

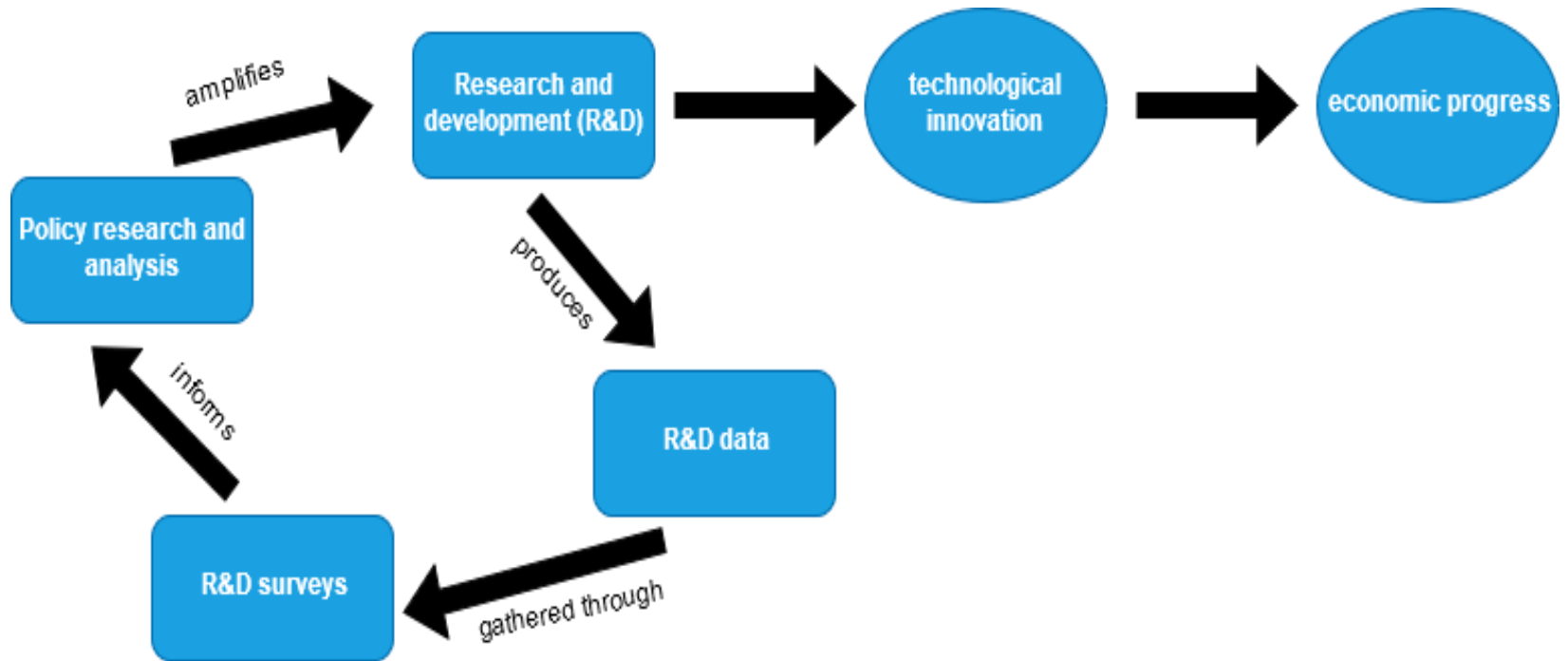
# Challenges in Designing and Implementing Research and Development Surveys in the Philippines



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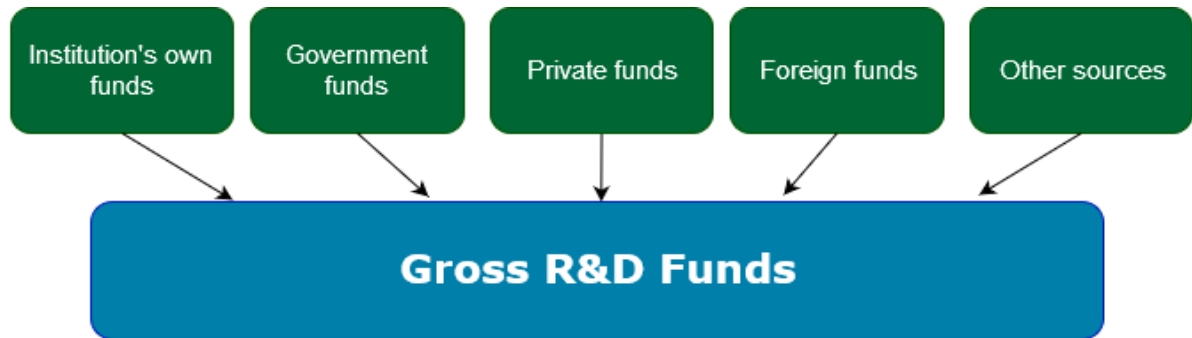
# Introduction



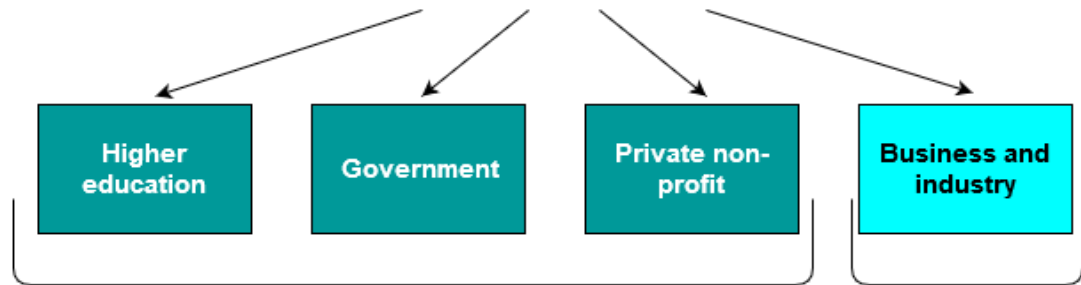
# Challenges in the R&D Survey

## Target population

Sources of Funds:



Participating sectors of in-house R&D:



R&D Surveys that collect data from the various sectors:

R&D Surveys of DOST

ASPBI by PSA



# Challenges in the R&D Survey

## Sampling frames

- institutions differ in business operations and functions
- there is no single data source for all sectors that can be used

## Questionnaire design

- need to ensure that an appropriate and knowledgeable (and motivated) respondent will complete the questionnaire
- item nonresponse for companies that refuse to participate due to company policies
- unit nonresponse



# Meeting the Challenges

## Constructing and validating the sampling frames

Sector	Initial List
GOV	online search
HEI	list of HEIs for A.Y. 2017-2018 from CHED
PNPI	registry of NGOs found in the website of the Philippine Council for NGO Certification (PCNC)



# Meeting the Challenges

## Constructing and validating the sampling frames

- the initial lists are not the desired frame so two-phase sampling is employed

Sector	Initial list	Phase 1 results		Imputations*			After imputations	With Admin units
		Responded	With R&D	DOST R&D List	CHED/ DOST Projects	Web search		
GOV	670	73	32	88 (88)	21 (31)	14 (15)	155	37
HEI	2,354	100	66	269 (298)	43 (171)	487 (530)	865	84
PNPI	354	21	9	29 (32)	0 (0)	24 (24)	62	0



# Meeting the Challenges

## Streamlining the questionnaires

2015 Questionnaire	2018 Questionnaire
Enumeration or listing of all Personnel and profile	Headcount of personnel according to type of personnel, sex, age group, highest qualification and field of science
	Number of personnel by percent of time spent in R&D by occupation
Enumeration or listing of all research projects with their expenditure and source of funds	Total expenditures and their subcategories
	Percentage of R&D expenditure to sources categories
	Percentage of R&D expenditure per Socio-economic objectives and field of science
Enumeration of name of agency with R&D funded by the institution	Name of institution and total amount of funds provided to other institution for R&D
Enumeration of publish journals	Total number of journals publish (local and international)



# Meeting the Challenges

## Using two-phase sampling design

### Phase 1

- census for all institutions in the initial lists
- screens out institutions without R&D activities

### Phase 2

- census for GOV and PNPI
- stratified cluster sample for HEI
  - stratified according to graduate enrolment size
  - “large” stratum is sampled with certainty





# Meeting the Challenges

## Using two-phase sampling design

For HEI, sample sizes are determined per stratum by assuming SRS and proportionally allocated across regions

Stratum	Level of Confidence, $1 - \alpha$	Margin of Error, $d$				
		0.10	0.07	0.05	0.03	0.01
Small ( $N = 363$ )	0.95	77	128	<b>187</b>	272	350
	0.975	94	151	211	289	353
	0.99	115	176	235	304	356
Unknown ( $N = 447$ )	0.95	80	137	207	316	428
	0.975	99	164	<b>237</b>	339	432
	0.99	122	193	268	360	436



# Meeting the Challenges

## Implementing multi-mode R&D surveys

### Phase 1

- online survey through *SurveyMonkey*
- short telephone follow-ups/interviews

### Phase 2

- online survey and telephone follow-ups
- personal interviews
- workshops at various sites for field enumerators' training



# Conclusions

## Future plans

Conduct a small post-enumeration survey to evaluate the effects of questionnaire streamlining

## Recommendations

1. HEIs are encouraged to develop centralized systems for monitoring R&D projects
2. Opportunities for statistical research:
  - Effects of imputation methods on sampling weights
  - Estimation procedures in between survey rounds
  - Analysis of measurement errors through a post-enumeration survey to improve the questionnaire design



Thank you!

