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R.G. Manabat & Co.

IT Report: Philippines

2018 Investment Guide by KPMG in the Philippines

In this issue:

The Philippine Economy: Today's Growth Pace-Setter in Asia

Trends and Outlook in the Philippine IT-BPM Industry

A Fine Time for FinTech in the Philippines



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IT Report: Philippines

2018 Investment Guide by KPMG in the Philippines

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Foreword

Sharon G. Dayoan Chairman and Chief Executive Officer KPMG R.G. Manabat & Co.



The new administration of President Rodrigo Duterte inherited a robust economy with good economic fundamentals. Immediately after assuming office, President Duterte unveiled his 10-point socio-economic agenda with a focus on maintaining macroeconomic stability, promoting inclusive growth, increasing spending on infrastructure, developing a progressive and efficient tax system, and enhancing business in cities, towns and provinces. With these, most Filipinos have remained hopeful and positive about the country's economic growth.

In the past four years, the Philippines has become one of the fastest-growing market economies both in Asia and the world. The country has drawn its vitality mainly from domestic demand drivers, inward remittances of overseas Filipino workers, incomes generated by information technology and business process management (IT-BPM), and good macroeconomic fundamentals. Furthermore, World Bank's recent country economic update in April 2017 stated that the government's commitment to further increase public infrastructure investment is expected to sustain the country's growth momentum through 2018, thereby reinforcing business and consumer confidence.

In this year's investment guide, we highlight the dynamism of the IT-BPM industry which has proven to be among the Philippines' economic game-changers during the past 20 years or so and will continue to provide support for strong growth in the years to come. In partnership with **The Wallace Business Forum**, we explore the growing sectors such as Information Technology (IT) development as well as emerging new sectors within the industry such as telemedicine, health management information systems, and financial technology, all of which emphasizes that IT-BPM remains an important leg for the Philippine economy to stand on. We hope that this guide will provide you with insightful knowledge and help you discover opportunities that will further your business.

¹ Doing Business 2017: Equal Opportunity for All. October 2016.

About the Wallace Business Forum

The Wallace Business Forum (WBF) has provided the country's business and political leaders information, insights and assessments on the Philippines political, economic and business environment over the past 34 years. WBF provides its services through both regular and occasional publications, roundtables featuring senior government officials, and informal breakfast and lunches among its members to discuss common issues, concerns and interests. Corporate briefings and data requests are also provided.

The company has undertaken numerous research projects for international organizations, such as World Bank, Asian Development Bank, USAID and Canadian Embassy, and for the Philippine government, including engagements with the Department of Trade and Industry, Philippine Coast Guard, and the House of Representatives. It has performed studies for private organizations, both local and multinational. The research conducted for these companies focused on identifying and developing a market, determining courses of action to access this market, or studying in detail the industries companies are involved in or would like to be involved in.

WBF releases studies on Philippine policy and suggested changes in policies. It also interacts actively with the country's leaders toward change for a better operating environment. A number of these changes and improvements have been effected, such as in the areas of foreign investment liberalization, promotion of responsible mining, tax reforms, and policy reforms in information technology.



We are grateful for the valuable insights of: Assistant Secretary Allan S. Cabanlong Department of Information and Communications Technology

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The Philippine Economy: Today's Growth Pace-Setter in Asia



Emmanuel P. Bonoan Vice Chairman & Chief Operating Officer KPMG R.G. Manabat & Co.



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From "sick man of Asia" to fastest-growing in Asia

Most millennials probably have no idea that the Philippines was once known as "the sick man of Asia." There is no timeline when this tag ceased, but it seems nobody has used it since the Philippines finally and permanently retired its debt with the International Monetary Fund (IMF) in 2007, ending four decades of what many benignly considered "a period of tutelage" with the Fund. In 2010, the country became a net creditor and two years later, contributed US\$1 billion to the IMF support package for economies experiencing financial crisis. It was a major turnaround for any country.

After slipping to become Asia's worst performer in the second half of the 1970s to the mid-1980s, in large part a result of the Marcos years' failed state control of vital economic activities and crony capitalism fueled by heavy borrowings, the Philippine economy grew from strength to strength in the next decades. Averaging 2.1 percent yearly in the 1980s, or lower than the annual population growth at that time of 2.5 percent (it is now down to 1.7 percent), economic growth picked up to 3.1 percent per annum (p.a.) in the 1990s (Figure 1). The momentum, though, was stalled by power supply shortages from 1991 to 1993 and the Asian financial crisis from 1997 to 1999. A significant break in the trend of the previous three decades occurred in the 2000s, buoyed by a favorable Asian economic situation, deregulation and liberalization that started in the second half of the 1990s under President Fidel V. Ramos, and reforms in the tax system, particularly in 2004, that led to a virtuous cycle of increased revenues, reduced public borrowings and more productive government spending - gross domestic product (GDP) growth rose markedly to 4.8 percent annually.

Economic growth continued to accelerate in the present decade, averaging 6.1 percent p.a. from 2010 to 2016, despite a challenging global environment that saw the weakening of most economies in the world. In fact, in the past four years, the Philippines uncharacteristically became one of the fastest-growing market economies both in Asia and the world. The country did not need a boost from world trade (which was considerably sluggish in performance during the period) to grow strongly, it drew its vitality mainly from domestic demand drivers, inward remittances of overseas Filipino workers, incomes generated by Information Technology and Business Process Management (IT-BPM) and good macroeconomic fundamentals.







Sources: Philippine Statistical Yearbook; Philippine Statistics Authority (formerly National Statistical Coordination Board)

Sustaining the growth momentum over the medium-term

The key issue today is whether or not this lofty growth performance can be sustained, even surpassed, over the medium-term or under the Duterte administration. A high rate of growth of near seven percent or higher, if recorded for at least a decade, can effectively address poverty and transform the country into an affluent society.

Fortunately, and unlike most previous incoming administrations, President Rodrigo Duterte takes over the national stewardship with the government in good financial condition and, with manageable inflation and interest rates, has sufficient leeway to inject more money into the system for accommodating higher growth goals. Most previous new administrations faced a cash-strapped government that prompted belt-tightening in the immediate post-election period.

As a consequence of this favorable environment, a high rate of GDP growth was sustained beyond the elections as President Duterte allowed the continued implementation of multi-year infrastructure projects mostly started just before the election campaign period, and the social mitigation programs like the conditional cash transfers and expansion of health insurance coverage that provided a lift to consumer spending. Growth under the new leadership in the second half of 2016 matched the pace in the first half which was expectedly aided by election-related spending. GDP rose by 6.9 percent in 2016, higher than 5.9 percent in 2015, and the second highest among Asia's developing market economies. (Table 1)

Country	2013	2014	2015	2016
India	6.2	6.9	7.5	7.5
Philippines		6.1	6.1	6.9
China	7.8	7.3	6.9	6.7
Vietnam	5.4	6.0	6.7	6.2
Indonesia	5.6	5.0	4.9	5.0
Malasia	4.7	6.0	5.0	4.2
Thailand	2.7	0.9	2.9	3.2
Singapore	5.0	3.6	1.9	2.0

Table 1. Real GDP Growth in Selected Asian Countries (%)

Source: Bangko Sentral ng Pilipinas (BSP)

10-Point Socio-Economic Agenda and Dutertenomics

President Duterte unveiled a 10-Point Socio-Economic Agenda immediately after taking his oath of office, which will serve as the basis for the economic policy thrusts during his term. The agenda articulates the commitment to continue with policies for maintaining macroeconomic stability, the promotion of inclusive growth, increased spending on infrastructure, changes in the tax system to make it more progressive and efficient, and making it easier to do business in cities, towns and provinces. They will adopt and build on past policies and strategies that worked, while focusing on areas where previous administrations have fallen short, such as spreading the benefits of growth to all Filipinos, bringing economic opportunities across geographic locations and greatly increasing infrastructure spending. Seven out of 10 of the agenda items are now being decisively carried out. (Table 2)

Table 2. Status of the 10-Point Socio-Economic Agenda As of June 2017

	Agenda	Status
1	Continue and maintain current macroeconomic policies	Relatively unchanged from the previous administration's policies. Appointment of a career insider as BSP Governor bolsters this commitment.
2	Progressive tax reform and more effective tax collection while indexing taxes to inflation	First package of tax reforms passed in December 2017 for implementation in 2018. Second package covering corporate taxation for Congress approval in 2018, implementation in 2019.
3	Increase competitiveness and the ease of doing business	President Duterte has asked local government units (LGUs) to simplify business registration procedures, to follow the example of Davao. The Department of Trade and Industry (DTI) and the Department of Information and Communications Technology (DICT) have partnered for this purpose. Business licensing software was also introduced to LGUs.
4	Accelerate annual infrastructure spending, raise to five percent of GDP	Allocated PhP860 billion (5.4 percent of GDP) in the 2017 budget; 17 Public-Private Partnership (PPP) projects worth PhP680 billion approved. Infrastructure budget to be raised further to up to seven percent of GDP over the medium-term.
5	Promote rural and value chain development in agriculture and rural enterprise and rural tourism	Greater budgetary allocation for farm-to-market roads, irrigation facilities, etc., announced a plan to exempt farmers from irrigation fees. But agriculture continues to lag behind.
6	Security of land tenure	Bills ensuring security of land tenure are not among the administration's priorities.
7	Invest in human capital development	Fully implemented the K to 12 program. Raised the budget for Training for Work programs. Free tuition and other fees in state colleges and universities signed into law in August 2017 and set for implementation in Academic Year 2018-2019.
8	Promote science, technology and the creative arts	Higher budget allocated for science and math scholars. Revival of the National Broadband Plan to connect remote areas. Establishment of a portal for one-stop shop online services to avail of various services of the government.
9	Improve social protection programs, including conditional cash transfers (CCT)	Budget for CCT increased to PhP79 billion in 2017 from PhP65 billion in 2016, it now includes rice subsidy. Additional PhP1,000 per month for SSS pensioners. Increased allocation for public health and other social mitigation measures with additional funds from tax reforms.
10	Strengthen the implementation of the RH law	The Supreme Court declared the law constitutional, but issued a temporary restraining order (TRO) on contraceptive implants, with the Food and Drug Administration (FDA) ordered to determine if they are safe and do not induce abortion prior to the lifting of the TRO. The FDA has certified in November 2017 that the implants do not induce abortion. Pres. Duterte issued Executive Order No. 12 in January 2017 supporting the implementation of the RH Law.

The 10-Point Socio-Economic Agenda, expanded to include Agenda 0 – which is the maintenance of peace and order, is the foundation of the Philippine Development Plan (PDP) for 2017-2022,¹ approved by the National Economic and Development Authority (NEDA) Board headed by the President in February 2017 and adopted for full implementation by all agencies of the government in June 2017. PDP 2017-2022 draws from the essence of the Agenda, translating it into three major pillars:

- 1. Regaining people's trust in public institutions/strengthening the social fabric
- 2. Reducing inequality (more inclusive growth)
- 3. Increasing economic (GDP) growth

The Plan spells out the specific and detailed strategies for each of the pillars. The Plan targets are:

- Average annual growth in GDP of seven to eight percent over the medium-term (6.5-7.5 percent in 2017);
- Decline in poverty rate from 21.6 percent in 2015 to 14 percent in 2022;
- A high level of Human Development by 2022; and
- Decline in unemployment rate from 5.5 percent in 2016 to three to five percent of the labor force in 2022.

"Dutertenomics" is the administration's game plan of pushing for a high rate of economic growth and reducing poverty, anchored on the 10-Point Socio-Economic Agenda and PDP 2017-2022. It is essentially anchored on the "Golden Age of Infrastructure" (unprecedented spending on infrastructure, reaching as high as seven percent of GDP) and the pursuit of inclusive growth by geographic areas and income classes, supported by peace and order and tax reforms, and building on previous successes.



Slowing down in 2017 but sttill among Asia's best performers

The Philippine economy experienced a modest slowdown in 2017, not only due to the base effect of election-related boosts in the early part in 2016, but also because rising inflation, induced by the recovery in world fuel and commodity prices and the peso depreciation, tempered household spending. The cyclical upswing in private capital expenditures, noted during the past two years as reflected in a nearly 30 percent annual increase in investment in plant and equipment, took a breather, although growth remained respectable at near double-digits. Escalating tensions in Mindanao, the unsettled state of the mining industry, and the impact of Trump's pronouncements on investment especially in outsourcing were added challenges during the year.

Partly offsetting these drags, however, was the stronger than anticipated performance of exports, growing at a seven-year high. They also outpaced imports, which slowed down with the moderation in capital spending and rising peso cost of goods purchased abroad as a result of the decline of the local currency vis-à-vis the US dollar. Agriculture also recovered, but this was to a large extent, due to a low base after two straight years of losses. The Dutertenomics-driven public spending on infrastructure and social services was a source of strength despite falling below programmed levels.

Nonetheless, the Philippines remains among the best performers in Asia. Multilateral financial institutions like the World Bank, IMF and Asian Development Bank believe the country has solid macroeconomic fundamentals, strong domestic demand and sharply recovering exports to be among the growth leaders in the region in 2018.

¹ Pernia, Ernesto. Roundtable Presentation of the Socio-Economic Planning Secretary to members of the Wallace Business Forum (WBF), Makati City, 21 March 2017

Economic outlook for 2018

The global economic environment is expected to remain favorable, perhaps even doing slightly better in 2018 with higher government spending worldwide to boost domestic growth, cyclical recovery in manufacturing and trade, and a sustained pickup in the U.S. economy. These factors are seen to offset the continuing slowdown in China, today's major driver of economies in Asia, and escalating geopolitical uncertainties that tend to disrupt commerce in some parts of the world.

On the domestic front, the passage of the first package of tax reforms, projected to provide an additional PhP130 billion in revenues for the government in its first year of implementation, will support the planned scale-up of infrastructure spending.² The increase in public investment is expected to be faster in 2018 not only with more funds available but also because spending was lower than expected in 2017, hence coming off a lower base in the previous year. In keeping with the boom in infrastructure, private investment is seen to follow, especially in property development projects like hotels and resorts, shopping malls and residential units outside of Metro Manila and other highly urbanized areas.

Consumer spending will grow faster in 2018. The tax reform, a key component of which is lowering the individual income tax rates and raising the level of income covered by the tax exemption, will increase the disposable income of households (Table 3). The rise in world oil and commodity prices is also forecast to be more moderate in 2018, while the central bank is expected to finally align domestic policy rates with global interest rates and as a likely outcome, control inflation and stabilize the exchange rate. Consequently, consumers will also face a more benign inflation scenario that, together with lower taxes to pay, should provide some lift on real incomes.

Table 3. Personal Income Tax Schedule (Effective 2018/2019 for Tax Reform; percentages rounded-off to whole numbers)

Annual Income Bracket (PhP)	Tax Rate			
	Previous/Old	Tax Reform		
0 – 250,000	0% (10,000); >5-8% (>10,000 to 30,000); >8-12% (>30,000 to 70,000); >12-16% (>70,000 to 140,000); >16-20% (>140,000 to 250,000)	0%		
>250,000 to 400,000	>20-24%	>0-8%		
>400,000 to 800,000	>24-28%	>8-16%		
>800,000 to 2,000,000	>28-30%	>16-20%		
>2,000,000 to 5,000,000	>30-31%	>20-29%		
>5,000,000	>31-32%	>29-35%		

Source: Department of Finance (DOF), Tax Reform for Acceleration and Inclusion (TRAIN), January 2017

Financial backing for the growth will come not only from tax reforms, which will see government playing a big role in the growth push, but also from a healthy foreign reserves position. The country's balance of payments will sustain a surplus, given the revival of exports which should again outpace moderating imports, and boost reserves further. Low-cost loans will also be available from China and Japan, which have offered up to a combined US\$20 billion in financial assistance during President Duterte's visit to these countries in 2016 and 2017.



² Later estimates of the Department of Finance, though, appear to indicate that Year 1 yield would be less than Ph130 billion, more likely just slightly above Ph90 billion.

Hence, the positive factors will more than offset the negatives, resulting in a faster GDP growth of around seven percent in 2018 (Table 4). The Asian Development Bank (ADB) sees the Philippines growing by 6.7 percent in 2018, up from 6.5 percent in 2017, and outpaced only by India (7.6 percent) and Vietnam (6.7 percent).³ The IMF forecast Philippine GDP to grow by 6.9 percent in 2018 from 6.8 percent in 2017, the second fastest after India's 7.7 percent.⁴

Table 4. Philippine Economic Growth Outlook

	2016	2017	2018
% real growth rate:			
Gross domestic product (GDP)	6.9	6.6	7.0
Household spending	7.0	5.5	6.5
Government current expenditures	8.4	6.0	6.7
Fixed investment	25.2	9.3	12.3
Export, goods and services	8.5	18.3	10.0
Import, goods and services	14.6	13.6	10.0
Agriculture	-1.3	5.0	3.0
Industry	8.4	7.0	8.0
Services	7.2	6.7	7.5
Annual averages:			
PhP:US\$ Rate	47.5	50.5	51.0
Bank lending rate	5.6	5.7	6.0
Inflation	1.8	3.3	3.0

Source: Wallace Business Forum, Economic Charts for Roundtable Presentation, June 8, 2017



³ Asian Development Outlook 2017 Supplement, July 2017

⁴ IMF World Economic Outlook April 2017 edition

Key risks

Despite a favorable outlook, the country faces a number of risks, many of which are carried over from the previous year, which could adversely impact on particular sectors of the economy, including:

- Peace and order and security challenges in some areas of the country, making it difficult to spread economic opportunities geographically;
- As shown in the past, and more recently in 2017, government spending could be below programmed levels, limiting its pump-priming capacity and affecting private investor attitude to provide matching spending;
- U.S. President Trump's pronouncements of keeping jobs at home could threaten the flow of IT-BPM investments into the country, which has now surpassed OFW remittances as the top source of dollars for the country; and
- President Duterte's antagonism towards countries criticizing his foreign policy pronouncements and his methods of addressing criminality and the drug problem, which could hurt foreign grants and even foreign direct investments just like the cancellation of EU grants in 2017.

While these could slow down the country's growth, they are most unlikely to lead the economy into a tailspin in the near future, given the stable financial situation and the economy's solid fundamentals. The country can also live with most of these risks as their effects can be considered as minor setbacks. For example, even if government expenditures are below program, they will still be at magnitudes well above those in the past. Foreign grants help, but the country does not depend on them to grow today and those that it lost could be replaced with aid from other countries like China and Japan who are willing to give and are already doing so. At worst, these risks, if they occur, could bring GDP growth down to a still lofty six percent or so average in this decade.

In summary, the Philippines will remain among the region's fastest-growing economies even if many of these risks were to occur and is on track towards significantly reducing poverty and strengthening the domestic market over the medium-term. The present leadership has smartly placed the stewardship of the country's economy at the hands of well-intentioned and bright managers bent on pursuing rational policies and carrying on from past successes.

The dynamism of IT-BPM, which proved to be among the Philippines' economic game-changers during the past 20 years or so, will continue to provide support for strong growth in the years to come. The establishment of the Department of Information and Communications Technology (DICT), dedicated to creating conditions for the IT-BPM industry to flourish, and the passing of the Data Privacy Act of 2012 and Cybercrime Prevention Act of 2012 will support the growth and emergence of new sectors within the industry, such as telemedicine and health management information systems and financial technology or FinTech. This should ensure that IT-BPM remains an important leg for the Philippine economy to stand on.



Finally a DICT



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Information Technology (IT) development has become a priority by the Philippine government leadership and this has been apparent in the various policies and programs currently being implemented. Seen as a major step forward in meeting the IT development objective is the creation of the Department of Information and Communications Technology (DICT).

The DICT Creation: Background and Rationale

On 12 January 2004, Executive Order No. 269 signed by President Gloria Macapagal-Arroyo created the Commission on Information and Communications Technology (CICT) to pave the way for the establishment of a Department of Information and Communications Technology (DICT). The commission was composed of the National Computer Center (NCC), the Telecommunications Office (TELOF), and other units under the Department of Transportation and Communications (DOTC). Also represented in the commission were the National Telecommunications Commission (NTC) and the Philippine Postal Corporation (PhilPost). The CICT assumed the functions of the Information Technology and Electronic Commerce Council (ITECC), which was abolished in 2004.

The need for a DICT separate from the then existing Department of Transportation and Communication became urgent as the country realized the vital roles played by information and communication in nation-building, which is why included as part of the state's policy is universal access to quality, affordable, reliable, and secure IT services. In addition, the Philippines has become an important focus especially given that the country has one of the fastest-growing number of mobile phones subscribers with estimated 177 million subscribers by end of 2016 with four out of 10 Filipinos with access to the internet, according to a report by the Business Monitor International (BMI). Add to this, the revenues from the business outsourcing sector – the BPOs, call centers, back offices, medical transcription, game development, creative process outsourcing, among others – has grown to reach US\$25 billion or eight percent of gross domestic product (GDP) in 2016. Hence, there is a need to spur Information and Communications Technology (ICT) development, institutionalize e-government, and manage the country's ICT environment and direction.

A number of bills were filed in the Philippine Congress creating the DICT but failed to hurdle final approval due to lack of time. In the House of Representatives, consolidated House Bill 4300 was approved on final reading in 2008 and transmitted to the Senate in the same year. In the Senate, the consolidated Senate Bill was approved by the Senate Committee on Science and Technology on 19 August 2008 but failed to pass as the Congress adjourned on 5 February 2010. With Congress' failure to pass the DICT bill, the CICT's existence remains by virtue of an executive order in which case the next President has the power to abolish the commission. President Benigno S. Aquino III signed Executive Order No. 47 on 23 June 2011 reorganizing, renaming and transferring the CICT and its attached agencies to the Department of Science and Technology (DOST) and abolishing the positions of Chairman and Commissioners of the CICT. The bill creating the DICT was then passed Senate approval in July 2015. Republic Act 10844 creating the Department of Information and Communications Technology (DICT) was finally signed on 20 May 2016 by President Aquino III.¹ Several agencies from the DOTC and other executive departments were transferred to the DICT. The DOTC was renamed to Department of Transportation (DOTr) following the creation of the DICT. The DICT law took effect on 9 June 2016.

DICT Structures and Mandates

The functions of several agencies were assumed by the DICT. These include:

- Information and Communications Technology Office (ICTO);
- National Computer Center (NCC);
- National Computer Institute (NCI);
- Telecommunications Office (TELOF);
- National Telecommunications Training Institute (NTTI); and
- All operating units of the DOTC dealing with communications

The following agencies are attached to the DICT:

- National Telecommunications Commission (NTC);
- National Privacy Commission; and
- Cybercrime Investigation and Coordination Center (CICC)

The DICT law, thus, abolished five government agencies: ICTO, NCC, NCI, TELOF, and NTTI. The three agencies attached to the DICT: the NTC, NPC, and the CICC – are headed by the DICT secretary.

The DICT is headed by a Secretary assisted by three Undersecretaries and four Assistant Secretaries. The law has been specific in requiring that two of the three undersecretaries and two of the four assistant secretaries be career officers. Moreover, one of the four Assistant Secretaries should be a licensed professional electronics engineer, while the Secretary and his Undersecretaries and Assistant Secretaries should have at least seven years of competence and expertise in any of the following: information and communications technology; information technology service management; information security management; cybersecurity, data privacy, e-Commerce, or human capital development in the ICT sector.

The DICT law aims to promote ICT development, institutionalize e-Government, and manage the country's ICT environment, according to the Information and Communications Technology Office (ICTO). It is the primary policy planning, coordinating, implementing, and administrative entity of the Executive Branch of the government that will plan, develop, and promote the national ICT development agenda. The DICT will also ensure the provision of efficient and effective information and communications technology infrastructure, information systems and resources to support efficient, effective, transparent and accountable governance and, in particular, support the speedy and efficient enforcement of rules and delivery of accessible public services to the people. It is tasked to conduct research and development in partnership with the academe towards improving the quality of ICT education and the production of globally competitive ICT manpower, and build the capacities of public sector institutions and their personnel in the use of ICT to improve planning, management, delivery of mission critical functions and monitoring and evaluation.

¹ Dept of Information and Communications Technology created,"

http://newsinfo.inquirer.net/787103/aquino-signs-law-creating-department-of-information-and-communications-technology, 23 May 2016

Priority Areas

Four priority areas to be implemented by the DICT were identified, namely: e-Society, e-Government, e-Business and CyberSecurity. Each of these priority areas are geared to achieve inclusive growth in the countryside via the provision of relevant ICT services.



e-Society

E-Society aims to bring the benefits of ICT to the society. The programs under this area are focused on ICT services for the different needs of sectors of the Philippine society.



e-Business

The DICT is mandated to create 1.3 million jobs in the IT-BPM Industry, e-Business guarantees the growth of the ICT-enabled industries through the public-private partnerships (PPPs) with the industry, academe and civil society, and through close collaboration with partners in government for the development and implementation of programs and projects. It also provides an avenue for the ICT office to harness other areas of ICT, such as ITpreneurship.



e-Government

Anchored on the e-Government Master Plan, this area ensures the best use of ICT in government to expand and improve services available to the public. The e-Government Master Plan aims to digitally connect government, whose services are citizen-centered.



CyberSecurity

Another important role of the DICT is that of a gatekeeper of ICT. It is tasked to ensure that the World Wide Web is safe for Filipinos, business, and the government. The aim is to make sure cyberspace is secure through the collaboration of private, public, and international partners for the development and rollout of programs and projects under CyberSecurity.



Priority Projects

National Broadband Plan

The National Broadband Plan for the Philippines (NBP) aims to provide a clear direction for the Philippine government to ensure that all Filipinos will reap the benefits of broadband, address challenges, and accelerate broadband deployment. The NBP is envisioned to provide detailed physical targets and strategies to effect nationwide broadband deployment and widespread use. The Broadband Plan would analyze existing and planned government and private sector deployment, and address supply and demand gaps by recommending policy and non-policy related actions. It would include policy decisions on the need to establish a National Internet Exchange or a peering arrangement mechanism to connect Internet exchanges in the country to pave the way for a National Facility that would allow government and public data to freely flow within the country. This would allow added security to the data and transactions being undertaken by the government and the public. NBP is a critical component of the e-Government program, as the country needs a broadband strategy to accelerate the deployment of fiber optic cables and other technologies to improve internet speed.

In line with the Philippine Digital Strategy (PDS) 2011-2016 that covered the provision of basic broadband access and internet opportunities for all by 2016, the following targets were identified and serves as guide in the development of the NBP²:

- 80 percent of barangays to have internet access through the Community e-Centers (CeCs) of at least two megabytes per second (Mbps)
- 100 percent of high schools and 80 percent of elementary schools have internet access;
- 80 percent of other public institutions have internet access;
- 100 percent of government offices have internet access;
- All central business districts to have available download speeds of 20 Mbps;
- 80 percent of households to have access to at least 2 Mbps of broadband connectivity;
- Average prices for basic broadband internet to be reduced by at least five percent annually; and
- Investment in infrastructure expansion to increase by at least 10 percent annually.

Over the course of 10 years (2017 - 2027), the NBP will have produced four parallel outcomes through its overall strategy of staging interventions within the ICT industry.³ These are:

- Accelerated Investment Market players, such as existing and upcoming Internet and telecommunications providers, are given the opportunity to penetrate underserved and unserved areas, particularly the ones outside of industrial zones and major cities.
- Mobilized and Engaged Public and Private Sector The government will work with both public and private organizations relevant to the improvement and deployment of broadband technologies. The crux of this strategy is coordination among all involved institutions to minimize implementation costs as well as public disruptions from physical construction.
- More Places Connected All government facilities, public schools, health institutions, and micro, small, and medium enterprises (MSMEs) will adopt current technologies and benefit from Internet connectivity. In addition to broadband infrastructures, the government will also utilize other technologies namely spectrum frequencies and satellites for wider distribution of broadband access.
- The establishment of the Philippine Integrated Infostructure (PhII) will enable government facilities, public schools, health institutions and MSMEs to utilize ICT services. Integration with existing infrastructure installed by big providers like PLDT, Globe, and the National Grid, will play a part in keeping costs down.
- Increased Take-Up Rate As broadband access is melded into public institutions and services, the government will actively promote its use while assessing and adjusting to the needs of newer users, specifically in the rural areas.

The DICT unveiled the NBP, Free Wi-Fi Internet Access in Public Places (FWPP) project, and National Government Portal or gov.ph on 23 June 2017. The FWPP or the Pipol Konek project aims to achieve digital literacy among the people. The government portal or gov.ph, on the other hand, will serve as a single website for all government information, transactions, and services.

The Philippine Integrated Infostructure

The Philippine Integrated Infostructure (PhII) is a PhP77.9 billion project that details the country's ideal network architecture, starting from the international submarine cable connections to domestic routes, and ending with individual access networks known as Super WiFi, local fiber-optic provisions, and LTE. Satellite and TV White Space (TVWS) are also some of the emerging technologies to distribute broadband. With the proposed architecture, it will become possible for unserved and underserved rural areas in the country to be given access points to the Internet at affordable costs, with the goal of providing connections of at least 10 Mbps to subscribers by 2020.

Other DICT initiatives that focus on the countryside are the Rural Impact Sourcing, a program that aims to provide jobs and opportunities in disadvantaged areas, and the Technology for Education, Employment, Entrepreneurs, and Economic Development (Tech4ED) Project, which builds e-centers to bring information and government services to communities.

² Philippine Government's ICT Initiatives and the National Broadband Plan.

http://www.dict.gov.ph/philippine-governments-ict-initiatives-and-the-national-broadband-plan/. Accessed 5 June 2017.

³ What is the National Broadband Plan? http://www.rappler.com/technology/features/164718-what-is-the-national-broadband-plan. Accessed 14 June 2017.



Challenges and Limitation

The road toward full access to the internet and other services related to information and communications technology may not be as easy as it appears. Improvement in internet services for one is hampered by the present system that makes it difficult for more players to enter the business. Telecommunications companies need to obtain a legislative franchise before they are allowed to operate, this means a bill will need to be filed in Congress and passed into law prior to operations, and this could take time. Moreover, the process of obtaining permits to construct cell towers will need to be reviewed and streamlined to avoid any redundancies and delays. Oftentimes, land issues make it difficult to obtain necessary construction permits.

Another challenge is the absence of complete Open Access and Peering Policy. Under this policy, internet service providers (ISPs) are required to have access to each other's facilities. A mandatory Open Access and Peering Policy will compel all ISPs in the Philippines to connect to an internet exchange operated by a neutral organization to lower the costs of internet services and further enable improvement in services available.

Availability of internet services in rural areas is another challenge given the necessary infrastructure needed to construct and install the facilities. While the Philippine government is keen on undertaking the project under the NBP, this could be further improved with the presence of more private investors in the rural scene.

In a presentation by NTC commissioner Gamaliel Cordoba, he compared similar projects in Association of Southeast Asian Nations (ASEAN) and how investment in telecommunications infrastructure has resulted in increase in GDP and a positive impact on the economy.⁴ In Singapore, the national fiber optic network project known as Singapore One was completed in 1998. A government-led project, the operation and maintenance of Singapore One, a national broadband network, was auctioned under Singapore government terms and conditions. Singapore is now constructing the ultra-high national fiber broadband network, which is a public-private partnership. In Malaysia, a NBP was developed in 1998 and approved by the government in 2004. It is a government-financed project network operated by Telekom Malaysia, which is majority-owned by the Malaysian government. Thailand's national broadband plan was approved in 2006 and 10 years later the national digital economy policy and plan (2016-2020) was also approved. Thailand Telephone Organization of Thailand (TOT) and Communications Authority of Thailand (CAT), which are government-owned companies, are implementing the network with government investment of US\$1.1 billion. Mr. Cordoba added that all three countries have open access networks.

⁴ What you should know about the National Broadband Plan. http://www.philstar.com/technology/2017/03/20/1682680/what-you-should-know-about-national-broadband-plan. Accessed 14 June 2017.

Safeguarding Data Privacy



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A law protecting data privacy in the Philippines is crucial, given the proliferation of Information Technology (IT)-enabled businesses in the country. The law likewise plays an important role in combatting cyber-attacks as the prevalence of e-commerce and smartphone use in the country expands.

Republic Act No. 10173 or the "Data Privacy Act of 2012"¹ (the "Data Privacy Act") is among the pro-business bills signed into law by former President Benigno S. Aquino III. It is part of the triumvirate of measures that is expected to attract more investments into the Philippines' Information Technology and Business Process Management (IT-BPM) industry, the others being Republic Act No. 10175 or the "Cybercrime Prevention Act of 2012"² and Republic Act No. 10844 or the "Department of Information and Communications Technology Act of 2015."³

The Data Privacy Act establishes data subjects' rights and general data privacy principles, and requires both public and private entities to protect and preserve the integrity and confidentiality of personal data that they may collect in their operations.⁴ The law is based on Directive 95/46/EC of the European Parliament Council, the most widely adopted data privacy system, and is aligned with the Asia Pacific Economic Cooperation (APEC) Information Privacy



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Framework. The European Parliament Council directive bars EU-based companies from outsourcing the processing of private information to countries that do not follow strict data protection standards. Certainly, the enactment of the law in the Philippines also highlights the importance of complying with global data security standards.

The enactment of the Data Privacy Act was well-received because it protects consumers' personal data, promotes trust and user confidence in electronic commerce (e-commerce) and e-governance initiatives, and enhances the competitiveness of the local IT-BPM industry. Despite its well-intentioned provisions, however, the implementation of the pro-business measure was stalled due to the delay in the issuance of its implementing rules and regulations (IRR) and the formation of the National Privacy Commission (NPC), an independent body tasked to administer and implement the Data Privacy Act. The IRR was released only on 24 August 2016, four years after the bill was signed into law by President Aquino. Moreover, it was only on 7 March 2016, shortly before the issuance of the IRR, that President Aguino appointed Raymund Liboro as inaugural head of the NPC, with Damian Domingo O. Mapa and Ivy D. Patdu as inaugural deputy privacy commissioners.

¹ Data Privacy Act of 2012, accessed at http://www.officialgazette.gov.ph/2012/08/15/republic-act-no-10173/. (the "Data Privacy Act")

² Cybercrime Prevention Act of 2012, accessed at http://www.officialgazette.gov.ph/2012/09/12/republic-act-no-10175/.

³ Department of Information and Communications Technology Act of 2015, accessed at http://www.officialgazette.gov.ph/2016/05/23/republic-act-no-10844/. (the "DICT Act") ⁴ Data Privacy Act, see note 1.



The NPC was created under the Data Privacy Act to administer and implement the provisions of the law and to monitor and ensure compliance of the country with international standards set for data protection.⁵ The commission is tasked to receive complaints, institute investigations, and facilitate or enable settlement of complaints through the use of alternative dispute resolution processes. It is attached to the Department of Information and Communications Technology (DICT)⁶ and is empowered to recommend to the Department of Justice (DOJ) the prosecution and imposition of penalties specified in Sections 25 to 29 of Data Privacy Act.⁷

The NPC is at the forefront of the government's battle against cyber threats. Among the more recent high-profile cases handled by the commission include the Bangladesh bank heist and the reported data breach of the Philippines' Commission on Elections (COMELEC) during the 2016 national elections.⁸ The NPC has also conducted compliance assessments of the Bank of Philippine Islands (BPI) and Banco de Oro (BDO) after the two banks encountered online systems failures.⁹

The NPC has exerted considerable effort in ensuring that it is recognized as being committed to international standards in protecting personal data and privacy in the Philippines, and that it is viewed as independent and vested with the authority to do so. It has received its accreditation as a member of the organization from the International Conference of Data Protection and Privacy Commissioners (ICDPPC), which signifies that a country's Data Protection agency meets stringent standards.¹⁰ The ICDPPC has been the premier global forum for data protection authorities for 40 years, providing global leadership in data protection and privacy by connecting the efforts of over 110 privacy and data protection authorities from around the world.¹¹

Despite this recognition, it cannot be denied that the NPC faces challenges. Its capacity to fulfill its task is hindered by the lack of technical staff that have a thorough understanding of technology and the lack of lawyers who are familiar with relevant IT laws. The feedback mechanism on the effectiveness of data privacy measures is also wanting. These challenges notwithstanding, however, the determined implementation of the Data Privacy Act by the NPC signals to the rest of the world of how serious the Philippines is in its objective of enhancing the competitiveness of its IT-driven industries.

Salient Features of Data Privacy Act's Implementing Rules and Regulations (IRR)

- The processing of personal data shall be allowed, subject to compliance with the requirements of the Data Privacy Act and other laws allowing disclosure of information to the public, and adherence to the principles of transparency, legitimate purpose, and proportionality.
- Personal information controllers and personal information processors shall implement reasonable and appropriate organizational, physical, and technical security measures for the protection of personal data. The security measures shall aim to maintain the availability, integrity, and confidentiality of personal data and are intended for the protection of personal data against any accidental or unlawful destruction, alteration, and disclosure, as well as against any other unlawful processing. These measures shall be implemented to protect personal data against natural dangers such as accidental loss or destruction, and human dangers such as unlawful access, fraudulent misuse, unlawful destruction, alteration and contamination.
- Any person or other body involved in the processing of personal data shall designate an individual or individuals who shall function as data protection
 officer, compliance officer or otherwise be accountable for ensuring compliance with applicable laws and regulations for the protection of data
 privacy and security. It shall likewise implement appropriate data protection policies that provide for organization, physical, and technical security
 measures, and, for such purpose, take into account the nature, scope, context and purposes of the processing, as well as the risks posed to the
 rights and freedoms of data subjects.
- Records of processing activities must be maintained. These records shall sufficiently describe the data processing system, and identify the duties and responsibilities of those individuals who will have access to personal data.
- As part of management of human resources, those involved in the processing of personal data are mandated to operate and hold personal data under strict confidentiality particularly if the personal data is not intended for public disclosure. The IRR states that there shall be capacity building, orientation or training programs for such employees, agents or representatives, regarding privacy or security policies.
- As part of physical security measures, the design of office space and work stations shall provide privacy to anyone processing personal data. The duties, responsibilities and schedule of personal data processors shall be clearly defined to ensure that only the individuals actually performing official duties shall be in the room or work station. Proper transfer, removal, and disposal schemes must be in place. Furthermore, the room and workstation used in the processing of personal data shall be secured against natural disasters, power disturbances, external access, and other similar threats.

- https://privacy.gov.ph/npc-starts-probe-comelecs-2nd-large-scale-data-breach-issues-compliance-order/.
- ⁹ "DICT's cybercrime center launches BPI, BDO inquiry," accessed at

⁵ Section 7, Data Privacy Act, see note 1.

⁶ Section 15, DICT Act, see note 3.

⁷ Section 7, Data Privacy Act, see note 1.

⁸ "NPC starts probe into COMELEC's 2nd large scale data breach; issues compliance order," accessed at

http://www.bworldonline.com/content.php?section=Economy&title=dicts-cybercrime-center-launches-bpi-bdoinquiry&id=147030.

¹⁰ "DICT's cybercrime center launches BPI, BDO inquiry," accessed at

http://www.bworldonline.com/content.php?section=Economy&title=dicts-cybercrime-center-launches-bpi-bdoinquiry&id=147030.
¹¹ Ibid.

- Technical security measures such as the following, among others, must be adopted and established, as appropriate: (a) Safeguards to protect their computer network against accidental, unlawful or unauthorized usage, any interference which will affect data integrity or hinder the functioning or availability of the system, and unauthorized access through an electronic network; (b) Regular monitoring for security breaches, and a process both for identifying and accessing reasonably foreseeable vulnerabilities in their computer networks, and for taking preventive, corrective, and mitigating action against security incidents that can lead to a personal data breach; and (c) Encryption of personal data during storage and while in transit, authentication process, and other technical security measures that control and limit access.
- Personal information controllers may subcontract or outsource the processing of personal data provided that the controllers use contractual agreements or other reasonable means to ensure that proper safeguards are in place to ensure the confidentiality and integrity of the personal data processed, prevent its use for unauthorized purposes, and generally, comply with the requirements of the law.
- Pursuant to the mandate of the NPC to administer and implement the Data Privacy Act, and to ensure the compliance of personal information controllers with its obligations under the law, the NPC requires the following, among others:
 - Registration of personal data processing systems operating in the country that involves accessing or requiring sensitive personal information of at least 1,000 individuals, including the personal data processing system of contractors, and their personnel, entering into contracts with government agencies;
 - Notification of automated processing operations where the processing becomes the sole basis of making decisions that would significantly affect the data subject;
 - Notification within seventy-two (72) hours upon knowledge of, or when there is reasonable belief by the personal information controller or
 personal information processor that, a personal data breach requiring notification under the Data Privacy Act has occurred; and
 Annual report of the summary of documented security incidents and personal data breaches;

Source: privacy.gov.ph

While more than 40 million Filipinos use the internet,¹² the latest World Bank data shows that only about 3.5 percent of the population pay bills or make purchases over the internet.¹³ This figure is projected to rise in the next years as more internet-savvy millennials with continuously growing disposable incomes join the workforce. The expected surge in the number of Filipinos that transact online reinforces the need for the government to tighten its data privacy measures.

Digital Payments (% of age 15+) as of 2014

Used a debit card to make payments	11.9
Used a credit card to make payments	2.2
Used the Internet to pay bills or make purchases	3.5

Source: World Bank

Aside from voice services, the Philippines is targeting a bigger slice of the burgeoning global knowledge process outsourcing (KPO) market that includes healthcare information management (HIM), human resource (HR) outsourcing, banking and finance, and other shared service businesses. These segments deal with sensitive data. Hence, the approval of the Data Privacy Act that aligns Philippine laws with international data privacy standards should enable outsourcing firms operating in the country to attract more higher-value KPO investments.

This is certainly at the forefront of the government's considerations. "The [Data Privacy Act] will help us sustain our momentum as an emerging global leader for shared services, one of the fastest growing segments of the IT-BPO industry. There are indications the market is selecting the Philippines as the preferred destination for this segment," Alejandro Melchor III, former Deputy Executive Director for ICT Industry Development, DOST-ICT office.¹⁴

The continued expansion of IT-BPM firms that deal with sensitive information indicates the global outsourcing firms' confidence in the country's policy environment. The strict execution of the law should also complement the implementation of Republic Act 10641,¹⁵ which allows the full entry of foreign banks in the Philippines.

The effective implementation of the Data Privacy Act will enable the country to further expand its attractiveness as an outsourcing hub and eventually generate more IT-BPM jobs. The long-term implementation of the measure and its rules and regulations also reflects the government's sincerity in safeguarding the confidentiality and integrity of personal information gathered by public and private organizations in the course of their operations.

¹² Revesencio, Jonha (2015), "Philippines: A Digital Lifestyle Capital in the Making?" Accessed at

¹⁵ An Act allowing the Full Entry of Foreign Banks in the Philippines, amending for the purpose Republic Act No. 7721,

http://www.huffingtonpost.com/jonha-revesencio/philippines-a-digital-lif_1_b_7199924.html.

¹³ "Financial Inclusion Data / Global Findex," accessed at http://datatopics.worldbank.org/financialinclusion/country/philippines.

¹⁴ "New Data Privacy Bill to Bolster IT-BPO Industry," accessed at http://www.dict.gov.ph/new-data-privacy-bill-to-bolster-it-bpo-industry/.

http://www.officialgazette.gov.ph/2014/07/15/republic-act-no-10641/.



Cyber Maturity: Balancing Security and Growth



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The internet has driven much of the technological advancement in the past few decades, revolutionizing communication, expanding connectivity, and transforming organizations. The rise of a multitude of technologies, from smart phones to artificial intelligence, has redefined the customer experience and paved the way for innovation in business models.

The remarkable evolution of technology presents great opportunities and risks to companies – as technology advances, more organized criminals scale their operations to automate the targeting and exploitation of business networks. The exponential advancement is matched by the developing nature of threats, causing some organizations to scramble as they aim to strengthen their defense infrastructure and race against the increasing risk.

In this global challenge against cyber risk, how prepared is the Philippines to face such threats? How do we balance efficiency and security to drive economic growth?

Filipinos online

In 2013, mobile cellular subscriptions in the Philippines rose to 104.5 (per 100 population) from 40.52 in 2005.¹ This indicates an over 150 percent increase in cellular subscription in less than 10 years, with a large number of people using more than one mobile network.

In a report by Hootsuite and We Are Social called "Digital in 2017", the number of Filipino internet users increased by 27 percent or by 13 million from January 2016 to January 2017, implying that internet users have reached about 60 million or nearly 60 percent of the Philippine population.² In addition, for the second year in a row, the Philippines ranked number one in time spent on social media, averaging at four hours and 17 minutes per day.³

https://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2014/MIS2014_without_Annex_4.pdf/

¹ Information Telecommunication Union. 2014. "Measuring the Information Society Report 2014." Accessed at

² Subido, Lorenzo. 2017. "Growing 27% in 2016, PH Now Has 60 Million Internet Users."Accessed at http://www.entrepreneur.com.ph/news-and-events/ph-now-has-60-million-internet-users-growing-27-in-2016-a36-20170124/

³ Camus, Miguel. 2017. "PH world's No. 1 in terms of time spent on social media." Accessed at http://technology.inquirer.net/58090/ph-worlds-no-1-terms-time-spent-social-media/

However, in a survey conducted by cybersecurity firm Kaspersky Lab ZAO, 52 percent of the internet users in the Philippines have been hacked or infected with malware during the last six months of 2016,⁴ significantly higher than the global average of 29 percent.⁵

The same study found that five out of 10 Filipinos remain unconcerned about cyberattacks, compared to the seven out of 10 global score. This suggests that despite the increased exposure and general awareness of risks, half of Philippine internet users are indifferent to their vulnerability online.

Variety of cyberattacks

Cybercrime comes in different forms and may target different groups of people or organizations. In a report by Lloyd's, KPMG, and DAC Beachcroft,⁶ cyberattacks are categorized into "high-end," "targeted," or "commoditized." High-end attacks are highly lucrative operations conducted by skilled international groups that develop custom weapons, often using insider knowledge, to target software vulnerabilities.

Unlike high-end attacks that are often smaller in scale, targeted attacks may affect up to tens of thousands in operations that focus on certain industries' systems and communications, such as the WannaCry ransomware incident in May 2017 that disrupted thousands of systems worldwide.

Commoditized attacks, commonly used as examples in cyber awareness activities, pertain to "spray and pray" techniques such as spam or phishing e-mails. Unfortunately, the perceived impact may be distorted by the scale and loss per individual. Attackers monetize operations by targeting hundreds of millions in the financial sector, where 88 percent of incidents are represented by denial-of-service (DoS), web application attacks, and payment card skimming.⁷

In 2014, a study by the National University of Singapore (NUS) and the International Data Corporation (IDC)⁸ predicted that some US\$240 million would collectively be spent on dealing with cybersecurity breaches in the Asia Pacific region. Hiscox Insurance chief executive Steve Langan said in an interview that in 2016, "Cybercrime cost the global economy over US\$450 billion."⁹

Recent studies by Symantec and Kaspersky Lab point to two main industries that can be significantly affected by cybercrime: healthcare and banking. The Philippines ranks 7th in the Asia-Pacific region for ransomware attacks, highlighting the high danger of recording sensitive medical information.¹⁰ As for banking, Kaspersky estimates that an average of US\$1,754,000 is spent on accidents involving internet banking services, more than double the price of recovering from a malware incident.¹¹

Not just about technology

The current state of Philippine technology is "reactive because we rely on antivirus, firewall," shared Assistant Secretary (Asec.) Allan S. Cabanlong from the Department of Information and Communications Technology (DICT) in an interview with KPMG R.G. Manabat & Co. He also listed the biggest cyber threats to the country right now: internal attacks in banks, malwares, and social engineering.

Asec. Cabanlong acknowledged cyber threats' potential effect to the country's business opportunities and cited banks and Business Process Outsourcing (BPO) centers as examples of organizations vulnerable to these threats. Cybercrime "if not prevented could really affect the economy that's why in my department it's prevention, it's all protection," he explains.

Asec. Cabanlong emphasized that cybersecurity is not just about technology but the framework, government strategy, and stakeholder cooperation. He adds that "Cyberspace is borderless so the threats are also borderless; that should be the cybersecurity that we should view so we can be mature enough."

⁴ GMA News. 2017. "Half of Pinoy netizens hit by hackers in H2 2016." Accessed at

http://www.gmanetwork.com/news/scitech/technology/619587/half-of-pinoy-netizens-hit-by-hackers-in-h2-2016-study/story/

⁵ Samson, Oliver. 2017. "Half of Pinoy Internet users remain tepid on security." Accessed at http://businessmirror.com.ph/half-of-pinoy-internet-users-remain-tepid-on-security/ ⁶ Lloyd's, KPMG, DAC Beachcroft. 2017. "Closing the Gap: Insuring your business against evolving cyber threats." Accessed at

https://www.lloyds.com/lloyds/about-us/what-do-we-insure/what-lloyds-insures/cyber/cyber-risk-insight/closing-the-gap/

⁷ Verizon. 2017. Data Breach Investigations Report 10th Edition.

⁸ International Data Corporation. 2014. "The Link between Pirated Software and Cybersecurity Breaches." Accessed at

http://download.softwareculicenta.ro/raport-idc-2014-03.pdf/

⁹ CNBC. 2017. "Cybercrime costs the global economy \$450 billion: CEO." Accessed a

https://www.cnbc.com/2017/02/07/cybercrime-costs-the-global-economy-450-billion-ceo.html/

¹⁰ Kritz, Ben. 2017. "Medical systems biggest target for hackers." Accessed at http://www.manilatimes.net/medical-systems-biggest-target-hackers/318347/

¹¹ Lucas, Daxim. 2017. "Cyberhacking incidents seen too costly for banks" Accessed at http://business.inquirer.net/231884/cyberhacking-incidents-seen-costly-banks/

¹² Department of Information and Communications Technology. 2017. "National Cybersecurity Plan 2022." Accessed at http://www.dict.gov.ph/national-cybersecurity-plan-2022/

A cyber-resilient Philippines

In May 2017, DICT launched the official National Cybersecurity Plan 2022. The five-year plan is aimed to address the "urgency to protect the nation's critical infostructures, government networks both public and military, small-medium enterprises to large business and corporations and its supply chains, and every Filipino using the Internet."¹²

The development of the National Cybersecurity Strategy Framework, through DICT's agency, the Cybercrime Investigation and Coordination Center (CICC), will institutionalize the adoption and implementation of Information Security Governance and Risk Management approaches. Based on global standards, a systematic and methodical practice will be put in place to ensure the protection of the country's mission-critical and non-critical infostructure.



National Cybersecurity Plan 2022: Primary Goals

The Plan also seeks to build the government's capability and capacity for quick response and recovery through the establishment of the National Computer Emergency Response Team (NCERT). DICT currently has an informal working NCERT team that can provide countermeasures to organizations but will soon be formalized as more experts are being recruited to join.

By 2022, DICT envisions a cyber-resilient Philippines, where government agencies and private companies can operate without disruption in the midst of a cyberattack. With the policies already in place, the government is looking to fine-tune and adopt best practices from technology providers from other countries.

¹² Department of Information and Communications Technology. 2017. "National Cybersecurity Plan 2022." Accessed at http://www.dict.gov.ph/national-cybersecurity-plan-2022/

"We're doing our best to make this dream a reality," Asec. Cabanlong said in the interview. "First, law, policy, and technology. There should be a law that supports technology, such as cybercrime and equipment standardization. It's a whole of society approach. So cybersecurity should be viewed not just like an antivirus or a firewall, but the totality of everything."

Soon after the launch of the Cybersecurity Plan, DICT will also release memorandum circulars on the (1) Protection of Critical Information Infostructure (CII), (2) Protection of Government Networks, and (3) Protection of Individuals. Part of the national strategy is also the promotion of cyberhygiene, especially for telecommunications companies to sanitize their customer facing network and prevent exfiltration, malware, and exploitation of data from phones or computers.

Bridging the gaps

The National Cybersecurity Plan, along with the establishment of the National Privacy Commission (NPC) under the 2012 Data Privacy Act, indicates a significant leap from a historically weak legislative implementation towards a more cyber mature Philippines.

In addition, the ASEAN-Japan Comprehensive Economic Partnership (AJCEP) is awaiting the establishment of a division under DICT to conduct cyber drills and strengthen the nationwide readiness for cyberattacks.

DICT also recently partnered with Malaysia for the Common Criteria Program wherein both countries will share technical information on the evaluation and certification of equipment to be used by the government to ensure that there will be no compromise in the security and no exfiltration of data.

On top of this, the Department is in various talks with academic institutions in incorporating cyber awareness and security in their curriculum. The curriculum for Bachelor of Science in Cybersecurity has already been drafted for AMA University in Quezon City and a Masters in Cybersecurity in Holy Angel University is also in the pipeline.

In terms of containment, Asec. Cabanlong said that it remains the responsibility of private organizations. The government monitors what goes in and out of the system but enforcement is still the company's responsibility.





Multidimensional cyber maturity

In KPMG's 2016 Global CEO Outlook study, 77 percent of the interviewed CEOs said that the next three years will be a transformative period for their respective organization but 68 percent of them acknowledged that they are "less prepared for a cyber event."¹³

However, a strong information technology infrastructure does not only focus on safety against digital threats but looks at a company's holistic business strategy — purely defensive mindset may hinder long term growth prospects. On the contrary, leveraging cyber security to innovate the business and drive positive transformation can give a company a competitive advantage.¹⁴

Regardless of industry, a high quality cyber security does not only keep data secure but also improves the integrity of information on which business decisions are made.

Cyber maturity is characterized by looking at the Information Technology (IT) structure in different dimensions: leadership and governance, human factors, information risk management, business continuity and crisis management, operation and technology, and legal and compliance. Cyber security is more than an IT risk and should be incorporated in the core strategy of any organization.

 ¹³ KPMG International Cooperative. 2016. "Now or Never: 2016 Global CEO Outlook." Accessed at https://home.kpmg.com/content/dam/kpmg/pdf/2016/06/2016-global-ceo-outlook.pdf/
 ¹⁴ KPMG International Cooperative. 2017. "Transforming companies must put cyber security front and center." Accessed at https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2017/01/cyber-security-front-and-center.pdf/

Trends and Outlook in the Philippine IT-BPM Industry



Sharon G. Dayoan Chairman & CEO and Head of Audit KPMG R.G. Manabat & Co.

Most dynamic Philippine industry



Benvenuto N. Icamina Vice President and Chief Economist The Wallace Business Forum

Information Technology and Business Process Management (IT-BPM)¹ has emerged as the Philippines' most dynamic industry since the beginning of the century. From US\$1.5 billion in 2004, industry revenues rose 15-fold (26 percent per annum or p.a.) to US\$22.9 billion in 2016. By 2017, it is projected to surpass overseas Filipino workers remittances as the top source of foreign exchange earnings for the country.

From 2.7 percent of gross domestic product (GDP) in 2004, its contribution to the economy reached 6.2 percent in 2016. Direct employment in IT-BPM grew 12-fold (25 percent p.a.) from 0.1 million in 2004 to 1.146 million in 2016.

Globally, the Philippines has positioned itself as among the top IT-BPM destinations. In 2010, the country surpassed India as No. 1 in voice services (call centers) with US\$5.7 billion in revenues.² The industry also claimed that it is No. 2 in the world in non-voice services.³ The country had met its target of capturing 10 percent of the global IT-BPM market as early as 2012.⁴

¹ The Philippine Department of Trade and Industry (DTI) defines BPM as "the delegation of service-type business processed to a third party service provider." The sectors of IT-BPM consist mainly of voice BPM (contact centers), non-voice BPM (KPO, back office services), IT outsourcing (e.g., software development), healthcare information management, engineering services, animation and game development.

² The Everest Group made the announcement in 2011.

³ The Philippine IT-BPM Road Map 2012-2016 brochure

⁴ Lee Kuan Yew School of Public Policy – Microsoft Case Studies, Business Process Outsourcing in the Philippines, 22 October 2014



Key success factors

From the global standpoint, IT-BPM's phenomenal success in the Philippines could be attributed to intensified business process outsourcing (BPO) activities in the world, resulting from the lowering of barriers to commerce and trade, which led companies to explore locations with lower operating costs without sacrificing the quality of service.⁵ Moreover, rapid advancements in Information and Communications Technology (ICT) enabled the cost-efficient and timely delivery of services via the internet, particularly outsourcing and offshoring, transforming the depth and coverage of these services into higher value offerings.⁶ Companies now tend to focus more on their core businesses while outsourcing non-core and routine tasks.

Domestically, the Philippines' value proposition has been its skilled and scalable workforce. The country produces 550,000 college graduates annually, 52 percent of which are in courses related to IT-BPM, such as business administration, engineering and Information Technology (IT), the third largest in terms of talent availability after India and China in terms of college graduates.⁷ Moreover, its skilled workforce are proficient in American English, are highly customer service-oriented, and receive globally competitive wages. Although India produces 5.5 million graduates annually, only 10 percent are said to be employable while in the Philippines, 30 percent of the graduates are employable.⁸

Government support was also a key success factor. The Philippine Congress passed the Special Economic Zone Act in 1995, lowering area requirements for development and offering tax incentives to attract more foreign investment. At the turn of the century, the Philippine Economic Zone Authority (PEZA) extended the incentives – consisting of Value Added Tax (VAT), import and customs duty waivers; exemptions on local taxes; six to eight-year income tax holiday and gross tax of five percent of revenues in lieu of all other taxes after the tax holiday period – to IT buildings (previously extended to industrial/IT estates and parks only) or portions of buildings dedicated to IT-BPM activities. This triggered an office space development boom that continues up to today, albeit now at a relatively slower pace.

⁷ Data on graduates based on Academic Year 2012/2013, so the numbers may have risen further today. Lee Kuan Yew School of Public Policy – Microsoft Case Studies, Op.Cit. ⁸ Ibid.



⁵ Philippines Department of Trade and Industry, IT & BPO/Invest Philippines (http://investphilippines.gov.ph/industries/manufacturing/it-and-bpo/)
⁶ Ibid.



The other crucial support given by the government was in addressing the manpower requirements of the rapidly-growing BPO industry. Due to the fast-paced growth, particularly of the voice BPO sector and given the low five percent acceptance rate of job applicants in contact centers in the first half of the previous decade, shortage of manpower became a serious threat to the sector's sustainability. The government stepped in with a number of programs to avoid this dire consequence, the most significant of which were the National English Proficiency Program (NEPP) targeted at teachers; training programs for BPO "near hires" (those who failed due to English communication deficiencies but were otherwise trainable), which was five times larger than the number of qualified applicants hired outright by contact centers, administered by the Technical Education and Skills Development Authority (TESDA) under the Industry-Based Training for Work Scholarship Program (I-TWSP); and a government-funded program in 17 state colleges and universities involving 15 units of electives tailored for IT-BPM industry competencies plus 600 hours of internship in an IT-BPM company.⁹

These initiatives, as well as the trainings conducted by the call centers themselves, enabled the voice BPM sector to maintain its dynamism and dominant stature in the industry up to the current decade.

From industry associations representing particular sectors of the industry, in some cases competing with each other, an umbrella organization emerged representing the interests of these various groups of IT services in the industry in 2004. This was the Business Processing Association of the Philippines (BPA/P). The groups under BPA/P included the Philippine Software Industry Association (PSIA), the Animation Council of the Philippines (ACPI), the Game Developers Association of the Philippines (GDAP), the Contact Center Association of the Philippines (CCAP), and the Healthcare Information Management Outsourcing Association of the Philippines (HIMOAP, now renamed HIMAP). In 2013, BPA/P was renamed as Information Technology & Business Process Association of the Philippines (IBPAP) to reflect the complete range of outsourcing services represented.

IBPAP played a role similar to National Association of Software and Services Companies (NASSCOM) of India, seeking to professionalize the industry and developing plans to chart its course. Among the specific activities pursued by the association, mostly in partnership with the government and other stakeholders, and in which it can claim success to, are as follows:

- The development of the IT-BPM Industry Roadmaps, the most recent one covering 2016-2022, identifying the directions to be taken by the industry, individually as sectors and collectively, to address key challenges and achieve its targets in revenues, employment, share in the country's economy, share in the global IT-BPM market, etc. over the medium-term.
- The Next Wave Cities and Emerging Location program, jointly with the Department of Information and Communications Technology (DICT), previously known as the Commission on Information and Communications Technology (CICT), which ranks, promotes, and assesses second and third-tier cities as potential industry locations; and providing assistance to local governments in improving their capability to host BPO companies.
- Partnering with the government in large-scale IT-related training initiatives, such as the I-TWSP, and in formulating policies beneficial to IT services including the approval of the Data Privacy Act of 2012.
- Working with colleges and universities, IBPAP was able to introduce changes in curricula to enhance the IT-BPM competency of students. The proven success of the industry in creating higher-paying jobs helped convince schools to make these changes.

Voice sector still dominates, but opportunities are more geographically spread out

The first industry master plan (Roadmap 2010) formulated by IBPAP focused on unification, collaboration and structure. IBPAP became the unifying force among all segments of the industry, bringing these groups together to achieve the goals of growing, professionalizing, and providing a distinct identity to the industry.

The next Roadmap 2016 sought to build from the gains of the previous plan, with the battle cry for the next six years of grow, diversify, transform. Growth meant attaining a target of US\$25 billion in revenues and 1.3 million in employment by 2016 from US\$10 billion and slightly over 500,000, respectively, in 2010. Diversification meant more contribution from non-voice and higher value IT services; non-US markets; and delivery locations outside of Metro Manila and other Tier 1 cities.¹⁰ Presumably, diversification should result in the transformation of the IT-BPM industry structure.

Contact centers and BPOs are the largest contributors of the industry, accounting for 56 percent (US\$12.8 billion) of revenues and 66 percent (751,200) of full-time employment in 2016. The first decade of the new century was the golden age for contact centers, growing by 44 percent annually in revenues and by 31 percent p.a. in employment from 2004 to 2010, towing with it the success of the entire IT-BPM industry.¹¹ It slowed to 14 percent p.a. in both revenues and employment during this decade, i.e., 2010-2016, so the sector's share in revenues declined from two-thirds in 2010 but its share in jobs was steady.

Healthcare information management, which diversified beyond medical transcription with the handling of higher value-added services like electronic medical records (EMR) and telehealth, was the fastest-growing segment of the industry during this decade at 71 percent p.a. in revenues and 18 percent p.a. in employment. This brought their industry share up from one percent of revenues in 2010 to 10 percent in 2016, and from eight percent of jobs to 10 percent. The segment, though, appeared to be growing at breakneck speed even in the previous decade, with revenues rising 66 percent annually and employment up 47 percent yearly from 2004 to 2010 based on Bangko Sentral ng Pilipinas (BSP) data on transcription.

Global In-House Centers (back offices and shared services) was the second fastest-growing sector in 2010 at 19 percent p.a. in revenues and 14 percent annually in jobs. Hence, the sector's share in revenues improved from 18 percent in 2010 to 20 percent in 2016, while its share in employment increased slightly from 12.8 percent to 13 percent.

¹⁰ These were the Centers of Excellence at the start of the decade of 2010's, namely Metro Cebu, Clark and Bacolod City.

¹¹ Based on Contact Center data from the 2013 BSP Survey of IT Services. IBPAP has data only starting 2010. Although the BSP data has slightly different composition than the Contact Center & BPO data of IBPAP, both are dominated by voice BPO activities hence are more or less comparative of the trend in the voice BPO sector.

The industry's structure in terms of sector continues to favor voice BPM, but with declining share in revenues in this second decade of the 21st century. The shift that significantly took place was towards healthcare information management, and to some extent global in-house centers in terms of revenues. The efforts to move towards lower-cost locations outside of Metro Manila may have meant tapping lower-level skills in these new areas which were most suitable for call centers, hence low-end voice BPM remained a significant contributor of employment in this decade.

CECTOR	REVENU	ES (US\$M)	EMPLOYMENT ('000)	
SECTOR	2010	2016	2010	2016
Animation & Game Development	24	56	1.5	4.3
Contact Center & BPO	5,956	12,772	350.4	751.2
IT Services	1,187	2,965	63.3	123.2
Healthcare Information Management	95	2,414	44.1	118.2
Global In-House Centers	1,638	4,686	67.7	148.7
TOTAL	8,900	22,893	527.0	1,145.7

Table 1.	IT-BPM	Revenues and	Employment	(Revenues in	US\$ million;	; Employment in '	(000)
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Source: IBPAP

A major transformation that occurred in this decade was the geographic diversification of the industry. The designation of Next Wave Cities¹² by the Information and Communications Technology Office (ICTO) of the Department of Science and Technology and IBPAP in 2009 opened up opportunities for the major industry players to expand outside of Metro Manila and the two other original Centers of Excellence, Cebu and Clark. Significant expansion outside these so-called first wave BPO growth areas, though, started in 2007, with facilities being set up in places such as Bacolod City, Iloilo City, and Dumaguete City at that time.¹³

In the middle of this decade, ICTO and IBPAP introduced another concept, the Emerging Locations, defined as sites which have the potential and foundation to attract BPO firms and become the future Next Wave Cities.¹⁴

In 2007, Metro Manila accounted for 83 percent of all BPO employment in the country; in 2011, Metro Manila's share dropped to 77 percent.¹⁵ It is estimated that this share has declined to near 70 percent in 2016, and with the Next Wave Cities and Emerging Locations absorbing close to 20 percent of the jobs in the industry and Centers of Excellence at 10 percent.¹⁶



¹² The Next Wave Cities are locations considered as having the capability to host the operations of major international business process outsourcing (BPO) companies based on talent, infrastructure, cost, risk management and business environment. The following were named Next Wave Cities in 2016: Baguio City; Cagayan de Oro City; Dagupan City; Dasmariñas City; Dumaguete City; Lipa City; Malolos City; Naga City; Sta. Rosa, Laguna; Taytay, Rizal

¹³ Based on an unpublished study done by the Wallace Business Forum (WBF) in 2016 entitled Research on the BPO Industry in Selected Philippine Locations
 ¹⁴ Listed as Emerging Locations in 2016 were Balanga City, Batangas City, Iriga City, Laoag City, Legazpi City, Puerto Princesa City, Roxas City, Tarlac City, Tuguegarao City, and Zamboanga City.

¹⁵ Lee Kuan Yew School of Public Policy, Op. Cit.

¹⁶ Basic data obtained from WBF (2016), Op. Cit., and interview with former IBPAP Pres. Jose Mari Mercado in February 2016

Based on the 2016 edition of the BusinessWorld Top 1,000 Corporations in the Philippines, the major IT-BPM companies operating in the Philippines in 2015 in terms of revenues were Accenture, Inc. (US\$868 million), Convergys Philippines Services Corp. (US\$510 million), Convergys Philippines, Inc. (US\$301 million), JP Morgan Chase Bank, NA (US\$279 million), Sutherland Global Services Philippines, Inc. (US\$253 million), Telephilippines, Inc. (US\$236 million), Sitel Philippines Corp. (US\$176 million), and Sykes Asia, Inc. (US\$176 million)¹⁷ (Table 2). There were 50 other IT-BPM companies in the Top 1,000 with total revenues amounting to almost US\$7 billion in 2015.

Given that IBPAP reported revenues of roughly US\$22 billion in 2015, this suggests that the 50 companies in the Top 1,000 contributed one-third of these revenues with customer relationship management activities (mainly voice BPM) accounting for 55 percent of total revenues. This indicates that earning opportunities within the industry were relatively well spread out.

Company	Sector ^a	Revenues in 2015 (US\$M)
Accenture, Inc.	Other Back Office Operations, N.E.C.	868
Convergys Philippines Services Corp.	Customer Relationship Management	510
Convergys Philippines, Inc.	Customer Relationship Management	301
JP Morgan Chase Bank, NA	Customer Relationship Management	279
Sutherland Global Services Philippines, Inc.	Customer Relationship Management	253
Telephilippines, Inc.	Customer Relationship Management	236
Sitel Philippines Corp.	Customer Relationship Management	176
Sykes Asia, Inc.	Customer Relationship Management	176
RMH Teleservices Asia Pacific, Inc.	Customer Relationship Management	164
Shell Shared Services (Asia) B. V.	Activities of Head Offices	160
Hewlett-Packard AP (Hong Kong) Ltd.	Activities of Head Offices	159
Telus International Philippines, Inc.	Customer Relationship Management	150
Teletech Offshore Investment B.V.	Customer Relationship Management	146
TeleTech Customer Care Mgt. Phils. Inc.	Customer Relationship Management	146

Table 2. Top IT-BPM Companies in the Philippines

^aBased on BusinessWorld classification

Source: 2016 BusinessWorld Top 1000 Corporations in the Philippines

Outlook over the Medium-Term¹⁸

The new Roadmap (2022) seeks to deal with the headwinds while focusing on opportunities perceived by the industry to prevail over the medium-term. Called "Accelerate PH Future Ready," the plan addresses the specific challenges of the development of artificial intelligence/automation, digital transformation and shifts in technology, changing political and regulatory environment, and changing preferences of clients.¹⁹ At the same time, the various industry stakeholders have agreed to raise their collective goals towards generating 1.8 million jobs (73 percent of which are mid- to high-value work), US\$40 billion in revenues, and 15 percent global market share by 2022.

IBPAP admitted that voice BPM has grown so large it is likely to slow down significantly in the next five to six years, given the much lower natural growth of the talent pool. A modest boost could come from tapping high school and junior college students under the K to 12 curricula for part-time work, but this is unlikely to prevent the decline in the sector's share to total industry revenues and employment. Moreover, the low-skilled and highly repetitive chores of BPOs are the ones most vulnerable to the threat of artificial intelligence (AI)/automation, so the industry strategy is actually to upgrade skills and talent base to higher value segments.²⁰

¹⁷ PhP value converted into USD using PhP45.5:US\$1

¹⁸ The last two sections benefited immensely from the insights provided by Mr. Rey Untal, President of IBPAP, during an interview held on June 22, 2017.

¹⁹ Othel V. Campos. "BPOs expected to add 1m direct jobs by 2022," Manila Standard, 19 July 2016; "IT-BPM sector drafts new 6-year roadmap," The Philippine Star, 20 July 2016; IBPAP, Frost & Sullivan, Philippine IT-BPM Roadmap 2022: Accelerate PH Future Ready, Roadmap brochure (www.ibpap.com/roadmap2022)
²⁰ Campos, Ibid.

To adapt to evolving technology, the industry is embracing the strategy of positioning the country as a technology-enabled hub, with up-scaling of IT skills and advocating for a strategic science, technology, engineering and mathematics (STEM) policy framework as supportive measures. This will require attracting more entrants to the workforce to take up high-tech education and join the IT-BPM industry, and to foster stronger industry-academe linkages to develop a deeper talent pool.

The IT-BPM industry is also seeking out greater involvement of small and medium enterprises (SMEs) and start-ups as drivers of new and innovative businesses. With some government backing, the start-up group has actually formulated its own roadmap, targeting 500 start-ups with funding of US\$200 million and generating a value of US\$2 billion by 2020.²¹ The roadmap addresses two major challenges, poor internet infrastructure and lack of enabling policies. A review of the anti-trust bill to allow entry of more internet providers in the market and a bill on tax incentives for start-up enterprises are the proposed solutions under the start-up plan.

The establishment of more delivery centers outside the National Capital Region (NCR) or Metro Manila and the other First Tier locations will also continue to broaden the economic opportunities provided by the industry and support the government's inclusive growth agenda.

The industry, however, is wary of the government's plan to reform the tax system, which also involves the rationalization of tax incentives. IBPAP has expressed concern regarding its impact on the competitiveness of the country as a global IT services center should the perks be removed. The country's competitiveness is one of the major focus of IBPAP's Roadmap 2022.

New Challenges

Two very recent developments that were not reflected in Roadmap 2022, having occurred when the blueprint was already finalized and approved for adoption by the industry, were the election of Donald Trump as U.S. President and the escalation of violence in Mindanao which led President Rodrigo Duterte to declare Martial Law in southern Philippines.

President Trump had articulated during his campaign his push of keeping jobs in America, with outsourcing among those he was presumed to be referring to as sources of jobs leaving the United States. Although no concrete actions have yet been done to make good on this promise – executive orders have no effect on the action of private companies – the Philippine IT-BPM industry admitted investors became cautious right after the change in U.S. political leadership. While many U.S. firms will have problems competing successfully without outsourcing, several bills protecting U.S. jobs filed in U.S. Congress have slowed the pace of investments offshore.

When the conflict erupted in Marawi City and President Duterte declared Martial Law in Mindanao, head offices of BPO companies immediately expressed concern on what would happen in Davao City, Cagayan de Oro City, and other locations in the south where they have presence. The situation subsequently calmed down, and it was back to *"business as usual"* for BPO companies in Mindanao. But the industry remains vigilant particularly on the safety of their workers.



Telemedicine: Improving Access to Healthcare through Technology



Imelda H. Corros Audit and Advisory Partner KPMG R.G. Manabat & Co.



Christopher Miguel C. Saulo Research Analyst The Wallace Business Forum

Access to healthcare services remains a challenge for many Filipinos. One of the culprits for this dilemma is geography. Divided by more than 7,000 islands, it is difficult to provide an equitable delivery of medical advices or treatments across the entire country. Aggravating this problem are the shortage of doctors, lack of hospital beds, and unutilized pool of nurses nationwide.¹ However, the rapid innovations in technology has spilled over to the health sector and has helped alleviate these problems, giving rise to what is known as eHealth. The World Health Organization (WHO) defines eHealth as the "cost-effective and secure use of Information and Communications Technology (ICT) in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge, and research."2

eHealth is further subdivided into several fields,³ first is telehealth or telemedicine, which refers to the use of ICT to deliver healthcare services to patients and providers separated by distance.⁴ Under this setup, medical specialists make diagnosis or treatment decisions based on patient information and data that are sent over the internet or mobile phone devices. It contributes to the achievement of universal healthcare (UHC) by increasing access to healthcare services for patients regardless of their location. The telehealth market worldwide is expected to grow to US\$9.35 billion in 2021 from US\$2.78 billion in 2016, with the highest growth being seen in the Asia-Pacific Region.⁵

¹ Doctor-to-patient ratio in the country is 1:33,000 people according to Health Secretary Paulyn Rosell-Ubial; Hospital Bed-Population ratio is at 1:1000 people as of 2011 (World Health Organization); The Professional Regulatory Commission reports that 287,000 nurses are underemployed as of 2011 (Cahiles-Magkilat, Bernie. "Comprehensive PJEPA FTA Review Pushed." 17 October 2011. Manila Bulletin Publishing Corporation. Accessed at http://www.mb.com.ph/articles/338028/comprehensive-pjepa-fta-review-pushed).

² World Health Organization.2016. Global Diffusion of eHealth: Making Universal Health Coverage Achievable. Geneva, Switzerland.

³ Ibid; Marcelo, Alvin and Julian Cañero. 2010. "Health Information Systems." Acta Medica Philippina Vol. 44, No. 4. University of the Philippines Manila National Telehealth Center.

4 Ibid.

⁵ Markets and Markets. 2016. "Telehealth Market by Component – Global Forecasts to 2021." Accessed at http://www.marketsandmarkets.com/Market-Reports/telehealth-market-201868927.html.



The second field of eHealth is electronic health records (EHR) and electronic medical records (EMR). These two, whilst often used interchangeably, have a slight difference. EMR refers to the electronic-based health information of a patient that can be created and managed by authorized users in one healthcare organization, while EHR is an electronic record of patient information that can be shared and accessed by different organizations and that adheres to national standards. Thus, the scope of EHR is broader.⁶ Globally, there has been a 46 percent increase in the adoption of national EHR systems in the past five years.

The third field of eHealth is mHealth or the "use of mobile devices for medical and public health practice" which include telephone helplines, text message appointment reminders, and mobile access to electronic patient information. The world mHealth solutions market is projected to reach US\$59.2 billion in 2020 from US\$14.02 billion in 2015, with European and Asian countries seen to have growth opportunities during the forecast period.⁷

The fourth field of eHealth is e-Learning or the use of ICT for education to train health workers and professionals, as well as, educate communities with poor healthcare infrastructure.

Lastly, health informatics or the use of "resources, devices and methods required to optimize the collection, storage, retrieval and use of health information." One of its branches, consumer health informatics, which is the "analysis and implementation of methods to make health information accessible to consumers, and integration of their preferences into medical information systems"⁸ is also growing.

Besides these sectors, the WHO has also been monitoring the use of big data and social media in eHealth initiatives across the globe. Big data is seen as a critical part in achieving UHC through the delivery of unique data on populations and individuals that supports better healthcare for all. Meanwhile, social media contributes to the attainment of UHC since it serves as a platform for healthcare consumers and organizations to discuss and share knowledge about health.

The global healthcare Information Technology and Business-Process Management (IT-BPM) market is seen to grow to US\$276.79 billion in 2021 from US \$170.47 billion in 2016. Particularly, the Philippine healthcare IT-BPM market is expected to grow to US\$5 billion in 2022, which will then contribute about 210,000 direct jobs.⁹

⁶ National Alliance for Health Information Technology. 2008. Defining Key Health Information Technology Terms. Accessed at http://www.hitechanswers.net/wp-content/uploads/2013/05/NAHIT-Definitions2008.pdf.

⁷ Markets and Markets. 2015. "mHealth Solutions Market by Connected Devices, Apps & Services – Global Forecast to 2020." Accessed at http://www.marketsandmarkets.com/Market-Reports/mhealth-apps-and-solutions-market-1232.html.

⁸ Eysenbach, Gunther. 2000. "Consumer Health Informatics." BMJ: 320, 1713.

⁹ Healthcare Information Management Association of the Philippines. 2016. "Global Healthcare IT-BPM market at \$276 B in 2021." Accessed at http://himap.ph/global-healthcare-it-bpm-market-at-276-b-in-2021/

Development of Health Information Systems in the Philippines The development of health information systems in the Philippines can be traced as far back as the 1960s when the Department of Health (DOH) first ran a national health information system.¹⁰ By 1984, together with WHO members, the system was revised to incorporate the strategy shift towards primary healthcare.

This old system was changed in 1989 through the implementation of the Field Health Services Information System (FHSIS) which required local Barangay Health Stations or Rural Health Units (RHUs) to collect data for different national health programs. Field personnel were tasked with submitting at least 40 different forms annually. It is also this year when the DOH started experimenting the use of ICT in the health sector through developing a software for FHSIS.¹¹

The devolution of health services to local government units (LGUs), through the enactment of the Local Government Code of 1991, saw the drastic weakening of the quality of management and services, low staff morale, waning infrastructure, and insufficient funds for operational costs and services.

To address these problems, the Modified Field Health Services Information System (MFHSIS) was implemented in 1996, under which, the number of submitted forms was reduced from 40 to seven. It then further developed into the Distributed Field Health Services Information System (DFHSIS) by 2001 where it was piloted in six different sites but was not implemented nationwide because of some technical difficulties.

In 2005, the Philippine Health Information Network (PHIN) was created.¹² Led by the DOH, it seeks to establish cooperation between government agencies, non-government organizations, academe, and the private sector in terms of health information.

Despite these developments in the Philippine health information system, several problems which caused delay and errors in healthcare decision-making were identified.¹³ These include paper-based and manual reporting systems; all-or-none phenomenon;¹⁴ hierarchical flow of data submission; manipulative target-based reporting; mixing good quality data with bad, fabricated data; disintegrated and



paradoxical vertical programs;¹⁵ data cemeteries;¹⁶ and lack of computerized health information standards.

eHealth is seen to address the shortcomings of the country's health information system. Telehealth in the country was first recorded in 1985 during the SatelLife-Healthnet project that connected medical centers in the Philippines and the U.S. via email communications. The use and development of telehealth was accelerated further by the establishment of the National Telehealth Center (NTHC) at the University of the Philippines (UP) Manila in June 1998.

It entered the realm of national policy when it was included in the DOH's Health Agenda for 2010-2016.¹⁷ In 2013, a National eHealth Steering Committee, composed of representatives from the DOH, Department of Science and Technology (DOST), Philippine Health Insurance Corporation (PhilHealth), UP Manila, and eventually the Department of Information Communications and Technology (DICT), was formed to lead all eHealth initiatives in the country and to implement the Philippine eHealth Strategic Framework and Plan.

¹⁰ Marcelo, Alvin and Julian Cañero. 2010. Health Information System. Acta Medica Philippina Vol. 44, No. 4. University of the Philippines Manila National Telehealth Center. ¹¹ Philippine eHealth Strategic Framework and Plan (2013-2017).

¹² Fernandez-Marcelo, P.G., B.L. Ho, J.F. Faustorilla Jr., A.L. Evangelista., M. Pedrana., and A. Marcelo. 2012. "Emerging eHealth Directions in the Philippines." IMIA Yearbook of Medical Informatics 144-52.

¹³ Marcelo, Alvin., and Julian Cañero. 2010. "Health Information Systems." Acta Medica Philippina Vol. 44, No. 4. University of the Philippines Manila National Telehealth Center. ¹⁴ All-or-none phenomenon means that a health statistic report is only complete if all of its component data are accounted for. A national health report cannot be released if a single barangay or municipality failed to accomplished their own report.

¹⁵ Each DOH program has its own set of requirements, forms, and logbooks. Patients with multiple conditions can result in bloating in the number of patients since they are recorded in several logbooks.

¹⁶ Data cemeteries is meant to describe a health center with piles of logbooks and paper records over the years.

¹⁷ Fernandez-Marcelo, Portia and Cynthia Villamor. 2015. National Telehealth Center: Bridging Distance to Improve Health through ICTs. In Health Ripples: The UP Manila Health and Life Magazine, Vol. 1, No. 2. Manila: UP Manila Information Publication, and Public Affairs Office.

Role of Telemedicine/Health Information Systems in the Philippine Health Agenda (PHA) 2016-2022

The WHO underscored the importance of a reliable health information system in "policy development and implementation, governance and regulation, health research, human resources development, health education and training, service delivery and financing,"¹⁸ as it is deemed critical in achieving universal healthcare since it improves delivery of healthcare services.

The Duterte administration, led by the DOH, outlined the PHA 2016-2022: All for Health towards Health for All. Under the PHA, the government aims to attain health-related sustainable development goals (SDGs) of financial protection especially for the poor, marginalized, and vulnerable; better health outcomes with no disparity; and a responsive health system where Filipinos feel respected, valued, and empowered.¹⁹

One of the strategies to achieve these goals is to invest in eHealth and health information systems to aid decision-making. This approach contains five key aspects:

- Require the use of electronic medical records in all health facilities;
- Make online submission of clinical, drug dispensing, administrative, and financial records a prerequisite for registration, licensing, and contracting;
- Commission nationwide surveys, streamline information systems, and support efforts to improve local civil registration, and vital statistics;
- Automate major business processes and invest in warehousing and business intelligence tools; and
- Facilitate ease of access of researchers to available data.

The inclusion of eHealth and health information systems in the main thrusts of the DOH points to a high priority given by this administration in developing these initiatives as means of achieving UHC.

National Telehealth Center and other institutions

The NTHC is one of the country's leading advocates of utilizing ICT for improving access to quality healthcare. The NTHC builds linkages with the government, both in the national and local level, as well as non-government organizations. Its first project was the provision of online updates on health matters through teleconferences.

The NTHC was the first to introduce a nationwide telemedicine initiative in the country in 2004, through the web-based *BuddyWorks*, a flagship project that aims to link rural communities with medical and health experts in UP Manila.²⁰ The Commission on ICT provided a PhP43 million grant for the project. It was implemented initially in 10 sites across four locations – Cagayan Valley; Palo, Leyte; Iligan City; and Capiz.

Buddyworks was then transformed into the National Telehealth Service Program (NTSP) with the help of the DOST Philippine Council for Health Research and Development (PCHRD) in 2007. It moved from from being web-based towards the use of short message service (SMS) in relaying teleconsultations and response of the medical specialists. They tapped into the Doctor to the Barrios (DTTB) program of the DOH to serve as the referring physicians for the system. In 2011, the DOH funded the project development of the NTSP which has two components: Real Time Regular Routine Reporting (R4Health) and Telemedicine.²¹

The R4Health strategy uses mobile phone technology to report on universal healthcare and millennium development goals (MDGs) related indicators.²² These are Conditional Cash Transfer (CCT) beneficiaries who avail of health services every month; infants immunized; births attended to by skilled health professionals; women with complete pre-natal check-ups; facility-based delivery; current contraceptive or family planning users; number of maternal deaths; number of neonatal deaths; and availability of medications from rural health units. This allows the provision of timely and accurate information to decision makers, particularly the DOH Secretary, to help them better allocate resources and plan investments on health. R4Health covers 246 rural health units across the country.

¹⁸ World Health Organization. 2010. Monitoring the Building Blocks of Health Systems: A Handbook of Indicators and Their Measurement Strategies. Geneva, Switzerland. ¹⁹ Philippine Health Agenda 2016-2022: All for Health towards Health for All

²⁰ Lingdas, Charmaine. 2015.RxBox: "Empowering Health Workers to Improve Healthcare in Remote Areas." In Health Ripples: The UP Manila Health and Life Magazine, Vol. 1, No. 2. Manila: UP Manila Information Publication, and Public Affairs Office.

²¹ Kanindot, January R. 2015. "From BuddyWorks to National Telehealth Service Program: The New Face of Healthcare Service." In Health Ripples: The UP Manila Health and Life Magazine, Vol. 1, No. 2. Manila: UP Manila Information Publication, and Public Affairs Office.

²² Kanindot, January R. 2015. "From BuddyWorks to National Telehealth Service Program: The New Face of Healthcare Service." In Health Ripples: The UP Manila Health and Life Magazine, Vol. 1, No. 2. Manila: UP Manila Information Publication, and Public Affairs Office.

Under the telemedicine aspect, the NTSP instituted regional implementation of telemedicine to specialists outside of Metro Manila starting with the Cordillera Administrative Region (CAR) and Eastern Visayas (Region 8).²³ Telemedicine consultation for health centers in CAR are conducted by specialists from the Baguio General Hospital and Medical Center while those in Region 8 are handled by Eastern Visayas Regional Medical Center. Meanwhile, the Philippine General Hospital (PGH) is still in charge of telemedicine consultation for the rest of the country. The NTSP coverage expanded to 389 disadvantaged municipalities currently being served by 196 municipal health officers and 193 DOH DTTBs.

Related to the telemedicine aspect is the revolutionary RxBox of the NTHC - a Filipino-made telemedicine device designed to offer better access to life-saving healthcare services in isolated and disadvantaged communities in the entire country. The RxBox has the capability to measure vital statistics, store information, and convey them through the internet to a specialist from a different location. It contains built-in sensors for blood pressure monitor, pulse oximeter, electrocardiogram, fetal heart monitor, maternal tocometer, and temperature sensor. It was formally launched in 2013 as part of the DOST's vision of a "Smarter Philippines." Currently, it has a compact, lightweight design with a tablet interface. 143 facilities from 51 provinces in the country, and 830 health workers have been trained to operate the RxBox. It is estimated that 2.86 million Filipinos, 56 percent of whom from 4th to 6th class poor municipalities, will benefit from this project.²⁴ According to NTHC Director Dr. Raymond Santiago, the RxBox is currently being used in 214 sites across the country with 1,000 additional locations being targeted for expansion in 2017.²⁵

Moving forward, the RxBox is being pitched to private companies, especially start-ups, to unburden UP-NTHC from its maintenance and sustainability plans.²⁶ Under the proposed business setup, the private entity will mass produce and commercialize the device, in exchange for a royalty to be paid to the university.

Another innovation initiated by the NTHC in 2004 is the Community Health Information Tracking System (CHITS) – an electronic medical records system that can store patient information at the point-of-care for RHUs. Its purpose is to assist health workers gather and retrieve patient information for better care and also allow generation of reports that health workers can submit to the decision makers. In 2011, it expanded to include eHealth applications to monitor and report key maternal and health indicators in real time (rCHITS).²⁷ CHITS held its pilot implementation in two health centers in Pasay City, Manila. Currently, Dr. Santiago reported that it is being utilized in over 169 facilities nationwide.

Apart from the NTHC, the academe, led by UP, has also made strides in promoting eHealth in the country by incorporating medical ICT courses in their curriculum.²⁸ The Medical Informatics Unit (MIU) of the UP College of Medicine initiated a Master of Science in Health Informatics that aims to train individuals on the application of informatics to health problems and to study health information systems. In basic medical education, courses on the national health information system, use of e-learning tools such as CHITS, and medical informatics were rolled out in various levels to increase awareness on the use of ICT in health.

Several universities followed through, De La Salle University integrated health informatics in its six-degree programs, the University of Santo Tomas Faculty of Medicine and Surgery now offers a course on medical informatics, while St. Luke's College of Medicine provides a bioinformatics and medical informatics subject in its Masters in Molecular Medicine degree. The Ateneo de Manila University also has a three-unit elective in health informatics including discussions on health information management. Notably, nursing educators in the country led the institutionalization of Commission on Higher Education (CHED) Memorandum No. 14 which requires the inclusion of health informatics in the nursing curriculum. Other institutions which offer eHealth trainings include the Asian Institute of Management, the Medical City, and My Health Clinic.



- ²⁵ Santiago, Raymond. Interview with the NTHC Director, June 15, 2017.
- ²⁶ Ibid.

²³ Ibid.

²⁴ Lingdas, Charmaine. 2015.RxBox: Empowering Health Workers to Improve Healthcare in Remote Areas. In Health Ripples: The UP Manila Health and Life Magazine, Vol. 1, No. 2. Manila: UP Manila Information Publication, and Public Affairs Office.

²⁷ Santos, Anne Loren Claire. 2015. "CHITS: Revolutionizing Healthcare Services Delivery in the Philippines." In Health Ripples: The UP Manila Health and Life Magazine, Vol. 1, No. 2. Manila: UP Manila Information Publication, and Public Affairs Office.

²⁸ Fernandez-Marcelo, P.G., B.L. Ho, J.F. Faustorilla Jr., A.L. Evangelista., M. Pedrana., and A. Marcelo. 2012. "Emerging eHealth Directions in the Philippines." IMIA Yearbook of Medical Informatics 144-52.

Various organizations also undertook their respective research and innovation in the field of eHealth and are seen to be major players in the future:²⁹

- Molave Development Foundation electronic wash, sanitation and hygiene (eWASH) and improvement of maternal healthcare using ICT;
- SynapseHealth Solutions Inc. mobile telehealth and information resource system for community health workers (M-DOK) and health, emergency, and disaster information using mobile technology;
- DOST Advanced Science and Technology Institute wireless last mile telephony solution;
- Health Action and Information Network identification of eHealth needs and eHealth for visually challenged;
- Physicians for Peace, Smart Communications, Ateneo Java Wireless Competency Center amputee screening via cellphone networking; and
- Peace Corps, Baguio Center for Young Adults, Save the Children, Child and Family Services, Philippines, Inc. sex education text.

There are also health informatics organizations in the country that advocate the use of ICT in healthcare, spearheaded by the Philippine Medical Informatics Society (PMIS). The PMIS aspires for the institutionalization of a health information system to augment national development and poverty alleviation. They conduct lectures and seminars from international medical informatics experts on the use of electronic health records and information, handheld devices, and online bibliographic databases. Another group is the Informatics Nurses Society of the Philippines, Inc. (iNurse SP) which is the leading nursing informatics organization in the country.

The NTHC has also called for the passage of the proposed "National Telehealth Act" in the Philippine Congress. This bill aims to institutionalize telehealth and telemedicine in the country through the creation of a national telehealth system and national telehealth board. It was filed during the 15th and 16th Congress but stayed pending at the House Committee on Health until the end of the session. A slightly different bill aiming to establish telehealth centers in every hospital across the country is currently pending at the committee level in the 17th Congress.

KonsultaMD and other technology-aided health value-added services

KonsultaMD is a health hotline service composed of licensed Filipino doctors who provide 24/7 immediate medical information and advisory. It is a product of the collaboration between Globe Telehealth, Inc. (GTI), an affiliate of Globe Telecom, and Salud Interactiva, one of the biggest operator of telephone medical assistance in Mexico. Apart from Globe, its service is now accessible in all Philippine telecommunications networks. Members of KonsultaMD are provided with various medical information such as telephone triage; lab and diagnostic results; health coaching and nutrition counseling; permissible medication; and information on primary conditions like cough, fever, urinary tract infections, allergies, maternity, and pediatrics. However, it is not meant to replace face-to-face encounter between doctors and patients but only to serve as immediate and affordable medical attention.

Globe has other initiatives to utilize ICT in the healthcare sector such as the creation of the Globe HealthCloud, an end-to-end web-based health ICT solution that provides real-time, secure, and expedient access to health information. Furthermore, Globe has also tapped the services of ACCESS Health and Philippine National AIDS Council (PNAC) to enable fast and efficient access to maternal and child care services, as well as to create mobile campaigns on HIV counseling, testing, and life-saving treatments.

Another telehealth program in the country is Medifi, an app that allows consultation between doctors and patients through a variety of activities such as video conferencing, chat messaging, medical imaging, and medical profiling.³⁰

Also, the Telegeria Project, which was borne out of the partnership between the Asian Institute of Management – Dr. Stephen Zuellig Center for Asian Business Transformation (AIM-ZCABT) and ACCESS Health International, is a telemedicine project that focuses on the elderly population, dubbed as "telegeriatrics." The ICT platform was provided by ClickMedix. Its features include electronic medical records, medical imaging, and referral to health specialists. Its pilot implementation was in Quezon City and Las Piñas City in Metro Manila.³¹

29 Ibid.

³⁰ Medifi. 2017. Accessed at https://medifi.com/.

³¹ Soriano, Jayson. 2012. Tele-Geriatrics: A Telemedicine Experience of Home Healthcare in Metro Manila, Philippines. Makati City: Asian Institute of Management-Dr. Stephen Zuellig Center for Asian Business Transformation.

ePharmacy is also closely associated to telehealth. MedGrocer is one of the organizations that ventured into this field. It is funded by Ayala Healthcare Holdings, Inc. to use online technology in the delivery of drugs to various communities at lower prices.

Apart from telemedicine, several organizations have also ventured into different fields of eHealth. LiFEDATA Systems, Inc. is one of the entities that engages in EMR and cloud based technologies.³² They have developed several EMR systems that aid in clinic management and patient data record keeping. In 2010, LiFEDATA partnered with the Philippine Medical Association (PMA) to standardize and computerize clinical practices in the country.

Moreover, ACCESS Health International, an international think tank and consulting group has launched the mHealth project e-AKAP that aims to improve maternal and child care in the country.³³ The project aims to train community health workers through a mobile application and tablet to monitor the health situation of pregnant mothers and families. It was piloted in 2014 on some 100 health workers covering 6,000 households in Caloocan City.

In 2012, Smart Communications, Inc. initiated the Secured Health Information Network and Exchange (SHINE), an mHealth platform that allows health practitioners to create cloud-based EMRs, send e-referrals to other health facilities, generate reports, and send SMS reminders to patients.³⁴ In 2014, it partnered with Ateneo Java Wireless Competency Center to improve SHINE and convert it to an open-source technology.

Challenges of eHealth in the Philippines

Although eHealth has become one of the recognized means of delivering health services to developed countries, there are still various challenges that impede its growth in a developing country like the Philippines.

Underdeveloped infrastructure remains one of the biggest problems. Whilst mobile phone penetration rate is high at 118.1 percent and smartphone usage is at 40 percent,³⁵ only 40.7 percent of the population have access to the internet.³⁶ The country also has one of the slowest fixed-line broadband speeds in the world at an average of 5.5 megabytes per second (Mbps).³⁷ The implementation of the National Broadband Program (NBP) would aid government facilities, especially public hospitals or RHUs in implementing telehealth. Internet access and speed is crucial to the delivery of timely medical information and diagnosis to patients particularly in the countryside.

Connected with infrastructure is the shortfall of technical support for the telehealth system. Health units in the countryside do not have the capability to maintain and sustain telehealth hardware and equipment. Another challenge is the lack of technical expertise. Not all healthcare workers are familiar with utilizing mobile phones or computers in their health service routine. Development of technological skills of medical professionals would be essential to the implementation of telemedicine in the country.

Liability and accountability on consultations and diagnoses are also challenges. Since no face-to-face interaction occurs, the diagnosis of a disease could be prone to error. This can be exacerbated by poor infrastructure such as internet and network signals in the countryside. Furthermore, doctors are cautious of telehealth setup as it is still unclear who will be legally liable for taking care of the patients.³⁸

Privacy and security of patient information is also a growing concern for telehealth in the country. Since storage of the data will be done electronically, the system would be exposed to risks such as hacking.

Lastly, inadequate policy framework for telehealth such as the lack of a national telehealth system is one of the biggest challenges. There is a need for (1) a national telehealth system to oversee and set standards on the practice of telehealth in the country to ensure that sustainable financing and concrete policy direction is in place to address existing problems in telehealth and facilitate its development; (2) an accreditation and certification program to ensure quality services for telehealth centers; and (3) a policy for telehealth that can also be used to attract businesses and organizations to invest in telehealth equipment or services.

³⁶ Ibid

³² LiFEDATA Systems, Inc. 2017. Accessed at http://lifedata.ph/?page_id=16.

³³ ACCESS Health International. 2014. ACCESS Health International Uses Mobile Health to Improve Maternal and Child Care Services in the Philippines. Press Release. ³⁴ Smart Communications. 2014. Smart, Ateneo partner to make SHINE an open source platform. Accessed at

http://smart.com.ph/About/newsroom/press-releases/2014/03/31/smart-ateneo-partner-to-make-shine-an-open-source-platform

³⁵ Mirandilla-Santos, Mary Grace. 2017. Top Issues of PH Telecom Consumers. Presentation delivered during 1st Philippine Telecoms Summit. Accessed at

http://www.dict.gov.ph/wp-content/uploads/2017/03/Consumer-Perspective_Santos-March-9-2017-Telecoms-Summit_v2.pdf

³⁷ Mirandilla-Santos (2017) and Akamai. 2017. Akamai's State of the Internet Q12017 Report. Retrieved from:

https://www.akamai.com/fr/fr/multimedia/documents/state-of-the-internet/q1-2017-state-of-the-internet-connectivity-report.pdf.

³⁸ Fernandez-Marcelo, Portia and Cynthia Villamor. 2015. National Telehealth Center: Bridging Distance to Improve Health through ICTs. In Health Ripples: The UP Manila Health and Life Magazine, Vol. 1, No. 2. Manila: UP Manila Information Publication, and Public Affairs Office.

A Fine Time for FinTech in the Philippines



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With Filipinos spending an average of four hours and 17 minutes per day on social media, the Philippines has taken the global lead in time spent on sites like Facebook, Twitter, and Snapchat.¹

If the findings of an OpenSignal report² are an indication, Filipinos may be spending more time on the Internet because of the low accessibility rate of 52.77 percent, which means users are able to access the Internet only half the time, and on such a very slow connection of 8.59 megabytes per second (Mbps).

The Philippines' LTE/4G services ranked 71st out of 75 countries in terms of download connection speed and 72nd in 4G availability.

But having one of the slowest internet speeds in the world has not stopped Internet usage from growing in the country.

In 2017, Filipino internet users grew 27 percent to 60 million or 58 percent of the total population.³ More than half of the

Philippine population are active mobile internet users, or those who use their smartphones to access the Internet.

While social networking sites are already widely used, Filipinos have not yet fully warmed up to Financial Technology (FinTech).

According to the 2014 World Bank Findex, only 4.2 percent of Filipino adults have a mobile account such as GCash and PayMaya (formerly Smart Money), which they use to make purchases, pay bills, or to send or receive money.⁴

The figure appears low but mobile account penetration in the Philippines is higher than the regional average of 3.6 percent. The Philippines also has a more mature mobile money market compared to most of its Southeast Asian neighbors (Figure 1) and, in fact, ranks third in the region.

¹ We Are Social Singapore (2017, January). Digital in 2017: Southeast Asia. Retrieved from

https://wearesocial.com/sg/blog/2017/02/digital-southeast-asia-2017

² OpenSignal (2017, June). State of LTE. Retrieved from https://opensignal.com/reports-data/global/data-2017-06/report.pdf

³ We Are Social Singapore 2017.

⁴ Bangko Sentral ng Pilipinas Inclusive Finance Advocacy Office





Figure 1. Percentage of Adults with a Mobile Account, Southeast Asia

Source: BSP Inclusive Finance Advocacy Office

"We expect the number of mobile money users to grow in the coming years," said the Bangko Sentral ng Pilipinas' (BSP) Inclusive Finance Advocacy Office (IFAO), noting the role of FinTech in the development of payment products and business models.

"There are new players seeking to improve the payment experience of customers, taking it to the next level in terms of speed, convenience, efficiency, and multi-channel accessibility," the IFAO said.

FinTech players

FinTech involves the application of technology to make financial services more accessible and efficient. New technologies developed by the industry now provide the convenience of digital payments and financial services to people without bank accounts anywhere in the country or abroad.

E-money products have been available in the Philippines since the early 2000s, but it wasn't until 2012 when the FinTech industry got a significant boost from the two giant telecommunication companies, Globe Telecom Inc. and Smart Communications, which invested in incubation centers to nurture FinTech startups.⁵

Today, a bigger chunk of the FinTech market is into payments, accounting for almost half of the pie at 48.3 percent.

One such player is PayMaya, a mobile app that lets users transfer money, pay for online purchases or for mobile phone load, or pay any merchant worldwide that accepts Visa even without owning a credit card.

A link between PayMaya and the Beep stored value card also makes for cashless travel and streamlined transfers among Metro Manila's rail transport system and select bus lines. PayMaya demonstrates the Philippines' new focus on the interoperability⁶ of mobile money and e-money services offered by different players – banks, mobile networks, and FinTech firms.

Other payments-oriented FinTech startups are Ayannah, BanKo, Beam and Go, Coins.ph, DragonPay, ePeso, GCash, PesoPay, Pitaca, Qwikwire, TagCash, and WeePay.

Meanwhile, lending accounts for 13.8 percent of FinTech startups in the Philippines, with some notable innovations from the government and private sector.

https://blogs.adb.org/blog/fintech-game-changer-financial-inclusion-asia

⁵ "The State of FinTech in the Philippines" by Alex Wong, TNG Wallet, 17 October 2016

⁶ Asian Development Bank (2016, May). Fintech is the game-changer for financial inclusion in Asia. Retrieved from



For instance, state-owned Land Bank of the Philippines partnered with Voyager Innovations to create Landbank Mobile Loansaver, the country's first paperless and fully digital consumer lending platform with insurance and auto-savings features. It offers the paperless payday loan program, which is particularly helpful in unbanked or underbanked rural areas where most farmers and fishermen are. It also assists micro, small, and medium enterprises (MSMEs) to access loans through short message service (SMS).

Some FinTech players choose to partner with banks and BSP-supervised institutions, thus allowing the BSP to oversee their operations. These include Lendr, Lenddo, and FinTQ.

"We are seeing encouraging models of partnership. Some banks are working with FinTechs to improve the way they deliver their services, like those working with a telco-subsidiary FinTech to enable them to reach out to customers to deliver credit more efficiently," observed BSP's IFAO.

Even with a government-mandated 25 percent allocation of loanable funds for agriculture credit, banks, in general, still prefer to pay the penalties than bear the risks of lending to a sector largely considered unbankable. Therefore, lending apps greatly benefit farmers and fishermen who – because of low productivity, lack of credit history, or verifiable IDs – often have a hard time borrowing from formal financial institutions.

Other FinTech subsegments include online wealth management like Acudeen, Pawnhero, and Robur; data management like Lenddo, MyFinB, and SAL; comparison sites like PaidUp and Zap; personal finance like Mynt; crowdfunding like Cropital; and Bitcoin and block chain technology, notably Satochi Citadel Industries, which provides the bitcoin remittance service Rebit and BuyBitcoin.ph, a platform to buy and sell bitcoins.⁷

At present, FinTechs are established as different legal entities and are thus governed by different regulatory frameworks. For instance, there are separate BSP circulars governing non-bank money issuers, technology-based remittance agents, digital pawnshops, and virtual currency exchanges.

⁷ FinTech News Singapore (2016, August). Fintech Startups in the Philippines. Retrieved from http://fintechnews.sg/fintech-startups-philippines/



Enriching Philippine digital finance

FinTech firms wanting to expand their reach in the Philippines can find a strong ally in the central bank, particularly with new BSP Governor Nestor Espenilla, a staunch advocate of financial inclusion, at the helm.

He is the brains behind the National Retail Payment System (NRPS), launched in early 2017, that serves as the foundation for the gradual shift from cash and check-based payments to electronic schemes.⁸

The NRPS created a shared clearing and settlement system that allows banks to offer digital financial services in an interoperable way, which means the system can be used by any consumer regardless of the mobile network operator or bank.

The ongoing work on the NRPS, noted the IFAO, is an opportunity to enrich the digital finance ecosystem.

Recognizing how new technologies can accelerate financial inclusion in the Philippines – where only 28 percent of all Filipinos own a bank account and only 10 percent borrow money from formal financial institutions over a 12-month period⁹ – the BSP has been adapting regulations to the changing financial landscape.

It issued implementing guidelines on e-money transactions through BSP Circular No. 704, which required electronic money issuers to notify BSP about the identity of their outsourced electronic money network service providers; conduct of mandatory training on anti-money laundering activities for employees handling outsourced e-money transactions; and providing BSP access to system and infrastructure for delivering e-money services so the central bank can promptly conduct investigations when necessary.

An earlier BSP circular – No. 649 – allowed authorized e-money issuers to build a network of cash agents to provide the previously unbanked access to financial services. The circular set the regulatory framework for e-money and e-money issuers that would encourage innovations in fund transfer mechanisms.

These initiatives, among other measures, show the BSP's belief in digital finance and how it can provide solutions to the key challenges to financial inclusion in the country.

⁸ Rappler (2017, May). Who is new BSP Governor Nestos Espenilla? Retrieved from http://www.rappler.com/business/169235-who-is-new-bsp-governor-nestor-espenilla-jr
⁹ Asian Development Bank (2017, January). Accelerating Financial Inclusion in Southeast Asia with Digital Finance. Retrieved from

http://www.adb.org/publications/financial-inclusion-south-east-asia-digital-finance

Reforms

Indeed, FinTech offers an opportunity for economic growth through financial inclusion. With the widespread use of mobile phones and growing access to the internet, it is likely that more and more Filipinos would soon warm up to these new technologies for banking and finance.

However, certain challenges still need to be addressed, like the country's weak internet infrastructure.

The newly-created Department of Information and Communications Technology (DICT) – tasked to facilitate the development of an Information and Communications Technology (ICT) enabled nation – has begun to address this through the implementation of a National Broadband Plan (NBP).

The NBP will interconnect Philippine government offices across the country and enable Filipinos, even those in remote rural areas, to gain access to telecommunication services. Free Wi-Fi internet access in public areas is expected to improve digital literacy and hasten the use of online financial services.

Digitally-driven financial inclusion, supported by regulatory and legislative initiatives, could boost Philippine gross domestic product (GDP) by two percent to three percent, generate more than US\$6 billion in additional electronic payment flows, result in more than US\$4 billion in additional credit uptake, and mobilize more than US\$7 billion in savings.¹⁰

Therefore, regulators and policy makers have critical roles to play in enabling this digital innovation and ensuring that consumer protection, particularly those who are new to formal and financial services, remains the top priority.

According to the BSP, crowdfunding is still at a nascent stage but is likely to rapidly develop. As such, the Securities and Exchange Commission (SEC) is already preparing rules, which will cover equity-based crowdfunding (excluding loan-based or person-to-person lending model).

The IFAO also supports the creation of a national identification (ID) system, which will facilitate access to financial services by addressing persistent challenges in client identification and verification. "[A Filipino ID system] can help meet Know-Your-Customer identification requirements, which is important in onboarding clients of digital financial services," the IFAO said.

Seeing the high interest in digital financial services and the daunting speed of change and innovation, multilateral finance institution Asian Development Bank is also looking to support digital financial inclusion with policymakers, regulators, and FinTech players to give consumers more choices and to better meet their needs.



State of IT Education in the Philippines



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The Philippine education system adopted the K to 12 Program (K-12) program in 2013. Signed into law by former President Benigno S. Aquino III, the Enhanced Basic Education Act of 2013 requires students to undergo kindergarten and 12 years of basic education. The 13 years of basic education includes the following levels (Table 1):

- Kindergarten to Grade 3
- Grades 7 to 10 or Junior High School

• Grades 4 to 6

• Grades 11 to 12 or Senior High School

In defending the K to 12, the Aquino government cited that the program is the recognized educational standard worldwide. Before the K to 12, the Philippines was the last country in Asia with a 10-year basic education program prior to university education. It was also one of the three countries in the world with a 10-year basic education.

The K to 12 program has been designed to ensure that students receive the proper education to meet global standards by developing lifelong learners and preparing graduates for university education, middle-level skills development, employment, and entrepreneurship.¹

School/Level	Starting Grade Level	Ending Grade Level	From Age	To Age	No. of Years
Pre-Elementary	Kindergarten	Kindergarten	4	5	1
Elementary	Grade 1	Grade 6	6	12	6
Junior High School	Grade 7	Grade 10	13	16	4
Senior High School	Grade 11	Grade 12	16	17	2

Table 1. Philippine Education System under K to 12

After the Senior High School level, a student has several options – to take on a vocational course or proceed to college or university to obtain a specialized course or degree.

http://primer.com.ph/blog/2016/06/24/what-you-need-to-know-awhat-you-need-to-know-about-k-to-12-program-in-the-philippinesbout-k-to-12/. Accessed 4 June 2017.

¹ "Know more about the K-12 Program." Philippine Business for Education.

ICT Education in the K to 12 Curriculum

The importance of Information and Communications Technology (ICT) in the basic education curriculum under K to 12 is reflected by the presence of ICT in the curriculum. As K to 12 has been recommended and eventually implemented for Filipinos to meet the global demand for highly competitive and skilled members of the labor force, the new educational system prepares the students of basic education for further specialization when they reach the tertiary level.

In the primary or elementary level, ICT is part of the curriculum and taught under the subject Home Economics and Livelihood Education. In high school (both Junior and Senior High School), it is part of Technology and Home Economics.

In a study on the status of ICT Education in Southeast Asian countries that included the Philippines, Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Singapore, Thailand, Timor Leste, and Vietnam conducted by the Southeast Asian Ministers of Education Organization (SEAMEO) in 2011, SEAMEO utilized the United Nations Educational, Scientific and Cultural Organization (UNESCO) model of ICT Development in Education. Using the UNESCO model, the countries were categorized into four stages namely: Emerging, Applying, Infusing, and Transforming. The Philippines was categorized under the Infusing stage of integrating ICT education together with Indonesia, Thailand, and Vietnam. This means that the Philippines has already taken steps to integrate ICT into the existing curriculum, as well as in administrative practices and policies. This Infusing level is apparent in government initiatives such as a national vision of ICT in education, national ICT plans and policies, complementary national ICT and education policies, professional development for teachers and school leaders, community or partnership, and teaching and learning programs.²



² "DepEd capitalizes on ICT programs for education stakeholder." Department of Education. N.p., 24 July 2014. http://www.officialgazette.gov.ph/2014/07/24/deped-capitalizes-on-ict-programs-for-education-stakeholders/. Accessed 23 May 2017.

ICT in Higher Education

Higher education institutions (HEIs) in the Philippines offer degree programs or specialized courses and these institutions are regulated by the Commission on Higher Education (CHED). CHED figures showed 2,247 HEIs in the Philippines in 2012 with 88 percent of them being college and universities. Majority or roughly 65 percent of these HEIs offer courses in ICT citing demand for such courses among enrollees. Around three million students enrolled in higher education every schoolyear with roughly 60 percent of them in private colleges and universities.

In schoolyear ending March 2014, CHED statistics showed that 553,706 students graduated from college. Of the top college courses, Information Technology (IT) ranks third with 68,178 graduates or 12.3 percent of the total.

Rank	Course	No. of Graduates
1	Business Administration & related courses	142,061
2	Medical and Allied Disciplines	110,280
3	Information Technology	68,178
4	Education & Teacher Training	65,092
5	Engineering & Technology	61,786
6	Other disciplines	26,298
7	Maritime	18,725
8	Social & Behavioral Science	13,144
9	Agriculture, Forestry, Fisheries & Veterinary Medicine	9,109
10	Service Trades	8,283
11	Mass Communication & Documentation	6,153
12	Humanities	5,362
13	Natural Science	4,171
14	Law & Jurisprudence	2,870
15	Architectural & Town Planning	2,268
16	Mathematics	2,094
17	General Courses	1,863
18	Religion & Theology	1,280
19	Trade, Craft & Industrial	403

2014 College Graduates According to Course

Source: Commission on Higher Education (CHED)

For academic years covering 2014 to 2015 and 2017 to 2018, CHED identified higher education courses that are in high demand. CHED encourages incoming higher education or college students to take up these priority courses with a promise that qualified students can obtain CHED Student Financial Assistance Programs. The list of priority courses was based on interagency meetings conducted last 30 September and 24 October of 2013 by the representatives from the Department of Labor and Employment (DOLE), National Economic and Development Authority (NEDA), Philippine Association of State Universities and Colleges (PASUC), and Philippine Association of Colleges and Universities (PACU). The list includes:

1. Agriculture and Related Fields (15 percent)

- Agro-Forestry
- Veterinary Medicine
- Agricultural Engineering
- Agribusiness/Management
- Agricultural Entrepreneurship
- Agricultural Technology
- Agriculture
- Fisheries
- •BS Food Technology
- Agricultural Economics

2. Engineering (15 percent)

- Mechanical
- Electronics
- Communication
- Metallurgical/Mining
- Computer
- Biomedical
- Chemical
- Geodetic
- Electrical
- Meteorological
- Mining
- Geological
- Sanitary
- Chemical
- Industrial
- Civil
- Electronics and Communication
- Petroleum
- Bio Chemical

3. Science and Math (13 percent)

- BS Mathematics
- •BS Physics
- BS Biology
- •BS Chemistry
- •BS Marine Biology/Science
- •BS Applied Physics
- •BS Geology

IT Report: Philippines

IT courses.

58

BS Earth Science

- BS Applied Mathematics
- BS Statistics/Applied Statistics
- Atmospheric Science
- Environmental Science

4. Information Technology (10 percent)

- Information Technology and
- Computing Studies
- Multimedia
- Animation
- Programming
- Computer Science
- Information System Management
- Bachelor in Library Science & Information System Major in System Analysis

5. Teacher Education major in (10 percent)

- Mathematics
- Science
- Physics
- Chemistry
- Reading
- English
- Educational Media/Technology
- Special Education (SPED)
- Human Kinetics
- Physical Education and Sports Science
- Bachelor of Physical Education major in School PE
- Early Childhood Education
- Environmental Planning (for teachers)
- MAPEH
- Music Education
- Art Education
- Health Education

6. Health Sciences (10 percent)

Pharmacy

Based on the priority courses identified, 10 percent of incoming college freshmen are encouraged to enroll in

- Radiology Technology
- Medical Technology
- Physical Therapy

- BS Nutrition
- Arts and Humanities (5 percent)
- Creative and Performing Arts
- BS Religious Education
- BS Philosophy
- BS Theology
- 8. Social and Behavioral Sciences (5 percent)
 - •BS Psychology
 - BS Social Work
 - Human Development
 - Guidance and Counseling
- 9. Business Administration and Related Courses (5 percent)
 - BS Accountancy

 - Business Data Outsourcing
 - Business Process Outsourcing
 - Construction Management
 - •Tourism

• Fine Arts

12. Communication (2 percent)

11. Maritime (2 percent)

Regional Office)

- 10. Architecture (5 percent)
 - •BS Architecture Interior Design

Urban Planning

 Landscape Architecture Environmental Planning

• BS Marine Transportation

•BS Development Communication

BA Communication

•BA Journalism

13.Others (to be determined by each

BA Broadcasting

Government-Initiated Programs to Upgrade ICT Skills

The Millennium Development Goals (MDGs) Target 8.F states that "in cooperation with the private sector, make available the benefits of new technologies, especially information and communications." On this premise, the Department of Education (DepEd) has instituted measures and programs to upgrade the skills of students in ICT.

In 1996, DepEd implemented a 10-Year Modernization Program covering 1996 to 2005 which involved several components such as the computerization project and the School of the Future project. The modernization program introduced use of IT in the improvement of the teaching and learning process, educational management, and operations. This program was supported by other government agencies and the private sector. However, insufficient supply of computers especially in Metro Manila and nearby areas hindered the program. In a 2012 study, it was noted that public high schools in Metro Manila have a computer to student ratio of 1:63. While 88 percent of schools have internet connection, half of the students claimed not using it.³ A study by Perez indicates that 14.28 percent of elementary and high schools in both public and private schools have computers and that DepEd's most recent estimates indicate 69 percent of public high schools already have at least one computer with the target of further raising it.⁴

The Challenges in Integrating ICT in Today's Educational System

Employment opportunities in the Philippines remained concentrated on areas that are largely dependent or based on the global demand. However, certain challenges hinder the Philippines from meeting demand for world-class skills in ICT technology. These are briefly summarized below:

- Lack of clear-cut guidelines from DepEd on the implementation process for ICT courses. This involves a more definite and experienced-based training program (OJT included) for students to get first-hand knowledge on actual work and functions required by ICT companies on certain skills.
- Insufficient facilities in government and private schools as a result of budgetary constraints. Public and private schools are unable to set up much-needed facilities complete with equipment and other devices for use in the training of students. The budgets for these are usually hinged on the overall lack of government funds and private schools' inability to fully finance their ICT curricula.
- Instilling in teachers and instructors the importance of their role in implementing ICT based learning in order to improve students' capability and skills. Higher secondary school teachers are unable to use ICT resources due to lack of training, thus affecting how they deliver the skills and knowledge to their students.
- Lack of instructors with the knowledge and skills in ICT. A large number of teachers or instructors have no experience in ICT and are often reluctant to learn. This renders them incapable of properly teaching ICT to their students.
- Lack of sufficient technical support in schools to maintain the facilities needed to continue providing ICT courses. A large number of education institutions do not have professionals who can provide technical support due to lack of funds.
- Low English proficiency in public schools. English proficiency is also needed as most of the technical information and materials for ICT courses are in English. In public schools, especially outside the urban areas, majority of the students lack English proficiency.

The Philippines has been known for its skilled workers and professionals in various fields. Over the years, the country has seen the need to keep up with the global trend in educating young minds on IT. By starting IT training in basic education, the country stands a good chance of having a future workforce that will meet IT demand. However, substantial investments – both the public and private sectors – is required to provide world-class educational facilities and instructors to meet the target.

³ Manaligod, H.T. (2012) Integration of Information & Communication Technology in Public Secondary Schools in Metro-Manila, Philippines

⁴ Perez, Diwanie. Status of ICT Education in the Philippines. https://www.slideshare.net/Roan10379/ict-education-in-the-philippines. Accessed on 29 May 2017.

Tax Intelligence Solution



Leandro Ben M. Robediso Tax Partner KPMG R.G. Manabat & Co.

Managing Philippine tax reporting and compliance obligations can be a daunting task for existing organizations in the Philippines and more so for potential investors who may not have a good picture of the Philippine tax environment.

Normally, companies would depend on technology support from their existing Enterprise Resource Planning (ERP) systems in order to get some level of comfort that they are reporting their transactions for tax purposes in a complete and accurate manner. To add to that, a large part of the validation and tax analyses in the tax compliance and reporting processes are done manually which inherently poses a risk of inconsistency in the processing of information and/or reliance on inaccurate computation which may eventually result in the overpayment of taxes, or worse the payment of deficiency taxes and fines.

In organizations with vast amount of data, tax professionals may struggle to spot issues and areas for improvement based on actual data. As we see a global trend where tax authorities are aggressively pushing to get more transparency from taxpayers by putting rules and regulations to gain access to taxpayers' transactional documents and electronic information and requiring real time reporting of transactions, it does become imperative for organizations to understand and comply with the said requirements while remaining cost-effective. In fact, the proposed amendments to the Philippine Tax Code states that the cost of putting in place a Value Added Tax (VAT)-registered taxpayer's capability to issue electronic invoices or receipts or more broadly the VAT-registered taxpayer's cost of adapting infrastructure to allow an electronic VAT system shall be shouldered by such taxpayer.

Organizations must prepare for a new era in tax and it all starts with data and analytics.

Using data analytics tools, organizations now have the opportunity to transform tax data into insight. Imagine gaining certainty on invoices, returns and declarations, finding overpaid or under-claimed tax, and revealing buried business opportunities:

- Insight into the supply chain based on actual transactions
- Clear insights on the realized margins per business unit, entity, country, product group or even product (stock keeping unit or SKU)
- Find non-tax opportunities, like double paid invoices

By accessing relevant tax data in a user-friendly way, you can be fully in control of your tax processes, identifying risks and leveraging opportunities. Stop struggling with your data. Start winning with it.



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How can KPMG help?

KPMG's Tax Intelligence Solution (TIS) is an integrated suite of indirect tax technology analytical tools, methodologies and insights that allow organizations to gain quantitative insights and visibility into the status of compliance, process efficiencies and opportunities – driving real financial value for the tax department and the wider business.

The solution is built on the certified Microsoft Azure cloud platform and leverages other critical technologies such as machine learning and predictive capabilities, for scalable, real-time data analysis, visualization and insights.

Experienced tax analytics advisors in our member firms, combined with the powerful data and analytics methodology of TIS, can help you transform your tax data into insights. From uncovering risks in tax compliance to unlocking opportunities in transactional data, member firm professionals can help clients achieve global compliance, monitor accuracy, enhance working capital, and create new enterprise value for the tax organization.

5	0.3	
	690.4	
		923.3
		1,145.4
		1,032.8
404		
40.0		
	470.3	
	693.1	
		1,083.8

TIS provides:

- Standardized tools to extract and analyze tax-relevant data from major ERP systems, allowing risk and opportunity identification and areas for process improvement
- The ability to 'enrich' finance and tax data with other key information, including: authorization data, customs and logistics data, and ERP master data
- Data visualization and reporting tools to allow easy manipulation and refinement of outputs

TIS' comprehensive suite of data and analytics tools provide insight in Indirect Tax, Transfer Pricing, and Trade & Customs. TIS can help increase tax process efficiencies by identifying taxes that have been incorrectly expensed and detecting tax determination errors earlier, helping reduce the risk of penalties and the time spent settling tax audits and queries.

TIS puts your tax professionals proactively in control over the tax process, which can enhance working capital, and ultimately help your organization avoid financial, reputational, strategic, and operational risks.

Practical uses of TIS

- Clients have limited insight into actual tax risks and want to be prepared for tax audits or queries by the tax authorities.
- Get insight into the quality of the underlying transactional data which feeds into tax compliance process/tooling.
- Identify quality and efficiency of tax controls (IT, process, people).
- Find VAT recovery opportunities, VAT not being claimed where it could have been claimed.
- Monitor quality of tax processes after recent tax legislation change or business (structure) change.
- Embed tax data & analytics checks in (monthly) tax compliance process.

Glossary

ACPI	Animation Council of the Philippines		
Al	Artificial Intelligence	MDG	Millennium Development Goal
AIM-ZCABT	Asian Institute of Management – Dr. Stephen Zuellig	M-DOK	Mobile telehealth and information resource system
	Center for Asian Business Transformation		for community health workers
APEC	Asia Pacific Economic Cooperation	MFHSIS	Modified Field Health Services Information System
	Puoleona Manitar International	MIU	Medical Informatics Unit
DIVII		NRP	National Broadband Plan for the Philippines
BPAVP	Business Processing Association of the Philippines	NCC	National Computer Conter
BPO	Business Process Outsourcing	NCC	
BSP	Bangko Sentral ng Pilipinas	INCI	National Computer Institute
CAR	Cordillera Administrative Region	NCR	National Capital Region
CCAP	Contact Center Association of the Philippines	NEDA	National Economic and Development Authority
CCT	Conditional Cash Transfer	NEPP	National English Proficiency Program
CeC	Community e-Centers	NPC	National Privacy Commission
CHED	Commission on Higher Education	NRPS	National Retail Payment System
CHITS	Community Health Information Tracking System	NTC	National Telecommunications Commission
	Cybererime Investigation and Coordination Contor	NTHC	National Telehealth Center
CICC		NTSP	National Telehealth Service Program
		NTTI	National Telecommunications Training Institute
COMELEC	Commission on Elections		Deligning Approximation of Colleges and Universities
DepEd	Department of Education	FACU	Filippine Association of Colleges and Universities
DFHSIS	Distributed Field Health Services Information System	PASUC	Philippine Association of State Universities and
DICT	Department of Information and Communications		Colleges
	Technology	PCHRD	Philippine Council for Health Research and
DOF	Department of Finance		Development
DOH	Department of Health	PDP	Philippine Development Plan
	Department of Justice	PDS	Philippine Digital Strategy
	Department of Jaber and Employment	PEZA	Philippine Economic Zone Authority
DOLL		PGH	Philippine General Hospital
DUST	Department of Science and rechnology	PHA	Philippine Health Agenda
DOIC	Department of Transportation and Communications	Dhil	Dhilipping Integrated Infectructure
DOTr	Department of Transportation		
DTI	Department of Trade and Industry	PhilPost	Philippine Postal Corporation
DTTB	Doctor to the Barrios	PHIN	Philippine Health Information Network
EHR	Electronic Health Records	PMA	Philippine Medical Association
EMR	Electronic Medical Records	PMIS	Philippine Medical Informatics Society
ERP	Enterprise Resource Planning	PNAC	Philippine National AIDS Council
eWASH	Electronic wash, sanitation and hygiene	PPP	Public-Private Partnership
FHSIS	Field Health Services Information System	PSIA	Philippine Software Industry Association
FinTech	Financial Technology	RA	Republic Act
E\\/DD	Free W/i Ei Internet Access in Public Places	rCHITS	Real-time monitoring of maternal and child health
	Come Developere Access in Fublic Flaces		indicators through CHITS
GDAF		BHU	Bural Health Inite
GDP	Gross Domestic Product	SEAMEO	Southoost Asian Ministers of Education Organization
GII	Globe Lelehealth, Inc.	SLAWLO	
HEI	Higher Education Institutions	SEC	Securities and Exchange Commission
HIM	Healthcare Information Management	SHINE	Secured Health Information Network and Exchange
HIMAP	Healthcare Information Management Outsourcing	SKU	Stock Keeping Unit
	Association of the Philippines (formerly HIMOAP)	SME	Small and Medium Enterprises
HR	Human Resource	SMS	Short Message Service
IBPAP	Information Technology & Business Process Association of	SPED	Special Education
	the Philippines	STEM	Science, Technology, Engineering and Mathematics
ICT	Information and Communications Technology	Tech4ED	Technology for Education, Employment,
	Information and Communications Technology		Entrepreneurs and Economic Development
	Information and Communications Technology Office		
IFAO	Inclusive Finance Advocacy Office	TECOA	Technical Education and Skille Development Authority
IMF	International Monetary Fund	TDAIN	Tex Deferre for Appeleration and Skills Development Authority
iNurse SP	Informatics Nurses Society of the Philippines, Inc.	TRAIN	Tax Reform for Acceleration and Inclusion
IRR	Implementing Rules and Regulations	IRO	I emporary Kestraining Order
ISP	Internet Service Providers	TVWS	TV White Space
IT-BPM	Information Technology and Business Process Management	UHC	Universal Healthcare
ITECC	Information Technology and Electronic Commerce Council	UNESCO	United Nations Educational, Scientific and Cultural
KPO	Knowledge Process Outsourcing		Organization
IGU	Local Government Units	VAT	Value Added Tax
Mbpc	Magabutas par sacond	WHO	World Health Organization
ivinh2	megabytes per second		

Directory of Government Agencies

Bangko Sentral ng Pilipinas

A. Mabini St. cor. P. Ocampo St., Malate, Manila Tel. No.: +63 2 708 7701 Website: bsp.gov.ph

Commission on Elections

Palacio del Gobernador General Luna St. Intramuros, Manila Tel. No.: +63 2 525 9296 Website: comelec.gov.ph

Commission on Higher Education

Higher Education Development Center Building C.P. Garcia Ave., UP Campus, Diliman, Quezon City Tel. No.: +63 2 441 1260 Website: ched.ph

Department of Education

DepEd Complex, Meralco Ave., Pasig City, Metro Manila Tel. No.: +63 2 636 1663 Website: deped.gov.ph

Department of Finance

DOF Building, BSP Complex, Roxas Blvd., Metro Manila Tel. No.: +63 2 525 0244 Website: dof.gov.ph

Department of Health

San Lazaro Compound, Tayuman, Sta. Cruz, Manila Tel. No.: +63 2 651 7800 Website: doh.gov.ph

Department of Information and Communications Technology

C.P Garcia Ave., Diliman, Quezon City Tel. No.: +63 2 920 0101 Website: dict.gov.ph

Department of Justice

Padre Faura Street, Ermita, Manila Tel. No.: +63 2 523 8481 Website: doj.gov.ph

Department of Labor and Employment

DOLE Building, Muralla Wing cor. General Luna St., Intramuros, Manila Tel. No.: +63 2 1349 Website: dole.gov.ph

Department of Science and Technology

DOST Building, Gen. Santos Avenue Bicutan, Taguig City Metro Manila Tel. No.: +63 2 837 2071 to 82 / +63 2 837 2937 Website: dost.gov.ph

Department of Trade and Industry

361 Trade and Industry Building, Sen. Gil J. Puyat Ave., Makati City Tel. No.: +63 2 751 0384 Website: dti.gov.ph

Department of Transportation

The Columbia Tower, Brgy. Wack-wack, Ortigas Ave., Mandaluyong City Tel. No.: +63 2 790 8300 / +63 2 790 8400 Website: dotr.gov.ph

National Economic and Development Authority

12 St., Josemaria Escriva Drive, Ortigas Center, Pasig City Tel. No.: + 63 2 631 0945 to 56 Website: neda.gov.ph

National Privacy Commission

3rd Floor, Core G, GSIS Headquarters Bldg., Financial Center, 1308, Pasay, Metro Manila Tel. No.: +63 2 517 7810 Website: privacy.gov.ph

National Telecommunications Commission - National Capital Region

BIR Road, East Triangle, Diliman, Quezon City, Metro Manila Tel. No.: +63 2 924 4010 Website: ncr.ntc.gov.ph

Philippine Economic Zone Authority

Bldg. 5, DOE-PNOC Complex, Energy Center, Rizal Drive, Bonifacio Global, Taguig City Tel. No.: +63 2 551 3451 loc. 612 / +63 2 551 3455 / +63 2 551 3432 / +63 2 891 6380 Website: peza.gov.ph

Securities and Exchange Commission

Secretariat Building, PICC Complex Roxas Boulevard, Metro Manila Tel. No.: +63 2 818 0923 Website: sec.gov.ph

Technical Education and Skills Development Authority

E Service Rd, Taguig, Metro Manila Tel. No.: +63 2 887 7777 Website: tesda.gov.ph

About the Philippines



Foreign direct investment has gone up 400%, from US\$1.9 billion in 2010 to US\$7.93 billion in 2016.

The 10-point socioeconomic agenda of this administration focuses on maintaining macroeconomic stability, promoting inclusive growth, increasing spending on infrastructure, developing a progressive and efficient tax system, and easing business in cities, towns and provinces.

Sources: The World Factbook, Philippine Statistics Authority, World Economic Forum's The Global Competitiveness Report 2016–2017 World Bank's Ease of Doing Business Index 2017, BusinessMirror



KPMG International is a global network of professional firms providing Audit, Tax and Advisory services. KPMG has more than 189,000 outstanding professionals working together to deliver value in 152 countries worldwide.

Demonstrating the KPMG difference

KPMG professionals understand what clients need to navigate through today's business, regulatory, social and economic complexity. That is because – every day – people from KPMG focus on the needs of member firm clients. KPMG carefully assesses exactly what clients require to achieve their objectives and then work across the globe to deploy the right skills and the right experience to help meet their unique requirements.

KPMG recognizes that clients are looking for the best solutions and advice, locally implemented with a global mindset. KPMG helps client-facing teams coalesce around the issues that matter most with support from KPMG Centers of Excellence and our global methodologies and approaches. KPMG Centers of Excellence are small groups of mobile, global specialists who support our member firms in bringing high quality industry and technical expertise to our clients.

* International Tax Review's World Tax 2018 Guide

*** International Tax Review 2017

KPMG in the Philippines

KPMG R.G. Manabat & Co. (KPMG RGM&Co.) is the Philippine member firm of KPMG International. It is one of the fastest-growing practices in the Philippines and among the KPMG practices in the Asia Pacific region. It has been recognized by the International Tax Review as a Tier 1 tax practice*, Tier 1 transfer pricing practice**, Tier 1 leading tax transactional firm*** and the National Transfer Pricing Firm in the Philippines in 2016. It was also recognized as the Best Consultancy and Advisory Firm in the Philippines by the International Alternative Investment Review in 2012.

KPMG RGM&Co. adopts a global approach spanning professional disciplines, industry sectors and national borders. It takes pride in imparting knowledge that adds value to its clients' businesses. The diverse public and private sector backgrounds of the partners and principals, coupled with their extensive training, and backed up by the wide knowledge resources and network of KPMG professionals, allows the firm to give real-world solutions to its clients' increasingly complex business and regulatory issues.

^{**} International Tax Review 2018



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IT Report: Philippines

2018 Investment Guide by KPMG in the Philippines

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