Productivity *Analysis*

AI in the Philippine Information Technology and Business Process Management Sector

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AI IN THE PHILIPPINE INFORMATION TECHNOLOGY AND BUSINESS PROCESS MANAGEMENT SECTOR

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PRODUCTIVITY ANALYSIS
AI in the Philippine Information Technology and Business Process Management Sector

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EXECUTIVE SUMMARY

Generative AI (GenAI) has captured public imagination in recent years with the unveiling of ChatGPT and similar AI tools. Because they seem able to perform many tasks like a human (understanding language, generating digital content, solving complex mathematical equations, and more), concern is rising over their possible impact on employment. This is of particular concern to the information technology and business process management (IT-BPM) sector in the Philippines, which constitutes a large share of the Philippine economy and employment. This was the primary impetus for this research.

The first part of the paper gives an overview of the Philippine economy and the IT-BPM sector, introducing the relevant statistics. The sector has become such a key driver of the Philippine economy that the national statistics authorities have reorganized some statistical accounts to feature and track the IT-BPM sector.

A recent set of statistics that the Philippine Statistics Authority (PSA) unveiled is the Philippine Digital Economy Satellite Accounts (PSA, 2024e). These cover digital transactions in the economy, including digital enabling infrastructure, digital media and content, and e-commerce. Thus, it is broader than the IT-BPM sector. In 2023, the digital economy accounted for a substantial 8.4% of GDP (PSA, 2024a). This is indicative of the potential importance of AI, as its medium, the digital economy, has been robustly growing in the past few years, especially since 2019, notwithstanding the COVID-19 pandemic starting in 2020.

The government statistics most closely measuring the IT-BPM sector are those derived from the Annual Survey of Philippine Business and Industry (ASPBI). While the Digital Economy Satellite Accounts include other sectors, ASPBI collects and presents data on revenue, expenses, employment, and other key information from various industries in the Philippines, and one has been

produced covering the IT-BPM sector since 2017 (in 2015 and 2016, separate ASPBIs were conducted for IT and BPM).

The third source of statistics on the IT-BPM sector is from the IT and Business Process Association of the Philippines (IBPAP). The IBPAP is an industry association that serves as an umbrella organization for the IT-BPM subsectors. IBPAP statistics and projections are frequently quoted by news media. IBPAP revenue and employment figures are larger than those reported in the ASPBI, which may be due to the sample firms used for the estimates.

The IT-BPM sector is an important contributor to the economy: according to the IBPAP estimates, in 2023 its revenue was over USD35 billion and it accounted for the employment of 1.7 million people (Desiderio, 2024). For perspective, remittances from overseas Filipino workers in 2023 reached USD37 billion (Bangko Sentral ng Pilipinas, n.d.). Remittances have often been regarded as the backbone of the Philippine economy, but the IT-BPM sector seems set to overtake it. The latter has the added social advantage that workers can work without having to be separated from their family as overseas Filipino workers are.

Given the sector's significance, the lost revenue and employment would be a serious blow to the economy if AI and GenAI were to displace a significant number of IT-BPM workers. Especially considering IT-BPM's relatively high output multiplier and its contributions to more spending, which stimulates the economy further.

To provide some perspective on the rising concern of AI's impact on labor productivity, the core part of this paper provides critical insights based on interviews with industry experts and government officials. While the research team consulted with some key industry authorities, others were not able to respond before the deadline. To complement and validate the insights from the interviews, the research team also reviewed some recent and pertinent literature on AI's impact on employment and its relationship with IT-BPM in the Philippines. This included academic research, research by institutions, and video interviews published online.

The results of the key expert interviews and the literature review suggest that in the near term, the adoption of AI tools may mean some displacement of

human workers in the IT-BPM sector, though not a large number. The consensus is that simple, repetitive, menial, and clerical tasks (e.g., looking up customer information, providing answers to frequently asked questions, email management, digital scheduling, and data entry) can be done by AI tools. Thus IT-BPM jobs that consist primarily of such menial tasks are in danger of being automated or performed by AI "bots" or applications.

On the other hand, by delegating such simple tasks to AI bots, time can be freed up for human workers to concentrate on more complex and likely higher value tasks. A customer service agent who no longer has to look up a customer's records or enter data due to the assistance of AI tools can more efficiently and effectively resolve a customer's issues, thereby becoming more productive. Although AI can augment human labor, there is a caveat: as mentioned by some key experts, some transactions still require a "human touch," such as empathy, the proper use of emotion, or other ethical aspects of communication. Nonetheless, the research conducted by a team of Massachusetts Institute of Technology and Stanford researchers (Brynjolfsson et al., 2023) showed that AI tools can speed up the learning process and increase the productivity of new customer service agents.

It was also pointed out, both in the expert interviews and in the reviewed literature, that as with many technological advancements in the past, new job opportunities emerge. IBPAP officials cited prompt engineering and cybersecurity as possible growth areas for employment opportunities. Thus, any displacement may be mitigated if Filipino workers are retrained and upskilled so that they can move to more complex tasks requiring human processing and decision-making.

Notably, the IBPAP cited a survey conducted on their member firms where they found that while two-thirds of member companies were implementing AI tools, only 8% reduced headcount while 13% increased their headcount (Crismundo, 2024). Thus, in the short term, the threat of job displacement appears manageable. One may argue, though, that AI and GenAI are still in their inception stage and that as AI technology improves, new applications may be found.

Moving forward, it is imperative that the Philippines strengthens its education and training sector so that Filipino workers are upskilled and trained in using

AI and completing complex tasks that require human discretion and decision-making skills. The government has already recognized that deficiencies in the Philippine education sector need to be addressed to properly embrace this crucial developing technology at the elementary, secondary, and higher/postsecondary education levels: in the National AI Strategy (Department of Trade and Industry, 2024), transforming education and nurturing future AI talents features as a strategic imperative.

Meanwhile, the IBPAP has revealed initiatives to partner with academia for educational and training programs (IBPAP, 2023a). On its website, the IBPAP features two playbooks that describe academic partnerships with two of its members (IBPAP, 2023b; IBPAP, 2023c). One is a partnership with universities while the other initiative is a work immersion or internship program for high school students.

Furthermore, some government policies to ensure ethical and proper use of AI-related applications are now under deliberation, considering intellectual property rights, potential drawbacks of the convergence of human creativity and AI, and the protection of consumer and sellers of AI related platforms. The proposed creation of an Artificial Intelligence Development Authority (AIDA) under House Bill 7396 to ensure a legal framework and regulations for the use of AI (Arasa, 2023) is supported by most government agencies.

We cannot discount the natural workings of market incentives and the private sector, which will motivate some investors to set up academies to train workers in the skills required for using AI in the IT-BPM sector. IT-BPM firms have already begun investing into training their workers, and since firms stand to reap the benefits of better trained workers, this is expected to increase. Eventually, it is likely that AI and GenAI will automate or augment work across different industries. It is predicted to significantly impact low-value-added services, such as call centers or clerical customer service tasks. For higher value tasks and services, AI is expected to augment and automate tasks and potentially create new job opportunities, offsetting possible job displacement. Fortunately, the impact of AI on low-income economies is less severe than on upper-middle- to high-income economies (Gmyrek et al., 2023).

INTRODUCTION

In November 2022, when ChatGPT was introduced, it reached 100 million monthly users in just two months. It sparked amazement with its capabilities and concern that it and other AI applications may replace or at least reduce the need for human labor. In this paper, we introduce research and survey literature on the possible effects of AI on productivity and employment. In particular, since the IT-BPM sector is a significant contributor to Philippine export revenue and employment, one concern is that its economy may suffer economic dislocation.

IT-BPM is a key driver of the national economy but is facing revolutionary change due to the advent of GenAI. The Philippine AI market is projected to grow at an annual growth rate of 28.57% until 2030 (Statista, 2024). This significant growth will surely have crucial repercussions on the lives of Filipinos as advanced technologies are integrated into key economic sectors. The rapid growth is complemented by improvements in digital connectivity. In 2022, the proportion of individuals using the internet was 75.2% in the Philippines, which indicates internet access and technology adoption is relatively widespread and robust (International Telecommunication Union DataHub, n.d.).

GenAI will change the face of the IT-BPM sector by taking over menial and repetitive tasks. This means redefining the roles of employees who will need to upgrade their skills and move into more complex, value-added activities. Some initial research suggests that even in a highly skilled environment such as consulting, AI will contribute to efficiency and productivity, as most business process outsourcing (BPO) processes may be augmented by AI. A study by Brynjolfsson et al. (2023) found evidence that AI can substantially increase the productivity of new and low-skilled workers in contact centers when it is designed to complement their skills.

In the past, technological advances brought in their fair share of employment displacement but also improved efficiency and productivity and created new

jobs. Now, the spectacular speed of advances in AI has captured the imagination and awe of the public, leaving it wondering and worrying about what is in store. Indeed, while AI is not new, its most recent developments seem to point to a steeper upward trajectory than in the past. It is likely that we have not exhausted the possibilities and uses that AI and GenAI have to offer society. In fact, ChatGPT is an example of GenAI, or AI that can learn from data that is fed to it.

Forecasting fast-paced technology is fraught with risks, especially if attempting to extrapolate from the past. Thus, to supplement the growing literature on the economic impact of AI, this research involved consulting experts in the field on their predictions of the likely applications of AI in the IT-BPM sector. Because of the relative newness of GenAI (though AI has existed and been applied for longer), the literature is still being developed.

With these developments on the horizon, the Congress of the Philippines is deliberating on an AIDA bill that will inform the responsible, planned development and deployment of AI with proper ethical principles for the protection of users, consumers, and program developers (Espinosa, 2024).

In this study, the effect of AI on productivity in the IT-BPM sector is examined while considering the implications for wider socioeconomic spaces. The researchers interviewed key informants and experts in IT-BPM to complement their own assessment of the available data and theoretical underpinnings of technology's augmentation of labor productivity. As there are no official statistical data capturing industry- or national-level AI investment by type, value, and utilization level, direct correlation or forecasting are not feasible currently. Therefore, this study uses insights from interviews and literature reviews to predict the likely impact of AI on labor productivity in the IT-BPM sector of the Philippines. Nonetheless, the researchers concur in general with the findings of Gmyrek et al. (2023) of the ILO that labor productivity augmentation is more likely than automation replacing jobs. Developing countries are less susceptible to job replacement than developed countries, with minimal automation of jobs involving menial tasks, such as basic customer service support or call center agent. Alarmingly, the Philippines has many contact centers for customer support, which might be affected significantly in the near future. The advent of AI is, nonetheless, seen in a positive light by key experts and most recent literature; it's believed that such technology will augment productivity and pave the way to higher-value-added jobs and even new occupations moving forward.

BACKGROUND ON PHILIPPINE ECONOMY AND THE IT-BPM SECTOR

The Philippine economy has leaped from an agricultural economy to a service-oriented one, skipping a crucial industry-oriented development phase (U, 2024). Along the way, it sought to transform itself into an industrial and manufacturing economy but faced constraints on power and concerns regarding policies toward foreign investments. After World War II (from the 1950s onward), the Philippines, like many developing economies, initially pursued an import substitution industrialization strategy. This involved raising tariffs to keep out imports or raise their prices, which was hoped to allow local producers to compete and gain market share in the domestic economy.

The protected sectors naturally were in agriculture and industry (the latter comprising mining and quarrying; manufacturing; electricity, gas, steam, and air conditioning supply; water supply and sewerage, waste management, and remediation activities; and construction). Without the recent advances of information technology, it was difficult, if not impossible, to trade services, thus the service sector was relatively sheltered from imported competition.

Under the first Marcos administration, the country pursued an industrialization policy, selecting some major industrial projects involving, among others, iron and steel, phosphate fertilizer, the automotive industry, and even a nuclear power plant. The political turmoil toward the end of the first Marcos regime was a key deterrent to attracting foreign investments and capital to drive the industrialization of the Philippine economy.

Nevertheless, the industry sector never really dominated the Philippine economy in terms of overall output. For much of the post–World War II era, the service sector accounted for the largest share of the economy by value added and employment until the present.

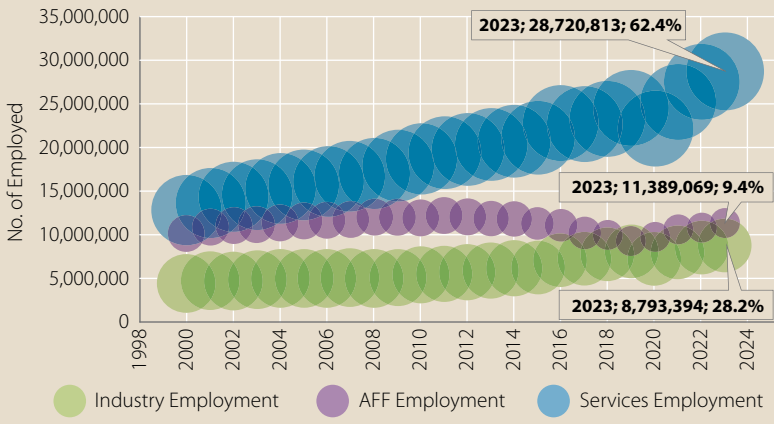
The Philippines may be said to have prematurely deindustrialized, as the industry shares of the country's GDP have fallen. The industry sector's share of GDP declined from 35% in 2000 to 28.2% in 2023 (see Figure 1). In contrast, the contribution of the service sector to GDP has risen significantly from 51.1% to 62.4%. A reversal of this declining trend does not seem likely even in the medium term. Nonetheless, the percentage of those employed in the industry sector (out of total employment) remained relatively stable, increasing from 16.2% in 2000 to 18% in 2023, while the employment contribution of the service sector to total employed rose significantly from 46.7% to 58.7%.

As IT-BPM is an important part of the service sector, the rise of IT-BPM plays no small role in the ascendancy of the service sector and is likely to further entrench the predominance of the service sector in the Philippine economy.

Looking at labor productivity, the Philippines increased productivity with 2.4% average growth rate between 2000 and 2023, as depicted in Figure 2. The labor productivity of workers grew at a yearly average of approximately 2.1% in the service sector, 1.7% in the industry sector, and 2.0% in agriculture, forestry, and fishing (AFF) in the same time period. Evidently there were significant declines during global crises like the 2008 global housing bubble

FIGURE 1

MAJOR SECTORS' SHARE OF GDP AND CORRESPONDING EMPLOYMENT LEVEL.



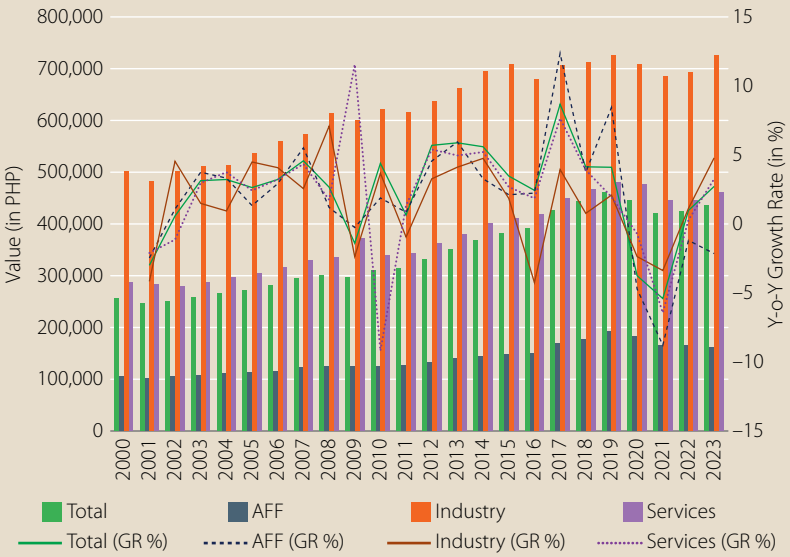
Notes: Size of bubble corresponds to percentage of GDP; the notation in the bubble indicates year, number of people employed, and percentage of GDP. AFF, Agriculture, Forestry, and Fishing.
Source: Asian Development Bank (n.d.).

and the recent COVID-19 pandemic from 2020 to 2021. If the data from 2020 to 2021 were excluded, the average annual growth of labor productivity would have registered at 3.1% overall, 2.8% for AFF, 2.7% for the service sector, and 2.1% for the industry sector. Nonetheless, the overall labor productivity of the Philippines has tended to increase overall despite the significant dips.

Despite having an inferior share of GDP and lower pace of average growth in the past two decades, the labor productivity value of the industry sector has been significantly higher than the service sector and AFF sector. In 2023, the labor productivity of the industry sector was 1.53 times bigger than the service sector (Figure 2). The industry sector labor productivity was PHP726,736 (USD13,066) in 2023, meaning that each worker employed in the industry sector contributed approximately PHP60,561 (USD1,089) per month to the GDP. The overall labor productivity level of the Philippines amounted to PHP436,894 (USD7,855) per year or PHP36,407 (USD655) per month in 2023, while the labor productivity of the service sector was slightly higher than the overall level at PHP459,377 (USD8,259). That of AFF was below the average at PHP161,247 (USD2,899).

FIGURE 2

GDP PER WORKER (LABOR PRODUCTIVITY).



Note: PHP, Philippine peso; GR%, growth rate percent; Y-O-Y, year on year.
Source of data: Philippine Statistics Authority (2025).

The following sectors had average labor productivity growth of 2.4% or above:

- AFF
- Mining and quarrying
- Manufacturing
- Electricity, gas, steam, and air conditioning supply
- Water supply and sewerage, waste management, and remediation activities
- Wholesale and retail trade
- Transportation and storage
- Accommodation and food services
- Financial and insurance activities
- Real estate activities
- Others

Only construction and information and communication were below average based on 2012 to 2022 data. Real estate and utilities (energy and water) were relatively robust in terms of average labor productivity. Manufacturing, transportation and storage, and financial and insurance services also had relatively high levels of labor productivity, as shown in Table 1. "Others" (other service activities) can be attributed to creative and digital-related activities not specified elsewhere. It has had a significant 13.7% average yearly growth rate since 2012. Although quite minimal in terms of magnitude at PHP117,600.00, with such rapid growth rate combined with digitization efforts, both from the public and private sectors, and laws supporting creative and digital economies, its potential value added could be critical in further boosting labor productivity.

TABLE 1

LABOR PRODUCTIVITY BY SECTOR (2012 TO 2022 DATA, AT CONSTANT PRICES).

Sector	Average	Monthly	Average Annual Growth Rate
Agriculture, forestry, and fishing	160,457	13,371	2.4%
Mining and quarrying	711,515	59,293	4.0%
Manufacturing	926,246	77,187	2.5%
Electricity, gas, steam, and air-conditioning supply; water supply; sewerage, waste management, and remediation activities	2,880,881	240,073	4.4%
Construction	26,766	2,231	-2.0%
Wholesale and retail trade; repair of motor vehicles and motorcycles	139,385	11,615	2.9%
Transportation and storage	998,978	83,248	3.0%
Accommodation and food service activities	341,867	28,489	4.0%
Information and communication	794,050	66,171	0.7%
Financial and insurance activities	936,988	78,082	2.6%
Real estate activities	7,183,810	598,651	5.4%
Others*	117,600	9,800	13.7%

*Other service activities.
Source of data: Asian Development Bank (n.d.).

When it comes to regional labor productivity, only the National Capital Region (NCR), Region IV-A, and Region II were above the national average. All other regions were below average. Table 2 also shows that NCR had the highest labor productivity by magnitude. Region III, Region IV-A, and the Cordillera Administrative Region had close labor productivity levels, but these were less than half that of NCR. Region VII and Region XI were also promising, with relatively high average labor productivity and impressive average growth rates from 2012 to 2022. Although Region VIII had relatively low labor productivity, it had the highest average growth rate of 9%: an indicator of its tremendous potential moving forward.

TABLE 2

LABOR PRODUCTIVITY BY REGION (2012 TO 2022 DATA, AT CURRENT PRICES).

Region	Average	Monthly	Average Growth Rate
Philippines	397,059	33,088	4.9%
National Capital Region (NCR)	1,013,432	84,453	4.0%
Cordillera Administrative Region (CAR)	372,830	31,069	5.1%
Region I (Ilocos Region)	262,359	21,863	5.7%
Region II (Cagayan Valley)	233,053	19,421	6.1%
Region III (Central Luzon)	400,873	33,406	3.7%
Region IV-A (CALABARZON)	413,418	34,452	2.2%
MIMAROPA Region	260,743	21,729	6.5%
Region V (Bicol Region)	202,082	16,840	7.6%
Region VI (Western Visayas)	248,674	20,723	6.9%
Region VII (Central Visayas)	329,728	27,477	5.8%
Region VIII (Eastern Visayas)	236,740	19,728	9.0%
Region IX (Zamboanga Peninsula)	242,111	20,176	6.3%
Region X (Northern Mindanao)	353,589	29,466	6.7%
Region XI (Davao Region)	373,767	31,147	7.4%
Region XII (SOCCSKSARGEN)	221,439	18,453	3.6%
Region XIII (Caraga)	241,928	20,161	6.2%
Bangsamoro Autonomous Region in Muslim Mindanao (BARMM)	176,832	14,736	5.2%

Source of data: Asian Development Bank (n.d.).

The asymmetry in regional productivity in Table 2 is significant, with NCR dominating the rest of the country. The IT-BPM sector could alleviate this as it has brought call center facilities to the provinces. This was partly driven by the difficulty in recruiting agents due to the depleting pool of college graduates in the NCR. Lower wages and property costs in the other regions were additional attractions.

This trend started as early as a decade ago, as can be seen in a video interview about the experience of a call center expanding to Davao (Region XI). The

video interviewed the Davao site lead and operations director for a global BPO company who related how their operation grew from less than 100 agents in November 2015 to about 1,500 agents a year later in November 2016 (Financial Times, 2017). The advantages for the workers were that they could stay close to home if they hailed from the area and avoid the stress of working in the congested NCR. Thus the sector has also stimulated regional growth and employment in the country. Admittedly, these cases will primarily benefit urban centers, but they should also contribute to reducing the historical migration to the NCR by increasing employment opportunities in these regional hubs.

DATA AND SOURCES ON THE IT-BPM SECTOR

This section presents data and statistics on the contribution of the IT-BPM sector to the Philippine economy. Industry data are published according to the 2019 Updates to the 2009 Philippine Standard Industrial Classification (PSA, 2019b).

The 21 broad sectors of the Philippine economy under the Philippine Standard Industrial Classification (PSIC) are shown in Table 3.

TABLE 3

SECTORS OF THE PHILIPPINE ECONOMY.

Section	Description
A	Agriculture, forestry, and fishing
B	Mining and quarrying
C	Manufacturing
D	Electricity, gas, steam, and air conditioning supply
E	Water supply; sewerage, waste management, and remediation activities
F	Construction
G	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	Transportation and storage
I	Accommodation and food service activities
J	Information and communication
K	Financial and insurance activities
L	Real estate activities
M	Professional, scientific, and technical activities
N	Administrative and support service activities
O	Public administration and defense, compulsory social security

(Continued on next page)

(Continued from previous page)

Section	Description
P	Education
Q	Human health and social work activities
R	Arts, entertainment, and recreation
S	Other service activities
T	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
U	Activities of extraterritorial organizations and bodies

Source: Philippine Statistics Authority (2019b).

The IT-BPM sector falls under section J (information and communication) and section N (administrative and support service activities). Section J was a new section created in the 2009 PSIC (National Statistical Coordination Board, 2010). Sections J and N are further broken down into the divisions listed in Table 4.

TABLE 4

DIVISIONS OF SECTION J (INFORMATION AND COMMUNICATION SECTOR) AND SECTION N (ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES).

Division	Activity
SECTION J: Information and Communication	
58	Publishing activities
59	Software publishing, motion picture and sound recording activities
60	Radio and TV broadcasting and programming activities
61	Telecommunication activities
62	Information technology activities
63	Other information service activities
SECTION N: Administrative and Support Service Activities	
77	Rental and leasing activities
78	Employment activities
79	Travel agency, tour operator, reservation service and related activities
80	Security and investigation activities
81	Services to buildings and landscape activities
82	Office administrative, office support, and other business support activities

Source: Philippine Statistics Authority (2019c, 2019d).

The growth in the IT-BPM sector was noted in the foreword to the 2009 PSIC by the then-Secretary-General Romulo Virola of the National Statistical Coordination Board (forerunner of the current PSA):

> Changes in various economic activities brought about by the introduction of new technologies and the emergence and growing importance of new industries especially in the Business Process Outsourcing (BPOs), such as Back-office operations activities; Engineering outsourcing activities; and Information and Communications Technology (ICT) activities … and other related industries which were not in the 1994 PSIC are incorporated in the 2009 PSIC. (National Statistical Coordination Board, 2010)

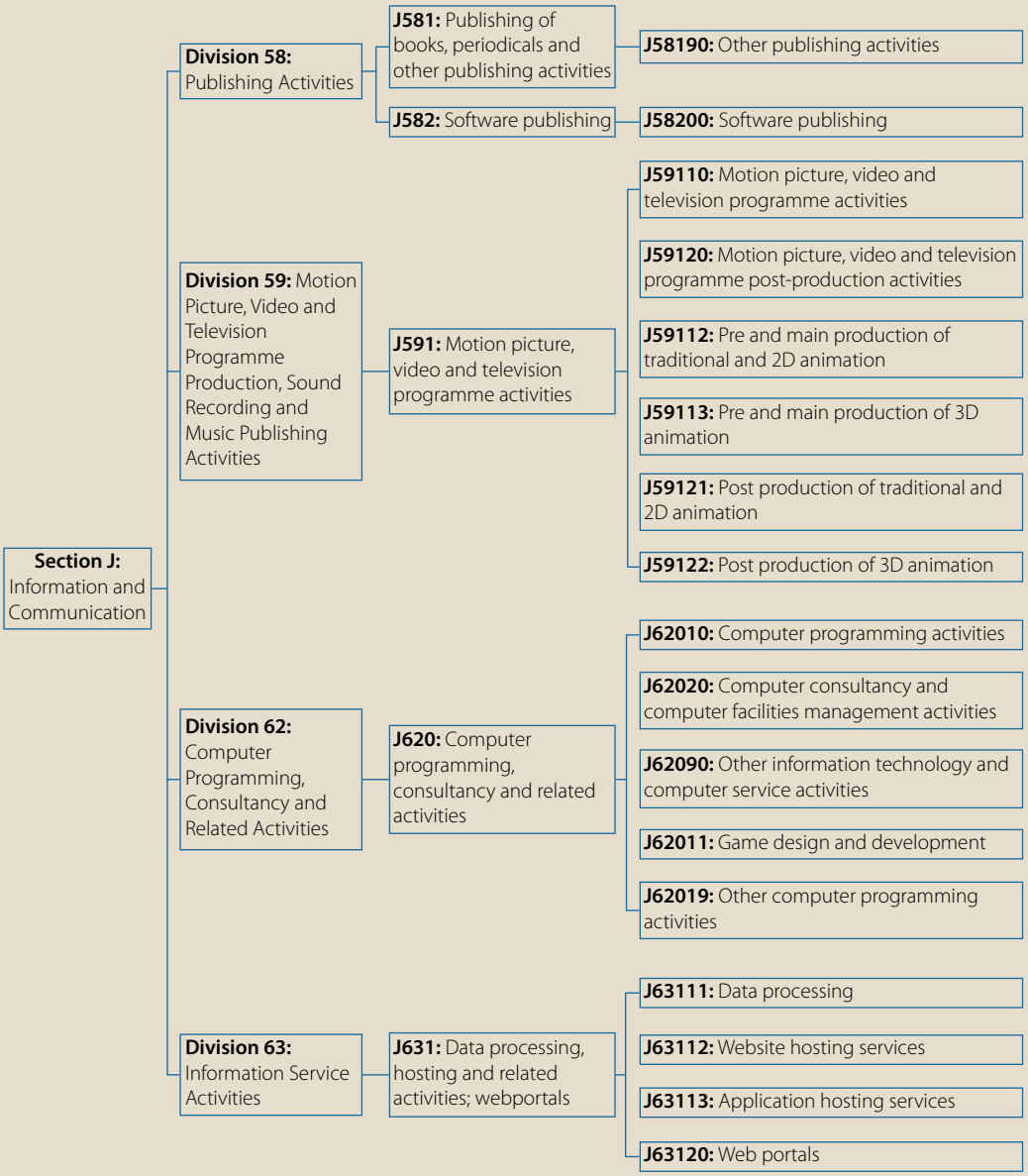
In 2023, the PSA released its 2021 Annual Survey of Philippine Business and Industry (ASPBI) on the IT-BPM sector. Special releases of the ASPBI on the IT-BPM sector started in 2015, recognizing the sector's valuable and growing contribution to the economy. The ASPBI cited the Central Product Classification version 2.1 by the United Nations Statistical Division, defining IT-BPM as referring to the following:

> [The] provision of a bundled service package that combines information technology-intensive services with labour (manual or professional depending on the solution), machinery and facilities to support, host, and manage a business process, such as financial transaction processing, credit card processing, payment services, such as benefits administration, payroll processing, personnel administration; supply chain management business processes, such as inventory management, procurement services, logistics services, production scheduling, and order processing; customer relations management business processes, such as help desk, call center, customer service; vertical market business processes, conducted by specific industries such as electric, chemical, petroleum; and other business processes for [a] client. (PSA, 2023c, paragraph 1)

The ASPBI on the IT-BPM sector specifies the subclasses shown in Figures 3 and 4 from sections J and N, respectively. The changes in the IT-BPM subclasses between 2015 and 2021 are shown in Table 5, showing how the sector has evolved over time due to structural and technological advancements in the economy.

FIGURE 3

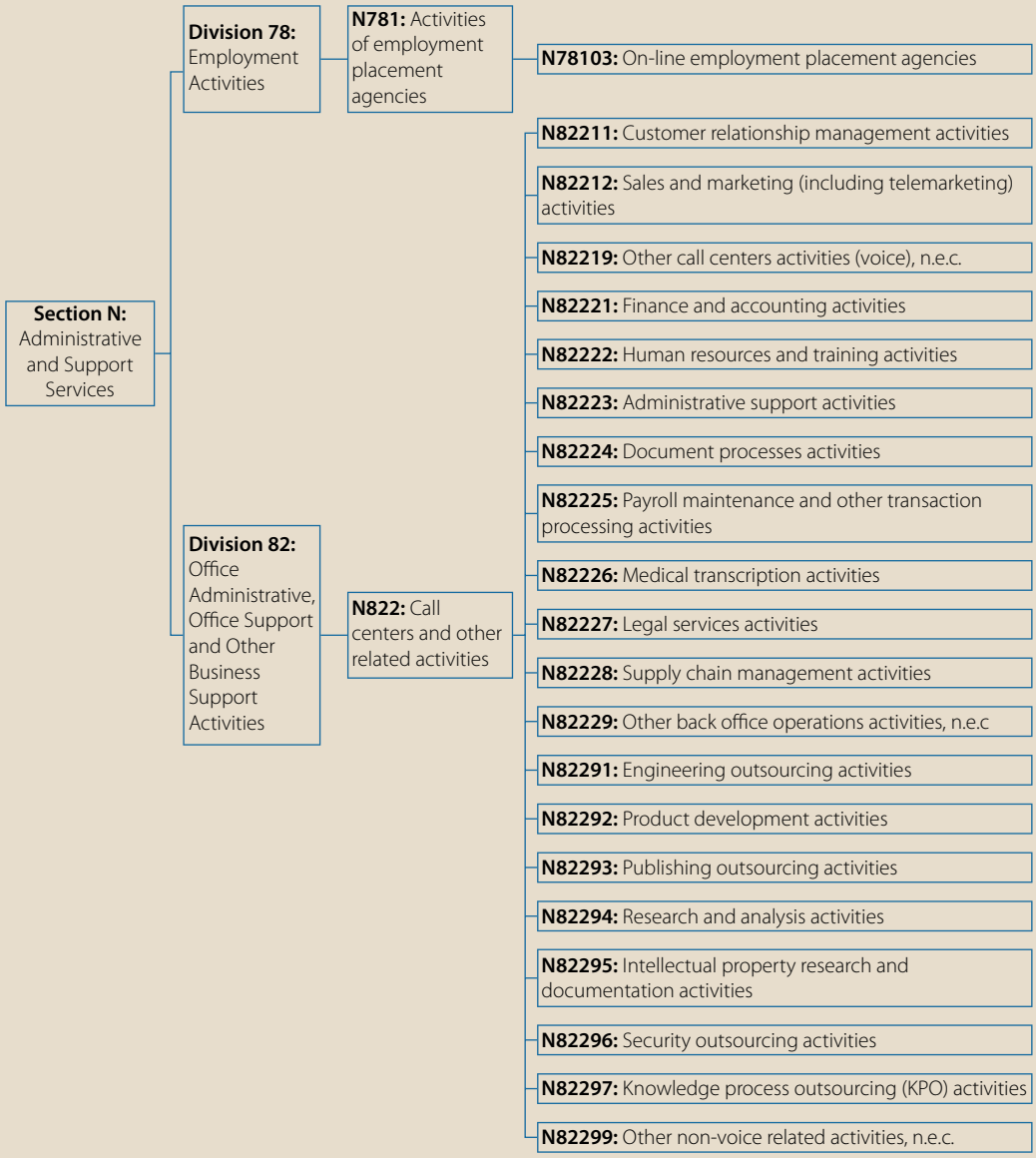
SUBCLASSES OF THE IT-BPM SECTOR FROM SECTION J: INFORMATION AND COMMUNICATION.



Note: This figure includes all five-digit subclasses that were specified in at least one of the ASPBI special releases on the IT-BPM sector published between 2015 and 2021. The changes in the subclasses throughout these years can be seen in Table 5.
Source: Philippine Statistics Authority (2018b, 2019a, 2020c, 2022, 2023a, 2023c).

FIGURE 4

SUBCLASSES OF THE IT-BPM SECTOR FROM SECTION N: ADMINISTRATIVE AND SUPPORT SERVICES.



Note: This figure includes all five-digit subclasses that were specified in at least one of the ASPBI special releases on the IT-BPM sector published between 2015 and 2021. The changes in the subclasses throughout these years can be seen in Table 5.
N.e.c., not elsewhere classified.
Source: Philippine Statistics Authority (2018b, 2019a, 2020c, 2022, 2023a, 2023c).

TABLE 5

SUBCLASSES OF THE IT-BPM SECTOR SPECIFIED IN THE ASPBI, 2015 TO 2021 (EXCEPT 2018).

2009 PSIC Code	Description	2015	2016	2017	2019	2020	2021
	SECTION J: Information and Communication						
J58190	Other publishing activities						
J58200	Software publishing						
J59110	Motion picture, video and television programme activities						
J59120	Motion picture, video and television programme post-production activities						
J59112	Pre and main production of traditional and 2D animation						
J59113	Pre and main production of 3D animation						
J59121	Post production of traditional and 2D animation						
J59122	Post production of 3D animation						
J62010	Computer programming activities						
J62020	Computer consultancy and computer facilities management activities						
J62090	Other information technology and computer service activities						
J62011	Game design and development						
J62019	Other computer programming activities						
J63111	Data processing						

(Continued on next page)

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2009 PSIC Code	Description	2015	2016	2017	2019	2020	2021
J63112	Website hosting services						
J63113	Application hosting services						
J63120	Web portals						
	SECTION N: Administrative and Support Service Activities						
N78103	On-line employment placement agencies						
N82211	Customer relationship management activities						
N82212	Sales and marketing (including telemarketing) activities						
N82219	Other call centers activities (voice), n.e.c.						
N82221	Finance and accounting activities						
N82222	Human resources and training activities						
N82223	Administrative support activities						
N82224	Document processes activities						
N82225	Payroll maintenance and other transaction processing activities						
N82226	Medical transcription activities						
N82227	Legal services activities						
N82228	Supply chain management activities						
N82229	Other back office operations activities, n.e.c						

(Continued on next page)

(Continued from previous page)

2009 PSIC Code	Description	2015	2016	2017	2019	2020	2021
N82291	Engineering outsourcing activities						
N82292	Product development activities						
N82293	Publishing outsourcing activities						
N82294	Research and analysis activities						
N82295	Intellectual property research and documentation activities						
N82296	Security outsourcing activities						
N82297	Knowledge process outsourcing (KPO) activities						
N82299	Other non-voice related activities, n.e.c.						

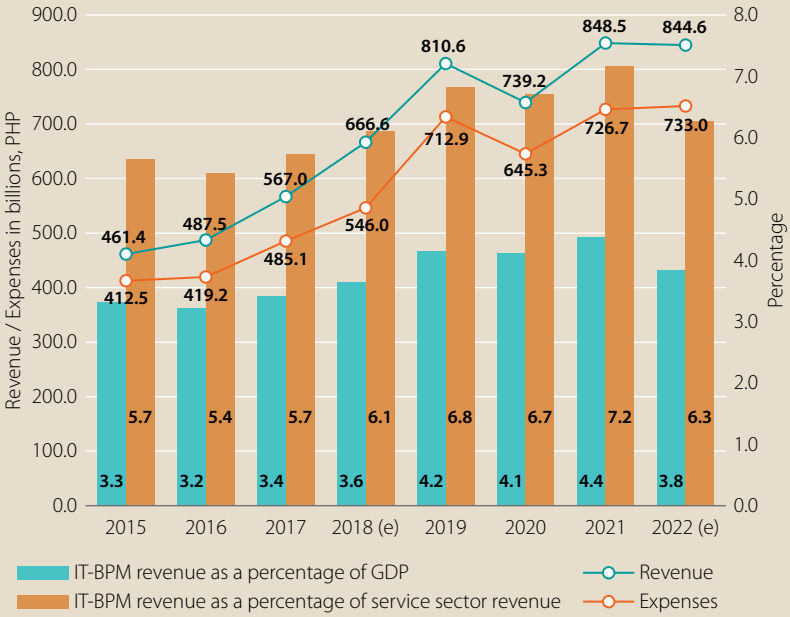
Note: Green boxes indicate that the subclass was specified in the ASPBI of the IT-BPM sector for that year.
Red boxes indicate that the subclass was not specified for that year.
Table 5 was compiled by comparing the lists of IT-BPM industries in the technical notes or associated files in the ASPBI IT-BPM surveys for 2015–2021 (excluding 2018).
N.e.c., not elsewhere classified.
Source: Adapted from Philippine Statistics Authority (2018b, 2019a, 2020c, 2022, 2023a, 2023c).

Revenue and Output of the IT-BPM Sector from Government and Industry Association Statistics

The dominance of the service sector in the Philippine economy can be attributed to the growth of its industries, including the IT-BPM sector. As seen in Figure 5, the IT-BPM sector has shown sustained contributions to GDP and to the service sector, contributing an average of 3.8% and 6.2%, respectively, from 2015 to 2022. Data from the ASPBI of the PSA, which collects and generates information on the formal sector of the economy (PSA, 2023c), indicates that the sector was able to generate total revenue of PHP848.5 billion in 2021, an increase of 14.8% from the previous year's reported total revenue.

FIGURE 5

IT-BPM REVENUE AND EXPENSES, 2015 TO 2022.



Notes: The data for all years except 2018 and 2022 are from ASPBI special releases for the IT-BPM sector. The data for 2018 is from the Census of Philippine Business and Industry (PSA, 2020b, 2021a) for sections J and N while the 2022 data is from the ASPBI for sections J and N.
Since sections J and N contain non-IT-BPM subclasses and since there were no five-digit subclass breakdowns for 2018 and 2022, the authors extrapolated the data by using the percentage of the relevant five-digit subclasses' contribution to the three-digit groups' revenue and expenses in 2019 and 2021, respectively.
GDP is by industrial origin at current market prices.
ASPBI surveys cover only the formal sector of the Philippines.
IT-BPM, information technology and business process management; PHP, Philippine peso; (e), estimated.
Source: Adapted from the Philippine Statistics Authority (2018a, 2019a, 2020a, 2020b, 2021a, 2022, 2023a, 2023c) and Asian Development Bank (n.d.).

The IBPAP, the primary industry association and advocacy group of the Philippine IT-BPM sector (IBPAP, n.d.), also provides valuable information about the sector's performance. Notably, ASPBI surveys only cover the formal sector of the economy (PSA, 2023c). Thus, there can be some discrepancies between the data reported by the IBPAP and ASPBI. For example, the PSA reported revenue of PHP848.5 billion in 2021 while the IBPAP reported around USD29.5 billion (approximately PHP1.6 trillion; USD 1: PHP 55; Crismundo, 2022). The historical and projected revenue by the IBPAP is shown in Figure 6.

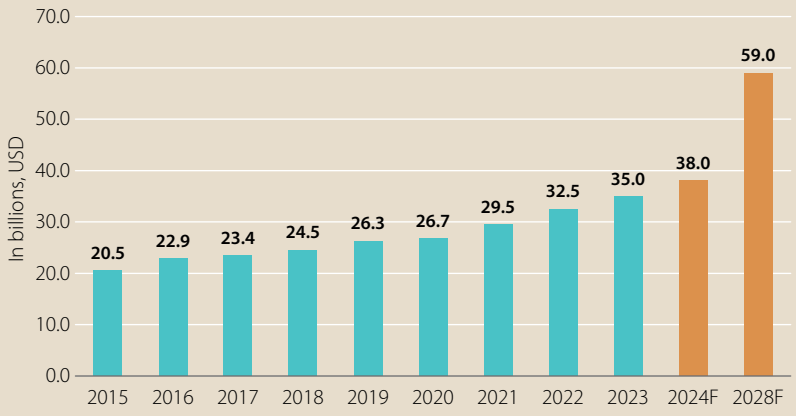
The IBPAP reported that the industry would hit its target of USD35.4 billion in revenue by the end of 2023, posting 8.8% growth year over year from 2022's USD32.5 billion (Garcia, 2023). The IBPAP expected revenue to exceed USD38 billion in 2024 (Tabile, 2024b). This robust and resilient growth can be attributed to the increasing need for offshoring services from US companies, persistent talent shortages in North America, and favorable remote and hybrid work policies implemented by the Philippine government.

According to Jack Madrid, IBPAP president and chief executive officer, the 2021 double-digit growth that surpassed their targets for 2022 marked a resurgence in the Philippine IT-BPM sector (Crismundo, 2022). He cited factors that contributed to the faster recovery of the sector such as "pent-up demand from global customers; higher confidence in work-from-home (WFH) setups by clients in contact centers and business process services; and growth in emerging sub-segments like e-commerce, fintech, healthcare, and technology."

Madrid also pointed out how, despite the challenges brought about by the COVID-19 pandemic, the sector was able to prove its resilience by continuously preserving jobs, promoting investments, stimulating development outside Metro Manila, and creating demand for the real estate sector.

FIGURE 6

PHILIPPINE IT-BPM SERVICE INDUSTRY REVENUE.

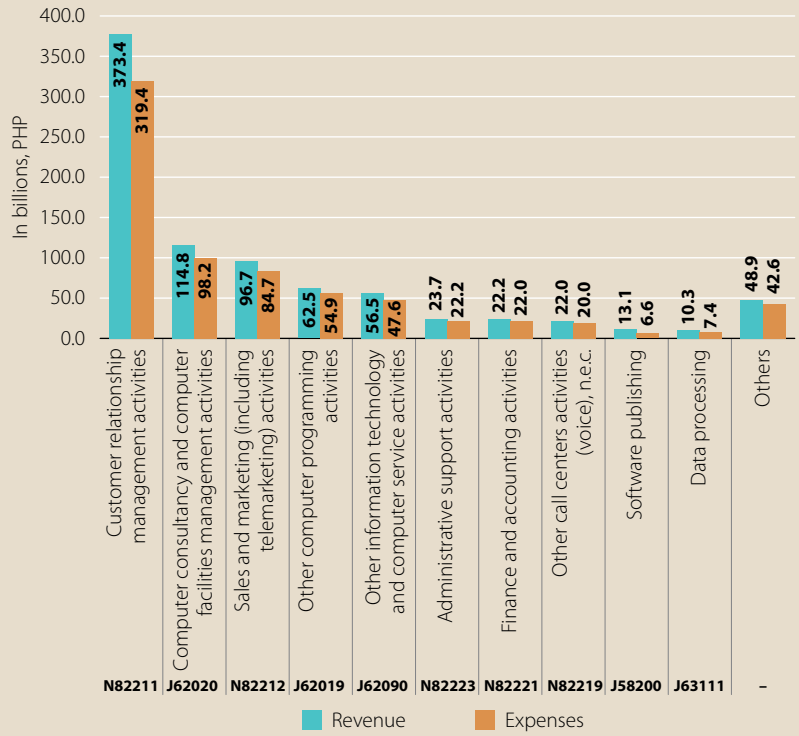


F, forecast; USD, US dollars.
Source: IBPAP as cited in Isip (2024).

Figure 7 uses the ASPBI 2021 figures (PSA, 2023c) to further analyze the contributions of the subsectors to the growing revenue generated by the IT-BPM sector. It shows the 10 subsectors with the highest contribution to the IT-BPM sector revenue in 2021. Among the IT-BPM industries, customer relationship management activities contributed the highest amount of PHP376.4 billion, approximately 44% of the total IT-BPM revenue in 2021. This industry also recorded the highest expenses of about PHP319.4 billion, also approximately 44% of total expenses in 2021 (PSA, 2023c). Thus, it achieved the fourth highest profit margin of 15.6% (profit as percentage of revenue).

FIGURE 7

REVENUE AND EXPENSES OF IT-BPM INDUSTRIES, 2021.



Note: The industries presented were the top 10 IT-BPM industries in terms of revenue in 2021. The data of other IT-BPM industries is represented by "Others."
ASPBI surveys cover only the formal sector of the Philippines.
PHP, Philippine pesos; n.e.c., not elsewhere classified.
Source of data: Philippine Statistics Authority (2021b, 2023c).

Employment Trends in IT-BPM and in Relation to Other Economic Sectors

The IT-BPM sector is considered an indispensable pillar of the Philippine economy (Tarriela, 2023) not only because of its invaluable contribution in terms of revenue but also because it provides employment to Filipinos. Table 6 shows that the IT-BPM sector (as defined in the ASPBI) is indeed a significant contributor to employment. In 2021, it accounted for 14% of employment and 19% of total compensation in the formal sector. Moreover, its workers are paid 39% higher than the overall average.

TABLE 6

KEY EMPLOYMENT TRENDS IN THE IT-BPM SECTOR.

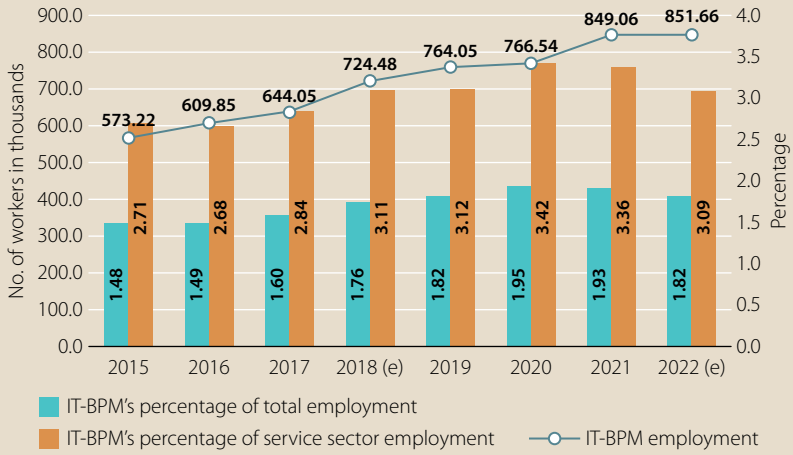
	IT-BPM		% of all	Economywide
	2020	2021	2021	2021
Total Number of Establishments	2,005	2,205	0.78	281,153
Total Employment	766,536	849,058	13.79	6,155,893
Average Number of Workers per Establishment	382	385		22
Total Compensation	PHP 388.489 billion	PHP 373.801 billion	19.30	PHP 1.936 trillion
Average Annual Compensation per Paid Employee (in PHP)	508,229	440,411		317,558
Total Revenue	PHP 739.212 billion	PHP 848.452 billion	4.20	PHP 20.185 trillion
Total Revenue from Transactions Outside the Country	PHP 192.846 billion	PHP 314.278 billion		not provided

Note: The ASPBI surveys cover only the formal sector of the Philippines. This implies that informal sector employment is significantly larger than that of the formal sector for the Philippines.
PHP, Philippine pesos.
Source: Adapted from Philippine Statistics Authority (2023b, 2023c).

Figure 8 shows the historical trend of employment in the IT-BPM sector. Generally, the number of workers has been increasing from 2015 to 2022. In 2021, the IT-BPM sector employed a total of 849,058 workers, an increase of 10.8% from the previous year's recorded employment (PSA, 2023c). The IT-BPM sector contributed around 1.93% and 3.36% to total employment and total service sector employment, respectively, in 2021.

FIGURE 8

IT-BPM EMPLOYMENT.



Notes: The data for all years except 2018 and 2022 are from ASPBI special releases for the IT-BPM sector. Data for 2018 is from Census of Philippine Business and Industry of sections J and N while 2022 data is from ASPBI of sections J and N.
Since sections J and N contain non-IT-BPM subclasses and since there were no five-digit subclass breakdowns for 2018 and 2022, the authors extrapolated the data by using the percentage of the relevant five-digit subclasses' contribution to the three-digit groups' employment in 2019 and 2021, respectively.
ASPBI surveys cover only the formal sector of the Philippines.
IT-BPM, information technology and business process management.
Source of data: Philippine Statistics Authority (2018a, 2019a, 2020a, 2020b, 2021a, 2022, 2023a, 2023d); Asian Development Bank (n.d.).

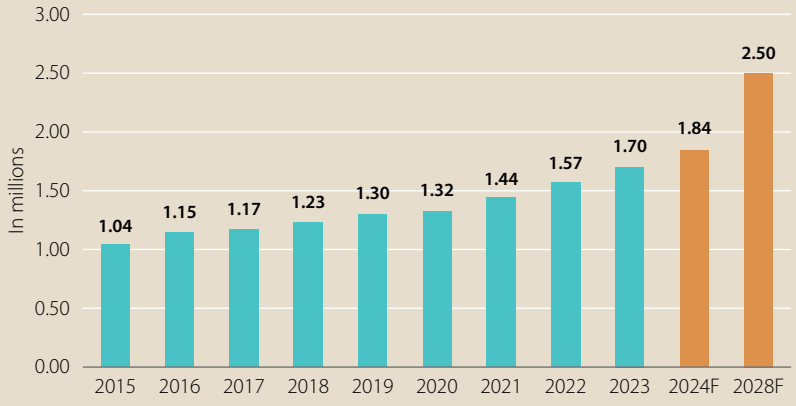
IT-BPM employment also surpassed targets in 2021 according to the IBPAP; the industry recorded around 1.44 million full-time employees, 120,000 more than in 2020 (Crismundo, 2022). The *Accelerate PH: Future-ready Roadmap 2022*, as discussed in a Technical Education and Skills Development Authority (TESDA) report (TESDA, 2019), set out sector targets for 2016 to 2022. The roadmap projected overall market growth of about 9.2% (compound annual growth rate) from 2016 to 2022. It also predicted that the sector would reach USD38.9 billion in revenue by 2022 and increase employment from 1.15 million full-time employees in 2016 to 1.8 million by 2022 (equivalent to a compound annual growth rate of 7.8%). The Contact Center Association of the Philippines expects its members to reach USD49 billion in revenue by 2028, which is close to the IBPAP projection of USD59 billion industry revenue by the same year, in line with *The Philippine IT-BPM Industry Roadmap 2028* (Tabile, 2024a).

Impressively, the performance of the sector is close to the projections made in 2016. The IT-BPM sector increased revenue from USD32.5 billion in 2022 to USD35.5 billion in 2023 (Desiderio, 2024). In a 2024 press briefing, IBPAP President Jack Madrid stated that the sector also increased employment to 1.7 million employees in 2023 from 1.57 million in 2022 (Desiderio, 2024). Major contributors to this include the healthcare sector, banking and financial services, and traditional contact center services. The historical and projected revenue can be seen in Figure 9, which shows a sustained uptrend for IT-BPM full-time employees since 2015. The sector is expected to have employed 1.84 million in 2024. With the increasing demand for knowledge- and creativity-based services, IT-BPM is expected to sustain the uptrend despite the perceived decline in overall employment due to the advent of AI. AI is expected to augment rather than threaten labor productivity (Gmyrek et al., 2023).

The Contact Center Association of the Philippines has projected that, from 2023 to 2028, the IT-BPM sector will add one million new jobs and generate over USD59 billion in revenue, representing 8% of the Philippines' GDP. This optimistic forecast can be rooted in the Filipino talents of excellent communication skills, English fluency, adaptability, creativity, empathy, and resilience (Tarriela, 2023).

FIGURE 9

PHILIPPINE IT-BPM SERVICE INDUSTRY EMPLOYMENT HEADCOUNT.



Note: F, forecasted.
Source of data: 2015–2024F data, IBPAP as cited in Isip (2024); 2028F data, IBPAP as cited in Culvera (2023).

Customer relationship management activities was the top IT-BPM sector subclass, consistent with revenue statistics, with 465,248 workers (54.8% of the total IT-BPM employment) in 2021. As shown in Table 7, sales and marketing (including telemarketing) activities followed with 148,562 workers (17.5%), while other computer programming activities ranked third with 36,357 workers (4.3%).

TABLE 7

TOP 10 IT-BPM INDUSTRIES IN TERMS OF EMPLOYMENT, 2021.

ASPBI Code	Description	Employed Workers (in thousands)	Percent of Total
N82211	Customer relationship management activities	465.2	54.9
N82212	Sales and marketing (including telemarketing) activities	148.6	17.5
J62019	Other computer programming activities	36.4	4.3
N82219	Other call centers activities (voice), n.e.c.	34.4	4.1
N82223	Administrative support activities	27.1	3.2
J62020	Computer consultancy and computer facilities management activities	20.9	2.5
J62090	Other information technology and computer service activities	20.7	2.4
N82299	Other non-voice related activities, n.e.c.	15.9	1.9
J63111	Data processing	12.8	1.5
N82229	Other back office operations activities, n.e.c	12.1	1.4
–	Others	53.5	6.3

Note: The data for other industries are represented by "Others."
N.e.c., not elsewhere classified.
Source of data: Philippine Statistics Authority (2023e).

Productivity Trends in the Broad Economy and in IT-related Sectors

Productivity per worker for the IT-BPM sector in 2021 (measured by total industry revenue divided by number of workers) was relatively higher than expected at PHP999,286.23 per worker per year, compared with PHP458,868.60 per worker per year economywide. The sector's contribution to the overall economy cannot be downplayed; IT-BPM together with overseas Filipino

workers' remittances are critical drivers of the Philippine economy. Based on the data released by the PSA in their 2018 input-output tables (PSA, 2021b), the sector has a relatively high output multiplier of 6.7, indicating that for every peso spent by the industry it impacts the overall economy by 6.7 pesos. It also induces other industries to produce with a 1.7 input multiplier.

A 2008 study (Magtibay-Ramos et al., 2008) captured a higher set of backward linkages than forward linkages for the sector, but in the PSA's 2018 input-output tables, the backward linkages were many times lower than the forward linkages. The sector's backward linkage is at 0.79 while the forward linkage is 3.13, indicating that the sector now provides more inputs to other sectors compared to 2008. This could be due to the emergence of IT services in BPO in addition to traditional call centers, giving rise to the IT-BPM sector and enabling more service types to be outsourced.

The top seven specific industries (out of the 240 industries) from which IT-BPM requires input are as follows:

- Real estate activities
- Employment activities (services)
- Retail trade (except of motor vehicles and motorcycles)
- Electric power generation, transmission, and distribution
- Banking institutions
- Activities of head offices; management consultancy services
- Refined petroleum products

On the other hand, the top seven specific industries (out of the 240 industries) for which IT-BPM provides output or services are as follows:

- Computer programming
- Consultancy and related activities

- Satellite telecommunications activities
- Wired telecommunications activities
- Motion picture, video, and television programme activities
- Activities auxiliary to financial intermediation
- Other administrative and support services activities, n.e.c.

Based on the assessment of sectors or industries related to IT-BPM, it is evident that IT-related services (e.g., computer programming) or high-value-added services (e.g., consultancy and related activities as well as contact center support or traditional call center work) have been dominating when it comes to outputs provided by the sector to other industries.

Government Policy for the IT-BPM Sector, Past and Current

Although the IT-BPM sector is described as agile, dynamic, and resilient since it achieved an impressive growth trajectory over the years, it is not exempt from challenges. Thus, there is no doubt that collaboration with key stakeholders, including the government, is vital to maintain and reinforce Philippine IT-BPM's competitiveness and relevance (IBPAP, n.d.). In the Philippines, the government has implemented policies and formulated plans to support the IT-BPM sector.

The Philippine Development Plan (PDP) "is a plan for deep economic and social transformation to reinvigorate job creation and accelerate poverty reduction by steering the economy back on a high-growth path" (National Economic and Development Authority, n.d.). This plan is published every six years, and the most recent version containing plans for 2023 to 2028 was approved in 2023. This five-part publication recognizes the IT-BPM sector's key role in employment generation and its development to higher-value-added services. In particular, Part III, Chapter 7: Reinvigorate Services, details the aim to shift the current low productivity level of the service sector to provide higher-value-added and differentiated services. The *PDP 2023–2028* spells out strategic interventions for the IT-BPM sector.

This opportunity offered by the IT-BPM sector is rooted in its projected growth trajectory (8% revenue growth per year from 2023 to 2028) to create one million direct and an additional 1.1 million indirect jobs by 2028 (National Economic and Development Authority, n.d.). The government aims to support the IT-BPM sector as a crucial driver for economic development. One of the strategies for achieving market expansion includes spearheading the building up of tourism, culture, creative industries, and the IT-BPM sector. Page 169 of the *PDP 2023–2028* states that the IT-BPM sector should "further strengthen [its] presence in markets such as North America where the Philippines enjoys strong market shares in products, such as contact centers and financial and professional services." The PDP highlights the need to "protect the country's dominant position in service in these markets, with the IT and Business Process Association of the Philippines, subsector associations, and firms as prime movers guided by … The Big PH IT-BPM Leap: The Philippine IT-BPM Industry Roadmap 2028."

The PDP emphasizes the potential of the IT-BPM sector to drive sustainable economic progress and makes recommendations for maximizing this potential. Key recommendations include the following:

- Promoting innovation and the digital transformation of businesses and enhancing the capabilities and service offerings of IT-BPM companies.
- Upskilling and reskilling the workforce to meet the evolving demands of the sector through collaborations with the private sector and schools.
- Encouraging foreign direct investments by promoting the country as an attractive market for global businesses.
- Developing a supportive ecosystem through infrastructure improvements, regulatory reforms, and public-private partnerships.

Another key initiative of the government, in collaboration with the industry association, is communicated through the IT-BPM roadmap, which is designed to guide the development and growth of the sector. The most recent IBPAP roadmap, *The Big PH IT-BPM Leap: The Philippine IT-BPM Industry Roadmap 2028* (hereafter referred to as *The IT-BPM Roadmap 2028*), was published in 2022 and covers the plans for 2023 to 2028. It sets out ambitious targets,

projecting a compound annual growth rate of 10.4% over six years and annual revenue of USD59 billion by 2028, which is nearly doubled that of 2021 (as cited in Talavera, 2022).

Aside from revenue growth and employment expansion targets, the IBPAP also aims to diversify and expand to higher value services, including advanced analytics, AI, and digital solutions, so that it can align its goals with the ongoing expansion of the AI landscape (Cacho-Laurejas, 2024). According to the IBPAP president, employment could be higher if the country focuses on upskilling and reskilling the workforce to meet the ever-evolving demands of the sector (Cacho-Laurejas, 2024). The Philippines must also strengthen its position in the global landscape as a preferred destination for IT-BPM services. *The IT-BPM Roadmap 2028* aims to end 2028 with 2.5 million full-time workers and USD59 billion in revenue (as cited in Cacho-Laurejas, 2024).

In addition to the PDP and IT-BPM Roadmap, the Corporate Recovery and Tax Incentives for Enterprises (CREATE) Act (Supreme Court E-Library, 2021) is another policy that can directly affect the IT-BPM sector. In fact, the sector expects to benefit from the proposed amendments to the law known as the "CREATE to Maximize Opportunities for Reinvigorating the Economy" (CREATE MORE) bill (Tabile, 2024c). Key provisions that can affect the sector include the reduction of the corporate income tax from 25% to 20% and incentives for registered business enterprises in the IT-BPM sector allowing hybrid or work from home arrangements if they comply with on-site work requirements laid down by the respective investment promotion agencies. This limits alternative work arrangements at half of the total workforce or total work hours. In June 2024, the IBPAP was optimistic that the amendments proposed in the latest draft of CREATE MORE would provide clarity and stability for the incentive regime for investors and for the entire sector (Tabile, 2024c).

Other amendments currently proposed by the IBPAP are adjustments to the Cybercrime Prevention Act of 2012 (Tabile, 2024c). The IBPAP is keen to adjust this law to enable employers to take action more easily against employees performing "certain actions" in order to protect IT-BPM companies' bottom line against fraud and to underscore that the Philippines is serious about preventing cybercrime.

The Philippine government has had various policies implementing the growth of the IT-BPM sector. Early programs included the Philippine Cyber Corridor, an initiative under former president Gloria Macapagal Arroyo during her administration for providing outsourcing services from interconnected technology centers (GMA News Online, 2010). In 2022, the government also amended the Public Service Act (11659) to facilitate improvements to the Philippine information and communication technology sector (International Trade Administration, 2024). This allowed full foreign ownership of public services in the Philippines, which includes telecommunications.

Some of the goals for this sector are ambitious, such as the compound annual growth rate of 10.4% and the doubling of 2021's revenue by 2028 seen in *The IT-BPM Roadmap 2028.* There is also the Digital Cities 2025 program of the Department of Information and Communications Technology, which aims to create IT-BPM hubs outside Metro Manila to push regional development (Department of Information and Communications Technology et al., 2020).

The government put in place the IT-BPM Scaled Upskilling Program and the Philippine Skills Framework as the standard educational requirements for IT-BPM industries (Lamentillo, 2023). Issues on tax incentives were also addressed by the government to make it easy to determine business sites for IT-BPM companies outside of the special economic zones (Lawphil, 2020). Recognizing the human capital edge of this sector, the government has been turning its attention to training and equipping Filipino workers with the skills needed to continue working in the industry.

More recently, House Bill No. 7396 was filed by Surigao del Norte Second District Representative Robert Ace Barbers in the Philippine House of Representatives in March 2023. This seeks to establish an AI development authority, AIDA, solely committed to the regulation and oversight of AI technologies in the country (Arasa, 2023).

The AIDA would be mandated to design a national AI policy reflecting ethics and human rights, public interest, and the benefit of all citizens. The authority would define standards and guidelines regarding the ethical and responsible development, use, and deployment of AI technologies and would ensure enforcement through investigation procedures in cases of violation. With regard to licensing and certification, the AIDA would impose the legal requirements on

developers and deployers to follow the defined regulations and guidelines. This bill would favor funding support for AI research, innovation, and development. The bill also promotes collaboration among government agencies, academic institutions, and organizations in the private sector.

The AIDA bill would have various implications:

- Companies and individuals developing or introducing AI would be obliged to reshape their business operations based on the benchmarks and standards established by the AIDA.

- Consumers and buyers would be protected from incidents such as data privacy violations and biases in AI applications.

- The Philippines would be propelled to the front line in the new world order orchestrated by responsible AI development. Ensuring adequate access and proper and ethical use of AI technologies would positively alter social and economic development.

As of November 2024, the AIDA bill is pending with the House Committee on Science and Technology. Success in passing the bill would be an important stride toward full regulation of AI in the Philippines, balancing innovation and the protection of rights and interests for the common good, guiding the proper use of AI, and impacting the IT-BPM sector moving forward.

Training and Education Sector

This subsection outlines the state of the Philippine education system and how ready it is to retrain and upskill workers.

IT-BPM Challenges in Training and Skills Development

The IT-BPM sector has proven its importance in the Philippine economy primarily through its ability to generate employment. However, it is not exempt from challenges. These are brought about by the dynamic needs of the sector and technological advancements such as AI. In the 2024 International IT-BPM Summit, the IBPAP reported that around 8% of surveyed member companies cut jobs due to AI (Crismundo, 2024). However, this represents only five of the 60 surveyed companies; 13% reported headcount gains. The association is

optimistic that the job cuts will not increase if the IT-BPM sector continues to retrain and upskill their talent pool.

IT-BPM sector stakeholders stress the importance of upskilling the workforce to meet its developing demands and address its biggest challenge: talent and skill gaps (Crismundo, 2024). In fact, as the industry association puts it, the current employment statistics could have been higher if training and education were improved. In a roadmapping executive report on AI and ICT published by the Philippine Council for Industry, Energy and Emerging Technology Research and Development (2020), lack of talent availability was identified as one of the barriers to the development of Philippine AI and ICT. Similar to the sentiments of the industry association, this report also recognizes that demand for AI talent is increasing but experts in the field who can train students, especially in advanced techniques and concepts, are limited.

What efforts are being made to solve this talent and skill gap? The IBPAP claims that around 67% of Philippine IT-BPM companies implement AI in their operations despite its challenges, as it helps boost employee productivity, operational efficiency, service quality, and customer satisfaction (Crismundo, 2024). In relation to training and education, this can also foster better familiarization with the skills needed to complement AI in the workplace. In addition, according to a feedback report by TESDA (2021) on the IT-BPM sector's skill prioritization, although some companies have in-house training, many rely on skills training online through platforms such as Purple and Udemy, despite the costs.

As well as working on initiatives for the private sector, the IBPAP works closely with the government through the Department of Education, the Commission on Higher Education, and TESDA to address the skill gaps of the IT-BPM sector. In fact, a memorandum of agreement was signed between TESDA and the IBPAP on 11 September 2019 to ensure that the industry's needs would be addressed in the development of TESDA's programs and standards (TESDA, 2021). TESDA recognizes the limitations of existing training regulations in relation to the skill requirements of the IT-BPM sector. Some required IT-BPM skills lack any training regulations, and most of the existing training regulations are considered insufficient and outdated (TESDA, 2021). The skills and jobs in the IT-BPM sector with their equivalent qualifications or training regulations are shown in Table 8.

TABLE 8

EQUIVALENT QUALIFICATIONS FOR THE JOBS AND SKILLS IN THE IT-BPM SECTOR.

Subsector	Technical Job/Skill/Qualification	Equivalent Qualification/ Training Regulation
Animation	2D animation artist	2D Animation NC III
	3D animation artist	3D Animation NC III
	Video editor	Film and Video Postproduction NC III
	Digital ink and paint artist	No available training regulations
	Digital background painting	
	Japanese anime for animators	
	Japanese anime for assistant animators (cut-out and inbetweening techniques)	
	Motion graphics animation (for postproduction)	
	Asset modeling for e-commerce (3D models and textured assets)	
	Layout	
	Basic storyboarding	
Game Development	Video editor	Film and Video Postproduction NC III
	2D game animation	2D Game Art Development NC III*
	3D game animation	3D Game Art Development NC III*
	2D game artist	2D Game Art Development NC III*
	3D game artist	3D Game Art Development NC III*
	Front end game developer	No available training regulations
	Back end game developer	
	User interface (UI)/user experience (UX) game artist	

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Subsector	Technical Job/Skill/Qualification	Equivalent Qualification/ Training Regulation
Contact Center and BPO	Customer service representative	• Contact Center Services NC II* • Customer Service NC II*
	Call center agents	Contact Center Services NC II*
	Computer transcriptionist	• Medical Transcription NC II* • Contact Center Services NC II*
	Customer interaction specialist	• Contact Center Services NC II* • Customer Service NC II*
	Workforce management Performance management/big data project management	No available training regulations
	Machine learning and data mining	
	Quality assurance (QA)/quality engineering (QE) testing Subject matter expert	
	Training quality specialist	
	Business process improvement	
	Virtual assistants	
	General transcriptionist Legal processing outsourcing	
	Engineering services outsourcing Collaborative internet architectures Knowledge process outsourcing	

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Subsector	Technical Job/Skill/Qualification	Equivalent Qualification/ Training Regulation
Information Technology	Software developer (including specific programming languages)	• Web Development NC III* • Game Programming NC III* • Programming (.Net Technology) NC III* • Programming (Oracle Database) NC III* • Programming (Java) NC III
	Programming (including low code/no code development)	• Programming (.Net Technology) NC III* • Programming (Oracle Database) NC III* • Programming (Java) NC III
	IT specialist/staff	Contact Center Services NC II
	Application and web developer	Web Development NC III*
	Front-end UI/UX	Visual Graphic Design NC III
	Technical support	Customer Service NC II*
	Augmented and virtual reality	• 3D Animation NC III • 3D Game Art Development NC III*
	Business analyst	No available training regulations
	Functional industry expertise Computer system analysis	
	Computer and information research science	
	Linux and cloud administration Database administration	
	Administration and maintenance Testing and data collection	
	System and database server	

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Subsector	Technical Job/Skill/Qualification	Equivalent Qualification/ Training Regulation
Health Information	Medical claims: associate	Medical Coding and Claims Processing NC III*
Management Services	Medical claims: representative	Medical Coding and Claims Processing NC III*
	Medical coding and billing	Medical Coding and Claims Processing NC III*
	Health information management and bioinformatics	No available training regulations
	Preventive health Remote healthcare management	
	Telemedicine: trainee Telemedicine: associate	
	Utilization management (UM)/ utilization review (UR): administrative staff UM/UR: nurse associate	
	Worker's compensation management	

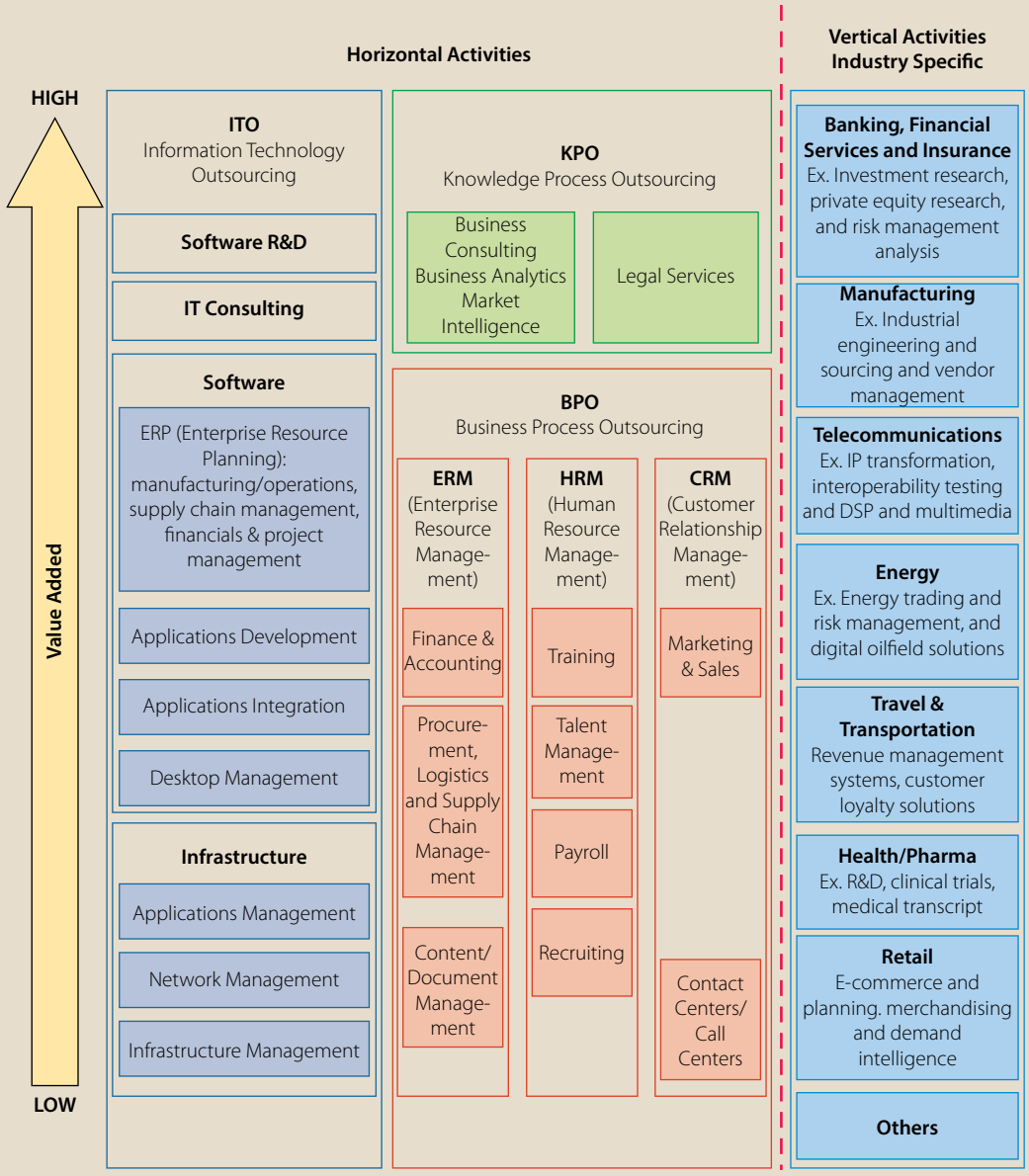
Note: NC, National Certificate.
* Training regulations issued between 2012 and 2018 that have never been amended or superseded.
Source: Technical Education and Skills Development Authority (2021).

As well as the insufficient talent and skill development in the country, it is also a challenge for the Philippines to capture higher-value segments in the value chain (Philippine Council for Industry, Energy and Emerging Technology Research and Development, 2020). As seen in the statistics presented in Table 7, the Philippines capitalizes on its strong presence in activities involving customer relationship management, which was the IT-BPM subclass with the highest number of employed workers. However, the value added for these types of skills is relatively low compared to other activities in the IT-BPM sector, as seen in Figure 10.

TESDA also confirms this in its *Labor Market Intelligence Report* (2019), where it cites the *Accelerate PH: Future-ready Roadmap 2022*. The *Future-ready Roadmap* was published in 2016, at which time 45.8% of the IT-BPM

FIGURE 10

OFFSHORE SERVICES GLOBAL VALUE CHAIN.



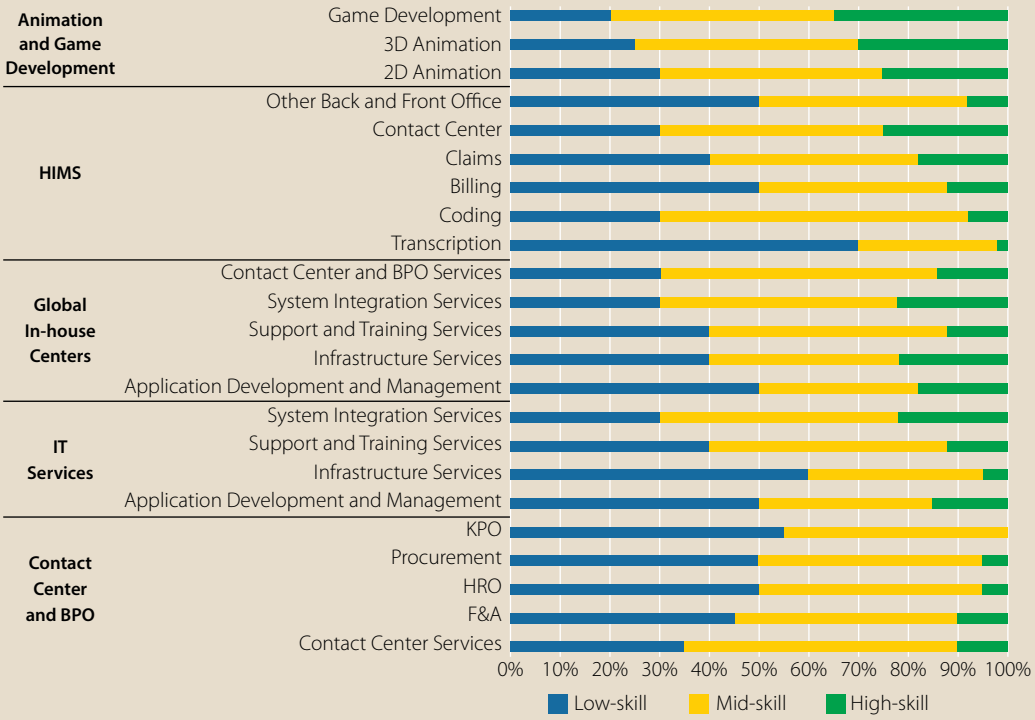
Note: R&D, research and development; Ex., for example; IP, internet protocol; DSP, digital signal processing.
Source: Adapted from Philippine Council for Industry, Energy and Emerging Technology Research and Development (2020).

workforce was in low-skilled roles, 39.4% in mid-skilled roles, and only 14.7% in high-skilled roles. A more detailed breakdown of the skills of IT-BPM workers, highlighting the low percentage in high-skilled roles, can be seen in Figure 11. The Philippine Council for Industry, Energy and Emerging Technology Research and Development states the following:

> The higher-level services that entail more advanced skills (Knowledge Process Outsourcing) are not as widespread in the country, given the limited number of available professionals to serve the demand and attract investment. These types of services provide better … value, and would maximize the revenues of the sector, as well as lower the threat imposed by automation on the economy. (2020)

FIGURE 11

SKILLS BREAKDOWN OF IT-BPM SERVICES IN THE PHILIPPINES (2016).



Note: BPO, business process outsourcing; F&A, facilities and administration; HIMS, healthcare information management services; HRO, human resource outsourcing; KPO, knowledge process outsourcing.
Source: Technical Education and Skills Development Authority (2019).

In terms of enrollment in IT-BPM-related training regulations, there were 7,941 enrollees and 9,685 graduates in 2021 (Table 9). These enrollees and graduates were mostly concentrated in NCR, Region IV-A, and Region VI, which are more advanced and relatively strong regions with key business districts. Every year, these figures tend to increase gradually. The outlook for the sector is that there will be demand for at least 100,000 additional workers in the next few years, and revenue growth is projected to rapidly increase until 2030. However, based on the current enrolment and graduation figures, the industry's labor supply will not be able to keep up. Nonetheless, many Filipinos have been flexible in working and learning new skills; some IT-BPM firms or call centers, in particular, take on professionals and new graduates as long as they can speak English well and are computer literate.

TABLE 9

TOTAL NUMBER OF THOSE ENROLLED IN AND GRADUATED FROM IT-BPM-RELATED TRAINING REGULATIONS, BY REGION AND QUALIFICATION, JUNE 2021.

Region	Qualification	Enrolled		Graduated	
		By Qualification	Total	By Qualification	Total
Bangsamoro Autonomous Region in Muslim Mindanao (BARMM)	Contact Center Services II	19	39	12	12
	Visual Graphic Design III	20		–	
Cordillera Administrative Region (CAR)	Contact Center Services II	224	236	114	125
	Visual Graphic Design III	12		11	
National Capital Region (NCR)	Contact Center Services II	2,806	2,870	3,595	3,808
	Medical Transcription II	19		71	
	Programming (Java) III	45		120	
	Visual Graphic Design III	–		22	

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Region	Qualification	Enrolled		Graduated	
		By Qualification	Total	By Qualification	Total
Region I	Contact Center Services II	99	159	97	261
	Visual Graphic Design III	60		164	
Region II	–	–	–	–	–
Region III	Contact Center Services II	202	202	183	335
	Game Programming III	–		25	
	Medical Transcription II	–		18	
	Visual Graphic Design III	–		109	
Region IV-A	Contact Center Services II	1,107	1,107	1,443	1,500
	Medical Transcription II	–		25	
	Visual Graphic Design III	–		32	
MIMAROPA Region	–	–	–	–	–
Region V	Contact Center Services II	225	250	469	492
	Medical Transcription II	25		23	
Region VI	Contact Center Services II	1,244	1,244	1,285	1,285
Region VII	Contact Center Services II	505	505	902	902
Region VIII	Contact Center Services II	388	388	232	232

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Region	Qualification	Enrolled		Graduated	
		By Qualification	Total	By Qualification	Total
Region IX	Contact Center Services II	451	451	421	421
Region X	Contact Center Services II	259	301	207	225
	Visual Graphic Design III	42		18	
Region XI	Visual Graphic Design III	122	122	62	62
Region XII	Visual Graphic Design III	25	25	25	25
Region XIII	Visual Graphic Design III	42	42	–	–
TOTAL		**7,941**		**9,685**	

Note: Empty cells are those without available data.
Source: Technical Education and Skills Development Authority (2021).

The Philippine Skills Framework for Analytics and Artificial Intelligence

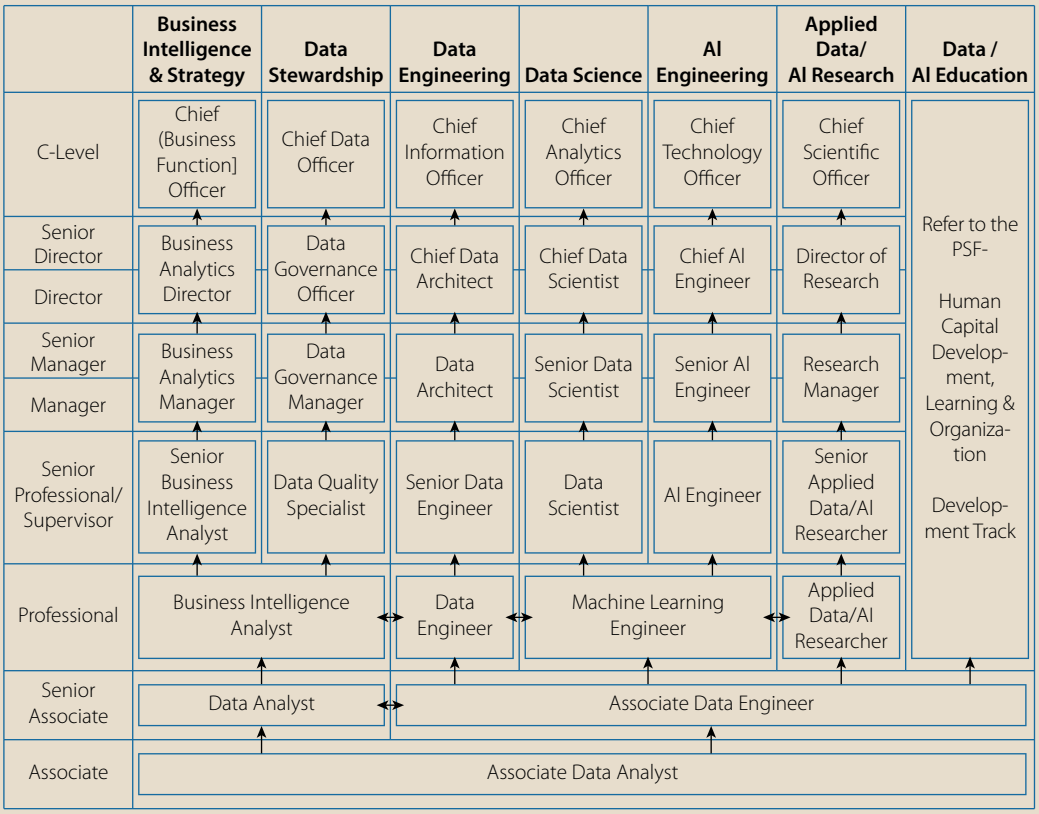
The Philippine Skills Framework for Analytics and Artificial Intelligence (PSF-AAI) was developed by the Department of Information and Communications Technology and the Analytics and Artificial Intelligence Association of the Philippines. According to the Philippine Business for Education Executive Director Justine Raagas, this tool is valuable for schools and training centers (Philippine Business for Education, 2024). It can help them update old courses or create new ones that meet current needs and future job demands, and focusing on skill alignment will make it easier for Filipinos to enter the AI and analytics field. The PSF-AAI career map is shown in Figure 12.

The framework outlines the different professions in seven fields:

- Business intelligence and strategy
- Data stewardship
- Data engineering
- Data science

FIGURE 12

PHILIPPINE SKILLS FRAMEWORK FOR ANALYTICS AND AI CAREER MAP.



Note: PSF, Philippine Skills Framework.
Source: Department of Information and Communication Technology & Analytics and Artificial Intelligence Association of the Philippines (n.d.-a).

- AI engineering
- Applied data and AI research
- Data and AI education

Through the PSF-AAI, one can identify the functional and enabling skills necessary for a specific position. For instance, Table 10 shows what skills are needed for associate data analyst, data analyst, and associate data engineer positions.

TABLE 10

SKILLS NEEDED FOR ASSOCIATE DATA ANALYST, DATA ANALYST, AND ASSOCIATE DATA ENGINEER POSITIONS.

Skills Needed	Associate Data Analyst	Data Analyst	Associate Data Engineer
Collaboration	Yes	Yes	Yes
Communication	Yes	Yes	Yes
Digital Fluency	Yes	Yes	Yes
Learning Agility	Yes	Yes	Yes
Application Development	Yes	Yes	Yes
Application Integration		Yes	Yes
Artificial Intelligence Ethics and Governance	Yes	Yes	Yes
Business Need Analysis	Yes	Yes	Yes
Configuration Tracking	Yes	Yes	
Cyber and Data Breach Incident Management	Yes	Yes	
Cloud Computing			Yes
Data Engineering	Yes	Yes	Yes

Source of data: Department of Information and Communication Technology & Analytics and Artificial Intelligence Association of the Philippines (n.d.-b).

The PSF-AAI facilitates the upgrading of the country's education system and the retraining and upskilling of the future workforce.

Philippine Higher Education System Status of Digital Infrastructure, AI Utilization and Adoption, and College Degree Preference

In their report *Digital Transformation of Philippine Higher Education*, the World Bank (2022) reported that digital transformation in the Philippines started before the COVID-19 pandemic; however, multiple and interrelated constraints caused its slow progress. One of the constraints was the exorbitant cost of internet service and related equipment. Based on the National ICT Household Survey (Department of Information and Communication Technology, 2019), high costs of internet accounts and equipment limited low-income students' access to digital infrastructure. Most of them used mobile phones for education and social media activities. The World Bank also

emphasized that limited physical campus access also restricted digital access for many higher education students in the Philippines. This meant that various college and university students faced a double disadvantage: limited physical campus access and, consequently, reduced digital access.

Furthermore, the World Bank report identified insufficient digital skills and pedagogical expertise among faculty as a hindrance to digital transformation. The COVID-19 pandemic further revealed bottlenecks in distance and online learning and digital transformation. The same report cited a survey of Philippine medical students (Baticulon et al., 2021) where less than half of students responded that their teachers had the necessary resources and skills for online teaching. The teachers' low level of digital literacy and shortage in advanced and specialized digital skills, such as computer network operation, IT and user support, and software development, were also considered barriers.

Lastly, the World Bank report highlighted a 2022 World Bank survey on career guidance (unpublished) that identified roughly 10,000 unique missing skills based on the sample students' favored career paths. Some of these were knowledge of Windows, search engine optimization, social media marketing, blogging, and data analysis. Additional skill gaps included team leadership, problem-solving, coaching, public speaking, strategic planning, and business strategy.

With the above-mentioned constraints, there are still areas for growth in the country's adoption of AI in the education sector. Based on a survey on the state of vocational education in the Philippines by Instructure, around seven in 10 institutions do not use GenAI (Instructure, Inc., 2023). According to this survey, 38% of institutions had banned GenAI tools, 23% chose not to use them despite knowing how, and 6% didn't know how to use them. Regarding the use of GenAI by students, around half of vocational learning institutions surveyed were concerned about the loss of creativity and critical thinking (52%) and data privacy (49%), while only 31% were concerned about plagiarism. Asirit and Hua (2023) examined 250 college students from state and local colleges and universities in the Philippines. They found that students, on average, had a moderate level of awareness about AI technologies; most students possessed a basic understanding of AI applications and their potential impact. They also found that respondents used AI more frequently for personal purposes than academic purposes, which the authors believed could be for entertainment, information retrieval, or communication.

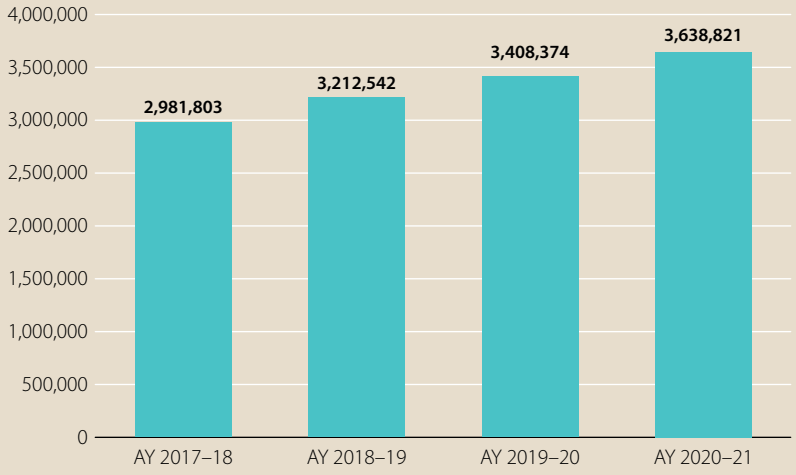
The Philippine education sector has digital infrastructure in place, and teachers and students in higher education have a level of familiarity with AI. However, to build an AI-ready workforce, capacity building for more advanced infrastructure and technology must take place and teachers' and students' level of knowledge and utilization of AI must be improved. Mylene Abiva, the president and chief executive officer of FELTA Multi-Media Inc., stressed the importance of modernizing and upskilling the country's education curriculum for AI (ABS-CBN News, 2024). She also believed that schools are conservative with investments because AI is still considered futuristic.

Statistics on College Enrollment, Higher Education Graduation Rates, and Government Budget Allocation for the Philippine Education Sector

Based on the recent available data, the number of students enrolled in higher education has steadily increased since 2017, with a compound annual growth rate of 5.10% (Figure 13). In academic year 2022–2023, there were almost 4.8 million enrolled students, with female students outnumbering male peers by 0.7 million (Commission on Higher Education, 2023a). The NCR and Region IV-A had the greatest number of higher education enrollment in the same period.

FIGURE 13

HIGHER EDUCATION ENROLLMENT FROM 2017–2018 TO 2020–2021.

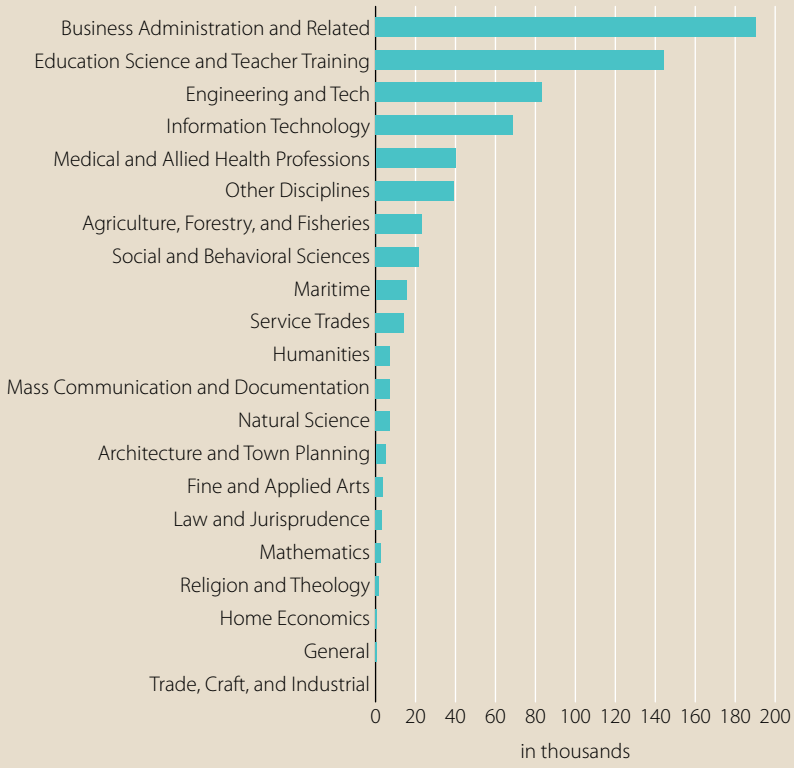


Note: AY, academic year.
Source of data: Commission on Higher Education (2023b, Table 10.17).

Figure 14 shows the average number of graduates from academic year 2017–2018 to 2019–2020; business administration and related disciplines had the highest average number of graduates (190,397), followed by education science and teacher training (144,196), engineering technology (83,132), and information technology (68,914). Based on these figures, the future workforce is anticipated to grow, with most graduates having backgrounds in business administration and education. Compared to these fields, information technology degrees are expected to be less popular with students. Hence, campaigns and programs such as company visits and internships to attract more students to study information technology could be initiated through industry, academia, and government collaboration.

FIGURE 14

AVERAGE HIGHER EDUCATION GRADUATES (ACADEMIC YEARS 2017–18 TO 2019–20).



Source of data: Commission on Higher Education (2023b, Table 10.18).

The Department of Budget and Management has allocated nearly PHP1 trillion, or 15.4% of the proposed PHP6.35 trillion national budget, for fiscal year 2025 to the education sector (Cordero, 2024). As this sector remains the Marcos administration's top priority, it has the highest percentage of funding in social services, as seen in Table 11. In addition, PHP433 billion of the entire national proposed budget will be allotted to expanding and upgrading the country's infrastructure. Of this amount, PHP221.5 billion will be for convergence and special support programs, PHP140.9 billion for the Network Development Plan, and PHP70.6 billion for ICT and digitalization (Department of Budget and Management, n.d.).

TABLE 11

SECTORAL DISTRIBUTION OF PUBLIC EXPENDITURE.

	2023	2024	2025
Economic Services	**1,671,154,889**	**1,721,654,013**	**1,714,609,177**
Defense	**240,530,071**	**238,048,412**	**252,475,246**
General Public Services	**979,682,029**	**1,083,458,357**	**1,077,554,254**
Social Services	**1,923,368,420**	**2,225,537,730**	**1,995,958,750**
Education, Culture, and Manpower Development	858,113,081	969,810,384	977,699,557
Health	376,903,592	487,523,907	489,808,260
Social Security, Welfare, and Employment	285,442,148	302,719,624	271,882,558
Housing and Community Development	185,055,066	261,756,939	23,556,210
Other Social Services	3,449,473	4,716,576	5,134,885
Subsidy to Local Government Units	214,405,060	199,010,300	227,877,280
Education, Culture, and Manpower Development as a percentage of Social Services	45%	44%	49%
Total Productive Expenditures	**4,814,735,409**	**5,268,698,512**	**5,040,597,427**

Source: Adapted from Department of Budget and Management (2024).

BRIEF SURVEY BACKGROUND ON THE GLOBAL IT-BPM MARKET

History of the IT-BPM Sector

In 1992, Accenture established the first contact center in the Philippines (Natividad, 2015). In 1995, Congress passed the Special Economic Zone Act, reducing area requirements for development and attracting foreign investors through tax incentives. Sykes Asia started operations in the Philippines in 1997 and is regarded as the first multinational BPO company in the country. In 1999, another significant industry player, eTelecare, was founded. In 2001, the US-based outsourcing company PeopleSupport began operating from the Philippines and provided 8,400 jobs. This was followed by the opening of two call centers in the Philippines in 2003 by Convergys Corp.

In 2002, the then–Department of Trade and Industry Secretary Mar Roxas lobbied in Congress to revise the Republic Act 7916 so BPO companies could register their buildings or floors in a building as an ecozone (Natividad, 2015). Ecozones can avail of incentives like exemption from national and local taxes and instead pay a 5% gross income tax. This is often considered a key contribution to the development of the BPO industry.

In 2000, the BPO industry was estimated to account for 0.075% of GDP. By 2010, call centers employed 525,000 employees and industry revenue was at USD8.9 billion. A year later, revenue reached USD11 billion and employment was 638,000. By 2013, revenue reached USD15.5 billion and full-time employees reached 900,000.

The rise in prominence of the IT-enabled service sector and the digital economy prompted the Philippine government to start measuring the digital economy through dedicated statistics. The PSA collaborated with the World Bank in 2019 to measure the digital economy (PSA, 2024e). The PSA released its pilot

estimates in Oct 2022. At that time, there was still a lack of internationally agreed standards and definitions for the sector. Thus, we can expect refinements and improvements in the statistics in the future.

Table 12 presents the PSA's breakdown of the digital economy in the Philippines from 2018 to 2023.

TABLE 12

GROSS VALUE ADDED OF THE DIGITAL ECONOMY BY SUBCOMPONENT AT CURRENT PRICES, 2018–2023 (IN MILLION PHP).

Subcomponents	2018	2019	2020	2021	2022	2023
E-commerce	155,254	205,360	136,730	191,681	241,855	286,667
Digital media/content	49,498	52,315	46,657	51,365	57,440	60,213
Digital-enabling infrastructure	1,385,640	1,458,868	1,383,415	1,491,620	1,598,710	1,697,043
• Computer, electronic, and optical products	393,480	390,335	318,483	349,203	348,000	349,251
• Wholesale trade, except of motor vehicles and motorcycles	36,170	40,259	37,560	37,580	40,935	43,766
• Telecommunication services	464,647	510,519	546,383	588,668	638,582	673,203
• Professional and business services	480,441	506,084	471,980	507,218	560,489	617,086
• Repair of computers and communication equipment	10,902	11,670	9,009	8,952	10,705	13,737
Government digital services	2,950	3,585	3,742	4,140	4,412	4,164
DIGITAL ECONOMY	**1,593,342**	**1,720,127**	**1,570,543**	**1,738,807**	**1,902,417**	**2,048,088**

Source: Philippine Statistics Authority (2024c).

The PSA estimated that the digital economy contributed approximately PHP2.05 trillion (8.4% of GDP) at current prices to the economy in 2023. This is almost the share of the entire agricultural sector, which was 9.4% in 2023 (Asian Development Bank, n.d.).

As seen in Table 13, the largest subsector by far in terms of employment in 2023 was e-commerce (87.3%), followed by digital-enabling infrastructure (11.6%), digital media/content (1.1%), and government digital services (0.1%). Note that the "digital economy" as defined by PSA in these statistics is larger in coverage than the IT-BPM sector, as the much larger employment figure suggests. For example, the digital economy includes government digital services and government workers. It is likely though, that firms in the IT-BPM sector may be suppliers or contractors to the government in the production or delivery of government digital services. This is pointed out here for perspective and to avoid confusing the digital economy with the IT-BPM sector, which though smaller, is nevertheless a significant driver of the economy.

TABLE 13

EMPLOYMENT IN DIGITAL ECONOMY BY SUBCOMPONENT, 2018–2023 (PERCENTAGE OF TOTAL).

Subcomponents	2018	2019	2020	2021	2022	2023
E-commerce	77.6	79.1	82.3	84.6	85.7	87.3
Digital media/content	1.6	1.6	1.2	1.2	1.1	1.1
Digital-enabling infrastructure	20.7	19.3	16.4	14.2	13.1	11.6
• Computer, electronic, and optical products	8.8	8.1	6.5	5.3	4.8	3.9
• Wholesale trade, except of motor vehicles and motorcycles	1.3	1.2	1.0	0.9	0.7	0.5
• Telecommunication services	5.5	5.3	4.0	3.9	3.9	3.8
• Professional and business services	2.1	2.1	1.6	1.4	1.5	1.7
• Repair of computers and communication equipment	2.9	2.5	3.2	2.7	2.1	1.6
Government digital services	0.1	0.1	0.1	0.1	0.1	0.1
DIGITAL ECONOMY	**100**	**100**	**100**	**100**	**100**	**100**

Source: Philippine Statistics Authority (2024d).

Probably the most well-known occupation in the IT-BPM sector is the call center or contact center agent. According to the 2022 Occupational Wages Survey of the PSA (2023d), the average monthly wage of a contact center information clerk (including contact center salesperson) in the call center activities (voice) industry is PHP22,830. This is slightly higher than that of nursing professionals (PHP20,715) or pharmacists (PHP18,734).

However, contact center information clerks and salespersons earn higher or lower depending on the industry (see Table 14). Their monthly wage ranged from a low of PHP13,767 (wholesale and retail trade and repair of motor vehicles and motorcycles) to a high of PHP28,177 (electricity, gas, steam, and air conditioning supply industry) with an average across all industries of PHP22,146. This is higher than the average for all the occupations covered (PHP18,423). Notably, except for the utilities sector (water and electricity), the rest of the call center clerks and salespersons were employed in service sectors.

TABLE 14

AVERAGE MONTHLY WAGE OF TIME-RATED, FULL-TIME WORKERS IN SELECTED INDUSTRIES AND OCCUPATIONS, AUGUST 2022 (IN ESTABLISHMENTS EMPLOYING 20 OR MORE WORKERS).

2009 PSIC/PSOC 2012 update	Industry/Occupation	Average Monthly Wage (PHP)
D35	**Electricity, gas, steam and air conditioning supply**	
4222	Contact center information clerks	28,177
E36	**Water collection, treatment and supply**	
4222	Contact center information clerks	23,611
G45	**Wholesale and retail trade and repair of motor vehicles and motorcycles**	
5244	Contact center salespersons	13,767
G46	**Wholesale trade except of motor vehicles and motorcycles**	
5244	Contact center salespersons	18,091
G47	**Retail trade except of motor vehicles and motorcycles**	
5244	Contact center salespersons	17,434
H53	**Postal and courier activities**	
4222	Contact center information clerks	28,074
I55/I56	**Accommodation and food service activities**	
4222	Contact center information clerks	15,122
J61	**Telecommunications**	
4222	Contact center information clerks	25,177

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2009 PSIC/PSOC 2012 update	Industry/Occupation	Average Monthly Wage (PHP)
K64 excl. K6411	**Financial service activities except insurance, pension funding and central banking**	
4222	Contact center information clerks	17,974
K65	**Insurance, reinsurance and pension funding except compulsory social security**	
4222	Contact center information clerks	29,337
N8221	**Call center activities (voice)**	
4222	Contact center information clerks (includes contact center salesperson)	22,830
5244	Contact center salesperson	20,869
N82222	**Back-office operations activities (non-voice) except medical transcription activities**	
4222	Contact center information clerks	27,441
	Average	**22,146**
	Average for all occupations	**18,423**

Note: PSIC, Philippine Standard Industrial Classification; PSOC, Philippine Standard Occupational Classification; PHP, Philippine pesos.
Source: Philippine Statistics Authority (2023d).

While anecdotal, a Bloomberg article (Rai, 2024) relates the story of a household of three adults who all work in the call center industry. In a poignant detail, the article mentions that although once they did not have enough money for food, "the family table is now full." The wife works for a financial company's credit card helpline while the husband and brother also work in the industry. In the article, she relates that they are saving up to buy a home and can even afford to hire a nanny so that she can sleep during the day.

Benefits and Downsides of Call Center Work

Despite the relatively higher wages cited above, working for call centers can have its downside. Most would cite the stress of having to deal with irate

customers, who can be rude if their concerns are not settled favorably for them. Because of the difference in time zones between the US and Europe, this means unusual work hours in the Philippine time zone. Different working hours means odd sleeping hours, which can lead to unhealthy lifestyles and, consequently, various ailments, such as cardiovascular diseases, type II diabetes, and obesity (Voice of America, 2015). These are likely some of the reasons for the high turnover in the industry.

Another advantage of the IT-BPM sector is that it has allowed Filipino workers who otherwise might have joined the overseas Filipino worker phenomenon to work and stay in the Philippines, lessening the brain drain. An Al Jazeera documentary tells the story of a Filipina freelance outsource worker who acts as the receptionist for an Australian education firm, answering phone calls for the company (Al Jazeera English, 2013, beginning at the 17:40 mark). It is remarkable that the video is 12 years old but foreshadowed the work from home phenomenon imposed on much of the world by the COVID-19 pandemic. But the social benefits to the interviewed worker are notable: she was able to stay in the Philippines, raise her two boys, and send them to school.

In contrast, many poor and less skilled Filipinas have had to leave their families in the Philippines to the care of relatives while they work as household service workers in other countries, performing duties that they would otherwise have performed for their own children and family.

The remittances from overseas Filipino workers have historically been a pillar of the Philippine economy, but the revenue of the IT-BPM sector is catching up and matched the $38 billion revenue of remittances in 2024 (Bangko Sentral ng Pilipinas, n.d.; Ayeng, 2025). Overseas workers' remittances may be growing slower partly due to the growth of the outsourcing industry.

AI: Hype or Premature Promise?

The most recent landmark of AI development for most people was likely the introduction of ChatGPT in November 2022. It could generate text, images, and even travel plans. Major competitors like Microsoft and Google have also released their respective equivalents: Copilot and Gemini (originally Bard).

Experience with AI, or AI-like functions and applications, is not new. For example, everyone using a cellphone is familiar with predictive text, which has been with us for decades. While a far cry from the GenAI applications of today, many people probably remarked in the early days of predictive text that their mobile phones (now antiquated) were so smart as to be able to predict the word they were typing.

And while there were those who were concerned about possible loss of privacy, many were initially mystified at how social media sites seemed to "know" what their current interests were when browsers and social media sites would seemingly send them ads and images related to their recent searches. Users wondered how the platforms could be "intelligent" enough to figure out their preferences. Privacy concerns were raised when users figured out that the sites they were visiting online were being tracked.

Fast-forwarding to 2018 in the US, Amazon opened its first Amazon Go grocery store, which used "Just Walk Out" technology (Maruf, 2024). This allowed cashierless shopping for its customers, who could just pick out their groceries from the shelves, walk out of the store, and be charged automatically for their purchase. An Amazon spokesman described the technology as follows:

> Just Walk Out technology is made possible by artificial intelligence like computer vision and deep learning techniques, including generative AI, to accurately determine who took what in any retail environment. Amazon built synthetic datasets to mimic millions of realistic shopping scenarios – including variations in store format, lighting conditions, and even crowds of shoppers – to ensure accuracy in any environment. (Lin-Fisher, 2024)

However, it has been reported that Amazon used approximately 1,000 people in India to remotely monitor purchases and ensure accuracy (Lin-Fisher, 2024), casting doubt on AI's capabilities.

Another news story reports how a restaurant chain in New York employed Filipino workers to take orders remotely via Zoom (Pohl & Janoski, 2024). While some patrons found the novelty interesting, some said that they miss the human touch. Some customers thought the virtual cashiers were AI generated and asked if they were real. This story suggests that while AI can replace

human workers in some lines of customer service, demand for human touch and empathy remains.

From the early predictive applications to today's automated customer service applications, AI has been on quite a trajectory of change. Forecasting technological change and the evolving applications of information technology is difficult and fraught with risk. Will humans be significantly displaced, or will they be augmented? In the rest of this paper, we seek to understand this new tool better. For this purpose, the team turned to experts in the field to get their thoughts on what the future holds for the adoption and future applications of AI.

SURVEY OF LITERATURE

Review of Economic Theory on Productivity

A production function often used in economic theory of production is $Q = F(K, L)$, where Q is the quantity produced, F is the production function, and K and L are the inputs. Classically, the basic inputs of production are capital (K) and labor (L). Traditionally, capital referred to the resources and assets that the firm employs (e.g., factory machinery, buildings). In the context of AI, we could think of the capital input, K, as being the amount of AI being used.

The production function relates the combinations of inputs and the maximum output producible. The marginal product of an input is conceptually the additional units of output made possible by the employment of an additional unit of input, which is normally positive. Mathematically, the concept is expressed as the partial derivative (∂) of the production function with respect to the input (e.g., MP_L for the marginal product of labor):

$$\frac{\partial F}{\partial L} > 0 \quad (1)$$

Production functions are also assumed to allow for input substitution; for example, a call center may elect to use more human agents and minimal chatbots, or it may replace some human agents with more chatbots and AI-enabled software.

Production functions are usually assumed to be characterized by the law of diminishing marginal productivity. This means that while marginal product is normally positive, it diminishes as more inputs are employed. Mathematically, this is represented as a negative second derivative of the production function with respect to the input:

$$\frac{\partial^2 F}{\partial L^2} < 0 \quad (2)$$

A production function using $F(K,L)$ implicitly assumes a fixed technology. Thus, the same combination or amounts of inputs will always produce the same amount of output. There are various ways to model changes of technology. One can think of improved technology as being represented by different functions, F, that result in higher quantities for the same combinations of inputs. This approach requires a higher level of mathematics to analyze. To simplify, one can view our analysis as being for a fixed point in time so that the technology is the same.

Every profit-maximizing firm presumably seeks efficiency to produce its product at the minimum cost. Here, w represents the price of labor (wage) while r represents the price of capital (e.g., AI investments in this case). The lowest cost combination of inputs to employ to produce a given level of output meets the following condition, where MP is marginal product:

$$\frac{MP_L}{w} = \frac{MP_K}{r} \tag{3}$$

The intuition is that a firm will employ inputs up to where each input's marginal product per peso (or the relevant currency unit) is equal. For example, if labor has a higher marginal product per peso than AI, then the firm should employ more labor and less AI. The law of diminishing marginal productivity then implies the marginal product of labor will decrease while the marginal product of AI rises. Eventually the inputs' respective marginal product per peso will equalize.

Arguably, for a price-taking firm (in the product or output market), the condition of the marginal product of each input per peso (the marginal product of each input divided by their respective price) being equal (equation 3) is also necessary for profit maximization. This is logical, as a firm could not maximize its profits if it was not minimizing its costs.

The optimal condition (equation 3) highlights that the relative prices of labor and AI matter. Another important consideration is that AI is not costless. The practical business implication of this is that a firm may not wish to employ AI to the degree that all labor is displaced. Since the Philippines has cheaper labor, the level of AI deployed could be lower than in higher wage countries. Conversely, in advanced countries where labor is more expensive, AI is more likely to be employed. Investing in AI costs money and, therefore, must earn a commensurate return.

What is AI and Generative AI?

"Artificial intelligence" was first coined and defined by John McCarthy in 1956 as "the science and engineering of making intelligent machines" (Collins et al., 2021). Since then, despite the development of the field, there has been no universally accepted definition of AI. Russell and Norvig (2010) highlighted that the AI definitions of Haugeland (1985), Bellman (1978), Charniak and McDermott (1985), Winston (1992), Kurzweil (1990), Rich and Knight (1991), Poole et al. (1998), and Nilsson (1998) deal with thought processes and reasoning, behavior, fidelity to human performance, and ideal performance or rationality. Recent authors such as Sheikh et al. (2023, Chapter 2) have defined it as the use of algorithms that pertain to detailed instructions for problem-solving or performing calculations, the replication of all human intellectual abilities and various complex human skills by computers and machines, and a technology that operates effectively and with foresight within its environment. In the context of scholarly communication research, it is characterized "as the tangible real-world capability of non-human machines or artificial entities to perform, task solve, communicate, interact, and act logically as it occurs with biological humans" (Gil de Zúñiga et al., 2023). Sheikh et al. (2023) also acknowledged that there is no standard definition of AI yet. Its evolution, complexity, and breadth make defining AI challenging (Collins et al., 2021; Sheikh et al., 2023). Table 15 presents other AI definitions from various authors. These authors emphasized the intelligent functions of technology that resemble human performance or skills.

TABLE 15

AI DEFINITIONS FROM VARIOUS AUTHORS.

Author and Date	Definition
Kolbjørnsrud et al. (2017)	AI is defined as computers and applications that sense, comprehend, act, and learn.
Afiouni (2019)	AI is the general concept for computer systems able to perform tasks that usually need natural human intelligence, whether rule-based or not.
Lee et al. (2019)	Artificial Intelligence: Intelligent systems created to use data, analysis, and observations to perform certain tasks without needing to be programmed to do so.
Wang et al. (2019)	AI is a broad concept that captures the intelligent behavior of the machine.

(Continued on next page)

(Continued from previous page)

Author and Date	Definition
Makarius et al. (2020)	Artificial Intelligence: a system's capability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaption.
Schmidt et al. (2020)	Artificial Intelligence: the endeavor to mimic cognitive and human capabilities on computers.
Demlehner and Laumer (2020)	Artificial Intelligence: a computer system having the ability to percept, learn, judge, or plan without being explicitly programmed to follow predetermined rules or action sequences throughout the whole process.
Wamba-Taguimdje et al. (2020)	Artificial Intelligence: defined as a set of "theories and techniques used to create machines capable of simulating intelligence. AI is a general term that involves the use of computer[s] to model intelligent behavior with minimal human intervention."
Mikalef and Gupta (2021)	AI is the ability of a system to identify, interpret, make inferences, and learn from data to achieve predetermined organizational and societal goals.

Source: Enholm et al. (2021, Table 1).

GenAI is related to AI. The Center for Teaching Innovation (2023) at Cornell University defined it as "a subset of AI that utilizes machine learning models to create new, original content, such as images, text, or music, based on patterns and structures learned from existing data. A prominent model type used by generative AI is the large language model." According to Routley (2023), GenAI uses a type of deep learning known as generative adversarial networks for content creation. According to Google Cloud (n.d.), supervised learning is the most common way of training a GenAI model: "the model is given a set of human-created content and corresponding labels. It then learns to generate content that is similar to the human-created content and labeled with the same labels." With a generative adversarial network, GenAI can produce images, text, and audio using two neural networks: a generator and a discriminator (Routley, 2023). Examples of GenAI include OpenAI Codex, ChatGPT, DALL-E, DeepMind, and Midjourney. Given the advancements and developments in AI, particularly in GenAI, its anticipated impact on the IT-BPM sector is worth examining.

Literature Review on the Possible Impact of AI on IT-BPM

Zebec and Indihar Štemberger (2024) focused on the business value of AI and found that AI adoption enhanced organizational performance through improvements in decision-making and business process performance. They also stated that process automation, organizational learning, and process innovation serve as important complementary partial mediators, offering insights into how AI generates business value. This is aligned with the findings of several other authors who claim that AI assimilation and capability positively enhance firm performance (Wamba-Taguimdje et al., 2020; Bag et al., 2021; Wamba, 2022; Chen et al., 2022), innovation performance (Rammer et al., 2022), and organizational creativity (Mikalef & Gupta, 2021).

Moreover, Olan et al. (2022) viewed AI technologies as key instruments that stimulate organizational knowledge activities. They acknowledged that AI could detect duplications within business processes and ensure efficient resource deployment for better performance. To take full advantage of this, knowledge-sharing, learnings from completed projects, and new knowledge should be incorporated into AI learning processes to boost performance and efficiency. AI positively affects business performance, including data accuracy, data transparency, data speed, creative thinking and learning, and, through the application of chatbots, customer service efficiency (Ahmad et al., 2023; De Andrade & Tumelero, 2022).

Alsheibani et al. (2018) identified factors that impact the adoption and deployment of AI, including technological readiness, organizational readiness, and environmental conditions such as government regulations. Despite AI's advantages, its downsides must be considered. For instance, AI is susceptible to technical issues, security vulnerabilities, and data challenges and may lead to accidents if users do not fully comprehend how the system operates (Mohammad, 2020). Based on their review of 139 peer-reviewed articles, Perifanis and Kitsios (2023) found that the majority of businesses do not yet have a department dedicated to AI development, and they recommended that management devote more time and expense to developing AI capabilities. In addition, Enholm et al. (2022) acknowledged that some organizations are facing challenges in incorporating and leveraging AI in their operations. They highlighted challenges such as infrastructure costs, hiring capable employees, and reliance on external partners. Nevertheless, they emphasized that organizations can use AI technologies to automate tasks or augment humans,

either to improve internal business processes or to use AI in products and services that are in direct contact with customers. These findings are similar to those of Olan et al. (2022). Lastly, Strusani and Houngbonon (2019) highlighted development opportunities and risks of AI in emerging markets, as seen in Table 16.

TABLE 16

AI DEVELOPMENT OPPORTUNITIES AND RISKS IN EMERGING MARKETS.

Opportunities	Risks
• New products and business models, including leapfrogging solutions, solutions for bottom of pyramid individuals, and easier access to credit • Automation of core business processes, leading to lower product costs • Human capital development • Innovation in government services	• Obsolescence of traditional export-led path to economic growth • Increased digital and technological divide • Transformation of job requirements and disruption of traditional job functions • Privacy, security, and public trust

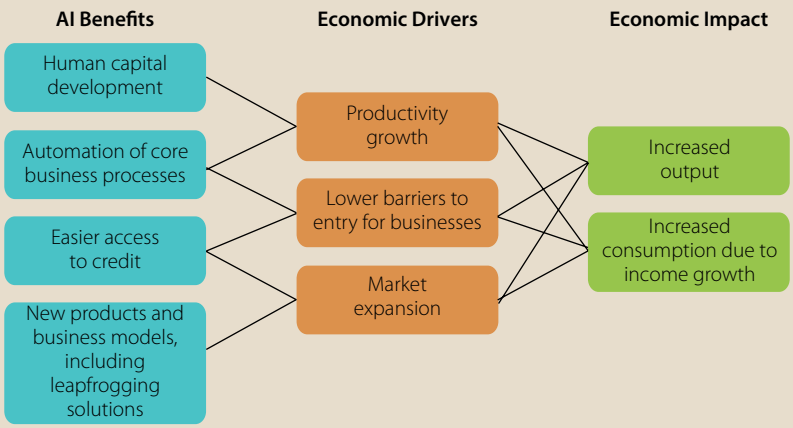
Source: Strusani and Houngbonon (2019, Figure 1).

Studies show that AI and GenAI have significant roles in and impacts on economies. For instance, Strusani and Houngbonon (2019) highlighted the channels to economic development supported by AI technologies. They stressed their role in reducing poverty and boosting shared prosperity.

Chua and Dobberstein (2020) reported that AI has the potential to boost Southeast Asian economies' GDP by 10%–18% by 2030, adding nearly USD1 trillion to the GDP across the region. In the Philippines, Ng et al. (2023) project that GenAI has the potential to release USD79.3 billion in productive capacity, equivalent to 20% of the country's GDP in 2022. According to these authors, the manufacturing and wholesale and retail trade sectors in the Philippines are expected to contribute the most to economic gains from GenAI due to their large workforces and high labor productivity. They also stressed that rather than replacing jobs, GenAI will shift the focus within roles, with most workers likely to incorporate AI into their tasks to some extent.

FIGURE 15

CHANNELS TO ECONOMIC DEVELOPMENT SUPPORTED BY AI TECHNOLOGIES.



Source: Strusani and Houngbonon (2019, Figure 2).

Gmyrek et al. (2023) of the ILO shared a comprehensive data analysis, covering 189 countries' occupational data, to capture the likely impact of AI utilization in different occupations. Jobs with high automation potential are those involving repetitive tasks related to administration and communication, customer service and coordination, data management and record keeping, information processing and language services, and providing information and responding to inquiries. Of clerical support worker tasks, 82% were seen as exposed to GenAI at an above-average level, with 24% of tasks being highly exposed. This is significantly higher than the next highest category: 27% of technician and associate professionals' tasks had above-average exposure and 2% had high exposure. Clerical support workers' tasks had the least potential for augmentation and, thus, the highest risk of job replacement. Nonetheless, for low-income economies, only 10.4% of employment is estimated to be affected by augmentation and only 0.4% by automation.

Gmyrek et al. also found that women are more likely to be affected by automation and augmentation, especially as an economy gets richer or has high income. Nonetheless, it appears unknown to the authors whether the automation and augmentation of jobs will result in new occupations, as has resulted from technological progress in the past. The group of occupations referred to by the

authors as "the big unknown" (because their potential for automation and augmentation was unclear), was estimated to be 6.8% of employment in low-income economies, 11.8% in lower-middle-income, 18.2% in upper-middle-income, and 24.2% in high-income economies (Gmyrek et al., 2023, figure 11b). Looking at the bigger picture, Gmyrek et al.'s findings indicate that AI's impact on job generation will offset the potential replacement of jobs at high risk of automation.

What Is the Impact of AI on Work?

Felten et al. (2023) updated their earlier work on AI occupational exposure to account for advances in AI language modeling capabilities. They pointed out that their index measures an occupation's exposure to AI but is silent on whether AI will substitute or augment the occupation.

Following their adjustment, they found that the occupation most exposed to AI is telemarketer, which is relevant to this analysis due to the similarity between the roles of telemarketers and contact center agents. Telemarketer was followed by teachers in a host of subjects, such as languages, literature, and history. In their original index, genetic counselors topped the index, followed by other occupations requiring abilities related to information processing. Notably, Felten et al. also found a positive and statistically significant correlation between AI occupational exposure index and mean wages.

What Jobs or Tasks May Not Be Easily Done by AI or GenAI?

The general assessment is that routine and repetitive tasks will be the first to be replaced by AI. A study by Ng et al. (2023) considered that activities requiring human judgment (e.g., to provide checks and balances), management of interpersonal relationships, and interaction with the physical environment (e.g., repairing machinery) are less likely to be done by AI.

Ng et al. identified three main channels by which GenAI will transform work: unleashing creativity, accelerating discovery, and enhancing efficiency.

In the area of creativity, the study estimated GenAI's potential impact on the arts, design, entertainment, sports, and media sector, adjusted for likelihood (percentage of total affected work activities). They estimated that the potential

for occupations in the sector to be affected by AI ranged from almost 0% to just over 20% (Ng et al., 2023, Exhibit 1).

The five occupations with the lowest potential of being affected by GenAI (all under 5%) were as follows (in descending order):

- Athletes and sports competitors
- Musicians and singers
- Umpires, referees, and other sports officials
- Actors
- Dancers

Meanwhile, the following had the highest potential (from approximately 16%–17% to slightly over 20%; in descending order):

- Media programming directors
- Art directors
- Interior designers
- Film and video editors
- Broadcast announcers and radio disc jockeys

In the science, health care, and education field, the range of variation was much narrower for the top occupations, which all fell within the 20% to 25% band (Ng et al., 2023, Exhibit 2; in descending order):

- Biochemists and biophysicists
- Astronomers
- Biologists

- Bioinformatics scientists
- Computer and information research scientists
- Audiologists
- Biological science teachers (postsecondary)
- Soil and plant scientists
- Nursing instructors and teachers (postsecondary)

In the educational instruction sector, the variation among the fifty-seven occupations (mostly teachers) ranged from under 5% to under 25% (Ng et al., 2023, Exhibit 3). Interestingly, the occupation with the lowest estimated potential of being affected by GenAI was "preschool teachers, except special education." The second lowest was self-enrichment teachers and the third lowest was tutors. One could imagine that these occupations would require the most personal interaction.

The estimated GenAI potential adjusted for likelihood did not exceed 25% for any of the occupations covered by Ng et al., suggesting that none of these occupations are likely to be replaced.

At the industry level, Ng et al. expect that industries that make use of data more intensely are likely to be affected most by AI. They list the following in decreasing order of potential, adjusted for likely impact on occupations (Ng et al., 2023, Exhibit 4):

- Finance and insurance
- Professional, scientific, and technical services
- Information and communications technology
- Wholesale trade
- Health care and social assistance

- Manufacturing
- Retail trade
- Other services (except public administration)
- Educational services
- Agriculture, forestry, fishing, and hunting
- Arts, entertainment, and recreation

Ng et al. note that their analysis was done on a global level. Thus, their estimates will only apply to the Philippines to the extent that Philippine occupations are performed in a similar way to comparable occupations around the world.

Other studies have found that AI can enhance worker productivity. A National Bureau of Economic Research working paper by Brynjolfsson et al. (2023) estimated quantitatively the effect of GenAI on employment and productivity. They found productivity (measured by issues resolved per hour) improved by 14% on average. Interestingly, "novice" workers' productivity improved more than that of more experienced workers. The study used data from 5,179 customer service support agents in a Fortune 500 company. The findings are especially relevant for the Philippines because the majority (89%) of the subject agents were working in the Philippines.

The system analyzed by Brynjolfsson et al. used a generative pre-trained transformer (GPT) language model that was "trained" on customer agent conversations that had been categorized by outcome (e.g., successfully resolved or not), skill level of agent, and duration of call, among other characteristics. The system can monitor customer chats and suggest responses to the call center agent in real time, which the agent can choose to follow or ignore. Thus, the software remains a tool while the human agent exercises their judgment on whether to follow the suggestions. It was reported that workers who followed the recommendations more closely saw higher productivity gains. The study found that workers using this AI assistance had a 14% increase on average in the number of chats successfully resolved per hour. This was the result of an increased number of chats handled as well as an increased percentage of chats successfully resolved.

The study found that the learning seemed to have been "durable." In periods of "software outages" or when the software was unable to make suggestions, the workers' productivity remained higher compared to pre-AI levels. Less skilled and less experienced workers saw a 34% increase in the number of issues resolved per hour. However, the impact on the productivity of more experienced or more skilled workers was minimal. Surprisingly, the study found evidence of a reduction in the quality of the chats of the most-skilled agents. This suggests that the GenAI tool primarily sped up the learning of the less experienced workers rather than enhancing the productivity of experienced and skilled workers.

Notably, the GenAI software used in the study was designed to assist human agents, not replace them. Indeed, the finding that the productivity of the most skilled and experienced agents only improved minimally suggests that the AI software is not significantly better than the best agents, at least in the context of customer service contact center agents.

Brynjolfsson et al. (2023) also raised the important question of whether and how the experienced workers would be compensated since the AI tool was trained on the data of their past conversations.

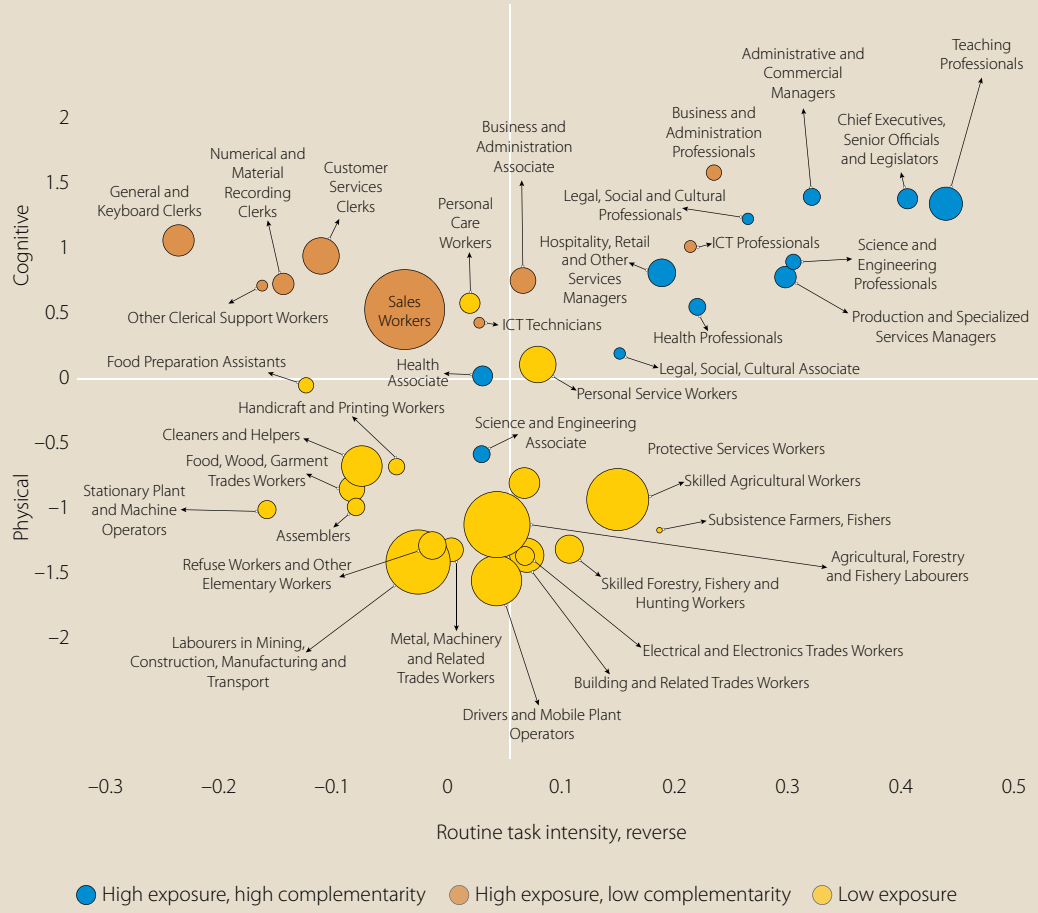
The Future of the Philippine Workforce

Recent studies have predicted that AI will enhance work productivity, but at the same time, some jobs will be displaced and others will be complemented, meaning that job growth may be negatively affected (Asia Foundation, 2020; Ng et al., 2023; World Bank, 2024). In the East Asia and the Pacific region, the World Bank (2024) reported that new technologies are boosting firm productivity and changing job prospects. While increased productivity typically fuels job growth and wage increases, labor-saving technologies can sometimes slow down this growth; because the technology enables existing employees to handle a higher workload and increase their productivity, the need to hire new workers is reduced. Furthermore, the impact of technology varies across different demographics, potentially widening or narrowing economic disparities. In the case of the Philippines, the World Bank revealed that AI exposure tends to be higher for cognitive tasks (general and keyboard clerks, customer services clerks, ICT technicians, etc.) rather than manual tasks (e.g., drivers and mobile plant operators and agricultural, forestry, and fishery laborers). Based on Figure 16, roles such as sales workers and business

administration professionals have high exposure to but low complementarity with AI and are therefore at high risk of displacement by AI. On the other hand, teaching professionals, health professionals, and hospitality, retail, and other services managers have high exposure to and high complementarity with AI. In these professions, AI could boost employees' productivity. These analyses are based on the index constructed by Pizzinelli et al. (2023), who attempted to measure the extent to which a job is shielded from AI displacement.

FIGURE 16

TASK INTENSITY AND AI EXPOSURE IN THE EAST ASIA AND THE PACIFIC REGION.



Source: World Bank (2024).

Complementing the World Bank's findings, the Asia Foundation (2020) predicted that AI will substantially increase employee productivity but a significant number of workers in the manufacturing, transportation, and professional service sectors will likely be displaced in the ASEAN region. AI is forecast to significantly boost ASEAN's economic output, potentially adding close to USD1 trillion to the region's GDP by 2030 (Hourn, 2024). However, the Philippines is also among the ASEAN countries at the greatest risk of increased unemployment due to automation. The Philippines' Department of Trade and Industry forecast that AI could replace up to half of the 1.2 million Filipino BPO workers (Department of Trade and Industry, n.d.). Robotic process automation and advancements in technology, especially AI, pose a high risk to ASEAN countries reliant on traditional occupations and manufacturing (Asia Foundation, 2020). These advancements threaten to neutralize the Philippines' market advantages in the construction and tourism sectors and of English language proficiency and low labor costs. On a more positive note, Ng et al. (2023) stated that some work activities in the country are not anticipated to be significantly impacted by GenAI. Jobs involving people-to-people interactions and coaching, developing, and caring for others will continue to be relevant; hence, social skills related to persuasion, negotiation, instruction, and personnel management will continue to be vital for the workforce. Although AI will lead to job losses in some sectors, it will also boost productivity and change the nature of other jobs by working alongside humans.

The Philippine National AI Strategy Roadmap

The Department of Trade and Industry (2024) has drafted an update to its National AI Strategy Roadmap for the Philippines with the following objectives:

- Sustain the competitiveness of Philippine industries, both globally and regionally, with the rise of AI
- Identify key areas for investment to help in developing new processes, products, and services for enhancing productivity
- Recommend ways to foster collaboration between industry, academia, and government

- Suggest approaches to prepare the workforce for the future workplace
- Attract investments to the country and generate jobs

The roadmap has two pillars, four strategic dimensions, and seven strategic imperatives, as shown in Table 17.

TABLE 17

STRUCTURE OF THE PHILIPPINE NATIONAL AI STRATEGY ROADMAP.

Pillars	Strategic Dimensions	Strategic Imperatives
Implementation	Digitization and infrastructure	Build a robust networked environment
		Improve data access and data value extraction
	Workforce development	Transform education and nurture future AI talents
		Upskill and reskill the workforce
	Regulation	Develop an AI economy "conscience"
Innovation	Research and development	Accelerate innovation with AI
		Master and push the boundaries of AI

Source: This table is drawn from figure 7 of the Department of Trade and Industry's National Artificial Intelligence Strategy for the Philippines, shared in personal communication with a DTI representative (2 November 2024) and presented here with permission. This structure is also presented in the header image of the webpage at Department of Trade and Industry (2024).

For infrastructure, the goal is for each household to have a download speed of 1 Mbps and for critical zones such as economic zones, government offices, higher education institutions, and research development institutions to attain global average internet speeds (40 Mbps for mobile and 90 Mbps fixed broadband at the time of roadmap drafting).

To address the question of how prepared the Philippines is for AI, Cazzaniga et al. (2024) constructed an AI preparedness index. In their review of the literature, they identified four key factors that may be relevant for AI adoption, which are presented in Table 18. Each of these four factors are in turn supported by a group of indicators expected to be critical for transitioning to AI (see Annex 5, Annex Table 5.1, in Cazzaniga et al., 2024).

With an index of 0.50, the Philippines ranked joint 63 out of 174 countries (International Monetary Fund, 2024). Table 18 breaks down the Philippines' AI preparedness index by subcomponent.

TABLE 18

THE PHILIPPINES' RANKING IN THE AI PREPAREDNESS INDEX.

	Index value	Rank (1 = highest)
Overall AI preparedness index	0.50	63
Digital infrastructure	0.10	88
Innovation and economic integration	0.12	64
Human capital and labor market policies	0.15	34
Regulation and ethics	0.12	84

Note: The displayed rankings are jointly held with other countries that have the same index value.
Source: International Monetary Fund (2024).

Of the four key components of the index, the Philippines ranked the best in human capital and labor market policies. This component consists of two subcomponents: (1) education and digital skills and (2) labor market flexibility and policies.

The relatively high rank of 34 for the human capital component compared to the other components supports the often-cited advantage of the Philippines: its labor force. In IT-BPM, and particularly customer services, Philippine workers' English proficiency and customer service orientation are advantages. The latter is admittedly difficult to quantify and measure, but anecdotally, Filipino workers are skilled at empathizing with customers, which is part of the reason why they are often highly regarded as nurses in many countries.

The fact that digital infrastructure is the Philippines' lowest ranked component aligns with complaints that have long been leveled at telecommunications companies regarding poor and slow internet service. This is remedied to some extent through the establishment of IT parks and cyberparks, which are special economic zones where IT and BPO companies can base themselves to receive fiscal incentives. It is possible to install better dedicated telecommunications and digital infrastructure in a narrowly defined cyberpark or economic zone. However, if the work from home or hybrid work trend continues and IT-BPM

employees need to work at least part of the time from their homes, the overall quality of digital infrastructure will need to improve.

These findings suggest that the government should address concerns regarding the upskilling of Filipino workers so that the country's human capital can remain a strong asset. Additionally, government regulators will need to find ways to incentivize telecommunications companies to upgrade the country's digital infrastructure.

INTERVIEW RESULTS

GenAI is a relatively recent development of AI, which has been around for some time and has had many applications. Like many new technological advances, its full potential will not be realized immediately. It is impossible to foresee all possible future applications, which may only be limited by human ingenuity and creativity. One possible way to gauge its current and potential impact is to talk to experts in academia and industry to discover their views. This section summarizes and analyzes the information gathered from the interviews.

The team was able to meet with some industry association officials and companies. Efforts were made to contact officials from the Department of Trade and Industry as well as some IT-BPM companies. Unfortunately, the team did not receive a response in some cases and thus was constrained to locating statements made by the respective subjects in the media and online. Some firms and organizations that the team approached also did not respond to inquiries. Thus, the team compensated for this by searching for material, including online videos, that featured recognized authorities in the field, as discussed earlier in this report.

The team was fortunate enough to be able to speak to representatives from the IBPAP, which is the sector's primary industry association and advocacy group of IT-BPM concerns, especially in representations with the government for conducive policies for the sector. The IBPAP comprises over 400 members and six partner associations. Its current president and chief executive officer is Jack Madrid, and Dominic Ligot is its AI and tech advisor and head of research.

The IBPAP projected that revenue from the sector will likely overtake overseas Filipino worker remittances as the country's top earner in 2024 or 2025. (In a January 2025 news article by Ayeng, the IBPAP reported USD38 billion in revenue and employment of 1.82 million for 2024.) The IBPAP also

related its findings from a survey it conducted among its members: 67% of respondents were implementing AI trials and use cases. Approximately 8% of its members saw some reduction in job roles, but 13% reported an increase in roles due to AI. The IBPAP still found that employment increased by 7% in 2024 compared to 2023.

One IBPAP source pointed out that the implementation of AI is not without glitches. Anecdotally, he cited the case of one BPO that had laid off 20% of its workforce in favor of a "bot" but later had to rehire workers when the bot did not work out. Well-publicized examples of AI implementation and its accompanying issues were cited earlier in this paper, for example, the experiment by Amazon to open stores with fully automated, checkout-free payment processes. One can argue that most new technologies are accompanied by "birthing" pains as the technology is tweaked and improved. One source pointed out that it is not easy to implement automation projects and they can be subject to failure. Nevertheless, these problems may be corrected in time and less human intervention may be needed.

The IBPAP stressed that the sector deserves more attention from policymakers and should not only be viewed as a source of tax revenue. Like other sectors, IT-BPM has raised the issue of coordinating national and local government taxes and incentives, as it has encountered some conflicts at the national and local level, e.g., tax incentives. Generally, the IBPAP pointed out the need to enhance the ease of doing business in the country if the Philippines is to attract more investments. This is something that other sectors of the economy have also clamored for to improve the country's competitiveness. While the country still has a cost advantage in labor, other cost categories, such as health maintenance organization and property costs, may drive up Philippine IT-BPM costs.

IT-BPM's success may also carry the seeds of challenges for the sector. It was noted that one challenge of attracting additional foreign investors and businesses to the Philippines was "over concentration." Multinational companies naturally want to spread their risk and are wary of being overly reliant on the same location or country.

Globally, competition in the sector is heating up among countries. The IBPAP said in the interview that although the Philippines is currently in second place

(behind India), a number of "third tier" (i.e., third place) countries are closing in on the Philippines, such as Vietnam, Mexico, Poland, South Africa, and some Latin American and Eastern European countries. If these countries adopt AI and improve their productivity but the Philippines does not, the Philippines could lose its competitive edge in the long run. Of course, this is a strategic dilemma that confronts firms for any technological development.

The IBPAP recognizes that AI can enhance worker productivity and views AI as leading to job augmentation rather than job displacement. They also pointed out the distinction between jobs and tasks. A worker's job typically consists of tasks. AI may displace some (likely menial and repetitive) tasks, but the human would still be needed for others. For example, AI apps can record and generate meeting and discussion transcripts, but a human can synthesize and analyze the content. In this way, human workers' time may be freed up so that they can focus on higher value tasks.

Historically, technological advances may replace some labor, but opportunities for new types of jobs are also created. The IBPAP sees job augmentation and job transformation as being more likely than job elimination, as implementing AI can create new opportunities. Interestingly, while cybersecurity is seen as a risk resulting from the growth of AI, this increased risk also increases the demand for workers in the cybersecurity sphere, which can cause a net increase in employment.

Another possible cause of employment growth is the increased demand for services. The IBPAP estimates that only 30% of offshorable jobs globally have been offshored, so the Philippines can still vie for a share of the remaining pie. In terms of subsectors, the IBPAP noted that there is still strong demand for digital customer experience and shared services, including banking, financial services, and healthcare (Castro, 2024).

There is a labor supply problem in BPO. One interviewee estimated that 85% of job applicants are rejected. This difficulty in recruiting workers may be a factor in the high attrition and turnover rates. One interviewee likened the movement of workers from one BPO to another to a game of musical chairs. The low rate of accepted job applicants in the sector may suggest a mismatch between the skills taught in the Philippines' education system and the needs of the industry. The IBPAP pointed out the need for teachers to be taught about AI

en masse so that they can in turn prepare their students for possible IT-BPM careers. It suggested that the government implement such a program. In the absence of such, then schools may have to take the initiative.

The IBPAP pointed out that all courses should already incorporate AI topics since most if not all professions will or already use AI in the workplace. Dominic Ligot cited prompt engineering as one subject that could be incorporated into curriculums relatively easily. As the name suggests, prompt engineering refers to how users "talk" to AI applications to generate their desired output or answers. The IBPAP recognizes that it would also be helpful to find ways to attract AI professionals to partner with schools and impart their experience to students.

The IBPAP pointed out that while technical courses in "hard" skills like information technology, computer programming, and data science are useful, training in soft skills like communication and critical thinking is also important. The IBPAP met with Secretary of Education Sonny Angara and requested that English be brought back as the medium of instruction in schools. It had noticed that the quality of English had deteriorated slightly and pointed out that English remains the language of business. While English communication has traditionally been a Filipino advantage, this edge could be blunted soon.

The IBPAP also lobbied the education department to increase the number of internship or immersion hours (on-the-job training hours) for senior high school students from a minimum of 80 to 640 hours to enhance their employability. Madrid indicated that some IBPAP members were already exploring hiring high school students. For its part, the IBPAP has partnered with companies such as Google in this "mass" training of Filipino educators and students.

One sector that services IT-BPM is real estate. The research team talked to David Leechiu of Leechiu Property Consultants, a leading real estate brokerage company that also provides advice and other real estate services to corporations. David Leechiu also sits as board trustee of the IBPAP, giving him an authoritative view of the IT-BPM sector as well.

Based on Leechiu Property Consultants' estimates, IT-BPM's demand for office space increased by 13% between the first half of 2023 and the first half

of 2024 (from 227,000 m^2 to 268,000 m^2). Furthermore, 252,000 m^2 of the real estate transactions in the first half of 2024 exceeded 1,000 m^2, broken down as follows: 68% for expansion, 12% for relocation and expansion, 12% for new entrants, and 8% for relocation. The combined new entrants and expansion transactions made up 92% of the transactions, which bodes well for the sector and its employment, at least in the short run.

Specializing in digital transformation and AI, Mario Domingo is the director of the Ateneo Institute for Digital Enterprises and was appointed global chief technology officer at UBX, a subsidiary of the Aboitiz Group's UnionBank, in 2022. In his interview with the team (3 September 2024), he said that AI is something that BPOs needed to embrace yesterday. Based on his three decades of experience in the technology sector, he predicted that much replacement caused by automation will happen within the next five years. While large language models or GenAI can be intimidating, they are still limited by the databases they use. He explained that GenAI does not have the capability to think as human but that it works by detecting the "distance" between words. It synthesizes patterns based on how many times and how frequently words were used together to form sentences or provide information. Thereby, GenAI works based on logic rather than understanding a concept, event, or action. Nonetheless, he agreed that GenAI is better for answering general questions than a human.

GenAI is trained on large datasets stored in databases or data centers. The capability of GenAI is limited by the dataset it uses. The more data it can access and the more coverage the GenAI platform has, the more adept and precise it can be at providing information. Therefore, when it comes to logic, GenAI has prowess in providing information or answering queries, while genuine human touch or emotion are hard for it to replicate. As an example, Mario Domingo mentioned the distrust some seem to harbor toward chatbots. Although chatbots can provide information and answer many general and frequently asked questions, they fail to address the urgency and emotion of clients or customers, especially if the problem is complex and outside of the known database of the chatbot. As well as the human touch or emotion limitations of AI, he spoke of the importance of ethics in AI. AI has various intellectual property implications, for example, in the case of digital assets created using AI. The ethical or moral aspects of AI use should be considered, monitored, and regulated.

Mario Domingo projected that the rate of replacement of menial tasks or jobs would depend on the speed of quantum computing advancement. The more affordable microchips or processors become, the faster certain tasks or jobs may be automated. He highlighted that repetitive and menial tasks will be easily replaced by AI. Thus, this technology challenges human workers to develop and move up the value chain. Nonetheless, he also believes that many tasks will be empowered or augmented by GenAI and AI and that equipping workers with AI tools will boost efficiency. Some work opportunities related to AI he mentioned were prompt engineering, cybersecurity, and AI data center engineering.

CONCLUSIONS AND RECOMMENDATIONS

AI had been around long before ChatGPT burst on the scene in 2022, but the latter's arrival triggered a spike in awareness and renewed discussion on whether AI would benefit the economy or take away jobs. For the Philippines, whose economy has come to rely significantly on the IT-BPM sector, the concern is whether employment and revenue from the sector will suffer.

Based on our survey of the literature, expert interviews, and key insight assessment, AI can be both a boon and bane. AI can displace human workers in tasks that are relatively simple, repetitive, and menial, but it can also augment human workers' performance of many tasks and thereby improve productivity. The developments of automation and augmentation also signal potential new types of work or occupations. Thus, to determine whether a job will be displaced by AI one must assess whether AI can substitute human labor in that role or complement it. Each job is different, and the answer will vary. Currently, the consensus seems to be that jobs requiring a degree of interaction with the physical world or involving higher levels of decision-making and discretion will be harder to replace entirely with AI.

Most jobs can be broken down into tasks, some of which may be simple and repetitive (e.g., looking up a customer's records). If these tasks can be done by AI, then the worker can be freed up to do more complex and likely higher value tasks, making the worker more productive. Thus, even when AI substitutes human labor in certain tasks, it may not displace the human from the job overall.

Brynjolfsson et al. (2023) found that for call center agents, some AI applications helped new agents learn faster and reach the levels of the more seasoned agents, enabling them to be more productive and handle more customer calls in a given time. However, the veterans were still among the top performers. This is an

intriguing result that suggests that in some environments, the best human workers may still be able to hold their own against AI, as when chess world champion Garry Kasparov was still able to win some games against the IBM supercomputer Deep Blue.

It seems likely that AI will augment and become a tool for most jobs that do not primarily consist of repetitive and simple tasks. Many jobs will likely be redesigned or reconfigured as AI takes over the more menial tasks. Thus, workers must be skilled enough to use AI and take on new and possibly more complex work. The IBPAP and the IT-BPM sector has often admonished workers to upskill and reskill so that they are not left behind.

This scenario was observed and predicted in Gmyrek et al.'s study of the potential effects of GenAI on employment (2023). For a developing country with relatively low income, the potential impacts of automation and augmentation are both minimal compared to advanced economies. Nonetheless, clerical and administrative jobs with repetitive and simple tasks are expected to decline faster than other types of jobs. Extrapolating the global estimated impact on employment in the context of the Philippines, approximately 190,000 jobs may be replaced by automation while about 5 million jobs may be augmented by AI.[1]

Like most new technologies, AI can spawn new job opportunities or expand existing jobs. Demand for prompt engineers could grow with the increased need to guide GenAI systems to search more efficiently and generate more useful output. Large language models and machine learning need to be fed with data and information to be trained properly; thus, there would also be increased demand for professionals who can train AI systems. The need for cybersecurity is also expected to rise as cybercriminals may use AI to pursue cybercrime. Cybersecurity professionals will have to be adept at using AI to counter attacks by cybercriminals. Another new job opportunity arising from the increase in data utilization and application is big data analyst. The existence of big data analytics bachelor's and master's degree programs indicates the emergence of this new career path catering to new market needs. AI has partly driven the need for this occupation since it uses big data mechanisms to provide more comprehensive information.

[1] Augmentation is estimated to potentially affect 10.4% of employment in low-income countries globally, while automation is estimated to affect 0.4%. The authors' extrapolation for the Philippines is based on 48.87 million employed individuals in the Philippines as of May 2024 (PSA, 2024b).

This analysis has not touched much on the ethical dimensions of AI, but this is an area that is still evolving. AI ethicists will also be needed to monitor and ensure compliance with guidelines on the ethical use of AI. Brynjolfsson et al. (2023) noted that GenAI tools and large language models like ChatGPT are trained on large amounts of data. In the context of customer service applications, the AI tools might be trained at least in part by "observing" how experienced human agents handle client calls. They raised the question of whether the humans whom AI tools "learn from" should receive additional compensation. A related example of an ethical situation that needs to be addressed is that a human may "train" an AI tool by allowing it to observe their work only to be displaced by the AI tool.

Since the key advantage of the Philippine IT-BPM sector lies in its workforce, the Philippine workforce must be upskilled so that it can adapt to the use of AI, become more competitive, and be prepared for the new occupations generated by AI's development. It is critical, therefore, that education authorities raise the quality of our education system. The government has recognized the deficiencies in the Philippine education sector and is taking steps to repair it (Congressional Policy and Budget Research Department, 2024). For example, it has been a long-standing concern that the Philippine basic education sector lags behind other countries in standardized test results (Chi, 2023). The adoption of the K-12 program was one measure taken to improve the Philippine basic education system and address this. However, Philippine higher/postsecondary educational institutions still generally lag behind their counterparts in international rankings, even compared to neighboring countries. The Philippines also needs to catch up in terms of research output, especially in the areas of science and math.

The deficiencies in the country's educational system are probably a factor in the high rejection rate of job applicants in IT-BPM (Bilyonaryo, 2023). Thus, many IT-BPM firms invest resources into training their workers. This is true in most industries, but the high turnover of employees accentuates the need in the IT-BPM sector. It is, therefore, a welcome development that the sector has been coordinating and collaborating with the government to upgrade the education and training of the Philippine population.

At the International IT-BPM Summit 2024, the IBPAP revealed the results of a survey conducted in the same year that showed 67% of IT-BPM operations

were already using AI for customer support, data input and processing, sales and marketing, and quality assurance (Crismundo, 2024). Nevertheless, 13% reported an increase in headcount while only 8% reduced their workforce. Thus, for now, AI seems to be a net positive when it comes to employment.

To conclude on the near-term future of AI in the IT-BPM sector in the Philippines, AI will augment the workforce, making workers more productive. This will of course mean that firms may not need as many workers to produce the same quantity of product or services, potentially resulting in some job displacement. However, if the size of the total market increases or if the Philippines increases its market share, then there could still be a net increase in employment.

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LIST OF ABBREVIATIONS

AFF	Agriculture, forestry, and fishing
AI	Artificial intelligence
AIDA	Artificial Intelligence Development Authority
ASEAN	Association of Southeast Asian Nations
ASPBI	Annual Survey of Philippine Business and Industry
BPO	Business process outsourcing
GDP	Gross domestic product
GenAI	Generative artificial intelligence
IBPAP	Information Technology and Business Process Association of the Philippines
ICT	Information and communications technology
ILO	International Labour Organization
IT-BPM	Information technology and business process management
Mbps	Megabits per second
NCR	National Capital Region
PDP	Philippine Development Plan
PHP	Philippine Pesos
PSA	Philippine Statistics Authority
PSF-AAI	The Philippine Skills Framework for Analytics and Artificial Intelligence
PSIC	Philippine Standard Industrial Classification
TESDA	Technical Education and Skills Development Authority
US	United States
USD	US dollars

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