well as to address the barriers and bottlenecks faced by these firms.

Mr. Clavesillas also agreed that there are wide opportunities brought about by networking and partnership. He also said that using the value chain in providing the intervention will facilitate the knowledge and cooperation network. For instance, he said that value chain within the Philippine Economic Zone Authority (PEZA) is very much defined which could be the reason for better performance of firms in the zones.

Reaction – second discussant:

Dr. Ronald Mendoza, Executive Director, Asian Institute of Management Policy Center

Professor Mendoza started his presentation by saying that policymakers in the country should strive to achieve high and inclusive growth wherein economic development translates to poverty and inequality reduction. He emphasized the need for innovation to attain this greater purpose. According to him, in order to achieve this purpose, we have to understand the deeper channels of innovation and innovation's impact on society. There is also a need to identify specific sectors that should be prioritized so that development may be more effective and efficient. In contrast to what the previous speakers have said, Prof. Mendoza cited Brazil, China, and India as the countries the country can emulate.

He explained that many firms are actually hesitant to innovate because of its "public good" property. A firm that comes up with something new can be copied by others. He noted, however, that other countries such as Malaysia, Indonesia, Taiwan, and Japan provide innovation service as a public good.

One of the main issues raised by Prof. Mendoza is the timing of the survey (2009 to mid-2010) which is a period of global economic downturn. For him, it would not be a suitable benchmark period for the firms. He postulated that this period would either be taken as opportunity by some firms while others might see this as a constraint. Particularly, the firms that are much more competitive will look at the crisis as an opportunity.

In addition, with regard to the empirical analysis conducted by the team, he raised doubt on a possible endogeneity problem with the model used. He argued that more innovative firms tend to be self-selecting on export orientation, which means that they are much more competitive by default; therefore, they innovate at a higher rate. He said linkages should be disentangled – is it innovation that enables them to be export oriented or are they just export oriented and thus, they need to innovate? In the empirical

analysis, some determinants of innovation which could be endogenous are geographic market, foreign capital, location, and knowledge management indicators. He also suggested looking at knowledge transfer mechanisms that impact on the firms.

The professor also discussed trade openness and "learning by doing" or channels of adaptive innovation. He emphasized that the products a firm trades and the entities they trade these with, are very crucial for the progress of firms. Firms adapt and learn from their trading partners as well on the kind of products they constantly trade.

Prof. Mendoza further elaborated on the possible roles of innovation in attaining inclusive growth. These include the role of innovation in firm-level competitiveness; employment; product variety, affordability, and quality; cost discovery; and knowledge externalities.

As a final note, Dr. Mendoza discussed the issue of externalities brought about by innovations, their implication to the firms, and the possible approach the government can undertake to deal with these externalities. He said the nature of social externalities brought upon by innovation should matter in the selection of sectors that would fall under full public support, be partly subsidized, or left to the private sector. As an example, he presumed that the innovation clusters suggested by COMSTE are the sectors that might have large social externalities.

Open forum (Moderated by Dr. Yap)

1st set of questions/comments

Dr. Ceferino L. Follosco
The former DOST secretary said that the study is quite good. However, in the current (economic) situation that we are dealing with, perhaps it is better to look at other things such as risk management and corporate social responsibility (CSR).

He also envisioned that many companies will collapse after 2015 when the country would fall or be included under an ASEAN community, and be involved with various trade agreements. According to him, inclusive growth should be benchmarked at the grassroots level. He added that total convergence of the private sector, government, and academe seems implausible.

Dr. Filemon Uriarte, Jr.
The former secretary was curious on whether the data are detailed enough to determine correlation between innovation and (foreign) ownership. And if they are detailed enough to examine whether there are differences in how much firms innovate given the nationalities of major ownership. He also asked if value innovation is covered in the study.

Dr. Flordeliza A. Lantican, University of the Philippines at Los Baños (UPLB)
Professor Lantican commented on some of the major findings of the study. First, she explained that a possible reason why firms give less importance to R&D funding is because in the country, there is no strong partnership among the private sector, academe, and research institutions in research and development. She added that in Thailand, Indonesia, and Korea, the private sector provides the direction of priority research areas. In addition, she said that R&D expenditures in the country are too small compared to our ASEAN neighbors. In fact, our R&D budget is less than the minimum prescribed by the Asian Development Bank (ADB).

She also supported the idea that value chain formation is very important for the country. She added that it surprised her that Davao City turned out to have low innovation expenditure. This is worrisome because Mindanao is known to be a food basket wherein food processing is a major industry. She called for government support to help these firms in attaining not only innovation but also value chain enhancement.

Reply to discussants and first set of questions

Dr. Jose Ramon Albert
In response to the endogeneity issue raised by Prof. Mendoza, Dr. Albert said that they tried to look for instrumental variables to address this concern but due to some data limitations, they just worked with what they have. He admitted, though, that there might indeed be some endogeneity concerns, especially since the expected signs for some variables did not come out.

Another limitation of the dataset, according to him, concerns the question raised by Dr. Uriarte regarding value innovation. Dr. Albert said that it is not possible to extract this from the dataset. But for the concern pertaining to the relationship of foreign capital ownership and innovation activities, the correlation was established but it was not that strong.

Addressing Dr. Lantican's comment about Davao surprisingly having low innovation rate, Dr. Albert explained that it may be due to the low sample of firms drawn from Davao. He said that some caveats should be included in the study addressing these possible sampling errors or bias (as also pointed by Dr. Mendoza).

Dr. Rafaelita M. Aldaba, PIDS
Dr. Aldaba briefly responded to the comments of the discussants. She first addressed the comment raised by Mr. Clavesillas regarding the inclusion of MSMEs. She said that one of the recommendations of the study is SME development through incubation processes.

With respect to Prof. Mendoza's comment on the timing of the survey, she agreed that indeed, the world was in a recessionary situation during that time; nevertheless, she said that the Philippine manufacturing sector then was actually improving. She agreed, though, that the crisis might have played a factor in the decision to innovate. She seconded the explanation of Dr. Albert regarding endogeneity concerns. Although there are possible statistical techniques such as average treatment effect to address endogeneity, they were restricted because of data limitation.

On the Philippines' participation in the AEC, she said that this is where our firms should capitalize in innovation in order for them to compete globally. She agreed with the creation of innovation clusters but cited two issues in creating such. First, firms do not link up with the academe because firms generally regard universities as having weak capacities to address their needs. And second, the absence of intellectual property rights within universities should be addressed.

Open forum

2nd set of questions/comments

Mr. Francisco Perez
Although stated in the paper that innovation is not only confined to R&D, he was quite bothered that acquiring computer software and hardware was the commonly reported innovation activity. He argued that if a business were to use computer software while most other firms would not, will that already constitute innovation? He added that with regard to policy issues, the paper did not mention anything about protectionism which is something that can cause industries to be complacent and not pursue innovation.

Dr. Jose Tabbada
Mr. Tabbada's concern has to do with the possible upward bias in asking firms questions such as "do you innovate?" Although he has not seen the questionnaire, he asked how the researchers tried to correct this possible upward bias. Additionally, he commented on the result of lack of government assistance availment which, in his opinion, could be a sign that innovative firms do not really need government assistance. He opined that what firms really need is a good business environment which is not necessarily perceived by these firms as government support.

Mr. Generoso Senal
Mr. Senal asked the team on what might be the underlying reasons for the result indicating that only one out of five firms avail of government support. And for those that actually availed of support, the micro and small firms seem to be the ones that seek government funding.

Reply to the second set of questions/Final remarks

Dr. Ronald Mendoza
Addressing the issue raised about protectionism, Prof. Mendoza shared that based on his knowledge, many of our politicians do not believe or support industrial policy while other countries like Taiwan, Indonesia, Malaysia, and Singapore have had industrial policies long before. According to him, these countries had some strategies which also failed but winners nonetheless have still emerged from them. The challenge for our country then is how to navigate this business environment and still allow winners to emerge.

Dr. Ceferino L. Follosco responded that the issue of globalization versus protectionism had in fact been an issue even during the time of the Cory administration. There was unanimous agreement in creating the first liberalization law in the country at that time. However, after its implementation, most businessmen were against it.

Dr. Rafaelita M. Aldaba added that the government can provide support not only through tariffs but also through other means. She reiterated the need to enhance innovation strategies geared toward firm competitiveness.

Dr. Jose Ramon Albert
Responding to the question raised by Mr. Perez regarding computer and software as part of innovative activities, he pointed out that the actual survey questionnaire pertains to the purchase of computer software specifically for innovation activities and not just for general purposes.

For the possible upward bias asked by Dr. Tabbada, Dr. Albert said that the questionnaire was more complex to avoid this possible bias. He said the survey questionnaire was adopted from a well-tested instrument by OECD.

On the issue of the low number of firms that availed of government support, again, he warned that the sample is not representative of the whole. However, during the local discussions with business representatives, they were confirming that government does not play much role in their innovation activities. In this connection, Dr. Dela Peña clarified that there was actually no question on whether firms need government support or not.

Closing remarks

Mr. Bernie Justimbaste, Director, Planning and Evaluation Service, DOST
For his closing remarks, Mr. Justimbaste discussed the rationale on why there is an urgent need for this innovation survey. He said that this tool would help the DOST manage and value the needs of the firms with respect to innovation. He discussed innovation as

a system wherein all participants, namely, the stakeholders, institutions, and people, are interconnected and interrelated. He said that innovation is nothing without systematic collaboration and cooperation. Finally, with countries like India and China having their own trademark of innovation, it is about time, he said, for the Philippines to define what should and what should not be innovation in the country.

END OF PROCEEDINGS

ANNEX C
Presentation on the Results of the 2009 Survey of Innovation Activities

Results of the 2009 Survey of Innovation Activities (SIA)

Jose Ramon Albert, Rafaelita Aldaba
Francis Quimba & Donald Yasay
Philippine Institute for Development Studies

Agenda

- Introduction: Innovation, 2009 Survey on Innovation Activities
- Main Results
  - Key Statistics, Public Support, Innovation Expenditures, Innovation Across Areas
- Determinants of Innovation
- Barriers to Innovation
- Effects of Innovation
- Sources of Information & Cooperation
- Wider Forms of Innovation
- Summary of Findings & Policy Issues

1. Innovation

- major driver of economic output, productivity and competitiveness
- often connoted with R&D, and thus, traditionally its measurement focused on scientific or technological outputs.
- broader sense : "the **application of (new) knowledge in production to increase value (customer or producer sense)**"
  - implementation of new or significantly improved products or processes, or new marketing or organizational methods

1.1. Measuring Innovation

- The first Innovation survey in PH conducted in 1998 for selected number of industries located in Metro Manila
  - Results published by the Philippine Institute for Development Studies (PIDS) in 1999
  - "PRIVATE SECTOR RESEARCH AND DEVELOPMENT ACTIVITIES" written by Dr. Tristan Macapanpan
  - Survey questionnaire adopted from 1994 Malaysian Survey of Innovation in Industry conducted by MASTIC.

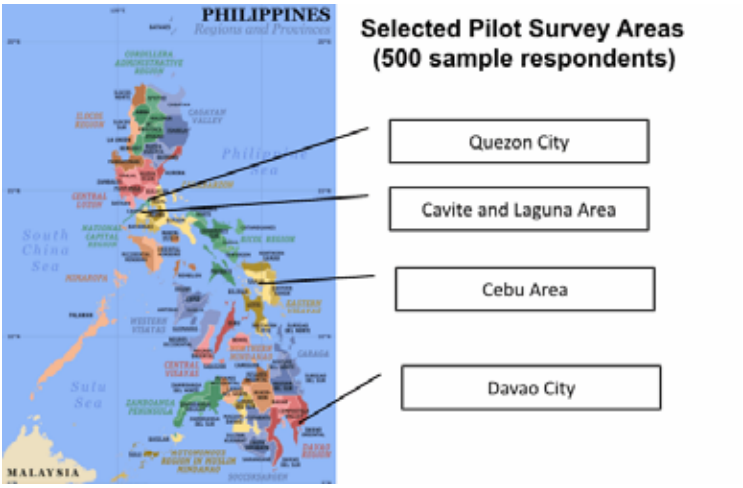
1.2. 2009 Survey of Innovation Activities

- Conducted by the Department of Science & Technology (DOST), the National Statistics Office (NSO) with support from International Development Research Centre (IDRC)
- Analysis of survey results by PIDS & local experts
- Objectives of 2009 SIA:
  - Describe innovation (and establish benchmark)
    - Processes involved
    - Expenditures
    - Types of firms perform innovation
  - Describe barriers and bottlenecks to Innovation
    - Enabling environment
  - Characterize support given to innovation

1.2. 2009 Survey of Innovation Activities

- Questionnaire based on concepts, definitions and methodology embodied in the OECD Oslo Manual, "Guidelines for Collecting and Interpreting Innovation Data" (3rd Edition, 2005) and patterned after the European Community Innovation Survey (CIS 4).
- Three items from the survey instrument designed under the New Partnership for Africa's Development (NEPAD) also included
- Contextualized to the Philippine setting and used the reference period, January 2009 to June 2010.

1.2. 2009 Survey of Innovation Activities

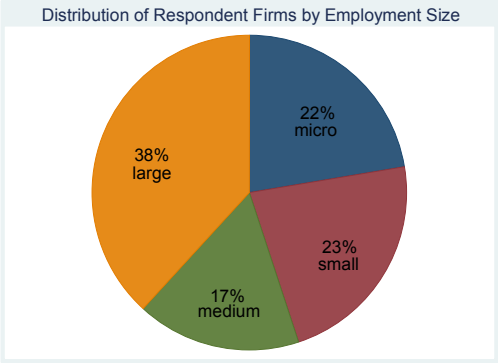


1.3. Profile of Establishments

- 474 responding establishments (effective response rate of 94%)

AREA	MAJOR SECTOR			
	Food Manufacturing	Electronics Manufacturing	IT	All Sectors
Cebu	71	6	52	129
Davao	35	0	10	45
Quezon City	75	6	82	163
PEZA	10	30	97	137
All Areas	191	42	241	474

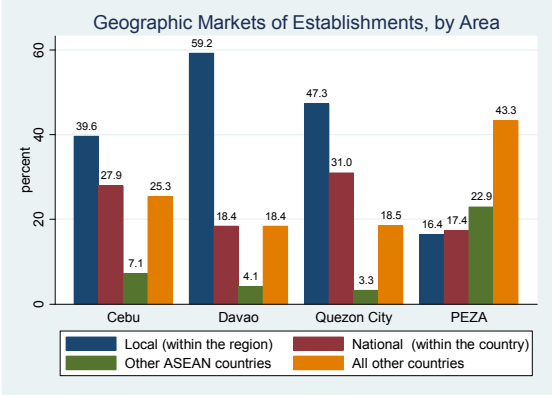
1.3.1. Profile of Establishments: Size



- About 2 in 5 firms are large firms; the rest are nearly uniformly micro, small, and medium firms.

1.3.2. Profile of Establishments: Geographic Markets by Location

About half of firms have local markets, a third have national markets, nearly 15% have markets in other ASEAN countries; a third have markets in countries outside ASEAN



1.4. Definition of Innovation

- Product innovation: new or significantly improved good/service: wireless connectivity in laptop, cameras in cellphones, hybrid engines in autos, flatscreen plasma displays
- Process innovation: production process, distribution method or support activity for goods/service: Toyota's Kanban manufacturing process
- Engaged in (on-going or abandoned) innovation projects
- Spent on innovation activities

1.4. Key Statistics

- More than half (54%) of firms are innovation active
  - About 2/3 of medium and large establishments are innovation active, as compared to a third for micro-establishments, and half for small establishments.
  - About 2 in 5 establishments were product innovators; Similar rate (44 percent) of process innovators

1.6. Public Support for Innovation

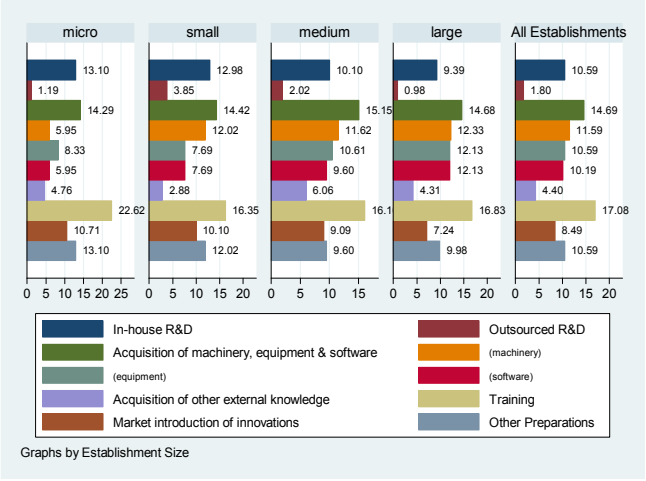
- Only one in twenty firms mentioned public support for their innovations (the rate highest among medium-sized firms).
- For wider forms of innovation, that include marketing innovation, about one in five had some form of government support.
  - A bigger share of medium-sized firms report government support for marketing innovation than small and micro establishments.

1.7. Innovation Expenditure

- Average annual expenditures in innovation rise with the size of establishments.
  - Micro firms 50 K PHP
  - Small and medium establishments 3M PHP
  - Large firms 30 M PHP
- Average expenditures in innovation activities are highest for electronics manufacturing at 25 M PHP, in contrast to food manufacturing (2.7 M PHP)

1.7.1. Innovation Expenditure by Firm Size

- Most investment in training, hard & software



1.8. Innovation in Study Areas

- Establishments in the PEZA zone lead in innovation activity, with an average expenditures in innovation activities at 25.6 million pesos.
- Quezon City & Davao firms have the least innovation activities, with average innovation expenses at 5.7 million pesos and 47 thousand pesos, respectively.
  - Davao though leads in innovation cooperation.
  - None of the establishments in QC are provided public financial support in innovation, although one out of ten received government support or assistance to wider forms of innovation.

2. Determinants of Innovation

With a probit model, we found:

- Having knowledge management practices is a good determinant of product innovation, process innovation and being an innovator, in general.
- Employment size matters, rather significantly for process innovation: The larger the firm, the more likely it is a process innovator.
- Location matters: firms in PEZA, all other things equal, are more likely to be innovators than firms in other areas.
  - evidence is strongest for product innovation, and innovation activity, in general, when comparing PEZA with Cebu firms

3. Barriers to Innovation

- Cost factors were commonly identified by the firms as significant barriers to innovation.
  - Direct costs of innovation were regarded as being too high (one out of four responding firms associated a high degree of importance to this, especially among 30% of micro firms and 28% of small establishments).
- About one in ten establishments also reported knowledge and market factors as significant barriers to innovation.

3. Barriers to Innovation

- Noninnovators in both IT and food manufacturing cite market conditions more as the reason for no innovations, but in electronics manufacturing, the trend is reversed.
  - About half (47%) of responding noninnovative firms felt they did not need to innovate due to market conditions, a slightly smaller proportion felt they did not need to innovate due to prior innovations.
  - Difference in rates is most evident among large firms

4. Effects of Innovation

- Product-related effects were more often cited than process (cost) effects, especially among large firms.
  - About three fifths (60 per cent) of innovation-active firms rated improving the quality of goods or services as highly important.
  - Increasing the range of goods or services was also widely reported product-related effect particularly in the food manufacturing industry.
  - The least commonly reported effect was reducing materials and energy per unit output.

4. Effects of Innovation

- Even for organizationally innovative firms, quality ranked highest across size and industries.
  - Across firms, the least commonly reported effect of organizational innovation appears to be improved employee satisfaction and/or lower employee turnover.
- As far as firms that engaged in marketing innovations, the most highly ranked effect is customer-related, i.e., improved customer satisfaction or strengthened customer relationship.

5. Sources of Info & Coop

- Firms reported internal (70%) and market sources, especially clients (67%) as most important for information on innovation.
  - This suggests that establishments tend to rely on their own experience and knowledge coupled with information from suppliers, customers, and clients.
- The institutional sources, especially government or public research institutes, were considered to be of lowest importance.

6. Wider Forms of Innovation

- Organizational innovation: business practices, workplace organization or external relations
- Marketing innovation: product design or packaging, product placement, promotion or pricing
- Knowledge management practices: internal knowledge flow & external knowledge (how firm creates linkage with customers, suppliers, competitors, research institutions)

6. Wider Forms of Innovation

	MSME	Large	ALL
Wider innovator	71%	83%	76%
Organizational Innovator	52%	67%	58%
Marketing innovator	49%	53%	50%
Knowledge management	56%	72%	62%

7. Policy Issues & Key Findings

- Only about one in five (20%) of firms availed of government support or assistance in its innovation activities, with the rate highest among large firms in the Food Manufacturing industry
- As regards govt programs
  - Micro and small firms tend to consider technical support and training to be impt
  - Medium & large firms value training, tax rebates and infra support
  - Least impt R&D funding, subsidies, and loans and grants

7. Policy Issues & Key Findings

- Major determinants to innovative behavior, include knowledge management, firm size of the firm and location
- Effects of innovation are also largely customer driven.
- Cost factors are most important barriers to innovation.
- Government support is found to be limited, particularly for product innovations, to medium-sized firms.
- Knowledge networks are rather weak.
  - Firms do not access technical assistance from the govt and research insts. Coop is also low between the firms and academe. Firms tend to coop more with establishments within their enterprise, their customers and suppliers (firms tend to rely more on those they have easy access and long-term relations with).

7. Policy Issues & Key Findings

- Survey results suggest the need to further strengthen the policy framework for innovation and aggressively pursue *Filipinnovation*, and to articulate the innovation strategy to firms, who seem to be generally of the view that government and research institutions are not key partners in their innovative practices.
  - Information dissemination on programs available to assist firms may need to be improved.

7. Policy Issues & Key Findings

- Firm size is a determinant of innovation.
  - Strategies and programs to assist firms in engaging in innovative practices will have to be customized. With limited resources, prioritization for assistance will also be needed
- Innovation varies across the study areas.
  - Investment climate in PEZA may be providing firms the incentive to innovate

7. Policy Issues & Key Findings

- Knowledge and cooperation networks, especially at the local areas, will have to be developed and when they exist, strengthened. Scope for partnerships to promote innovation is wide.
  - Cooperation and knowledge sharing among firms
  - NG and LGUs working in tandem with sectors
  - Information dissemination on programs
- It is also important to regularly monitor innovation
  - Innovation management cannot be effectively done if we do not measure what we manage

Salamat po!
End of Presentation

ANNEX D
Area Reports

Cebu and the Innovative Behavior of its Local Firms*

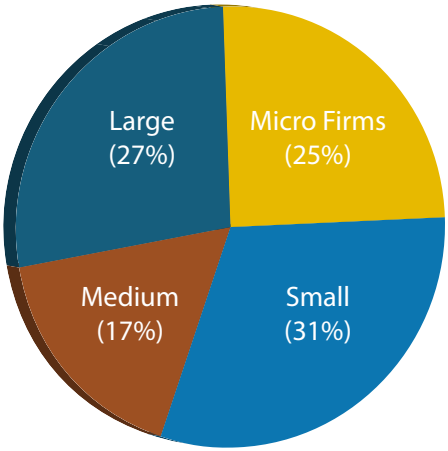
Innovation is defined as the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organization method in business practices, workplace organization, or external relations (Oslo Manual 2005). This write-up highlights some of the key points from the responses of Metro Cebu establishments to the 2009 Survey of Innovation Activities (SIA). The survey provides a broad picture on how innovation activities are implemented, driven, and hindered among selected establishments in the area.

Context

Cebu, one of the most developed provinces in the Philippines, has successfully produced various products and services both for local and export markets. This province has originally been known for its food manufacturing, furniture, and handicrafts sectors, but over the past decade, these traditional industries had been overtaken by advanced high-technology industries. The entry of business process outsourcing (BPO) firms such as call centers have also contributed much to the growth of the local economy. Cebu, being one of the fastest-growing economies in the country, was chosen as one of the four areas surveyed for this pilot 2009 SIA.

*Based on the report titled "2009 Survey of Innovation Activities in Metro Cebu" by Ms. Joan Arce Jaque, consultant of the Department of Science and Technology (DOST) Region 7.

Figure 1. Types of Enterprises



Profile of sampled establishments in Cebu

The 2009 SIA studied the innovation behavior of micro, small, medium, and large enterprises in four study areas, including Cebu. A total of 129 establishments from three key cities in Cebu (Cebu City, Mandaue City, and Lapu-Lapu City) were surveyed, with 25 percent of the respondents being micro firms; 31 percent, small; 17 percent, medium; and 27 percent, large enterprises as shown in Figure 1.

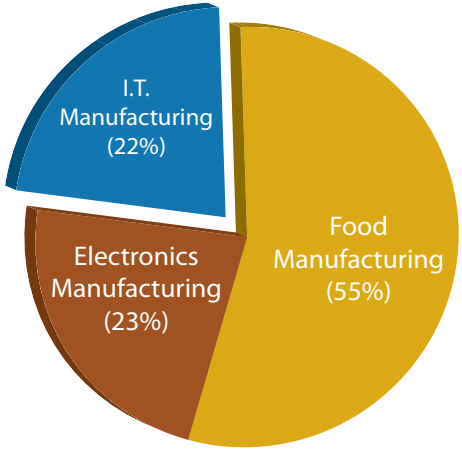
The firms belong under three major industry groups, namely, food manufacturing (55%), electronics manufacturing (23%), and IT manufacturing (22%) as gleaned from Figure 2. A focus group discussion (FGD) was then conducted among the key stakeholders to represent the industries that were not surveyed. The FGD was intended to gather feedback and further insights on the initial findings of the survey. The final survey results were also presented to various Cebu stakeholders. Recommendations which were formulated through these activities were presented in the final SIA report.

Key findings and results

Innovation activity

- More than half of the surveyed establishments (56%) in Cebu were innovation active.
- There are more process innovators (47%) than product innovators (38%). This is considered as a low turnout by the Cebu stakeholders. This could be due to the noninclusion of creative (fashion accessories, furniture making), tourism, and maritime industries.
- Only 43 percent of the surveyed industries claimed to have incurred expenses on innovations. This could

Figure 2. Industry groups



mean that more than half of the surveyed industries did not spend for innovation activities, or it could also be that some respondents may have failed to report their expenditures on innovation activities.
- The highest recorded percentage of innovation-active industry is the motion picture publishers (67%), followed by the ICT services (63%).
- In most types of industries, large enterprises are more innovation active than their micro, small, and medium enterprises (MSME) counterpart.

Constraints to innovation
- Cost factors were considered as the most significant hindering factor to innovate among industries in Cebu. Twenty-five percent of the surveyed industries claimed that they lack funds to innovate while 23 percent think innovation cost is too high.
- Innovation is usually associated with acquisition of new equipment or machinery for innovation activities. In relation to this, the survey revealed that majority of the reported innovation expenditure (74%) was spent for acquiring machinery and equipment or software.
- Greater proportion of the noninnovation-active establishments perceived the lack of information on technology and difficulty in finding cooperation as barriers to innovation.

Factors driving innovation
- Some of the respondents (28%) cited that they innovate to improve the quality of their goods or services.
- Large industries innovate to enter new markets and increase market shares.
- The responses of Cebu firms in the SIA reflect a similar trend to the overall responses across the four study areas of the SIA.

Sources of information and cooperation for innovation
- Thirty-seven percent of the respondents give high importance to their internal resources as their source of information for innovation.
- Thirty-four percent, on the other hand, regard their clients or customers as an important source of information for innovation.
- Some companies (26%) recognize their competitors and suppliers as sources of information as well.
- The most frequent type of cooperation of the firms is with their clients or customers within the Philippines.
- Government support programs were considered of high importance by 11 percent of the respondents.

Wider forms of innovation

There are other equally important forms of innovation apart from product and process innovations. These forms of innovation are believed to be key to the industries' competitiveness and economic progress. Firms are said to engage in wider forms of innovations if they had engaged in:
- Organization innovation, the utilization of the new organizational methods in the firm's business practice;
- Marketing innovation, which pertains to the adoption of new marketing and promotion strategies; or
- Knowledge management, a range of

strategies and practices to identify, create, represent, distribute, and enable adoption of ideas and information.

Results show that majority of the innovation-active establishments (61%) are reported to have implemented organizational innovations. On the other hand, there is also a big percentage (55%) of firms that turned out to be market innovators. Overall, most of the innovation-active enterprises in Cebu are innovators in a wider sense of the term.

Policy recommendations

This first innovation survey in Cebu was positively welcomed by the key stakeholders who were involved in the process of finalizing this study. As gathered during the series of meetings with the steering committee and from the FGD with 11 industry representatives, the following are hereby being recommended:

General

- Conduct an innovation survey on a regular basis (at least every 2 years) to bring in public consciousness and spur the "Culture of Innovation."
- Promote innovation as a tool for nation building by introducing innovation concepts and related topics.
- Promote and give recognition to best innovation practices through public and private fora.

Government intervention

- Strengthen government support from both the national and local governments, that will encourage and drive industries to become active innovators by providing government incentives together with financial and technical assistance, particularly for MSMEs.
- Promote and communicate existing government innovation-support programs such as tax credits or deductions, grants, subsidized loans, and loan guarantees to industries.
- Assign a government agency that will be responsible for promoting, marketing, establishing links, and communicating innovation activities in the country, and forging private and public partnership for innovation (one-stop shop for innovation).
- Plow in government funds for research and development to private and higher education institutions that will contribute to encourage and promote innovation activities.
- Provide government subsidy to in-house research and development projects that will be shared among similar industries.
- Minimize gap between external knowledge sources and industries by facilitating linkage and knowledge exchange through programs similar to "Balik Scientist" and Foreign Expert Exchange and by tapping local experts with government subsidy.

Private-public partnership

- Register and monitor micro and small industries engaged in ICT services for overseas market to provide support and protection.
- With more than half of the employment being generated by call centers, strengthen partnership between

the government and call centers in order to support the industry's innovation activities for expanding both their local and foreign markets.

- Follow China's indigenous innovation product policy where all products manufactured by foreign companies in China are labeled "Made in China." If this is already done in the Philippines, enforcement should then be monitored.

A final note

Cebu is a promising zone for economic development. Aside from its success in producing quality products and services for both local and international markets, it is also becoming a center for high-technology industries. It is thus important to further trigger this economic growth and make the province a key player in the growing national and global economy. Innovation indeed is a key for further economic prosperity.

As the survey results suggested, it is important to establish an environment that ensures continuous innovation not only through executive, legislative, and judiciary initiatives but through local government programs as well.

Strong public-private partnership is essential for innovation to flourish. Government support will encourage and drive industries to become active innovators. On the other hand, private establishments, especially the ICT-BPO industries, should work hand-in-hand with the government institutions to be able to establish stronger collaboration for innovation.

The Filipinnovation network spearheaded by the DOST is important for acquiring a stronger innovative environment. However, innovation policies must be contextualized and further articulated in each local setting, and across innovation clusters, to help build a competitive economy. ■

Is Davao Ready to be Developed into an Economic Processing Zone?*

Davao City is the premier city and "Crown Jewel" of Mindanao. It is the most important economy in the island and the third most important urban center in the Philippines. The stable banana and flourishing pineapple industries of Davao are among the country's leading export commodities. A net exporter since 1987, Davao City largely contributed in making the Philippines as the world's top exporter of papaya, mangosteen, and even flowers. Like in any other key parts of the country, high-technology industries are spreading all over Davao. In 2002, Davao City was declared as an IT hub given its potential to attract ICT companies. The prominent IT-BPO services sourced from Davao City include call center, medical transcription, web and graphics design, and engineering services. Being one of the important economies in the country, Davao was chosen as one of the four areas surveyed for this pilot 2009 Survey of Innovation Activities (SIA) of the Department of Science and Technology (DOST).

Profile of sampled firms in Davao

The 2009 SIA aims to generate information on the innovative behavior of establishments in selected Philippine areas and to determine the factors that drive their innovation performance. The survey in Davao focuses on its economic activities which include manufacturing, electronics, information and communication technology (including content and media industries), and business process outsourcing (BPO) industries.

A total of 45 establishments were randomly selected to represent the food (35) and nonfood (10) industries. They were classified according to size, based on their total employment, as micro, small, medium, and large. The majority of the

*Culled from the Final Area Report submitted by the Department of Science and Technology (DOST) Region 11 based in Davao City.

sampled industries consist of small enterprises, followed by micro and medium to large enterprises. In the final analysis, though, a regrouping of establishments was done due to the limited number of sampled establishments for Davao where micro and small were grouped into one category, while medium and large establishments were similarly grouped into one category.

Food industry is dominant across industry size wherein approximately 69 percent are micro, 79 percent are small, and 90 percent are medium to large. All others in the industry size category are nonfood. Most micro enterprises are run through single proprietorship (56.3%) and private corporation (31.3%) while only very few are run by cooperatives (6.3%) and partnerships (6.3%). Small enterprises, meanwhile, are mostly run through private corporation (79%), with the same pattern being true for medium to large enterprises where they are managed by private corporations (80%). Regardless of size, though, most of the establishments are branches of enterprises (micro = 56%, small = 47%, medium to large = 50%).

Key findings

Innovation activity

- Almost half of the businesses (42%) in Davao were innovation active.
- Medium to large enterprises are more likely to engage in some sort of innovation compared to that of micro to small enterprises. It can be noted, however, that micro-small businesses are more likely to conduct innovations which are new-to-market products.
- Training is the most common among the innovation activities at 85 percent, followed by the acquisition of machineries, in-house research and development (R&D), and marketing which range from 46 to 62 percent.
- Among the nonfood industry firms, it can be observed that large businesses in Davao are the ones having more innovation activities.

Constraints to innovation

- Cost factors were most commonly regarded as significant barriers to innovation among the Davao enterprises. This is similar to the overall national finding.
- Market factors were not considered as a barrier by large enterprises in Davao compared to the small enterprises in the region and to the national enterprises.
- There is a need to look into the possibility of subsidizing innovation of small companies in the region by finding partners so as to help reduce their capital exposure in the conduct of innovation activities.

Factors driving innovation

- Generally, product-related factors were more often cited than process (cost) factors as drivers for innovation by Davao enterprises.
- Twenty percent of the Davao respondents rated increasing range of goods or services as highly important as well as improving the quality of goods and services, confirming a strongly customer-focused approach to innovation.
- An increase in the entry of the firms' products into new markets or an increase in their market-share was also reported as product-related drivers.

Sources of information and cooperation for innovation

- Eighteen percent reported internal and market sources as most important for their information on innovation. This suggests that enterprises tend to rely on their own experience and knowledge coupled with information from suppliers, customers, and clients.
- The institutional sources such as education institutions, government and public research institutes were considered to be of lowest importance among the Davao enterprises.
- These results imply that there is a need for institutions (academe and government) to promote innovation activity or to provide enterprises with innovation information.
- Most frequent partners for cooperation cited among innovation-active enterprises were suppliers, clients and customers, and competitors within the same sector (75% within the country, 0 ASEAN, 13% other countries).
- The least likely cooperation arrangement among enterprises was with government or public research organizations such as the academe, with only 38 percent each.
- It is essential for government organizations and the academe to promote cooperation and partnerships with the industry. By doing so, technological development will be more promising for the enterprises in the region. This was a major observation among firms in the Davao survey.

Wider forms of innovation

Innovation is not wholly about the development or use of technology or other forms of product or process change. Enterprises can also change their behavior or business strategies to make themselves more competitive, often in conjunction with product or process innovation, and also as an independent means of improving competitiveness.

Knowledge management was the most commonly reported wider activity among the small and medium enterprises (SMEs) and large enterprises in Davao. Large enterprises in Davao, however, have the least rate of marketing innovations for wider activity at only 30 percent.

Recommendations

- It is worthwhile to look into the possibility of developing an economic processing zone in Davao, which will likely increase innovation among enterprises and improve economic activity. The local government of Davao should therefore play a more active role in exploring potentials for this through closer coordination with national government agencies concerned in this program and in attracting prospective investors and locators.
- There is a need to look into the possibility of subsidizing innovation of small companies in the region by finding partners for them. Firms may only require proper networking to expand prospects for innovative activity.
- Finally, greater information sharing on innovation-related matters must be encouraged and promoted among government institutions, academe, and the private sector. These partnerships may include technology commercialization of matured researches conducted by the academe or government institutions. ■

Incentives and Innovation: SIA Results of PEZA Firms in Laguna and Cavite*

The report on innovation activities in PEZA-operated economic zones in Cavite and Laguna illustrates government's central role in fostering and encouraging firms to innovate. It shows that conducive business environment and strong institutional qualities such as good governance translate into improved and increased innovation activities by firms. Moreover, the report also points out a number of challenges and constraints to innovation such as the lack of collaboration among government, business, industry, and academe. It then provides some policy recommendations drawn from the analysis and results of the survey.

PEZA at a glance

Among the four study sites of the Survey of Innovation Activities (SIA) are the economic zones operated and managed by the Philippine Economic Zone Authority (PEZA) in Cavite and Laguna. PEZA has been a vital investment promotion agency in the country, with a large portion of trade and investments being sourced from and directed to PEZA-operated zones. From 2000–2009, PEZA has registered an average share of 38 percent of the country's total approved foreign and domestic investments and accounted for the bulk of the total foreign direct investment (FDI) at 46 percent. The choice of PEZA economic zones as a study site is principally because they host a number of large industries such as motor vehicle,

*Based on the final area report of the SIA results in PEZA-operated zones in Cavite and Laguna written by Dr. Rafaelita Aldaba and Mr. Donald Yasay, Senior Research Fellow and Research Specialist, respectively, at the Philippine Institute for Development Studies (PIDS).

processed food, and high-tech electronics manufacturers. PEZA in Laguna, for instance, houses Toyota Motors, Universal Robina, San Miguel, Amkor, and Fujitsu while PEZA in Cavite is a location for large electronics, automotive parts manufacturing, and shipbuilding firms.

Established in 1994, PEZA is a government corporation tasked to promote investments, extend assistance, register, grant incentives to, and facilitate the business operations of investors in export-oriented manufacturing and service facilities in so-called special economic zones. Fulfilling this mandate, PEZA commits itself to provide efficient, graft-free, and high-quality infrastructure and services to its clientele. As such, it operates as a one-stop shop operating nonstop (24/7) in issuing building and occupancy permits, export and import permits, environmental clearance certificates, and special nonimmigrant visa processing.

Cognizant of the stiff regional competition for foreign investments, PEZA also provides generous incentives consisting of income tax holiday and tax and duty exemption of raw materials and supplies and capital equipment in the hope of attracting foreign firms to invest and stay in the country. Included are incentives for research and development (R&D) and for innovation activities such as: (i) an income tax holiday (ITH) of four years which is granted for pure R&D activity; (ii) an ITH of six years plus other incentives which are provided for R&D with manufacturing in the country in coming up with new product or new application; (iii) an ITH of four years with other incentives for existing product enhancement with additional features; and (iv) other incentives but without ITH for existing product to reduce cost.

Profiles of surveyed PEZA establishments

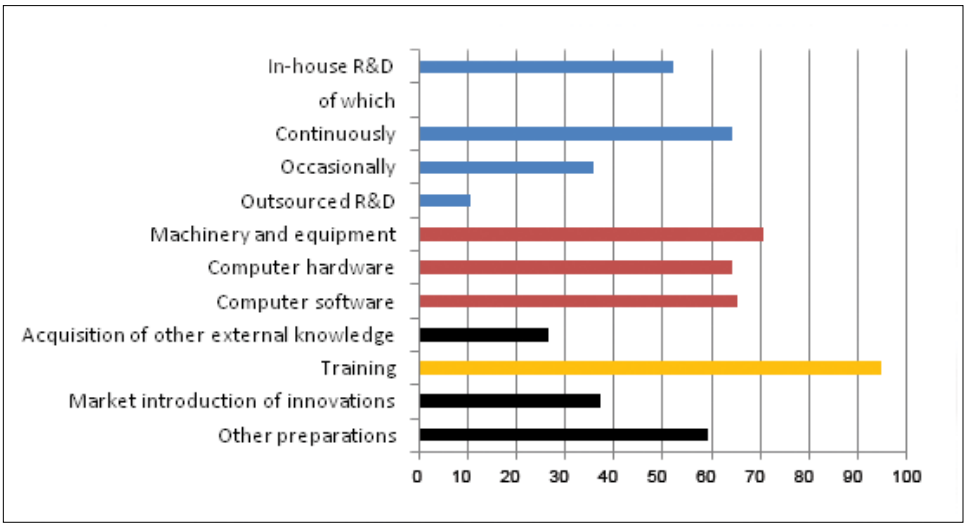
The SIA covered a total of 137 PEZA-registered firms (Table 1) located in Cavite and Laguna special economic zones. These surveyed firms consist mostly of IT

Table 1. Profile of Surveyed Firms in PEZA Laguna and Cavite (in percent)

		Establishment Size		Market Orientation			Foreign Equity	
Industry group	% to all PEZA	SME (share to industry)	Large (share to industry)	Domestic Only	Exports Only	Both Domestic & Exports	With no or less than 10% Foreign Capital	With 10% Foreign Capital
Food manufacturing and BPO	8%	36%	64%	64%	36%	0%	55%	45%
Electronics manufacturing	22%	43%	57%	27%	47%	27%	30%	70%
IT Manufacturing	70%	25%	75%	17%	59%	24%	16%	84%
Total	100%	30%	70%	23%	55%	23%	22%	78%

Source: 2009 SIA

Figure 1. Breakdown of Innovation Activities in PEZA Enterprises (in %)



manufacturers (70%), electronics manufacturers (22%), and food manufacturers and business process outsourcing (BPO) firms (8%). More than half of these firms are manufacturing only for the export market (55%) while the rest either sell their products in the domestic market only or in both markets (foreign and domestic). The sampled PEZA firms are composed mostly of large firms (70%). In terms of foreign capitalization, 78 percent of the surveyed firms have at least 10 percent foreign ownership. Among the PEZA respondents, 85 percent are single establishments which have neither branch nor main office. Eleven percent of the samples are branch offices only while the remaining 4 percent are both establishment and main office.

Key findings

Innovation activities

The survey results show that 72 percent of the sampled PEZA establishments are innovation active. This is relatively higher than the 54 percent rate of innovation-active firms across all samples. Innovator firms are mostly large corporations, with 55 percent engaged in product innovation while 64 percent in process innovation activities. Among small and medium enterprises (SMEs), only 44 percent are product innovators while 54 percent are process innovators. Results also show 50 percent of large establishments and 40 percent of SMEs are both product and process innovators.

Innovation, as defined in the study, is not only about the development or application of technology or other forms of product or process change. Changes in business strategies that increase competitiveness are also considered as innovation. That said, the survey shows 86 percent of PEZA firms being engaged in wider forms of innovation as compared to the national rate of 76 percent. Seventy-two percent are organizational innovators

while 55 percent are marketing innovators. The study further notes that food manufacturing and BPO enterprises in PEZA are most innovation active, with 91percent of firms engaged in innovative practices and activities. Electronics and IT manufacturing firms follow with 77 percent and 68 percent, respectively.

Various types of innovation activities are also employed by sampled firms as seen in Figure 1. Almost all of PEZA respondents (95%) said they engaged in either external or internal training for their personnel. A little more than 50 percent of all sampled PEZA firms said they engaged in in-house R&D and 11 percent outsourced their R&D activities. A high number of firms (71%) in the PEZA region also acquired advanced machinery and equipment to produce new or significantly improved products and processes.

Barriers to innovation

Similar to the sample firms in the other study areas, PEZA firms were likewise asked to rank in degree of importance the different factors that hamper their innovation activities. The factors are classified into three groups: cost, knowledge, and market, with the results summarized in Table 2.

Cost factors are perceived as the most significant barrier, with 27 percent of firms pointing out that innovation costs are too high and 18 percent noting that they lack funds for innovation. Knowledge factors such as the lack of qualified personnel, lack of information on technology and markets as well as difficulty in finding cooperation partners for innovation are also perceived as hampering their innovation. Fifteen percent of SMEs within PEZA consider lack of information on markets as a "high" barrier to innovation; however, only around 9 percent of large establishments indicated the same. Both SMEs and large enterprises with responses of 12 percent and 13 percent, respectively, perceive lack of finance from sources outside their enterprise as a high barrier to innovation.

Other findings

One of the important findings of the SIA in the PEZA sites is on the drivers of innovations—that is, identifying what factors encourage firms to innovate. Thirty-five percent of the respondents rated "improved quality of goods and services" as highly important in their decision to innovate, implying a customer-focused approach to innovation. Other important drivers were process related such as improved flexibility of production or service provision. Other exogenous factors such as meeting regulatory requirements, reduced environmental impact, and improved health and safety measures are found to be important drivers of innovation.

The study also shows that surveyed PEZA firms have high internal sources of information about innovations at 39 percent and from clients or customers at 36 percent. For SMEs, the most important source of information is from suppliers of equipment, materials, components, or software and clients and customers. In fact, most firms (74%) partnered with suppliers of equipment, materials, components, or software from other countries and almost half of the respondents considered clients or customers as the most valuable partner in their innovation activities.

Table 2. Potential Barriers to Innovation

Barrier		Size of enterprise (percentage of all enterprises)					
		SME		LARGE		ALL	
		National	PEZA	National	PEZA	National	PEZA
1. Cost Factors	a. Lack of funds within the establishment or enterprise	26	12	19	20	24	18
	b. Lack of finance from sources outside the enterprise	18	12	9	13	15	12
	c. Innovation costs too high	27	22	22	29	25	27
2. Knowledge factors	a. Lack of qualified personnel	14	10	6	10	11	10
	b. Lack of information on technology	12	10	7	10	10	10
	c. Lack of information on markets	11	15	6	9	9	11
	d. Difficulty in finding cooperation partners for innovation	11	10	8	11	10	11
3. Market factors	a. Market dominated by established enterprises	18	10	7	9	14	9
	b. Uncertain demand for innovative goods or services	12	10	7	10	10	10
4. Reasons not to innovate	a. No need due to prior innovations	8	7	8	8	8	8
	b. No demand for innovations	11	7	9	9	10	9

Source: 2009 SIA

The results, however, show that institutional sources were considered to be of lowest importance with only 3 percent of the PEZA respondents noting that information from universities or other research institutions as highly important. Thus, this shows that there is minimal tie-up between private firms and the academe.

In addition, the study shows that only 9 percent of PEZA innovation-active firms received support from the national government which is, however, substantially higher (almost twice) than the national result of 5 percent. Yet, respondent firms articulated that technical support or advice (33%) from government is the most important form of support followed by training (22%), infrastructure support (22%), R&D funding (17%), tax rebates (17%), and loans and grants (17%).

Policy recommendations

In general, the results of the SIA in PEZA economic zones in Laguna and Cavite

suggest that a conducive business environment and strong institutional and governance qualities are critical in encouraging firms to be innovative. Below is an outline of some policy considerations drawn from the SIA in PEZA:

- Reduce cost of doing business by providing infrastructure and logistics and creating an efficient and effective bureaucracy like PEZA.
- Expand and improve government support to domestically owned firms, particularly SMEs.
- Incentivize a wider range of innovation activities including not only development of a new or improved product, process, and technology but also of marketing and organizational innovations.
- Strengthen and develop SMEs by addressing major constraints such as access to finance, technology and skills, and difficulties with product quality and marketing.
- Encourage universities and research institutions to collaborate with industries and businesses, particularly with SMEs.
- Set up central institutions to monitor and diffuse new technologies and technological services to SMEs and other large firms.
- Establish more industrial parks and industrial incubators supported by both government and private sector and set up local or regional testing and quality standards institutes for SMEs to improve competitiveness.
- Expand DOST and PEZA programs such as the open technology and business incubation partnership for start-up companies in ICT to include other industries.
- Strengthen coordination and cooperation among PEZA, local government units, and the private sector toward the promotion of innovation as well as creation of an enabling business environment.
- Improve linkages and innovation cluster development among domestic firms and multinational companies in PEZA with firms operating outside PEZA which will have positive spill-over effects by linking up SMEs with larger domestic and foreign firms as potential suppliers or clients, and by building clusters.

Ultimately, the study of innovation activities in PEZA shows the primacy of the role that government should play in promoting free exchange of innovative ideas and knowledge. It illustrates that appropriate incentive structure may possibly stimulate innovation activities. Policies on promoting innovation should be in place such as encouraging collaboration among national government agencies, local government units, business, industry, and academe. An example of this would be Senator Angara's "innovation clusters" which is a paradigm of organizing regional universities and technical schools into research consortiums with funding support from the government and industry. This kind of collaboration would hopefully improve the competitiveness of domestic firms, particularly SMEs, as well as create an enabling business environment. ■

Industries Investing on Innovations in Quezon City*

Photo: Alveo Land (http://ayalalveoland.wordpress.com)

Among the 16 cities in the National Capital Region (NCR), Quezon City has the largest land area as well as the highest local government income amounting to about PHP 9.5 billion in 2008. Having a comprehensive expenditure plan, the local government unit (LGU) was able to improve its services and infrastructure facilities in order to attract investments in the area.

Quezon City has a consistently rising number of establishments, from over 56,000 firms in 2006 to around 58,000 in 2008 and to approximately 59,000 in 2009 (Chavez 2009; SOCA 2009). This increasing number has been attributed to the rapid infrastructure development in the city as indicated by new public areas, completion of several shopping malls, business centers, and ICT parks. The city boasts of 17 PEZA-accredited IT parks, including the UP-Ayala Technology Business Incubator (TBI) and the Technohub-Ayala TBI. Quezon City also houses about 60 business process outsourcing (BPO) companies and around 3,000 ICT-related businesses.

Establishments in Quezon City are concentrated in the service sector, ranging from contractors of goods and services, wholesalers and retailers of goods to food establishments and bars, to manufacturers of goods.

While Quezon City's performance in terms of attracting new investments has been good, it is also important to look at how the city can support these existing firms, especially in terms of innovation activity.

Profile of sampled establishments

For the pilot 2009 SIA, Quezon City has been selected as one of the study sites. A total of 163 firms in the city were interviewed for the survey. More than 68 percent of these firms are single establishments, 16 percent are branches, and

*Based on the area report on the Quezon City SIA written by Mr. Francis Mark A. Quimba, Supervising Research Specialist at the Philippine Institute for Development Studies.

15 percent are establishments with the main office. In terms of legal organization, 80 percent of the interviewed firms are stock corporations while only 19 percent are single proprietorships. The remaining 1 percent comprises partnerships, government corporations, and nonstock corporations.

In terms of distribution by industry groups, 46 percent of the surveyed firms manufacture food, 25 percent belong to the IT manufacturing and services group, 13 percent represent the publishing and motion picture industry, and 12 percent are BPO establishments. The smallest group is composed of electronics manufacturing, contributing only about 4 percent of the total number of surveyed firms.

The establishments were classified into micro, small, medium, and large, depending on their number of employees. Micro (less than 10 employees) establishments are about 36 percent of the sample in Quezon City; large firms (more than 200 employees) make up 27 percent of the sample; small firms (10–99 employees), 23 percent; and medium firms (100–199 employees), about 14 percent of the surveyed firms.

Looking at the ratio of female employees to total employees, only micro establishments in the electronics manufacturing sector have a ratio (80%) that is more than 50 percent. Despite this high proportion for the microsized electronics firms, the overall average for the sector is only about 42 percent because of the significantly low percentage (16.51%) of female employees in the medium-sized firms. For the other sectors, most of the firms have more males than female employees on the average. The food manufacturing sector, in general, has about 37 percent female employees on the average while the publishing and BPO industry has a relatively better percentage, with almost 45 percent of their employees being female.

Almost half of the establishments (47%) sell their goods and/or services within the region (NCR). About 31 percent, which totals to 57 establishments, meanwhile, are able to market their goods to other areas outside of the region but still within the country. Only about 40 firms are able to export their products, with majority of these firms (34 out of the 40 firms) targeting non-ASEAN countries.

Key findings/results

Any firm that had innovated a product or process, attempted to innovate, has an ongoing innovation activity, or has innovation spending may be called an innovation-active firm. An establishment is a product innovator if it has introduced to the market a new product or significantly improved a product which may have developed its user-friendliness, ingredients, or components. The new or improved product need not be new to the market but it has to be new to the firm for it to be considered a product innovation.

A process innovator is an establishment that has implemented a new or significantly improved manufacturing process, distribution system, or any other activity undertaken for the overall operations of the firm, but excluding organizational and marketing innovations. Organiza-

tional and marketing innovations fall into the wider forms of innovation that are considered as a separate category.

Innovation activity

Of the 163 firms surveyed in Quezon City, 42 percent are identified to be innovation active. This number is lower than the national average of 57 percent. Data show that for Quezon City, as in the rest of the country, large firms are more likely to be innovative than the medium, small, and micro firms. This observation is applicable for all types of innovation activity—be it product, process, abandoned, or ongoing.

Of the 163 firms in the sample, 43 (26.4%) are identified as product innovators while 50 (30.7%) are process innovators. The results of the Quezon City survey show that firms are slightly more likely to be process innovators than product innovators. In terms of any innovation activity that has been ongoing by the end of 2009, 43 percent of the large firms have affirmed so, while for the micro, small, and medium enterprises (MSMEs), the proportion is only about 24 percent. For abandoned innovation activities, 11 percent of large firms and 7 percent of the MSMEs indicated having had these.

The discrepancy of innovation activity by major industry, in the meantime, indicates that some sectors tend to be more innovative than others. For Quezon City, the electronics and IT sectors tend to be more innovation active than the food manufacturing or publishing and BPO sectors, with 57 percent of the electronics and IT firms being so compared to only 36 percent of innovation-active firms for food manufacturing and 38 percent for publishing and BPO. This observation is consistent with the nationwide picture.

Types of innovation activities

The most commonly reported innovation activities for establishments in the Quezon City sample were training (26%), in-house R&D (17%), and other preparations (16%). Other preparations include procedures and technical preparations to implement new or significantly improved products or processes that are not covered in the other options provided. Outsourced research and development (R&D) is the lowest with only 1 percent of all firms undertaking this innovation activity. Second to the lowest activity would be the acquisition of other external knowledge (7%). The low percentage for activities involving outsourced R&D and acquiring other external knowledge may indicate some difficulty in the experiences of firms relating to innovation activities that are beyond the internal resources of the establishment.

When divided according to industry group, training has been the number one innovation activity across all three industry groups. In-house R&D is the second most popular innovation activity for food manufacturing establishments while acquisition of equipment is the second most popular for electronics & IT firms. For publishing and BPO, acquisition of machinery, equipment, and software, market introduction of innovations and other preparations were all tied for second place as a popular innovation activity. Innovation activities that involve external resources, specifically outsourced R&D, had been consistently observed to be the least popular innovation activity across industry groups.

Innovation-related spending

In terms of expenditure related to innovation, about 29 percent of firms in

Quezon City spent funds, indicating recognition of the importance of innovation. Only 25 percent of the MSMEs in the city had innovation-related spending while the percentage for large firms is at 45 percent. The relatively higher innovation expenditure of larger firms probably explains why the bigger the firm is, the more likely for it to be innovation active.

For the average expenditure on innovation by major industry group, it is the electronics and IT group that has the highest average spending of about PHP 7 million, followed closely by publishing and BPO with an average of about PHP 5.4 million. Food manufacturing has the lowest average innovation spending at around PHP 2.4 million.

Government support

As to the receipt of some form of public financial support for their innovation activities, no firm from Quezon City reported to have experienced such. However, 12.3 percent of the firms reported that they have availed of some form of government support or assistance for their firm's innovation activity since January 2009. Those who received support were then asked to rate the degree of importance of the different types of government assistance that they got. In general for Quezon City, all the firms that received training support viewed it as highly important while two out of three firms that received support in the form of tax rebates said that this type of support is important.

Data show that the perception on the importance of government support varies by group of major industry. While no firm in the electronics and IT industry reported to have received any government support, firms in the food manufacturing sector that have received assistance for their innovation activities noted that all kinds of government support are important, be it in terms of R&D funding, training, or even infrastructure support. For the publishing and BPO group, training is viewed as highly important by all firms that received training assistance, while only half of those that received tax rebates viewed this as important.

Constraints

For the firms surveyed in Quezon City, the major constraint would be cost. More than one-fourth (29 percent) of all the firms indicated a 'high' rating for the lack of funds within the establishment as an important barrier to innovation. And while only 11 percent of large firms gave a high rating to innovation costs, it is the MSMEs that are more affected as 29 percent of them rated the high innovation costs as a barrier to innovative activities.

Market factors are also important for about 18 percent of MSMEs in Quezon City, indicating the dominance of already established enterprises as an important barrier. Only 4.5 percent of large firms, on the other hand, gave a high rating for market factors.

Knowledge factors are also relatively more important to MSMEs as compared with large firms. All in all, it has been observed that it is easier for large firms to be more innovation active than MSMEs.

For the group of firms that were classified as not innovation active, data show that for Quezon City, it is the food manufacturing sector that has the highest proportion (3.2%) that indicated no demand for innovation. The sectors with the highest pro-

portion of firms that indicated no need for innovation due to prior innovations are the publishing and food manufacturing industries. Electronics and IT sectors have zero firms citing prior innovations as a reason for not innovating. This could indicate that the electronics and IT sectors have better awareness on the need for constant innovation.

Perception on the barriers to innovation differs on whether a firm is innovation active or inactive. There are more innovation-inactive firms relative to innovation-active firms in Quezon City that perceive cost as an important barrier to innovation. Specifically, 31 percent of the innovation-inactive and only 28 percent of innovation-active firms have rated lack of funds within the establishment as a highly important factor. Discrepancies are more highlighted for the other cost-related factors such as lack of finance from external sources and innovation costs being too high.

Meanwhile, for the factors on the lack of qualified personnel and the lack of information technology, innovative firms have a slightly higher perception of such barriers being important than innovation-inactive firms. It can be derived from these observations that barriers to innovation affect different firms on the basis of their innovation activity.

Factors that drive innovation

The survey instrument asked the innovation-active firms to rank a number of effects of product and process innovation with a scale from "not relevant" through "low," "medium," or "high" impact. Not considering the establishment size, the top five most cited effects of innovation for firms in Quezon City are as follows:

1. Improved quality of goods or service (57 percent),
2. Increased range of goods or services (51 percent),
3. Improved flexibility of production or service provision (43 percent),
4. Entered new markets or increased market share (39 percent), and
5. Increased capacity of production or service provision (35 percent).

Of these five, numbers 1, 2, and 4 are all product-oriented effects of innovation while numbers 3 and 5 are process-oriented effects. This indicates that firms that innovate have always been highly motivated by the product-oriented effects of their innovation.

It would also be interesting to look at the discrepancy of the top most cited effects of innovation for firms by size. For large firms, the top three would be

1. Improved quality of goods or service (65 percent),
2. Increased range of goods or services tied with improved flexibility of production or service provision (55 percent), and
3. Entered new markets or increased market share, increased capacity of production or service provision, and met regulatory requirements (45 percent).

For MSMEs, the top most cited effects of innovation focus mainly on product-oriented effects.

By comparing the ratings, it can be seen that for motivation for large innovation-active firms, it does not only center on product-oriented effects but also on other aspects of the business like penetrating new markets and meeting regulatory requirements.

Policy recommendations and implications

Based on the results of the survey, the following are policy recommendations for Quezon City:

1. Prepare a master plan for innovation providing different policy interventions/support programs depending on firm size. The results of the survey clearly show that the innovation characteristics (barriers, drivers) differ for large firms and for MSMEs, for innovation active and innovation inactive and for different major industry groups. A one-size-fits-all policy would not specifically address the needs of these firms.
2. Maximize the presence of technology hubs in the area. Beng Hui et al. (2010) underscored the importance of the University of the Philippines-Ayala Land Technology Hub in promoting the growth/start-up of small-scale businesses. The UP-Ayala Techno Hub provides a venue for the academe and the industries to cooperate with each other in order to upgrade the firm's operations and give direction to the academe's research.

   Unfortunately, despite the presence of the UP-Ayala Techno Hub in the heart of the city, it has been underutilized especially by the small-scale business owners. One possible reason for the underutilization of the facilities in the UP-Ayala Techno Hub is the lack of awareness of the presence of these facilities. The local government of Quezon City, the regional office of the DOST, and the industry associations should thus join hands in promoting the use of the facilities in the Techno Hub as a means of supporting the innovation activities of small businesses.
3. Develop and promote information campaigns on government activities. It would seem that although the firms are interested in undertaking innovation activities, they are at a loss as to where to get information regarding these matters.
4. Foster an environment where information improves linkages. While the survey results indicate that most of the firms are able to source information for innovation activities from clients or customers, suppliers and internal sources, a number of vital sources of information are also overlooked. Studies show that information relating to research, production, and human resources may be taken from a variety of sources such as government/public research institutions, multinational companies, and joint ventures, among others. This clearly indicates the importance of forging and strengthening linkages with these possible sources of information which would help facilitate the flow of information. It is therefore important that an environment for information sharing and collaboration among firms, business associations, government research/financial institutions, and multinational corporations (MNCs) is promoted by the local government of Quezon City.
5. Increase the reach of financial support. Apart from information campaign, the survey results indicate the need to expand and improve the extension of financial support for innovation activities to firms, especially to MSMEs. A number of firms suggest that tax breaks or tax exemptions be

given them as some form of financial support to promote innovation. While this may be an option, the implications to government resources should, however, also be considered.

6. Lower the cost of doing business. One of the major factors hampering innovation activities is cost. While firms have mentioned the need for financial support related to innovation activities, a number have also suggested the importance of lowering the cost of doing business in the country. Unnecessary costs and delays have resulted in loss of income for a number of firms which could have been spent on innovation activities. In this regard, the one-stop shop services being provided by the local government of Quezon City is part of the solution in lowering the cost of doing business in the area. Further enhancement of these services and expansion of the scope of said one-stop shop services could thus provide incentive for firms to innovate.
7. Provide resources for the conduct of innovation surveys. The scope of the first innovation survey in the Philippines, albeit limited to a few sectors, nevertheless provides a picture of the status of innovation activity for these sectors in Quezon City. Regular monitoring of these sectors and possibly other important sectors in the city through innovation surveys is thus necessary with resources provided by the local government, in cooperation with the regional offices of the DOST and other stakeholders.

Concluding remarks

Putting in place an overall environment that is conducive for promoting and encouraging firms in a locality to innovate so that they may improve their goods and services and/or become more competitive is a big challenge for the government. For the local government of the city of Quezon, this calls for, among others, the forging and promotion of a stronger linkage and networking with national government entities, the academe, including public and private research institutions, private business sector, and industry associations to facilitate the sharing and assimilation of information, expertise, and resources for innovation activities. This is the essence of the Filipinnovation strategy being espoused by the national government which may be incorporated in the blueprint for Quezon City. ■

ANNEX E
Project Collaborators

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Ms. Jaque is currently a Consultant/Social Development Planner of Hydronet Consultants, Inc. She has more than 20 years of experience in carrying out government, private and foreign assisted development projects. She studied Social Work at the Philippine Women's University and did her Master's Degree in Development Planning at the Asian Institute of Technology, Bangkok Thailand. She started her career by working directly with people and communities in some remote areas in Philippines. Her early years of experience in carrying out holistic work have built her foundation in advocating development for people and community later in her life. This foundation has brought her through the wider horizon of development work. Over the years, she has worked as a planner, researcher, an evaluator, a monitor, coordinator, implementer and facilitator of development projects. Today, she is looking forward to witness the actualization of peoples and communities' aspiration for fulfilled lives.

Dr. Bonifacio A. Gabales, Jr.

Dr. B. Gabales, together with co-authors Mr. V. Quimno and Mr. G. Importante from the University of South Eastern Philippines (USEP), constitutes the research team for the 2009 Survey on Innovation Activities in Davao City. Aside from being a researcher, he is also the Dean of College of Education and Deputy Director of Lifelong Learning in the said academic institution. He earned his Ph.D. in Development Research and Administration from USEP in 2010 and was engaged in several education-related studies that employs quantitative analysis.

The 2009 Survey of Innovation Activities (SIA), the Philippines' pilot survey on innovation and an outcome of the national innovation strategy called "FILIPINNOVATION," aims to generate information on innovative behavior of establishments in selected areas and industries in the Philippines.

The SIA sampled 474 establishments from a sampling frame of 1,824 firms across three major industries: (a) food manufacturing, (b) electronics manufacturing, and (c) information and communications technology in four study areas: Quezon City, Metro Cebu, Davao City, and the Philippine Economic Zone Authority (PEZA) areas in Cavite and Laguna.

To give more information and understanding about the dynamics of innovation with economic growth as well as to benchmark national performance, the Department of Science and Technology (DOST), with funding support from the International Development Research Centre (IDRC), launched the SIA with the help of the National Statistics Office (NSO) to conduct the actual survey and the Philippine Institute for Development Studies (PIDS) to do the analysis of the survey results.

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