

# Does Innovation Mediate Good Firm Performance?

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# Outline of the presentation

- Background:
  - Definition of Innovation
  - Review of Related Literature
- Objective
- Data and Methodology
  - Description of survey data
  - Probit model
- Regression Results
- Conclusion



# Background

- Innovation: firm activities involving the implementation of new or significantly improved products or processes or new marketing or organizational method
  - Product innovation = Technological innovation
  - Process innovation = Non-technological innovation
- “Does innovation mediate good firm performance?”



# Review of Literature

- Innovation leads to greater productivity
  - Mairesse and Sassenou (1991): estimated the contribution of R&D to productivity
  - Lin and Chen (2007): showed the positive impact of administrative innovation on firm-level profitability
  - Hall et al. (2009): established positive, significant linkage between SME's innovations and productivity, profitability, and growth



# Review of Literature

- There is scant research in the Philippines on innovations and firm performance
  - Albert and others (2011): showed that knowledge management is a good determinant of innovation
  - Quimba and Rosellon (2011): reported that some of the automotive firms have not been able to utilize available technology
  - Llanto (2013): described government's technology/innovation programs and financing support to innovative SMEs



# Research Objectives

- determine the impact of innovation on firm performance
- identify factors that could lead firms to innovate

# Data and Methodology

- PIDS/ERIA-NSO: 2013 Survey on Production Processes for Manufacturing Establishments
- Probit estimation method



# Survey scope/coverage

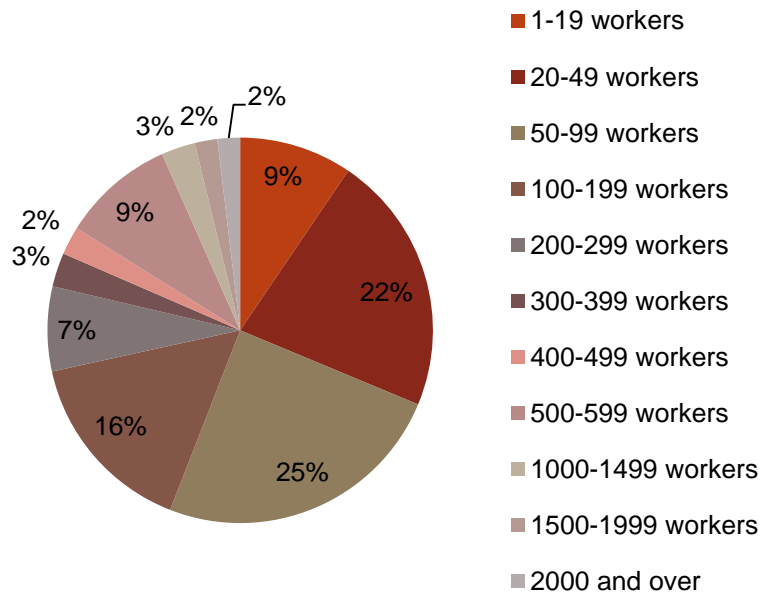


Covers manufacturing establishments in 5 provinces

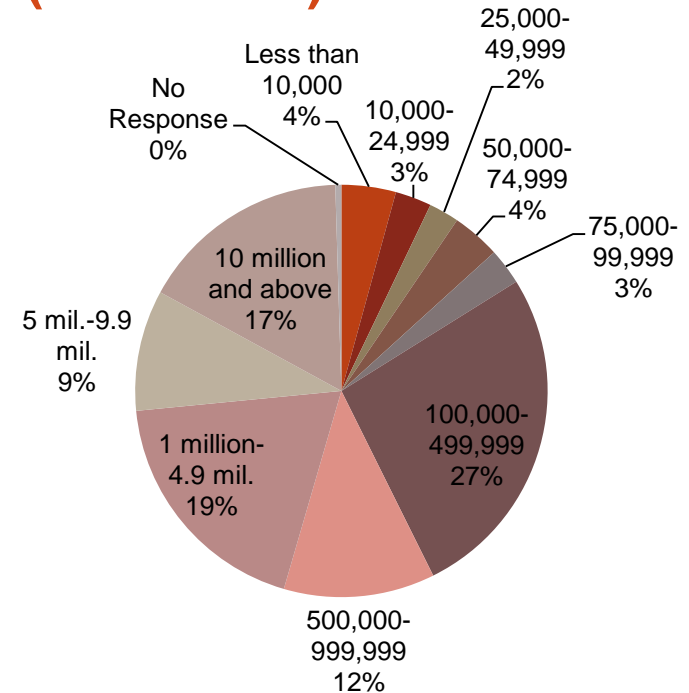
- CALABARZON (Region IVA): Cavite, Laguna, Batangas, Rizal and Quezon
- Firms with average total employment (ATE) of 20 workers and over
- Survey conducted by NSO/PSA from January to February 2014

# Summary of Survey Results: Profile of Respondents 1/2

## Respondents by employment size



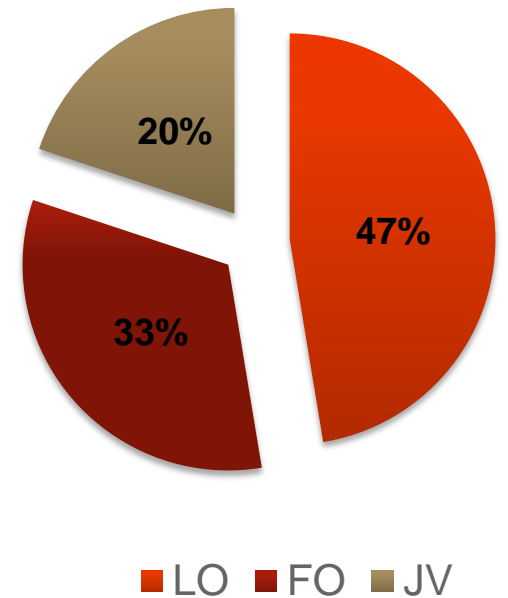
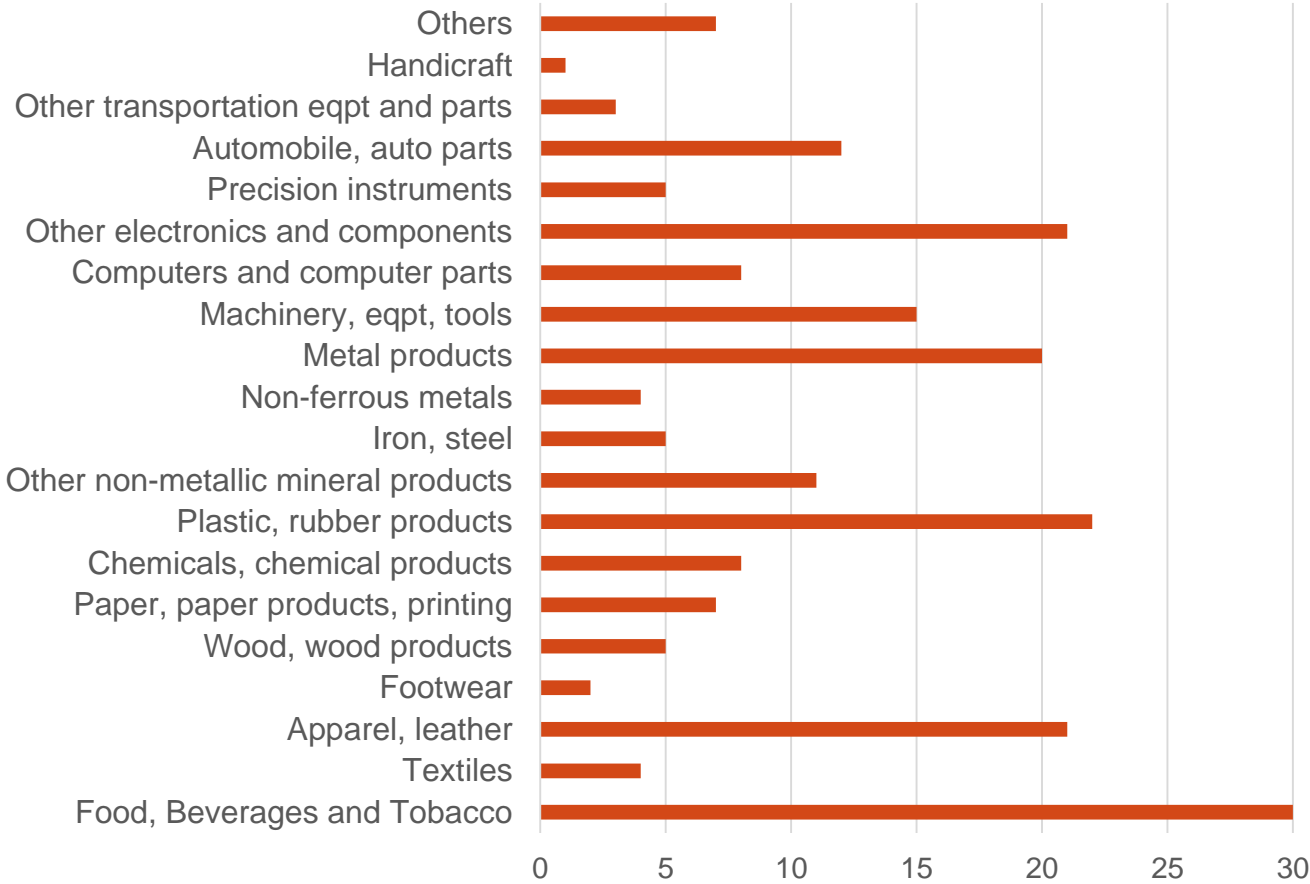
## Respondents by total assets (US dollars)



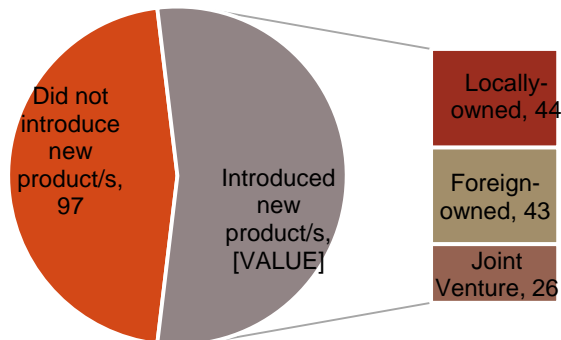
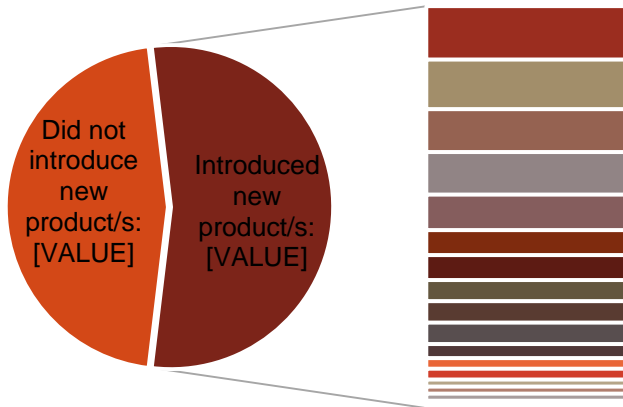
- In terms of employment size: 72% of the respondents have an employment size of not more than 199 employees: micro, small and medium-sized companies (MSMEs)
- In terms of capitalization: 27% have total assets ranging from USD 100k-500K; 17% have over USD10 million in total assets



# Summary of Survey Results: Profile of Respondents 2/2



# Summary of Survey results: product innovation



Employment size	Introduced new products	Did not introduce new products	Grand Total
1-19 workers	8	12	20
20-49 workers	15	31	46
50-99 workers	27	25	52
100-199 workers	19	14	33
200-299 workers	8	6	15
300-399 workers	4	2	6
400-499 workers	4	1	5
500-599 workers	17	3	20
1000-1499 workers	5	1	6
1500-1999 workers	3	1	4
2000 and over	3	1	4
<b>Grand Total</b>	<b>113</b>	<b>97</b>	<b>211</b>

# Summary of Survey results: process innovation—wider forms of innovation

Innovation measures	Achieved	Tried	Not tried yet	Grand Total
• Production	89	86	35	210
• Procurement, outsourcing	74	82	54	210
• Business process re-engineering	58	74	78	210
• Sales promotion	57	80	71	208
• Sales management	63	78	67	208
• Inventory control	86	84	40	210
• Logistics	76	82	51	209
• Accounting	84	85	40	209



# Summary of Survey results:

## Improvement in business performance

Business performance measures	Significant increase	Moderate Increase	Satisfactory	Moderate Decrease	Significant decrease	Grand Total
• Sales	15	58	79	49	12	213
• Profit	16	45	83	52	17	213
• Export Value	8	30	57	28	8	131
• Labor productivity	20	66	89	31	5	211



# Probit model specification

$$\text{Prod}(I_{jt} = 1 \mid X, Y) = \beta_0 + \beta_1 \text{AGE} + \beta_2 \text{SIZE} + \beta_3 \text{FOREIGN} + \beta_4 \text{HIGHTECH} + \mu$$



# Probit regression results: Determinants of Firm Innovation

	Product Innovation		Process Innovation	
	Coefficient	Marginal effects	Coefficient	Marginal effects
Age	0.007 (0.009)	0.003 (0.004)	0.021** (0.009)	0.008** (0.004)
Large	0.661*** (0.215)	0.251*** (0.076)	0.577*** (0.216)	0.215*** (0.075)
Foreign	0.316* (0.191)	0.125* (0.075)	0.177 (0.192)	0.069 (0.075)
High-tech	-0.001 (0.025)	-0.001 (0.010)	0.009 (0.024)	0.003 (0.010)
_cons	-0.379 (0.236)		-0.464* (0.239)	
se				
note: *** p<0.01, ** p<0.05, * p<0.1				



# Probit regression results: Impact of Innovation on Firm performance

	Sales	Marginal Effects		Profit	Marginal Effects		Labor Productivity	Marginal Effects
Product	0.438**	0.158		0.269	0.090		0.435**	0.167
	(0.182)	(0.253)		(0.186)	(0.249)		(0.178)	(0.259)
_cons	-0.650***			-0.716***			-0.469***	
	(0.138)			(0.140)			(0.132)	
Process	0.530***	0.188		0.641***	0.205		0.635***	0.239
	(0.185)	(0.252)		(0.195)	(0.243)		(0.183)	(0.256)
_cons	-0.728***			-0.967***			-0.614***	
	(0.146)			(0.157)			(0.142)	
Se								
note: *** p<0.01, ** p<0.05, * p<0.1								

# Conclusion

- “Does innovation mediate good firm performance?”
  - Our empirical results indicate an affirmative response
  - Product and process innovations lead to increase in sales and profits and improve labor productivity.
  - Firm size, age and foreign equity participation contribute to firm’s innovation activities
- Removing regulatory and structural barriers toward greater openness and entry of foreign direct investments will encourage innovation among firms.





End of presentation. Thank you

