



Science and Technology Competitiveness Rankings of the Philippines (2012 – 2018)



Department of Science and Technology
November 2017

TABLE OF CONTENTS

	<u>Page</u>
World Economic Forum's Global Competitiveness Report Indicators	
Trend in Philippine Rankings in Global Competitiveness of Factors, 2011-2017	2
DOST contributes to Technological Readiness (9 th Pillar), Business Sophistication (11 th Pillar) and Innovation (12 th Pillar)	3
Global Competitiveness Ranking of the Philippines	
❖ Technological Readiness Pillar	5
❖ Business Sophistication Pillar	8
❖ Innovation Pillar	11
Twelve (12) Pillars	14
Global Competitiveness Index Ranking of the Philippines versus ASEAN countries, 2010-2017	16
International Institute for Management Development's World Competitiveness Yearbook Indicators	
Four (4) Competitiveness Factors	29
Trend in Philippine Rankings in the World Competitiveness Factors, 2011-2016	30
World Competitiveness Ranking of the Philippines: Technological Infrastructure Factors, 2011-2016	31
World Competitiveness Ranking of the Philippines: Scientific Infrastructure Factors, 2011-2016	33

TABLE OF CONTENTS

World Economic Forum's Global Competitiveness Report Indicators

Trend in Philippine Rankings in Global Competitiveness of Factors, 2011-2017

DOST contributes to Technological Readiness (9th Pillar), Business

Sophistication (11th Pillar) and Innovation (12th Pillar)

Global Competitiveness Ranking of the Philippines

- ❖ **Technological Readiness Pillar**
- ❖ **Business Sophistication Pillar**
- ❖ **Innovation Pillar**

Twelve (12) Pillars

Global Competitiveness Index Ranking of the Philippines versus ASEAN countries, 2010-2017

International Institute for Management Development's World Competitiveness Yearbook Indicators

Four (4) Competitiveness Factors

Trend in Philippine Rankings in the World Competitiveness Factors, 2011-2016

World Competitiveness Ranking of the Philippines: Technological

Infrastructure Factors, 2011-2016

World Competitiveness Ranking of the Philippines: Scientific

Infrastructure Factors, 2011-2016

World Economic Forum's Global Competitiveness Report Indicators



Trend in Philippine Rankings in Global Competitiveness Factors, 2012-2018

Factor	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Global Competitiveness Index Rank	65	59	52	47	57	56
1. Basic requirements	80	78	66	66	65	67
(a) Institutions	94	79	67	77	91	94
(b) Infrastructure	98	96	91	90	95	97
(c) Macroeconomic Environment	36	40	26	24	20	22
(d) Health & primary education	98	96	92	86	81	82
2. Efficiency enhancers	61	58	58	51	58	61
(a) Higher education & training	64	67	64	63	58	55
(b) Goods Market efficiency	86	82	70	80	99	103
(c) Labor Market efficiency	103	100	91	82	86	84
(d) Financial Market Development	58	48	49	48	48	52
(d) Technological Readiness	79	77	69	68	83	83
(e) Market size	35	33	35	30	31	27
3. Innovation factors	64	58	48	47	53	61
(a) Business sophistication	49	49	46	42	52	58
(b) Innovation	94	69	52	48	62	65

Source:

Global Competitiveness Report, World Economic Forum, 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018

**DOST contributes to:
Technological Readiness (9th Pillar),
Business Sophistication (11th Pillar)
and Innovation (12th Pillar)**

- Three of the 12 pillars relate to S&T, namely: Technological Readiness (9th pillar) under Efficiency Enhancers; the Business Sophistication (11th pillar) and Innovation (12th pillar) under Innovation and Sophistication Factors.
- The **Technological Readiness** pillar is composed of 7 indicators, three of which are opinion survey questions (on availability of latest technologies, firm-level technology absorption, and FDI and technology transfer) among respondent CEOs whose perceptions determine the country's ranking.
- The other four indicators are on actual data on ICT (number of internet users, number of fixed broadband subscribers, size of internet bandwidth, and number of mobile broadband subscribers) that are sourced from the "World Telecommunication ICT Indicators" being collated and published annually by the International Telecommunication Union (ITU).
- The **Business Sophistication** pillar is composed of 9 indicators that are all based on opinion survey questions (on local supplier quantity, local supplier quality, state of cluster development, nature of competitive advantage, value chain breadth, control of international distribution, production process sophistication, extent of marketing, and willingness to delegate authority) among respondent CEOs whose perceptions determine the country's ranking.
- The **Innovation** pillar is composed of 7 indicators, all of which, except one, are based on perceptions of respondent CEOs when they rank the country on opinion survey questions (on capacity for innovation, quality of scientific research institutions, company spending on R&D, university-industry collaboration, government procurement of advanced technology products, and availability of scientists and engineers).

TECHNOLOGICAL READINESS PILLAR, 2012-2018

Indicator	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Technological Readiness	79/144*	77/148*	69/144*	68/140*	83/138*	83/137*

1) Availability of latest technologies	56/144 (5.2)	47/148 (5.3)	58/144 (5.1)	78/140 (4.6)	77/138 (4.5)	73/137 (4.6)
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- ❖ Executive Opinion Survey with question asked: *“To what extent are the latest technologies available in your country?”*
- ❖ Experts ranked 1 to 7 according to their perception on availability of technology giving a score of 1 as lowest to 7 as widely available

2) Firm-level technology absorption	46/144 (5.2)	40/148 (5.2)	41/144 (5.1)	40/140 (5.1)	54/138 (4.7)	51/137 (4.7)
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- ❖ Executive Opinion Survey with question asked: *“To what extent do businesses in your country adopt new technology?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or firm not absorbing technology to 7 as highest or aggressively absorbing technology

3) FDI and technology transfer	40/144 (5.0)	42/148 (4.9)	31/144 (5.0)	42/140 (4.8)	62/138 (4.5)	63/137 (4.5)
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- ❖ Executive Opinion Survey with question asked: *“To what extent does foreign direct investment (FDI) bring new technology into your country?”* (1–not at all; 7–to a great extent, FDI is a key source of new technology)
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or no new technology to 7 as highest or a great extent of new technology

* Philippine rank over the number of countries

Source: Global Competitiveness Report, World Economic Forum, 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018

TECHNOLOGICAL READINESS PILLAR, 2012-2018

Indicator	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Technological Readiness	79/144*	77/148*	69/144*	68/140*	83/138*	83/137*

4) Internet Users	90/144 (29.0)	87/148 (36.2)	91/144 (37.0)	89/140 (39.7)	92/138 (40.7)	74/137 (55.5)
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❖ Data is about percentage of individuals using the internet (*Internet user refers to people using the internet from any device including mobile phones in the last 12 months*) National data are sourced from the International Telecommunication Union (ITU), World Bank Telecommunication / ICT Indicators

5) Broadband Internet Subscriptions	91/144 (1.9)	97/148 (2.2)	93/144 (2.6)	37/140 (23.2)	92/138 (3.4)	87/137 (5.5)
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❖ Data is about the number of fixed broadband Internet subscriptions per 100 population (*This refers to total fixed (wired) broadband Internet subscriptions, that is, subscriptions to high-speed access to the public internet – a TCP/IP connection – at downstream speeds equal to or greater than 256 kb/s.*) National data are sourced from the International Telecommunication Union (ITU), World Bank Telecommunication / ICT Indicators

6) Internet bandwidth	75/144 (12.4)	85/148 (14.3)	46/144 (57.6)	76/140 (27.7)	72/138 (37.4)	78/137 (43.4)
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❖ Data is about the International Internet bandwidth (kb/s) per internet user (*This refers to the sum of capacity of all internet exchanges offering international bandwidth measured in kilobits per second (kb/s)*) National data are sourced from the International Telecommunication Union (ITU), World Bank Telecommunication / ICT Indicators

* Philippine rank over the number of countries

Source: Global Competitiveness Report, World Economic Forum, 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018

TECHNOLOGICAL READINESS PILLAR, 2012-2018

Indicator	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Technological Readiness	79/144*	77/148*	69/144*	68/140*	83/138*	83/137*
7) Mobile broadband subscriptions per 100 population	93/144 (3.4)	104/148 (3.8)	79/144 (20.3)	92/140 (28.0)	80/138 (41.6)	89/137 (46.3)

- ❖ Data is about mobile broadband subscriptions per 100 population *(This refers to active SIM cards or, on networks, connections accessing the Internet at consistent broadband speeds of over 512 kb/s, including cellular technologies; it also includes connections being used in any type of device able to access mobile broadband networks, including smartphones, USB modems, mobile hotspots and other mobile-broadband connected devices.)* National data are sourced from the International Telecommunication Union (ITU), World Bank Telecommunication / ICT Indicators

* Philippine rank over the number of countries

Source: Global Competitiveness Report, World Economic Forum, 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018

BUSINESS SOPHISTICATION PILLAR, 2012-2018

Indicator	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Business Sophistication	49/144*	49/148*	46/144*	42/140*	52/138*	58/137*

1) Local supplier quantity	49/144 (4.9)	54/148 (4.8)	69/144 (4.6)	64/140 (4.6)	60/138 (4.6)	49/137 (4.7)
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- ❖ Executive Opinion Survey with question asked: *“In your country, how numerous are local suppliers?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or non-existent local supplier and 7 as highest as extremely numerous suppliers

2) Local supplier quality	68/144 (4.5)	68/148 (4.5)	65/144 (4.4)	64/140 (4.3)	74/138 (4.2)	73/137 (4.3)
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- ❖ Executive Opinion Survey with question asked: *“In your country, how would you assess the quality of local suppliers?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or extremely poor quality of local supplier and 7 as highest or extremely high quality of local suppliers

3) State of cluster development	38/144 (4.1)	55/148 (4.0)	51/144 (4.0)	45/140 (4.0)	66/138 (3.7)	62/137 (3.8)
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- ❖ Executive Opinion Survey with question asked: *“In your country, how widespread are well-developed and deep clusters (geographic concentration of firms, suppliers, producers of related products and services, and specialized institutions in a particular field)?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or non-existent of well-developed and deep clusters and 7 as highest or widespread in many fields

* Philippine rank over the number of countries

BUSINESS SOPHISTICATION PILLAR, 2012-2018

Indicator	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Business Sophistication	49/144*	49/148*	46/144*	42/140*	52/138*	58/137*

4) Nature of competitive advantage	58/144 (3.6)	67/148 (3.5)	77/144 (3.4)	85/140 (3.3)	83/138 (3.2)	94/137 (3.1)
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- ❖ Executive Opinion Survey with question asked: *“What is the competitive advantage of your country’s companies in international markets based upon?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or with low-cost labor or natural resources and 7 as highest or with unique products and processes

5) Value chain breadth	66/144 (3.6)	60/148 (3.8)	44/144 (4.1)	39/140 (4.2)	49/138 (4.1)	53/137 (4.0)
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- ❖ Executive Opinion Survey with question asked: *“In your country, do companies have a narrow or broad presence in the value chain?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or have companies w/ narrow, primarily involved in individual steps of the value chain [e.g. resource extraction or production] and 7 as highest or have companies w/ broad, present across the entire value chain [e.g. including production and marketing, distribution, design, etc.]

6) Control of international distribution	54/144 (4.2)	41/148 (4.3)	43/144 (4.4)	44/140 (4.1)	52/138 (3.9)	60/137 (3.8)
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- ❖ Executive Opinion Survey with question asked: *“To what extent are international distribution and marketing from your country owned and controlled by domestic companies?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or not at all – they take place through foreign companies and 7 as highest or to a great extent- they are primarily owned and controlled by domestic companies

* Philippine rank over the number of countries

Source: Global Competitiveness Report, World Economic Forum, 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018

BUSINESS SOPHISTICATION PILLAR, 2012-2018

Indicator	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Business Sophistication	49/144*	49/148*	46/144*	42/140*	52/138*	58/137*

7) Production process sophistication	64/144 (3.8)	57/148 (4.0)	44/144 (4.3)	50/140 (4.1)	67/138 (3.8)	80/137 (3.6)
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- ❖ Executive Opinion Survey with question asked: *“In your country, how sophisticated are production processes?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or not at all – labor intensive and 7 as highest or highly technology and knowledge intensive

8) Extent of marketing	41/144 (4.5)	41/148 (4.6)	41/148 (4.7)	31/140 (4.8)	32/138 (4.9)	36/137 (4.8)
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- ❖ Executive Opinion Survey with question asked: *“In your country, to what extent do companies use sophisticated marketing tools and techniques?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or not at all use sophisticated marketing tools and techniques and 7 as highest or to a great extent use sophisticated tools and techniques

9) Willingness to delegate authority	27/144 (4.5)	26/148 (4.6)	24/148 (4.7)	23/140 (4.7)	23/138 (4.7)	44/137 (4.6)
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- ❖ Executive Opinion Survey with question asked: *“In your country, how do you assess the willingness to delegate authority to subordinates?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or not willing at all (senior management takes all important decisions) and 7 as highest or very willing (authority is most delegated to business unit heads & other lower level managers)

* Philippine rank over the number of countries

Source: Global Competitiveness Report, World Economic Forum, 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018

INNOVATION PILLAR, 2012-2018

Indicator	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Innovation	94/144*	69/148*	52/144*	48/140*	62/138*	65/137*

1) Capacity for Innovation	86/144 (2.9)	48/148 (3.8)	30/144 (4.5)	33/140 (4.6)	41/138 (4.4)	45/137 (4.5)
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- ❖ Executive Opinion Survey with question asked: *“In your country, to what extent do companies have the capacity to innovate?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or not all and 7 as the highest or to a great extent have the capacity to innovate

2) Quality of scientific research institutions	102/144 (3.2)	91/148 (3.4)	75/144 (3.6)	69/140 (3.7)	72/138 (3.8)	75/137 (3.7)
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- ❖ Executive Opinion Survey with question asked: *“In your country, how would you assess the quality of scientific research institutions?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or extremely poor and 7 as highest or extremely good)

3) Company spending on R&D	58/144 (3.2)	51/148 (3.4)	42/144 (3.5)	36/140 (3.8)	44/138 (3.7)	51/137 (3.5)
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- ❖ Executive Opinion Survey with question asked: *“In your country, to what extent do companies spend on R&D?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or do not spend on R&D and 7 as highest or spend heavily on R&D

* Philippine rank over the number of countries

Source: Global Competitiveness Report, World Economic Forum, 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018

INNOVATION PILLAR, 2012-2018

Indicator	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Innovation	94/144*	69/148*	52/144*	48/140*	62/138*	65/137*
4) University-industry collaboration	79/144 (3.5)	69/148 (3.6)	55/144 (3.8)	55/140 (3.8)	61/138 (3.5)	59/137 (3.5)

- ❖ Executive Opinion Survey with question asked: *“In your country, to what extent do business and universities collaborate on R&D?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or do not collaborate at all and 7 as highest or collaborate extensively

5) Government procurement of advanced technology products	107/144 (3.1)	85/148 (3.4)	53/144 (3.7)	59/140 (3.5)	74/138 (3.1)	91/137 (3.0)
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- ❖ Executive Opinion Survey with question asked: *“In your country, to what extent do government purchasing decisions foster innovation?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or no, not at all and 7 as highest or yes, to a great extent

6) Availability of scientists and engineers	91/144 (3.7)	87/148 (3.8)	71/144 (4.0)	67/140 (4.0)	78/138 (3.8)	74/137 (3.8)
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- ❖ Executive Opinion Survey with question asked: *“In your country, to what extent are scientists and engineers available?”*
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest or not at all and 7 as highest or widely available

* Philippine rank over the number of countries

Source: Global Competitiveness Report, World Economic Forum, 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018

INNOVATION PILLAR, 2012-2018

Indicator	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Innovation	94/144*	69/148*	48/144*	48/140*	62/138*	65/137*

7) PCT applications per million population	83/144 (0.3)	84/148 (0.3)	86/144 (0.3)	85/140 (0.3)	86/138 (0.3)	83/137 (0.4)
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❖ Data is about the number of PCT applications per million population (Sourced from WIPO and USPTO)

* Philippine rank over the number of countries

** Utility patents per million population

Source: Global Competitiveness Report, World Economic Forum, 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018

World Economic Forum's Global Competitiveness Ranking

The WEF's Global Competitiveness Index is measured based on the following 12 pillars organized into three subindexes, each critical to a particular stage of development:

A. Basic requirements

1. Institutions – is the first pillar determined by the legal and administrative framework within which individuals, firms, and governments interact to generate wealth.
2. Infrastructure – is the second pillar critical for ensuring the effective functioning of the economy, as it is an important factor determining the location of economic activity and the kinds of activities or sectors that can develop in a particular instance.
3. Macroeconomic environment – is the third pillar important for business and, therefore, is important for the overall competitiveness of a country.
4. Health and primary education – is the fourth pillar vital to a country's competitiveness and productivity. This pillar takes into account the quantity and quality of the basic education received by the population, which is increasingly important in today's economy. Basic education increases the efficiency of each individual worker.

B. Efficiency enhancers

5. Higher Education and Training – is the fifth pillar which is crucial for economies that want to move up the value chain beyond simple production processes and products.



6. Goods Market Efficiency – is the sixth pillar in which countries with efficient goods markets are well positioned to produce the right mix of products and services given their particular supply-and-demand conditions.
7. Labor Market Efficiency – is the seventh pillar which is critical for ensuring that workers are allocated to their most efficient use in the economy and provided with incentives to give their best effort in their jobs.
8. Financial Market Development – is the eight pillar in which an efficient financial sector allocates the resources saved by a nation's citizens.
9. Technological Readiness – is the ninth pillar which measures the agility with which an economy adopts existing technologies to enhance the productivity of its industries, with specific emphasis on its capacity to fully leverage information and communication technologies (ICT) in daily activities and production processes for increased efficiency and competitiveness.
10. Market size – is the tenth pillar which affects productivity since large markets allow firms to exploit economies of scale.

C. Innovation and Sophistication factors

11. Business Sophistication – is the eleventh pillar which is conducive to higher efficiency in the production of goods and services. It concerns the quality of a country's overall business networks and individual firms' operations and strategies.
12. Innovation – is the final pillar which is important for economies as they approach the frontiers of knowledge and the possibility of integrating and adapting exogenous technologies tends to disappear.



Global Competitiveness Index Ranking of the PHILIPPINES versus ASEAN Countries (2011-2018)

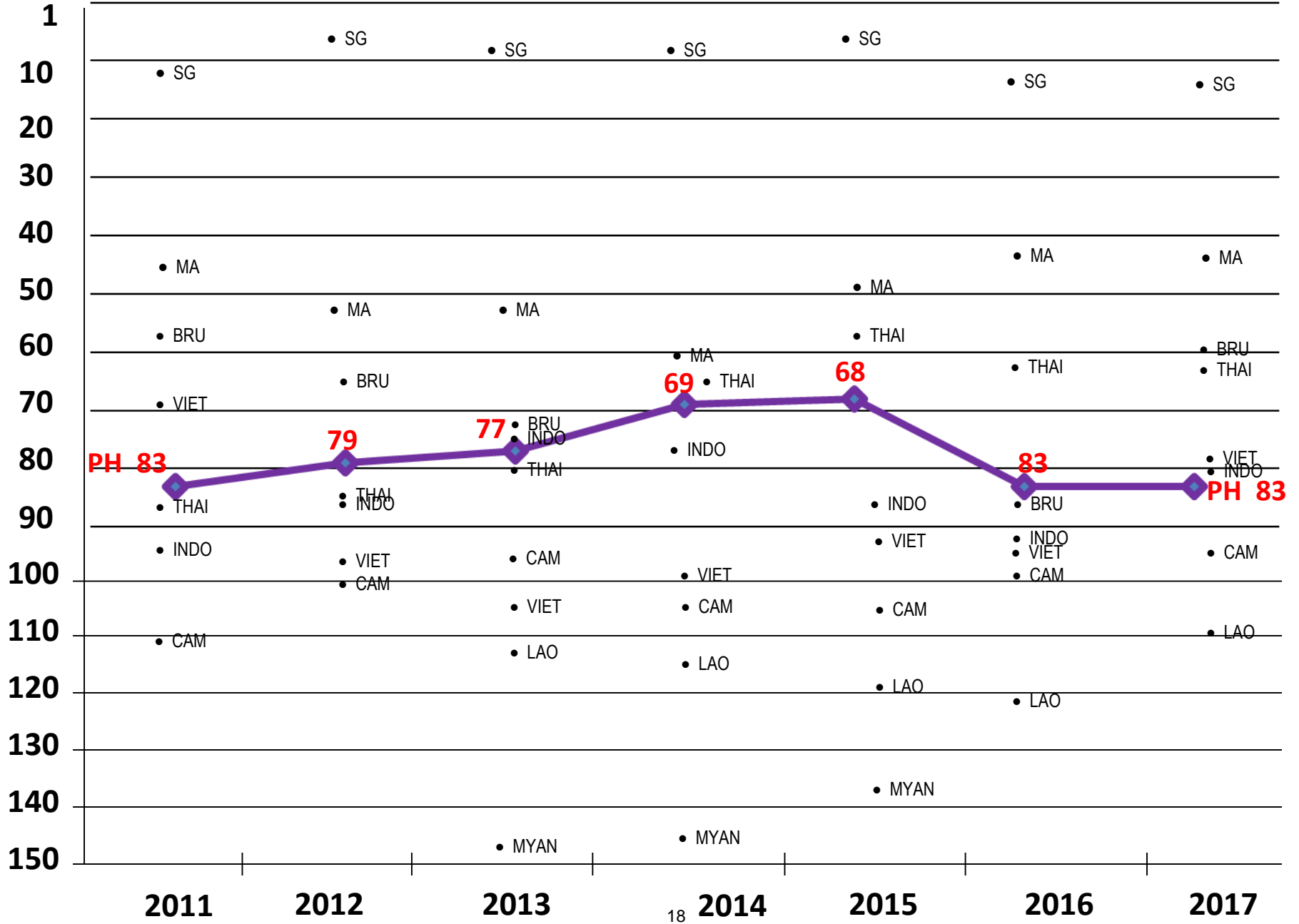


METHODOLOGY

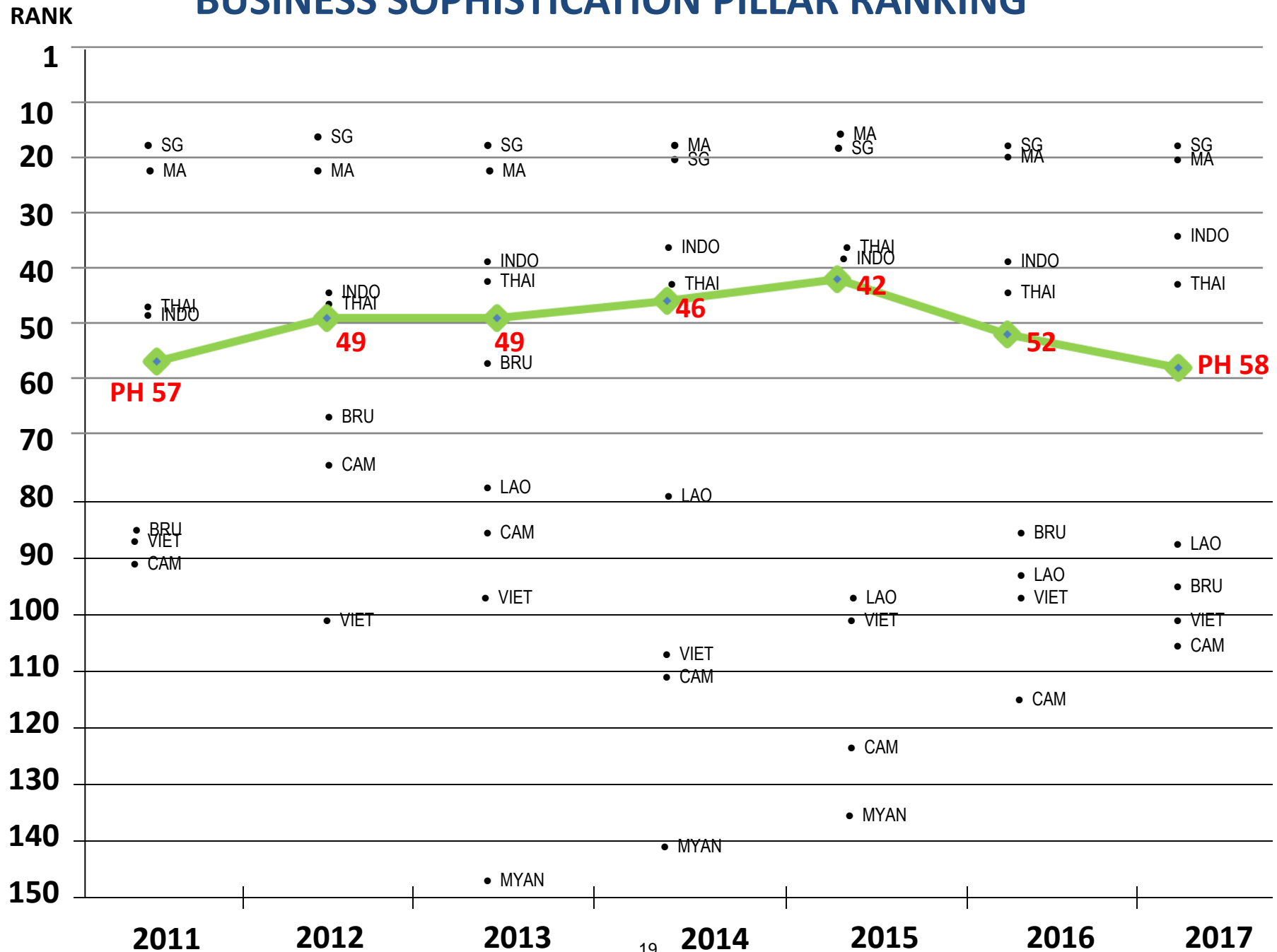
- ❖ An Executive Opinion Survey was conducted yearly to complement the statistics being used from international, national and regional sources. Whereas the Hard Data shows how competitiveness is measured over a specific period of time, the Survey Data measures competitiveness as it is perceived.
- ❖ The Executive Opinion Survey is sent to executives in top and middle management in all of the economies.
- ❖ The survey responses reflect present and future perceptions of competitiveness by business executives who are dealing with international business situations.
- ❖ Experts ranked the country from 1 to 7 with 1 as lowest and 7 as highest

TECHNOLOGICAL READINESS PILLAR RANKING

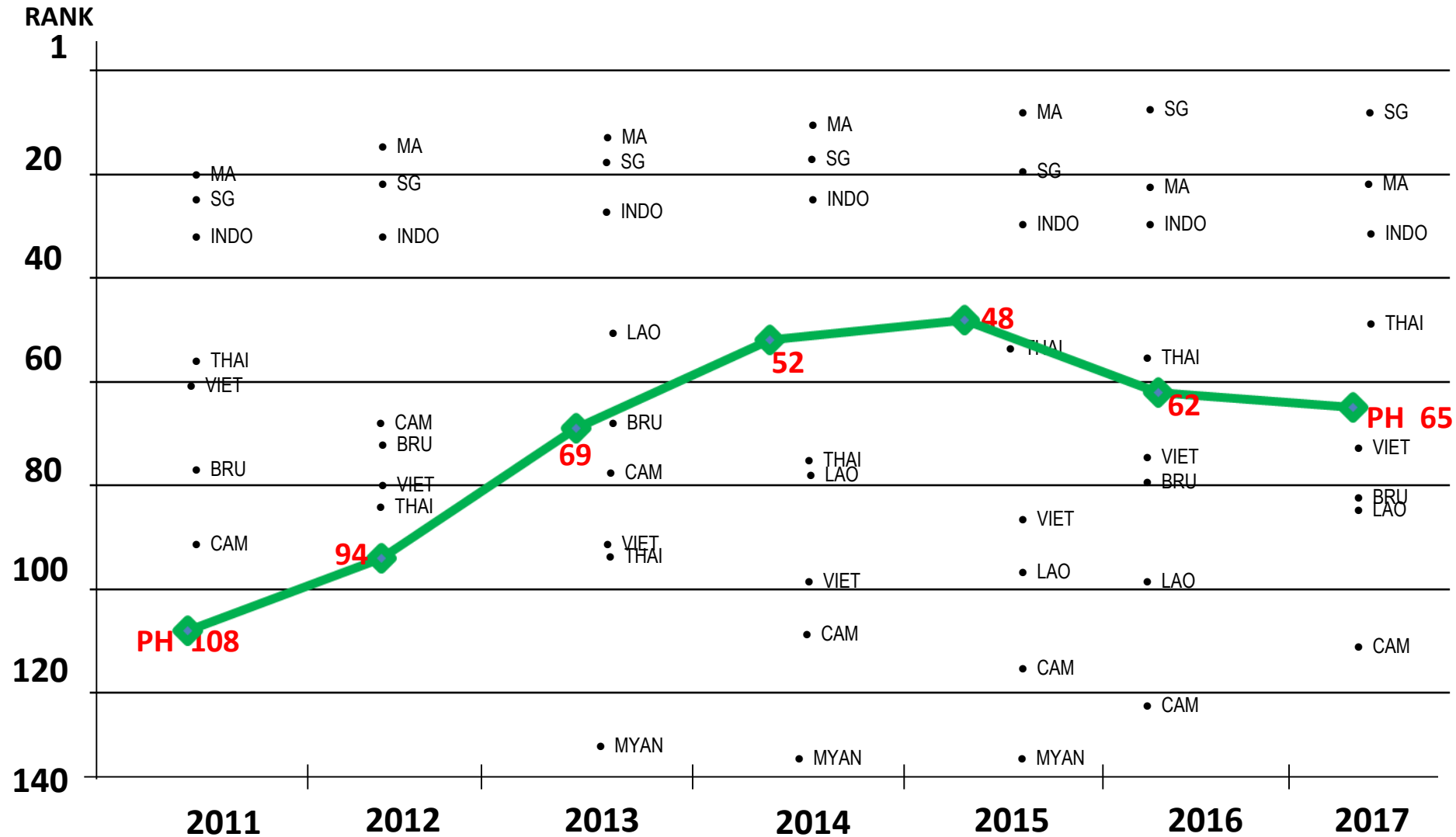
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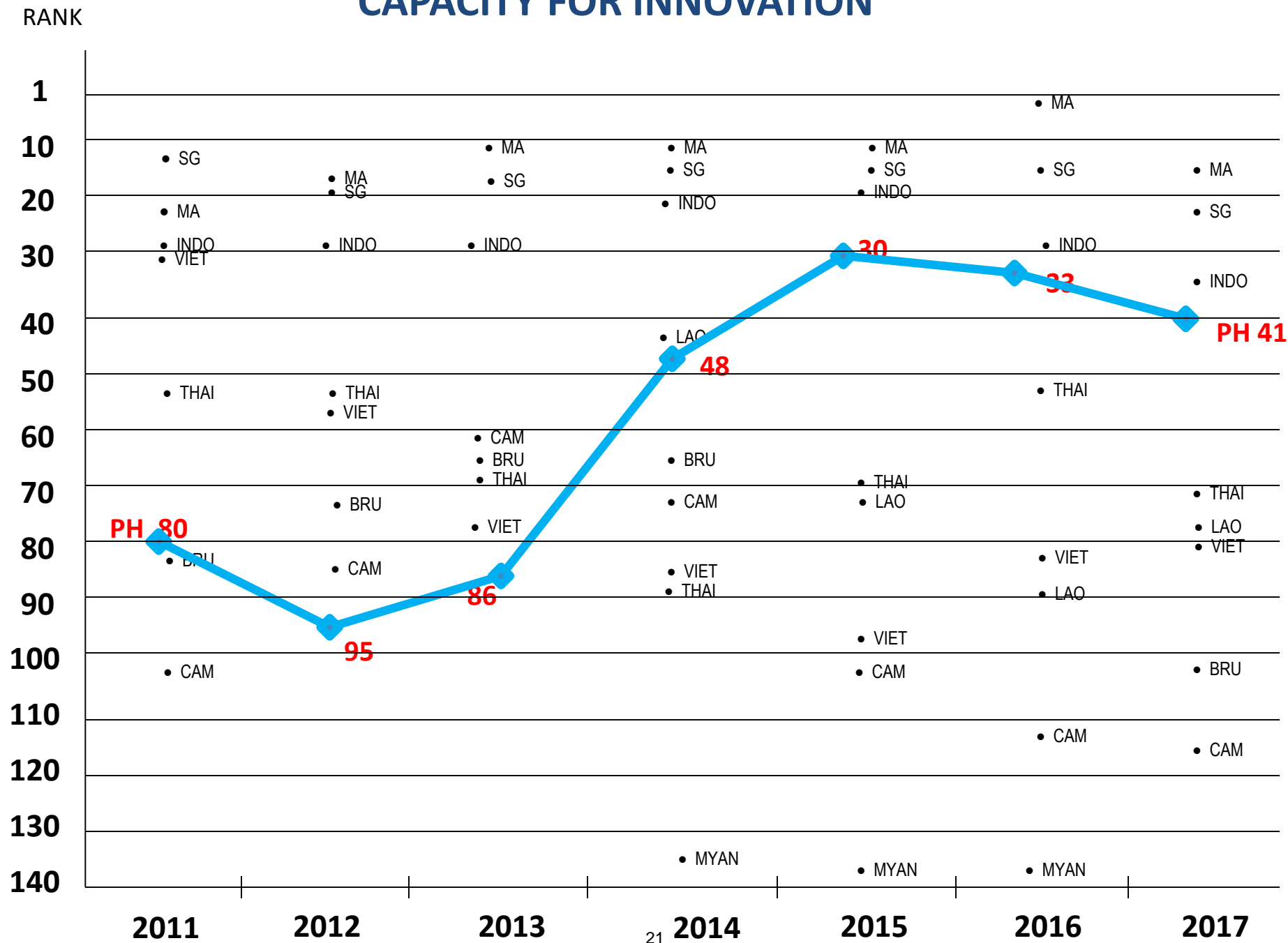
BUSINESS SOPHISTICATION PILLAR RANKING



INNOVATION PILLAR RANKING

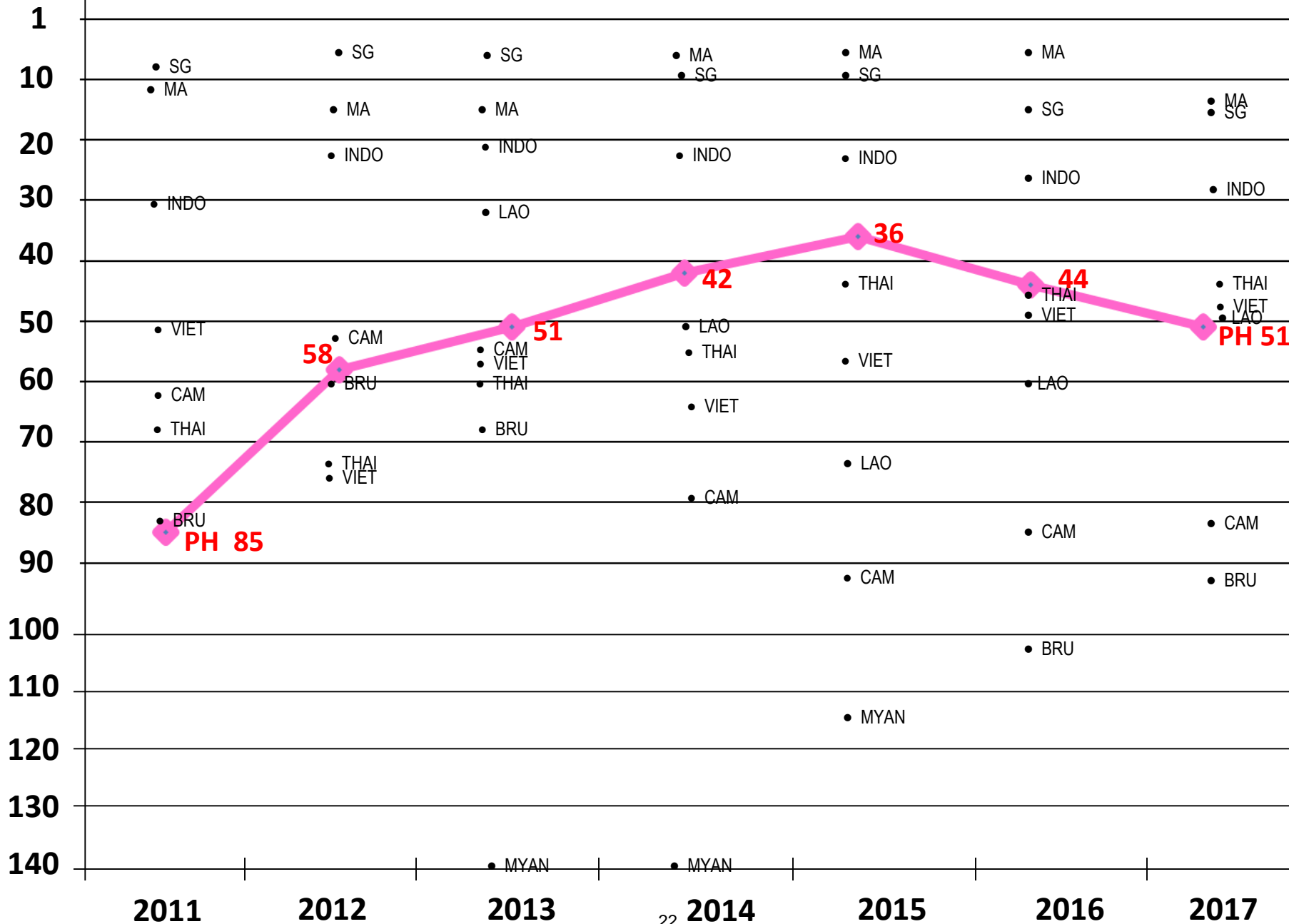


CAPACITY FOR INNOVATION



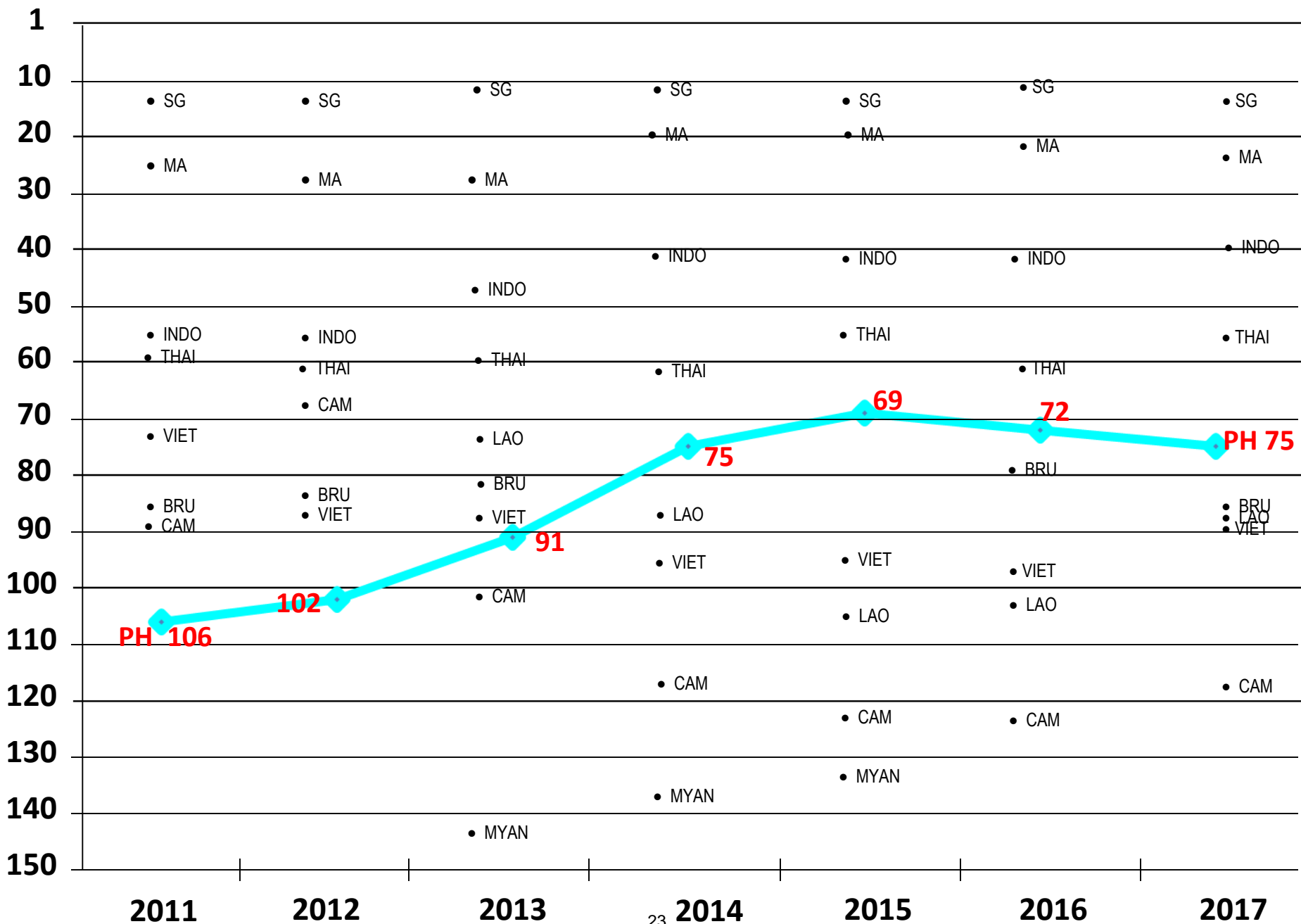
COMPANY SPENDING ON R&D

RANK



QUALITY OF SCIENTIFIC RESEARCH INSTITUTIONS

RANK



UNIVERSITY-INDUSTRY COLLABORATION

RANK

1

10

20

30

40

50

60

70

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**International Institute for
Management Development's
World Competitiveness Yearbook Indicators**



International Institute for Management Development's World Competitiveness Yearbook Ranking

The IMD's World Competitiveness Ranking are based on each of the following competitiveness factors, each highlighting different facets of competitiveness:

- A. Economic Performance - refers to macro-economic evaluation of the domestic economy: domestic economy, international trade, international investment, employment and prices.
- B. Government Efficiency – refers to extent to which government policies are conducive to competitiveness: public finance, fiscal policy, institutional framework, business legislation and societal framework.
- C. Business efficiency - extent to which the national environment encourages enterprises to perform in an innovative, profitable and responsible manner: productivity and efficiency, labor market, finance, management practices and attitudes and values.
- D. Infrastructure - extent to which basic, technological, scientific and human resources meet the needs of business: basic infrastructure, Technological Infrastructure, Scientific Infrastructure, Health and Environment and Education.



Trend in Philippine Rankings in the World Competitiveness Factors, 2011-2017

Factor	2011 ^a	2012 ^b	2013 ^c	2014 ^d	2015 ^e	2016 ^f	2017 ^g
Overall Rank	41	43	38	42	41	42	41
1. Economic Performance	29	42	31	37	34	38	26
2. Government Efficiency	37	32	31	40	36	36	37
3. Business Efficiency	31	26	19	27	26	24	28
4. Infrastructure	57	55	57	59	57	55	54
(a) Basic infrastructure	57	56	54	55	58	57	57
(b) Technological infrastructure	32	46	40	45	36	41	42
(c) Scientific infrastructure	58	58	59	59	58	55	57
(d) Health & Environment	50	50	51	52	55	54	49
(e) Education	57	57	59	59	60	59	59

Source:

^a World Competitiveness Yearbook, International Institute for Management Development, 2011, (59 countries included in ranking)

^b World Competitiveness Yearbook, International Institute for Management Development, 2012, (59 countries included in ranking)

^c World Competitiveness Yearbook, International Institute for Management Development, 2013, (60 countries included in ranking)

^d World Competitiveness Yearbook, International Institute for Management Development, 2014, (60 countries included in ranking)

^e World Competitiveness Yearbook, International Institute for Management Development, 2015, (61 countries included in ranking)

^f World Competitiveness Yearbook, International Institute for Management Development, 2016, (61 countries included in ranking)

^g World Competitiveness Yearbook, International Institute for Management Development, 2017, (63 countries included in ranking)

World Competitiveness Ranking of the Philippines: Technological Infrastructure Factors, 2011-2017

Factor	Ranking (Raw Score/Data)						
	2011	2012	2013	2014	2015	2016	2017
Technological Infrastructure	32/59*	46/59*	40/60*	45/60*	36/61*	41/61*	42/63*
1. No. of internet users	58/59 (146)	58/59 (166)	59/60 (190)	59/60 (233)	57/61 (311)	57/61 (372)	58/63 (397)
❖ Data used are the number of internet users per 1000 people							
2. Fixed Broadband tariffs	22/59 (21.55)	25/59 (21.95)	28/60 (23.06)	29/60 (23.44)	30/61 (23.44)	not available	not available
❖ Data used are the monthly fees (residential), US\$							
3. Broadband Subscribers	55/59 (18.68)	56/59 (18.65)	57/60 (19.13)	57/60 (22.61)	58/61 (22.61)	56/61 (65)	57/63 (94)
❖ Data used are the number of subscribers per 1000 inhabitants							
4. Internet bandwidth speed	43/59 (8.39)	46/59 (10.72)	49/60 (12.36)	49/60 (12.36)	50/61 (12.36)	57/61 (3.2)	62/63 (4.5)
❖ Data used are the capacities that backbone operators provide to carry internet traffic. These are measured in bits per second (per Internet users).							

* Philippine rank over the number of countries

Source: World Competitiveness Yearbook, International Institute for Management Development, 2011, 2012, 2013, 2014, 2015, 2016, 2017

World Competitiveness Ranking of the Philippines: Technological Infrastructure Factors, 2011-2017

Factor	Ranking (Raw Score/Data)						
	2011	2012	2013	2014	2015	2016	2017
Technological Infrastructure	32/59*	46/59*	40/60*	45/60*	36/61*	41/61*	42/63*
5. Development and application of technology	40/59 (5.76)	39/59 (5.67)	38/60 (5.95)	48/60 (5.27)	43/61 (5.41)	46/61 (5.46)	53/63 (5.29)
<ul style="list-style-type: none"> ❖ Executive Opinion Survey with question asked: <i>“In your country, to what extent is the development and application of technology hindered/supported by the legal environment?”</i> ❖ Experts answered the question on a scale of 1-6, with the response 1 indicating a negative perception and 6 indicating the most positive perception 							
6. Funding for technological development	44/59 (4.32)	47/59 (4.10)	40/60 (4.88)	58/60 (3.48)	46/61 (4.31)	49/61 (4.39)	50/63 (4.46)
<ul style="list-style-type: none"> ❖ Executive Opinion Survey with question asked: <i>“In your country, to what extent is the funding for technological development is not readily/readily available?”</i> ❖ Experts answered the question on a scale of 1-6, with the response 1 indicating a negative perception and 6 indicating the most positive perception 							
7. Technological regulation (hinders/supports business development and innovation)	41/59 (5.61)	44/59 (5.36)	36/60 (5.81)	50/60 (4.95)	41/61 (5.31)	49/61 (5.15)	54/63 (4.89)
<ul style="list-style-type: none"> ❖ Executive Opinion Survey with question asked: <i>“In your country, to what extent is the technological regulation hinders/supports business development and innovation?”</i> ❖ Experts answered the question on a scale of 1-6, with the response 1 indicating a negative perception and 6 indicating the most positive perception 							

* Philippine rank over the number of countries

World Competitiveness Ranking of the Philippines: Scientific Infrastructure Factors, 2011-2017

Factor	Ranking (Raw Score/Data)						
	2011	2012	2013	2014	2015	2016	2017
Scientific Infrastructure	58/59*	58/59*	59/60*	59/60*	58/61*	55/61*	57/63*
1. Total expenditure on R&D (US\$ millions)	55/59 (166)	57/59 (166)	58/60 (166)	58/60 (166)	57/61 (278)	54/61 (375)	53/63 (375)
❖ Data used are total expenditures on research and development in US million dollars							
2. Total expenditure on R&D (as percentage of GDP)	56/59 (0.10)	56/59 (0.10)	58/60 (0.10)	58/60 (0.10)	60/61 (0.12)	58/61 (0.14)	59/63 (0.14)
❖ Data used are total expenditures on research and development as percentage of GDP							
3. Total expenditure on R&D per capita (US\$ per capita)	56/59 (1.8)	56/59 (1.8)	58/60 (1.8)	58/60 (1.8)	60/61 (3.0)	58/61 (3.8)	59/63 (3.8)
❖ Data used are total expenditures on research and development in US\$ per capita							
4. Business expenditure on R&D (US\$ millions)	51/59 (88)	50/59 (95)	52/60 (95)	53/60 (95)	52/61 (169)	56/61 (134)	54/63 (134)
❖ Data used are total business expenditures on research and development in US million dollars							

* Philippine rank over the number of countries

Source: World Competitiveness Yearbook, International Institute for Management Development, 2011, 2012, 2013, 2014, 2015, 2016, 2017

World Competitiveness Ranking of the Philippines: Scientific Infrastructure Factors, 2011-2017

Factor	Ranking (Raw Score/Data)						
	2011	2012	2013	2014	2015	2016	2017
Scientific Infrastructure	58/59*	58/59*	59/60*	59/60*	58/61*	55/61*	57/63*
5. Business expenditure on R&D	52/59 (0.05)	52/59 (0.05)	53/60 (0.05)	55/60 (0.05)	55/61 (0.08)	56/61 (0.05)	58/63 (0.05)
❖ Data used are total business expenditures on research and development as percentage of GDP							
6. Total R&D personnel nationwide (full-time work equivalent, thousands)	42/59 (17.1)	42/59 (17.1)	43/60 (17.1)	43/60 (17.1)	41/61 (19.2)	36/61 (36.5)	36/63 (36.5)
❖ Data used are total number of R&D personnel nationwide in full-time work equivalent (thousands)							
7. Total R&D personnel nationwide per capita (full-time work equivalent per 1000 people)	50/59 (0.19)	51/59 (0.19)	52/60 (0.19)	52/60 (0.19)	53/61 (0.20)	54/61 (0.37)	55/63 (0.37)
❖ Data used are total number of R&D personnel nationwide in full-time work equivalent per 1000 people							
8. Total R&D personnel in business enterprise (full-time work equivalent, thousands)	41/59 (6.6)	40/59 (6.6)	41/60 (6.6)	39/60 (6.6)	37/61 (9.0)	29/61 (22.3)	29/63 (22.3)
❖ Data used are total number of R&D personnel in business enterprise in full-time work equivalent (thousands)							

* Philippine rank over the number of countries

Source: World Competitiveness Yearbook, International Institute for Management Development, 2011, 2012, 2013, 2014, 2015, 2016, 2017

World Competitiveness Ranking of the Philippines: Scientific Infrastructure Factors, 2011-2017

Factor	Ranking (Raw Score/Data)						
	2011	2012	2013	2014	2015	2016	2017
Scientific Infrastructure	58/59*	58/59*	59/60*	59/60*	58/61*	55/61*	57/63*
9. Total R&D personnel in business per capita (full-time work equivalent per 1000 people)	50/59 (0.07)	49/59 (0.07)	51/60 (0.07)	51/60 (0.07)	53/61 (0.10)	52/61 (0.23)	54/63 (0.23)

❖ *Data used are total number of R&D personnel in business per capita in full-time work equivalent per 1000 people*

10. Science degrees	46/59 (24.73)	48/59 (24.73)	48/60 (24.73)	not available	47/61 (24.62)	15/61 (33.55)	7/63 (40.29)
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❖ *Data used are percentages of total first university degrees in science and engineering*

11. Scientific articles	55/59 (195)	55/59 (223)	55/60 (223)	55/60 (241)	55/61 (241)	55/61 (916)	56/63 (916)
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❖ *Data used are number of scientific articles published by the origin of author*

12. Patent applications	27/59 (3,389)	52/60 (298)	52/60 (255)	52/60 (255)	53/61 (350)	46/61 (608)	46/63 (729)
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❖ *Data used are number of patent applications filed for residents and non-residents*

* Philippine rank over the number of countries

Source: World Competitiveness Yearbook, International Institute for Management Development, 2011, 2012, 2013, 2014, 2015, 2016, 2017

World Competitiveness Ranking of the Philippines: Scientific Infrastructure Factors, 2011-2017

Factor	Ranking (Raw Score/Data)						
	2011	2012	2013	2014	2015	2016	2017
Scientific Infrastructure	58/59*	58/59*	59/60*	59/60*	58/61*	55/61*	57/63*
13. Patent applications per capita	50/59 (4)	49/59 (4)	56/60 -	58/60 (0.27)	57/61 (0.36)	58/61 (0.61)	59/63 (0.72)
❖ Data used are number of patent applications filed by applicants per 100,000 inhabitants							
14. Patents granted to residents	50/59 (16)	51/59 (24)	53/60 (53)	54/60 (58)	54/61 (64)	55/61 (80)	55/63 (107)
❖ Data used are number of patents granted by applicant's origin							
15. Number of patents in force	48/59 (1.8)	35/59 (56.9)	58/60 (0.3)	59/60 (0.3)	58/61 (0.4)	58/61 (0.5)	60/63 (0.5)
❖ Data used are number of patents in force by applicant's origin per 100,000 inhabitants							
16. Scientific research	56/59 (3.03)	52/59 (3.37)	39/60 (4.08)	56/60 (2.95)	51/61 (3.33)	49/61 (3.63)	48/63 (3.71)
❖ Executive Opinion Survey with question asked: "In your country, to what extent is scientific research (public and private) low or high by international standards?"							
❖ Experts answered the question on a scale of 1-6, with the response 1 indicating a negative perception and 6 indicating the most positive perception							

* Philippine rank over the number of countries

Source: World Competitiveness Yearbook, International Institute for Management Development, 2011, 2012, 2013, 2014, 2015, 2016, 2017

World Competitiveness Ranking of the Philippines: Scientific Infrastructure Factors, 2011-2017

Factor	Ranking (Raw Score/Data)						
	2011	2012	2013	2014	2015	2016	2017
Scientific Infrastructure	58/59*	58/59*	59/60*	59/60*	58/61*	55/61*	57/63*

17. Researchers and scientists	45/59 (3.04)	48/59 (3.06)	39/60 (3.64)	48/60 (2.91)	49/61 (3.08)	44/61 (3.40)	49/63 (3.21)
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- ❖ Executive Opinion Survey with question asked: *“To what extent are the researchers and scientists not attracted or attracted to your country?”*
- ❖ Experts answered the question on a scale of 1-6, with the response 1 indicating a negative perception and 6 indicating the most positive perception

18. Scientific research legislation	52/59 (3.53)	50/59 (3.60)	43/60 (4.11)	49/60 (3.71)	49/61 (3.66)	48/61 (3.90)	54/63 (3.61)
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- ❖ Executive Opinion Survey with question asked: *“In your country, to what extent are the laws relating to scientific research do not encourage or encourage innovation?”*
- ❖ Experts answered the question on a scale of 1-6, with the response 1 indicating a negative perception and 6 indicating the most positive perception

* Philippine rank over the number of countries

Source: World Competitiveness Yearbook, International Institute for Management Development, 2011, 2012, 2013, 2014, 2015, 2016, 2017

World Competitiveness Ranking of the Philippines: Scientific Infrastructure Factors, 2011-2017

Factor	Ranking (Raw Score/Data)						
	2011	2012	2013	2014	2015	2016	2017
Scientific Infrastructure	58/59*	58/59*	59/60*	59/60*	58/61*	55/61*	57/63*
19. Intellectual property rights	53/59 (3.88)	53/59 (3.81)	54/60 (4.17)	56/60 (3.82)	52/61 (4.17)	57/61 (4.44)	53/63 (4.73)
<ul style="list-style-type: none"> ❖ Executive Opinion Survey with question asked: “In your country, to <i>what extent are the intellectual property rights adequately or not adequately enforced?</i>” ❖ Experts answered the question on a scale of 1-6, with the response 1 indicating a negative perception and 6 indicating the most positive perception 							
20. Knowledge transfer	40/59 (4.29)	40/59 (4.34)	34/60 (4.60)	33/60 (4.44)	38/61 (4.33)	36/61 (4.45)	50/63 (4.06)
<ul style="list-style-type: none"> ❖ Executive Opinion Survey with question asked: “In your country, to <i>what extent is the knowledge transfer lacking or highly developed between companies and universities?</i>” ❖ Experts answered the question on a scale of 1-6, with the response 1 indicating a negative perception and 6 indicating the most positive perception 							
21. Innovative capacity	45/59 (4.90)	39/59 (5.02)	33/60 (5.18)	46/60 (4.58)	45/61 (4.73)	37/61 (5.26)	46/63 (4.99)
<ul style="list-style-type: none"> ❖ Executive Opinion Survey with question asked: “In your country, to <i>what extent is the innovative capacity of firms to generate new products, processes and/or services low or high in your economy?</i>” ❖ Experts answered the question on a scale of 1-6, with the response 1 indicating a negative perception and 6 indicating the most positive perception 							

* Philippine rank over the number of countries

Source: World Competitiveness Yearbook, International Institute for Management Development, 2011, 2012, 2013, 2014, 2015, 2016, 2017

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