

# AQUACULTURE THROUGH THE LENS OF GENDER: AN INVESTIGATION INTO THE SOCIO-ECONOMIC IMPACT OF SEAWEED FARMING ON COASTAL COMMUNITIES IN BANTAYAN, PHILIPPINES

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# Outline

1. *Research objectives*
2. *Background Information*
3. *Socio-demographic overview*
4. *Factors impacting gender pay gap*
5. *Model estimation and findings*
6. *Discussion and final comments*



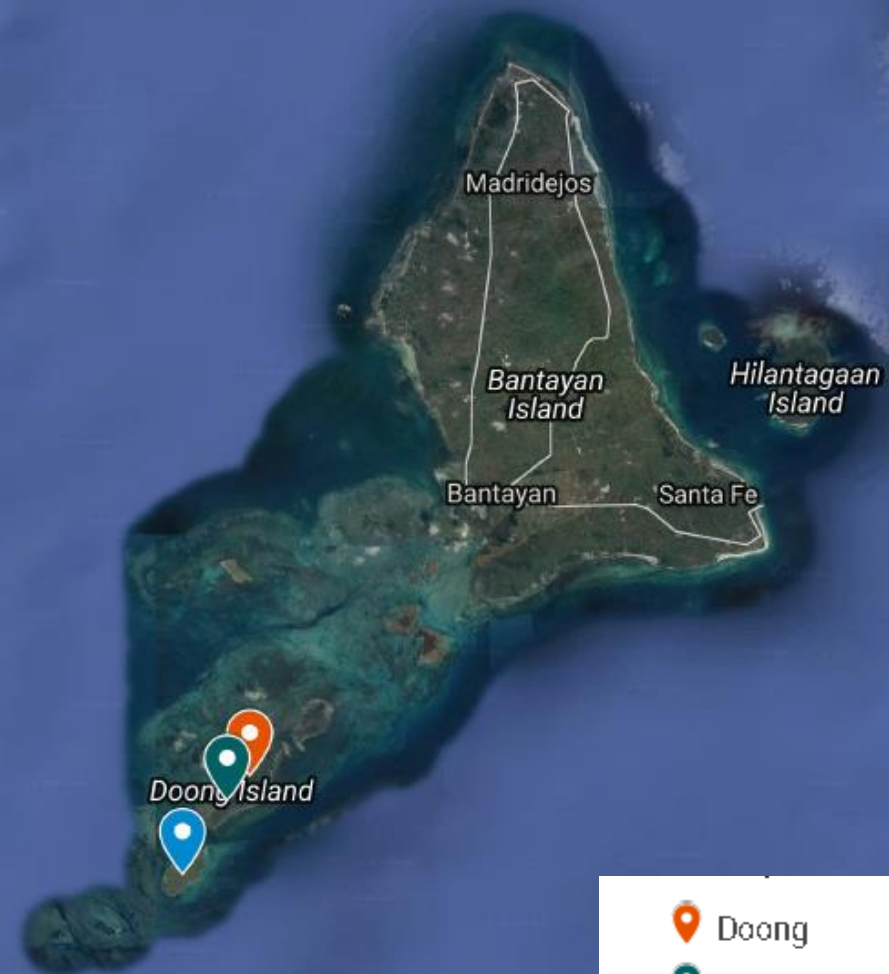


## CONTEXT

- **Philippines** is the **third major seaweed producer globally**
- **Seaweed aquaculture** is contributing to the **economic development** and creating **new job** opportunities in **small coastal communities** which, otherwise, would mostly rely on small-scale fisheries operations
- **Women** are engaged in **various seaweed farming activities** throughout the whole cultivation cycle, from the preparation of the farm to post-harvest phase

### OVERALL RESEARCH OBJECTIVE:

Investigate if seaweed aquaculture has enhanced women's **empowerment** and increased community **wellbeing** in 3 selected barangays on Bantayan Island, central Philippines



- Doong
- Luyongbaybay
- Lipayran



## Background information: Newton Initiative

Production of a **toolkit** and methodology for:

- A. assessing **interactions of aquaculture facilities** (and other marine resource uses) **with sensitive coastal habitats**
- B. identifying **suitable aquaculture production sites** which maximise economic returns while minimising environmental impacts using the toolkit and reference database.

Area	Proposed Variables				
<b>Economic</b>	TOTAL COSTS ( <u>start up costs</u> + <u>running costs</u> )				
	Revenues				
	Profits				
	Other (tentative) variables (ROI)				
<b>Environmental</b>	Sea surface temperature				
	Salinity				
	Bathymetry				
	Tidal Velocity				
	Underwater light / depth penetration light				
	Wave height				
<b>Other possible existing uses</b>	Dissolved nitrogen concentration				
	Fish farms	Illegal Activities	MPAs	Fishing routes	Tourists areas



# Background Information: Preliminary Results

HIGH SEASON FARMING CYCLE (6 months)	Male	Female
Number of people employed	2 (s.d. 1.1)	3 (s.d. 3.7)
Cost of people employed (PHP)	473 (s.d. 711)	457 (s.d. 975)

## Gap in economic conditions between men and women

- *Women employed in seaweed farming in the areas investigated are **more** than men*
- *On average they are paid **less** than men*



## Socio-demographic characteristics of the sample

		Total=310	Male =124	Female =186
<b>Age</b>		40.3 (s.d. 14.0)	39.9 (s.d. 14.1)	40.7 (s.d. 14.0)
<b>Education</b>	Elementary	50.7%	47.6%	52.7%
	High School	41.0%	41.1%	40.9%
	Post-secondary/college	8.4%	11.3%	6.5%
<b>Marital Status</b>	Single	10.3%	12.1%	9.1%
	Married	62.9%	66.1%	60.8%
	Other	26.8%	21.8%	30.1%
<b>Household composition</b>	Less than 3	20.8%	21.0%	20.7%
	Between 4 and 5	44.2%	46.8%	42.4%
	Six or more	35.1%	32.3%	37.0%
<b>Monthly Income</b>	Php 2,000-7,889	51.6%	46.0%	55.4%
	Php 7,890 - 15, 780	45.8%	50.0%	43.0%
	Php 15,780 –31,560	2.6%	4.0%	1.6%

- ✓ Average age is 40 years
- ✓ Most respondents are educated at elementary school level
- ✓ Great majority of people interviewed are married
- ✓ Household composed on average by 4-5 people
- ✓ Personal income level of the majority of the respondents lies in the lowest income class



# Influencing gender pay gap in seaweed farming: Job Role

		Total	Male	Female
<b>Years of experience</b>		12.5 (s.d. 7.8)	11.8 (s.d. 6.9)	13 (s.d. 8.2)
<b>Job Role***</b>	Owner/ Employer	28.9%	50.0%	14.8%
	Employee	54.8%	37.7%	66.1%
	Worker in own family business (paid/non-paid)	16.4%	12.3%	19.1%
<b>Hours worked in the farm</b>	Preparation phase***	9.6 (s.d. 6.7)	10.9 (s.d. 6.4)	8.7 (s.d. 6.4)
	Growing phase ***	5.5 (s.d. 8.6)	8.2 (.sd. 10.5)	3.6 (s.d. 6.3)
	Harvesting phase ***	5.9 (s.d. 6.1)	8.1 (s.d. 7.2)	4.3 (s.d. 4.7)

- ✓ The majority of people interviewed are seaweed farm employee, mainly women
- ✓ Less women are farm owners compared to men
- ✓ Women work significantly more during the preparation phase of the seaweed farm
- ✓ Men distribute their effort almost equally throughout all stages of cultivation

Notes: \*p < .05 \*\*p < .01 \*\*\*p < .001



# Influencing gender pay gap in seaweed farming: Activities within the farm

		TOTAL (%)
Number of people working with the respondent	1 to 5	32.0
	6 to 10	32.0
	More than 10	36.0
Gender of co-workers: preparation phase	Mostly men	17.1
	Mostly women	<b>78.7</b>
	Equal number	4.2
Gender of co-workers: maintenance phase	Mostly men	<b>95.5</b>
	Mostly women	3.2
	Equal number	1.3
Gender of co-workers: harvesting phase	Mostly men	<b>93.2</b>
	Mostly women	5.5
	Equal number	1.3

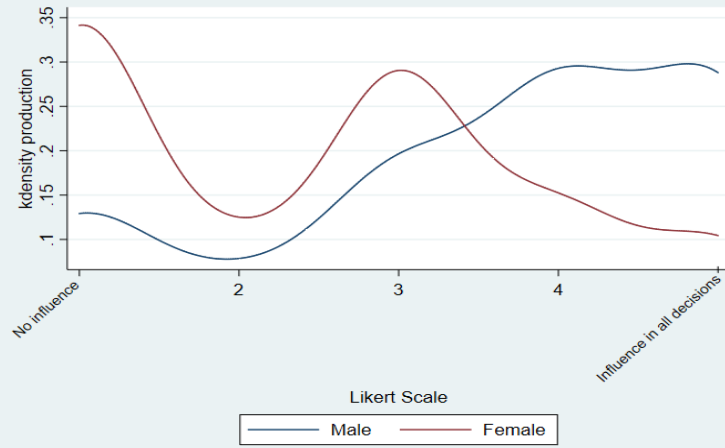
The gender of people working in seaweed farming varies significantly across different phases:

- ✓ **Women** are significantly more involved in the **preparation** of the farm (e.g. tying seedlings to the ropes)
- ✓ The great majority of **men**, on the contrary, are employed for the **maintenance** and **harvesting** of the farm

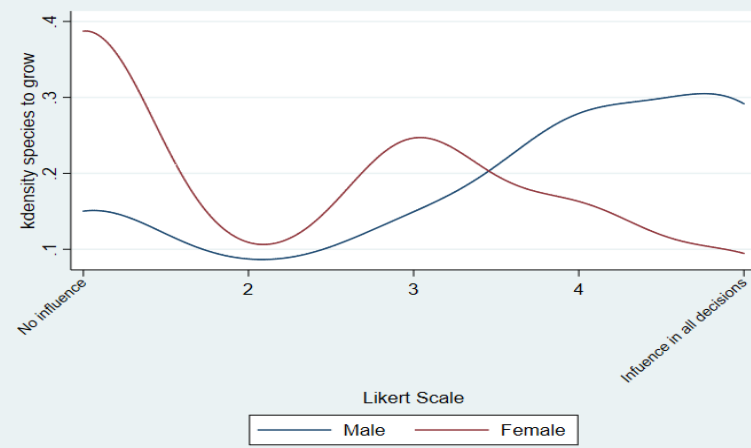


# Influencing gender pay gap in seaweed farming: Decision making power

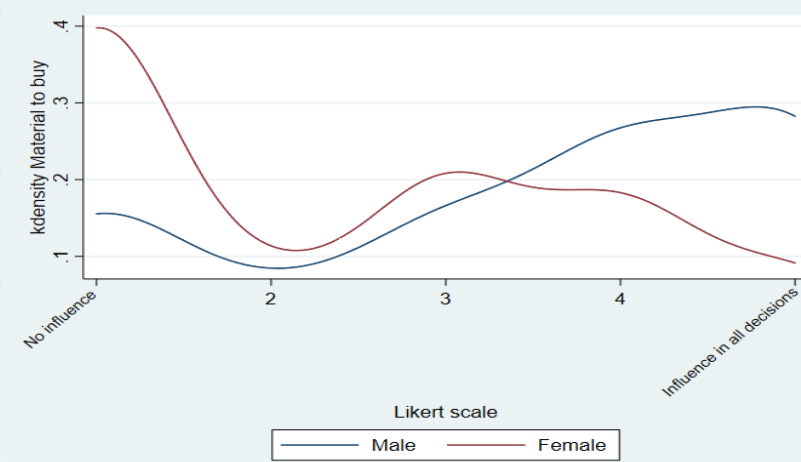
### Farm Preparation \*\*\*



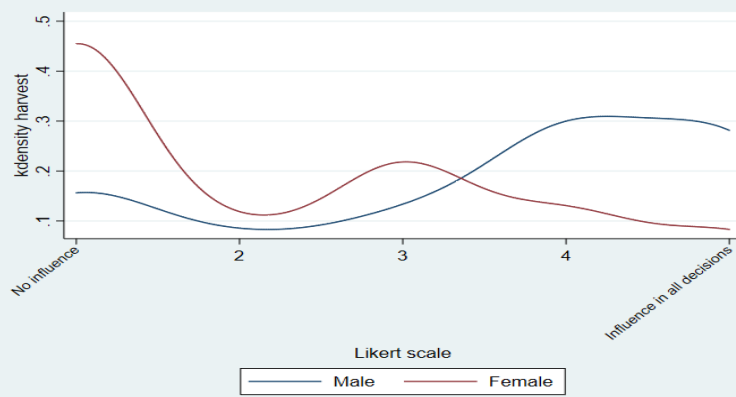
### Species to grow \*\*\*



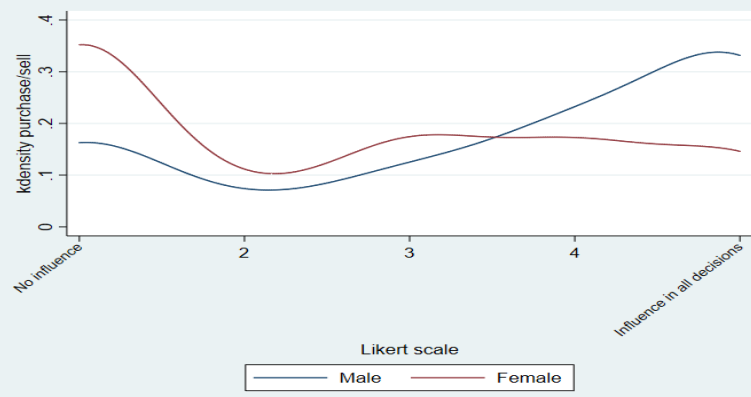
### Material to buy \*\*\*



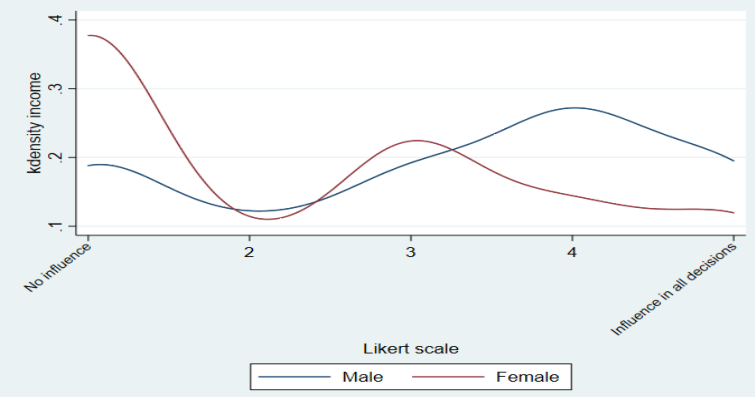
### Harvest related decisions \*\*\*



### Purchasing or Selling Decisions \*\*\*



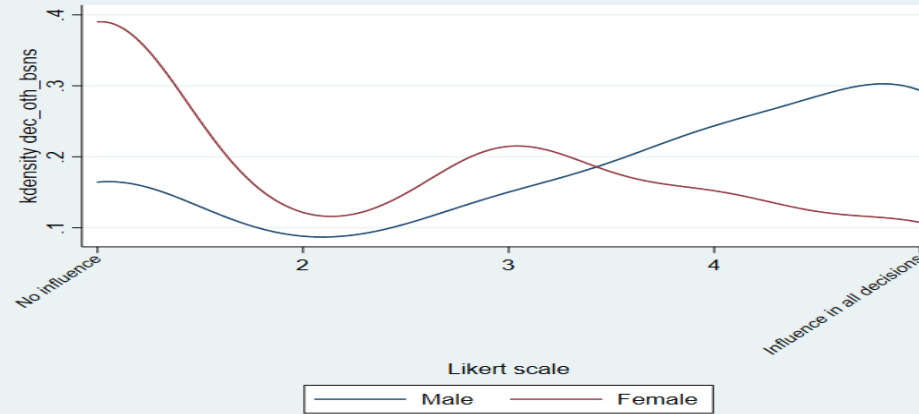
### Income \*\*\*



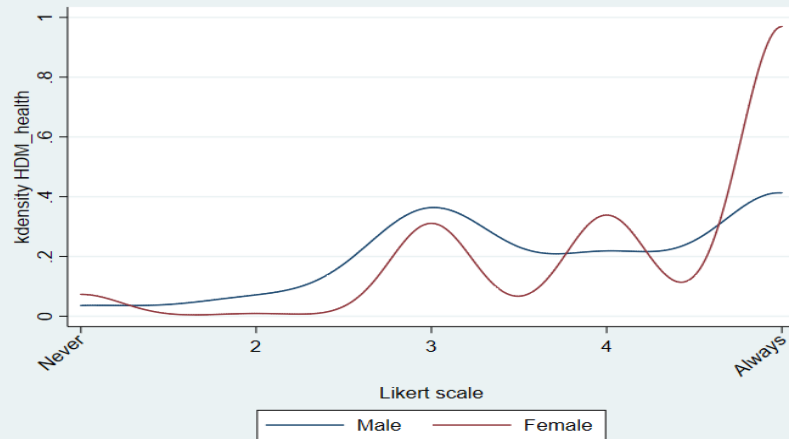


# Influencing gender pay gap in seaweed farming: Decision making power

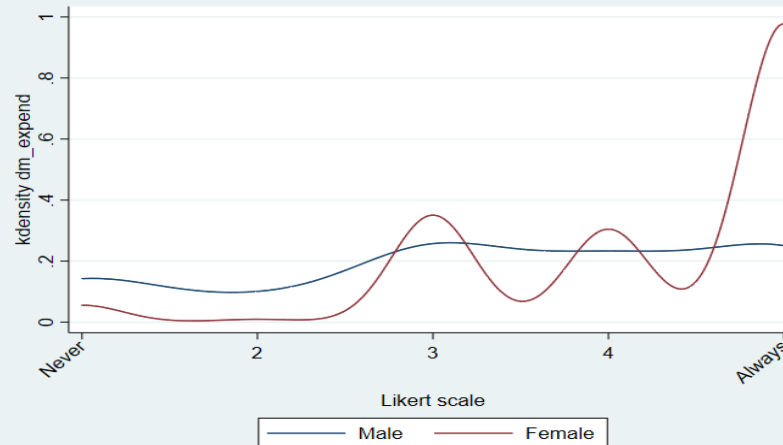
## Influence decisions regarding other family businesses \*\*\*



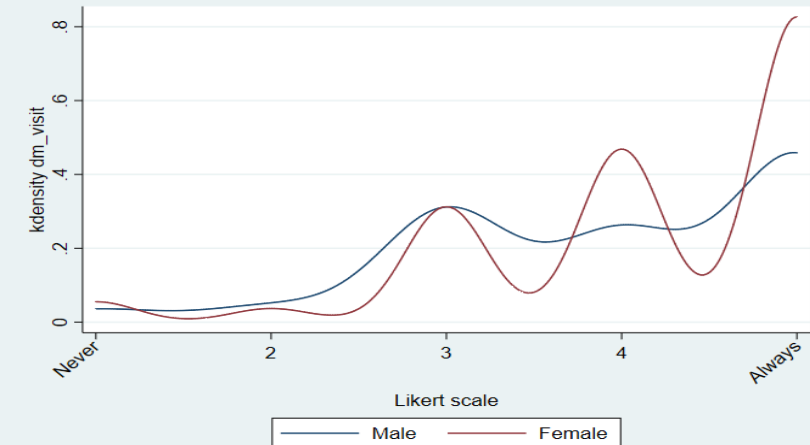
## Personal healthcare \*\*\*



## Household expenditures\*\*\*



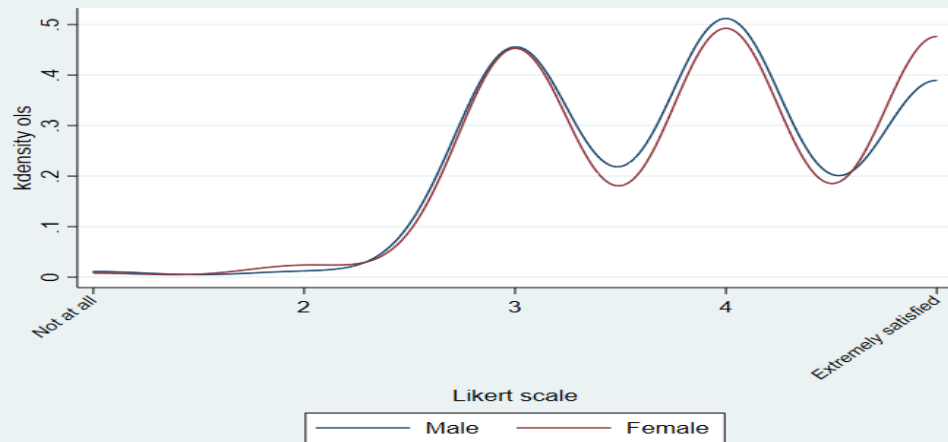
## Visits to family or relatives



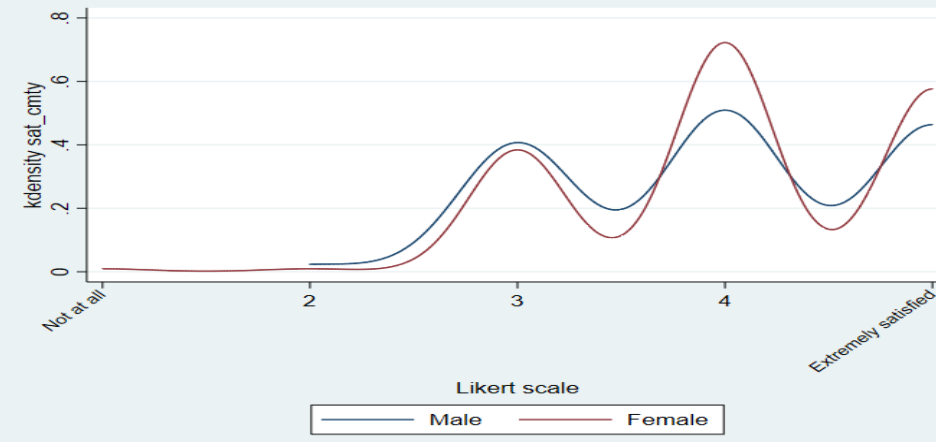


# SEAWEED FARMING: Empowerment and Community Wellbeing

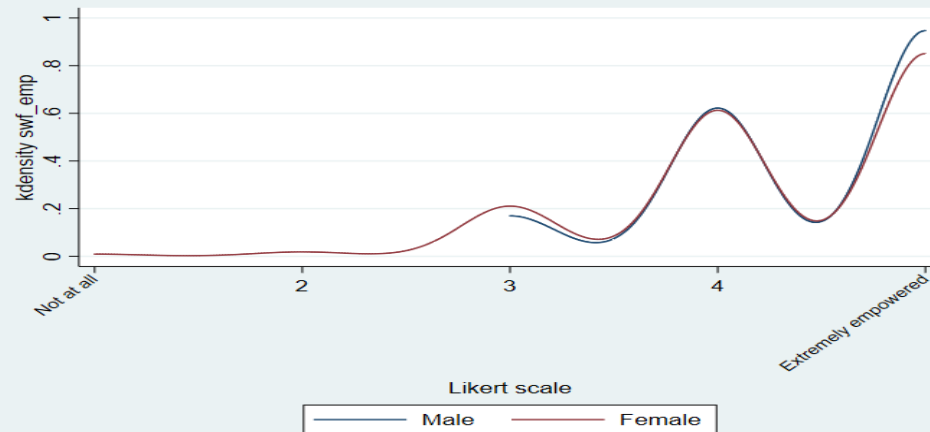
## Respondent's satisfaction with life



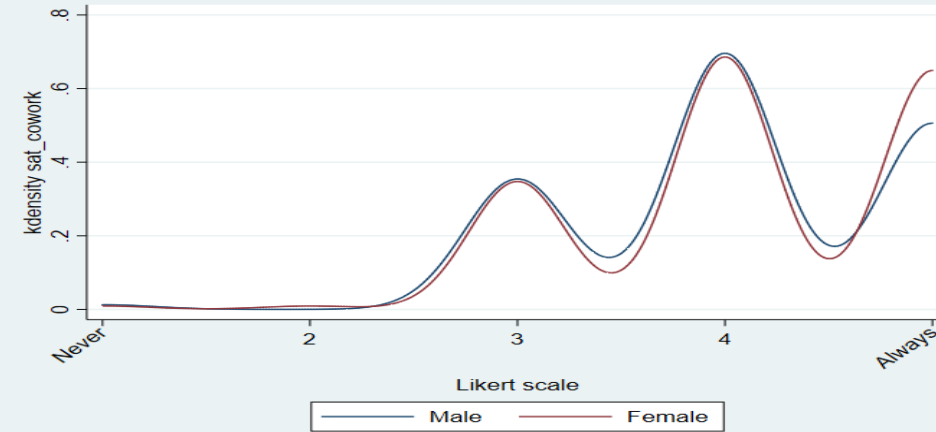
## Satisfaction with life within the community



## Empowerment has result seaweed farming activities



## Satisfaction with co-workers





		Production (DM)	Productive resources (DM)	Leadership
<b>Gender</b>		-0.283 (0.312)	-0.133 (-0.005)	0.242 (0.428)
<b>Role (base level: Owner/ Employer)</b>	Employee	<b>-1.232***</b> (0.206)	<b>-1.409***</b> (0.233)	-0.161 (0.205)
	Worker in own family business (paid/non-paid)	<b>-1.573***</b> (0.284)	<b>-1.899***</b> (0.298)	-0.561 (0.414)
<b>Gender#Role</b>	Owner/Employer	<b>-0.874*</b> (0.373)	<b>-1.172**</b> (0.427)	-0.763 (0.504)
	Employee	-0.190 (0.734)	-0.394 (0.412)	-0.240 (0.463)
<b>Age</b>		-0.0006 (0.005)	0.007 (0.005)	-0.0007 (0.005)
<b>Education (base level: Elementary)</b>	High School	0.127 (0.138)	0.035 (0.152)	-0.117 (0.135)
	Post-secondary/college	-0.167 (0.228)	-0.344 (0.249)	-0.002 (0.254)
<b>Monthly Income (Base level: Php 2,000-7,889)</b>	Php 7,890 - 15, 780	0.034 (0.129)	0.046 (0.147)	0.089 (0.125)
	Php 15,780 –31,560	0.690 (0.290)	0.757 (0.292)	<b>0.580*</b> (0.120)
<b>Years of experience</b>		<b>0.199*</b> (0.008)	<b>0.030***</b> (0.009)	<b>0.020*</b> (0.009)
<b>Seaweed farm association membership</b>		<b>0.430*</b> (0.132)	<b>0.522***</b> (0.145)	0.220 (0.464)

Notes: N. observation = 305; \*p < .05 \*\*p < .01 \*\*\*p < .001

### Supplementary analysis: OLS model

- ✓ Decision making power is affected by **job role** within the farm and **years of experience**
- ✓ **Women's farm ownership** does **not** appear to increase their ability to **influence decisions**
- ✓ **Higher income** levels have a **positive** effect on self-confidence and, consequently, on **leadership**
- ✓ Seaweed farming association **membership** strongly **increases influence** on productive resources' decisions



		Real Autonomy	Community wellbeing
<b>Gender</b>		-0.155 (0.269)	0.060 (0.175)
<b>Role (base level: Owner/ Employer)</b>	Employee	<b>-0.288*</b> (0.140)	<b>-0.352**</b> (0.129)
	Worker in own family business (paid/non-paid)	-0.452 (0.250)	-0.175 (0.169)
<b>Gender#Role</b>	Owner/Employer	<b>0.011*</b> (0.006)	-0.431 (0.230)
	Employee	-0.142 (0.298)	0.065 (0.208)
<b>Age</b>		-0.001 (0.004)	-0.001 (0.003)
<b>Education (base level: Elementary)</b>	High School	-0.85 (0.1)	0.036 (0.08)
	Post-secondary/college	-0.79 (0.174)	<b>-0.302*</b> (0.131)
<b>Monthly Income ( Base level: Php 2,000-7,889)</b>	Php 7,890 - 15, 780	-0.043 (0.897)	-0.123 (0.77)
	Php 15,780 –31,560	0.154 (0.240)	<b>0.430***</b> (0.111)
<b>Years of experience</b>		0.011 (0.006)	<b>0.009*</b> (0.005)
<b>Seaweed farm association membership</b>		0.149 (0.085)	-0.038 (0.074)

Notes: N. observation = 305; \*p < .05 \*\*p < .01 \*\*\*p < .001

### Supplementary analysis: OLS model (continued)

- ✓ Respondent's **real autonomy** and **wellbeing** are **negatively impacted** by the **job role**
- ✓ **Years of experience** in seaweed farming mildly **positively** affect community wellbeing and life satisfaction
- ✓ **Ownership** of the farm has a **beneficial** effect on **women's real autonomy**
- ✓ The **more** the respondent is **educated**, the **less** is **satisfied** with life
- ✓ **Greater life satisfaction** comes with **higher income**



## ***Discussion***

- *Job role and farming stages participation might influence pay gap*: the majority of the women interviewed are employee and the mostly work during the seaweed farm preparation phase
- *Men have a greater degree of decision making power in the working sphere*
- *Women are empowered within the domestic sphere*
- *Decision making power is affected by ownership of the asset and years of experience*
- *Ownership of the farm is not enough to grant a woman equal participation in decision making*
- *Level of community wellbeing and life satisfaction are equal across gender and are not directly associated to seaweed farming activities*



## ***Policy Implications***

- Seaweed farming provides women with an opportunity to be active in the workforce
- Women should be empowered beyond the domestic sphere
- Women should be encouraged to gain more control over resources and assets
- Women's participation in seaweed associations could help increase their bargaining power

## ***Further research***

- Investigation of relationship between latent factors
- Exploration of endogeneity effects
- Link pay gap with latent factors and other individual characteristics



***Thank you!***

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