

**Reorienting Human Capital Development for the Philippines:
Creating and Capturing In-Country R&D Value through the Global Value Chains
and Facilitating the Country's Entry into the Fourth Industrial Revolution**

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A nation's human capital development project does not exist in a vacuum, but is embedded in and is an integral part of a larger economic paradigm.

In the early 1900's before the Second World War, and for about two decades thereafter, the operative human capital development paradigm for science and technology (S&T) professionals in the Philippines was training them for employment mainly by the Philippine government, local universities and the domestic private sector.

With the country's burgeoning population growing more than double from 18.6 million in 1950 to 47.4 million in 1980, however, the country's hiring capacity for S&T professionals started lagging behind the country's rate of production of S&T graduates. Thus, began the long-term, steady and significant out-migration of the country's S&T professionals to seek employment elsewhere around the globe.

Outward-Looking Paradigm

The Philippines' reigning outward-looking paradigm for human capital development found its most unequivocal and coherent articulation arguably during the administration of President Gloria Macapagal-Arroyo from 2001 to 2010, during which the country's population continued its exponential surge from 78.0 million to 94.0 million. As a *de facto* national policy, Filipino workers, including S&T professionals, were trained with a view to facilitating sending a significant portion of them out of the country for gainful employment elsewhere around the globe. Indeed, President Macapagal-Arroyo often referred to Filipino migrant workers as the country's "greatest export."

This national project has since been bearing lucrative economic fruit for the country in the form of foreign remittances. Indeed, foreign remittance flow to the Philippines in 2019 reached a record U.S.\$33.5 billion, accounting for approximately 10 percent of the country's Gross Domestic Product (GDP), and conferring fourth rank to the Philippines among the world's top remittance-recipient countries, behind only India (U.S.\$79 billion), China (U.S.\$67 billion) and Mexico (U.S.\$36 billion).

Such an outward-looking paradigm for human capital development, however, resulted in costly unintended consequences. On the social side, the resulting thousands of cases of family separations have caused enormous social dislocations and disruptions among Filipino families, with the brunt of the impact experienced by children who have been left behind by their parents in the Philippines.

On the economic side, such outward-looking paradigm arguably contributed to the demotivation of and inaction by the Philippine government in proactively incentivizing global companies that have already been conducting their manufacturing operations in the country to also perform at least part of their R&D operations in the country as is the typical, and largely successful, practice by the Philippines' many Asian neighbors. Such inaction translated into huge opportunity costs and missed opportunity for the Philippines in terms of creating S&T jobs in the country, further boosting the country's foreign direct investments, expanding its high-value commodity exports, and building a thriving S&T industrial innovation ecosystem in the Philippines. At the very least, the economic value to the country of the foregoing would have easily far exceeded and dwarfed the record value of foreign remittance flow to the Philippines posted in 2019.

Such missed opportunity is perhaps most profoundly exemplified through the country's semiconductor and electronics manufacturing industry, which has been in operation in the Philippines now since the early 1970's. Composed of hundreds of global (e.g., Texas Instruments, Toshiba, etc.) and a few local companies, the industry employs 3.2 million direct and indirect workers and accounts for about U.S.\$37.6 billion of commodity exports, representing 55.7 percent of the country's total exports in 2019. Quite notably, the semiconductor and electronics manufacturing industry serves as the biggest economic growth driver in the Philippines. After 50 years of operation in the country, however, the industry remains predominantly focused on patently basic manufacturing services, including assembly and testing, and has not at all developed and progressed toward engaging in value creation (innovation) through R&D and design. Indeed, of the hundreds of companies that make up the industry, less than five companies are currently conducting some form of in-country R&D.

In this respect, it becomes plainly clear that, unlike most of its Asian neighbors, the Philippines has overlooked fully taking advantage of the prodigious benefits on offer by globalization to emerging economies like itself.

Inward-&-Outward-Looking Paradigm

Without question, the human capital development project of the Philippines needs rebalancing to accommodate not only an outward-looking orientation, but also an inward-looking one. Continuing to neglect the latter would simply be foolhardy as it would squander substantial economic opportunities on offer by globalization to, and which are within practical reach by, the country.

Realizing an inward-looking paradigm for human capital development for the Philippines, however, necessitates a whole-of-government strategy with deepened cooperation among the country's pertinent government agencies, particularly, the Department of Trade and Industry (DTI), the Philippine Board of Investments (BOI), the Department of Science and Technology (DOST), the Philippine Economic Zone Authority (PEZA), and the Commission on Higher Education (CHED), among others.

Some misconstrue that the business of producing S&T graduates and creating S&T industry jobs in the Philippines falls into a “chicken-or-egg” quandary. What the cases among the Philippines’ Asian neighbors amply demonstrate, however, is that both can be duly planned, balanced and harmonized in close coordination and cooperation with partner global companies already operating in the said countries. In the case of the global companies predominantly constituting the semiconductor and electronics manufacturing industry in the Philippines, for instance, the BOI, DTI and PEZA, which in the first place have given such global companies the license to operate within the country, could negotiate with such companies to bring in R&D and design operations to the Philippines in exchange for some added incentives. In return, the Philippines would supply them with the needed S&T professionals, whose training and timeline for training would be planned through close partnerships between the companies and the Philippine government through its research universities, DOST and CHED. Such a win-win partnership is very much attainable as, again, many of the Philippines Asian neighbors have already demonstrated. It would be in the Philippines’ best interests to send study delegations to Vietnam, Thailand, Malaysia, Indonesia, Singapore and Taiwan to learn of these countries’ approaches and strategies in effecting such partnerships with global companies and the concomitant human capital development programs that they have designed and have been implementing.

Inward-Looking S&T Human Capital Development Program

So how might the Philippines’ human capital development program in S&T look like when partner global companies operating in the country commenced regularly hiring S&T graduates? While there would be multitudinous aspects to such a program that would need addressing, the following would certainly be chief among them, and all would help facilitate the country’s proactive participation in the Fourth Industrial Revolution:

- Reworking and updating baccalaureate and graduate S&T curricula with direct input from the global industry
- Accreditation of Philippine S&T programs to ensure their being on par with international counterparts
- Student industry internships formulated and conducted in partnership with in-country global companies
- Senior capstone design projects or thesis projects formulated and conducted in partnership with in-country global companies
- Graduate research addressing cutting-edge technical problems formulated and conducted in partnership with in-country global companies

The foregoing represents what would be an upward spiral of proactive linking, cooperation and partnerships between the Philippine academe and the Philippines' in-country global companies. A rebalanced human capital development project for the Philippines that accommodates not only an outward-looking orientation, but also an inward-looking one, would strategically reposition the country to fully take advantage of the vast economic opportunities on offer by the global value chains to emerging economies like the Philippines through creating and capturing in-country R&D value which, in turn, would also significantly facilitate the country's entry into the Fourth Industrial Revolution. This move, however, certainly would require a whole-of-government strategy with deepened and sustained cooperation and coordination among the Philippines' pertinent government agencies together with the country's research universities.

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