



Securing the Food Systems  
of Asian Mega-Deltas for  
Climate and Livelihood  
Resilience

# TRANSFORMATION OF THE FEED SUPPLY SEGMENT OF THE AQUACULTURE VALUE CHAIN IN BANGLADESH

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Alliance





# BACKGROUND

- Aquaculture is a **highly dynamic** and **rapidly growing** sub-sector in the global food system, including Bangladesh
- Bangladesh is the **fifth largest** aquaculture producing country in the world (FAO, 2022) and production has **increased 20 times** over the past 3 decades (DoF, 2022).
- Aquaculture sector has experienced **significant growth, diversification, and technological innovations**, indicating a noticeable shift toward **more intensive cultivation techniques**
- This evolution has resulted **higher demand of fish feeds** which increased the number of **traders for distribution of these feeds** (Hernandez et al., 2018)



# BACKGROUND

- However, yet very little is known about the **characteristics of the dynamic and rapidly growing aquatic food value chain** in Bangladesh
- These gaps make it difficult to **plan and manage aquaculture development** or **design appropriate investments, policies and effective interventions**
- Considering all these aspects collectively, **comprehensive stacked survey-based research** was conducted in fish feed supply segment considering **the dynamic of transformation structure, conduct and performance**

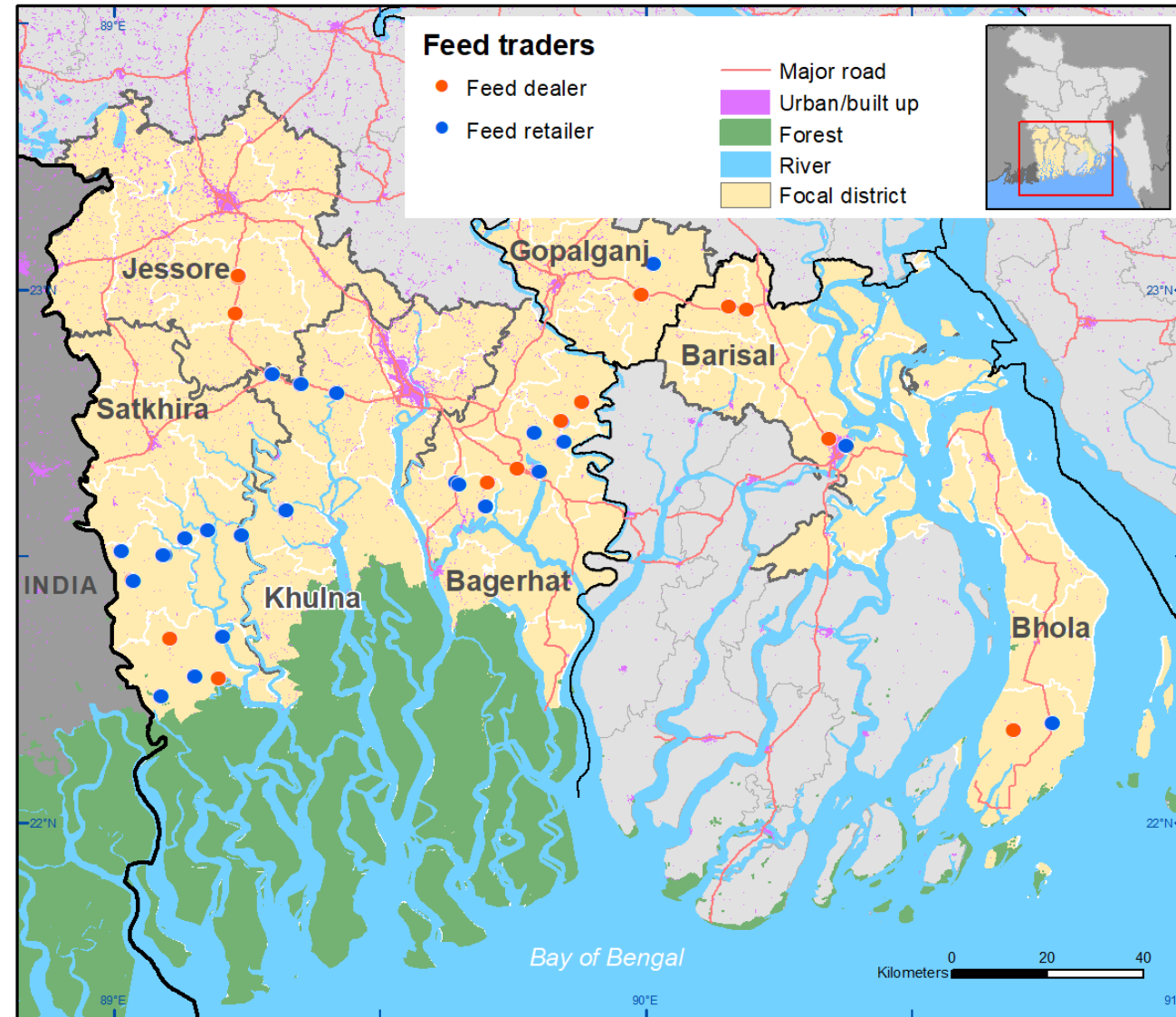
# MATERIALS AND METHODS



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## Study Area

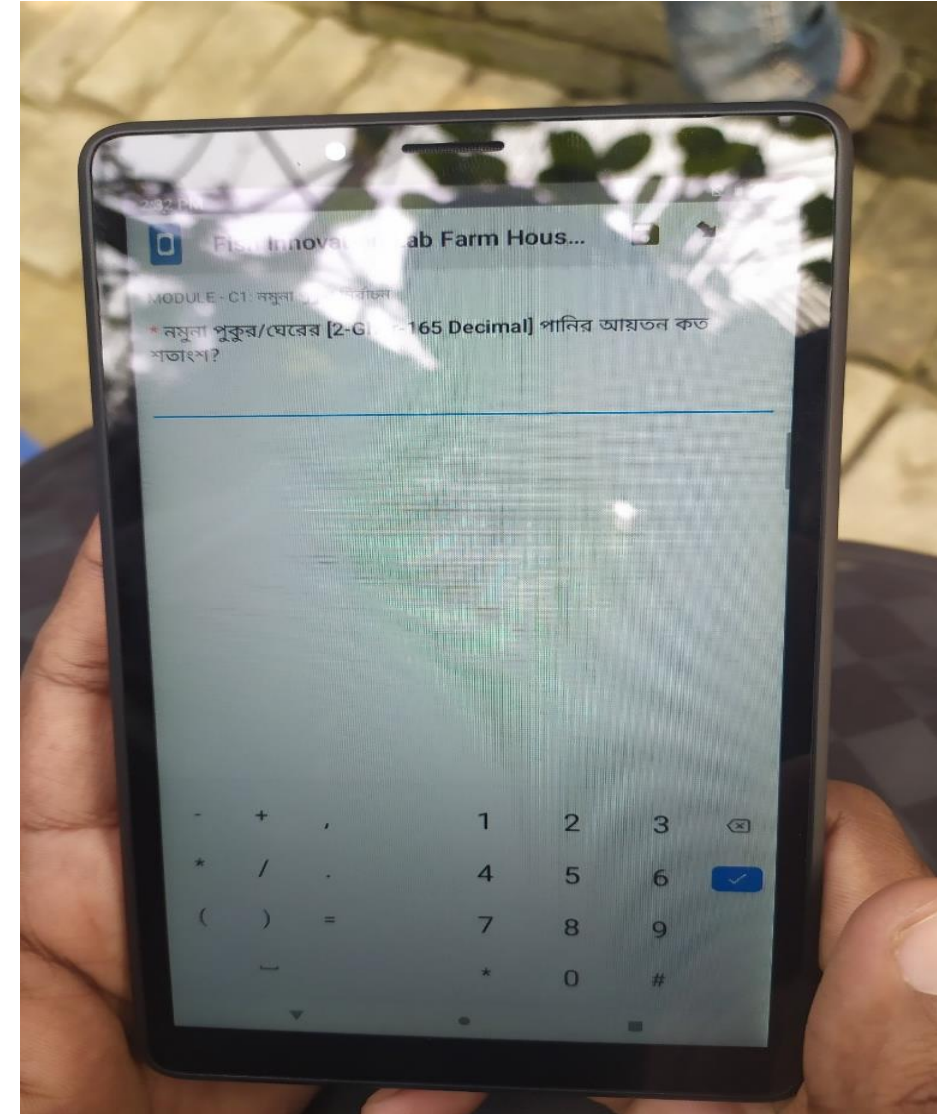
- **31 Markets**
- Survey was conducted in **13 sub-districts** in **7 districts** of south and southwest regions of Bangladesh



# MATERIALS AND METHODS

## Research Tools

- **A paper version of questionnaire** developed and translated to Bengali and pre-tested
- **After transforming digital version**, questionnaire was uploaded on the KoBo Toolbox, free open-source tool for mobile data collection
- **Repeated pre-testing** of the questionnaire was conducted to avoid possible errors



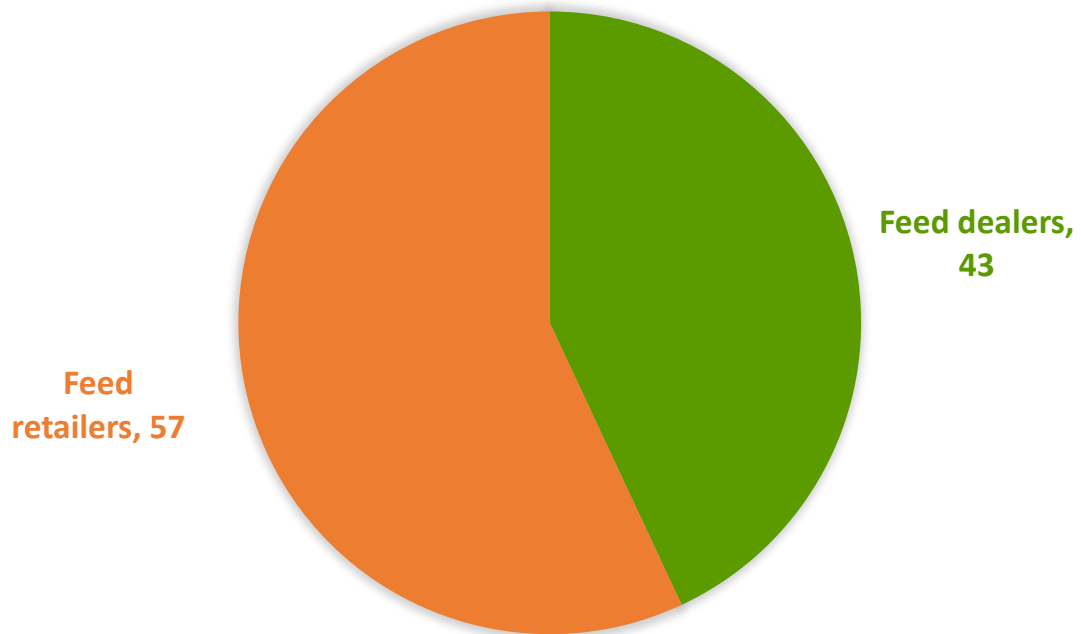
# MATERIALS AND METHODS

- **Digital version was finalised** after discussing among the researchers and research assistants
- A census of 250 feed suppliers was developed – **randomly surveyed 79 suppliers** including feed dealers and retailers
- **31 focus group discussions** were conducted in **feed supply markets** to collect meso-scale data



# RESULTS AND DISCUSSION

## Distribution of sample feed suppliers



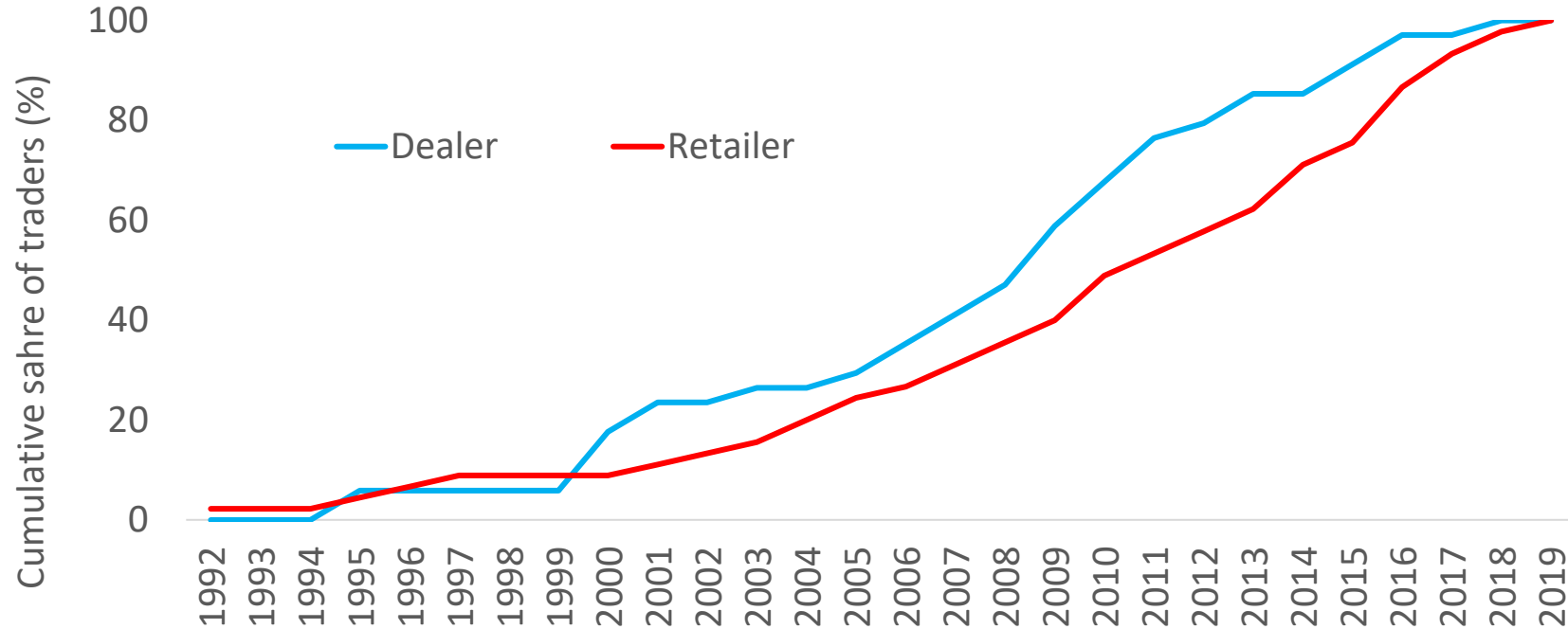
- Dealers function **mainly as retailers**, but large ones that **work directly with mills**. They have sole **distributorship rights** to sell a particular mill's feeds to farmers and retailers in given area, and may receive **commission or other financial incentives** from feed mills if they are able to fulfil sales targets
- Retailers are **smaller on average** than dealers, are **not linked** to feed mills through relational contracts, and specialize more in sales of **non-formulated feeds**.

# RESULTS AND DISCUSSION



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## Number of trader increased over the period



- **Majority (65%)** started between 2008 and 2019, reflecting the **relatively recent growth of feed use**
- Business establishment was linked to **the expansion of feed trading into more rural areas**

# RESULTS AND DISCUSSION



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- The number of **feed suppliers** increased by **69%** over the last decade
- **Retailers** increased more quickly than **dealers**, reflecting the **growth of aquaculture** at both the **extensive and intensive margin**



# RESULTS AND DISCUSSION

## Composition and volume of feed traded

Inputs (ton/year)	Dealer	Retailer	Overall
Fish feed (floating)	142	7.8	48
Fish feed (sinking)	42	4.4	15
Shrimp/prawn feed	24	9.6	14
Starter feed	19	1.3	6.7
Nursery feed	5.4	0.7	2.1
<b>Sub total</b>	<b>233</b>	<b>24</b>	<b>85</b>
Oil cakes	15	22	20
Wheat bran	23	25	24
Maize	14	27	23
Wheat products	4.3	15	12
Rice bran	3	9.2	7.4
Rice products	9.2	4.3	5.7
Pulse products	3.7	3.9	3.9
<b>Sub total</b>	<b>72</b>	<b>106</b>	<b>96</b>
<b>Total</b>	<b>305</b>	<b>130</b>	<b>182</b>

- Dealer traded **the largest average volume** than retailer
- Dealer mainly traded **formulated feed** whereas retailer traded **non-formulated feed**
- The average **volume of formulated increased almost double** over last decade
- Formulated feed market is **diverse**, but quite concentrated.
- Suppliers sold **35 companies feed**, with eight companies accounting for **74% of sales**

# RESULTS AND DISCUSSION



## Share pelleted and non-pelleted feed traded (% of total volume)

Inputs (% of total volume)	Dealer	Retailer	Overall
Fish feed (floating)	47	6	26
Fish feed (sinking)	14	3.4	8.5
Shrimp/prawn feed	7.8	7.4	7.6
Starter feed	6.4	1	3.7
Nursery feed	1.8	0.5	1.1
<b>Sub total</b>	<b>76</b>	<b>18</b>	<b>47</b>
Oil cakes	4.9	17	11
Wheat bran	7.6	19	13
Maize	4.6	21	13
Wheat products	1.4	12	6.7
Rice bran	1	7.1	4.1
Rice products	3	3.3	3.2
Pulse products	1.2	3	2.1
<b>Sub total</b>	<b>24</b>	<b>82</b>	<b>53</b>

- Formulated floating feed was **major traded feed for dealers**
- **The volume of floating feed traded has tripled** over the past decade, growing more rapidly than sinking feeds.
- On the other hand, non-formulated feed such as oil cakes, wheat bran, maize and wheat products **mainly traded feeds for retailers**

# RESULTS AND DISCUSSION

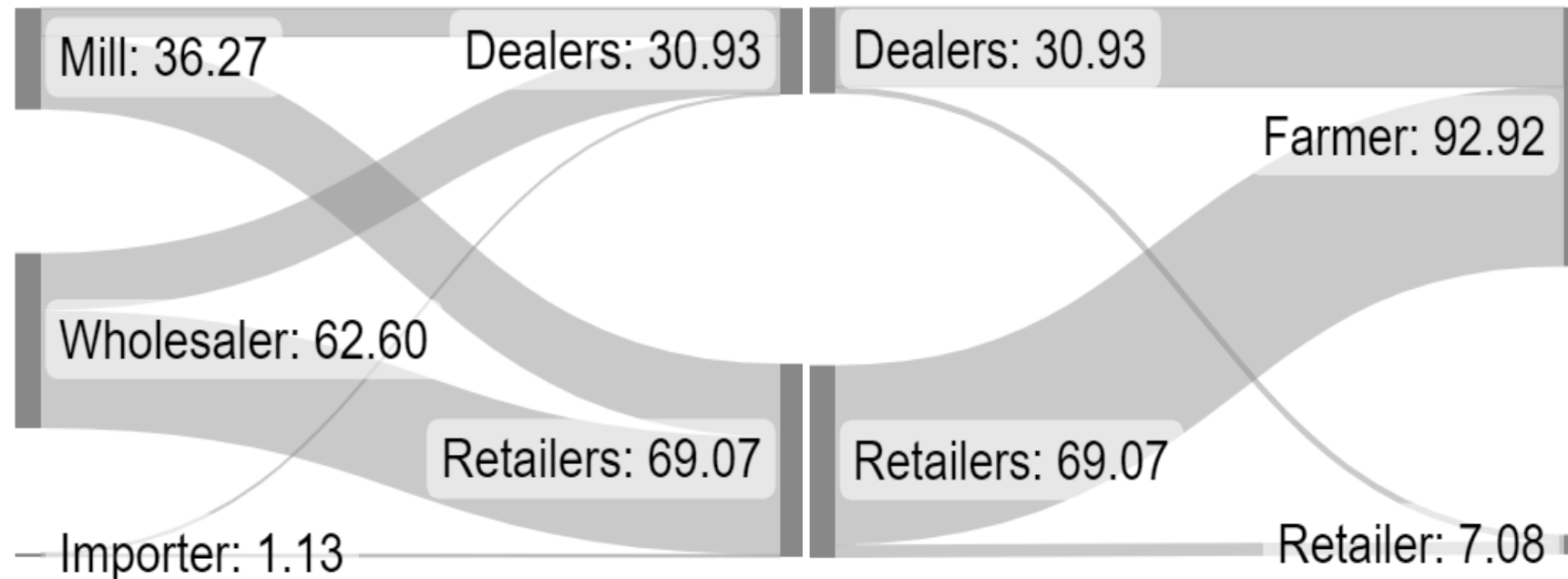
## Marketing channel of formulated feed



- The main marketing channel for formulated feed was **from mills to dealers**, (88% of supply), and **from dealers to farmers**, accounting for 64% of formulated feed traded

# RESULTS AND DISCUSSION

## Marketing channel of non-formulated feed



- The main upstream flows of non-formulated feeds were **from wholesalers and mills to retailers and dealers**
- Around **93% of combined non-formulated** feed sales by **retailers and dealers** were **direct to farmers**, with 7% flowing from retailers to retailers.

# RESULTS AND DISCUSSION

## Feed handling and storage

- Feed handling practices are **efficient**
- Suppliers sell feeds quickly (**average turnover time 10 days**) and storage practices are **adequate to maintain quality**
- No traders reported experiencing **any waste or loss of feed** during their most recent completed transaction
- Only 5% of traders reported **losing a small portion of feed** (1.7%) during transport.

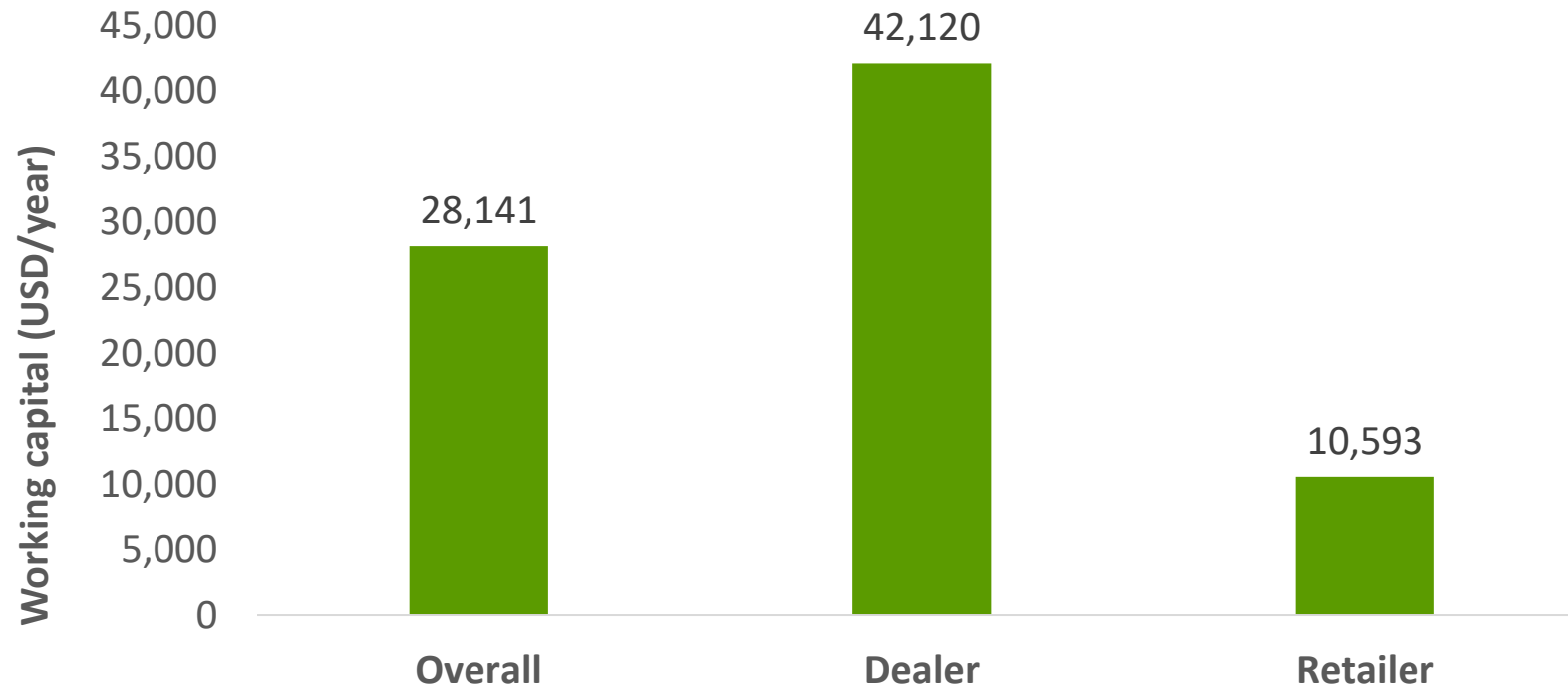


# RESULTS AND DISCUSSION



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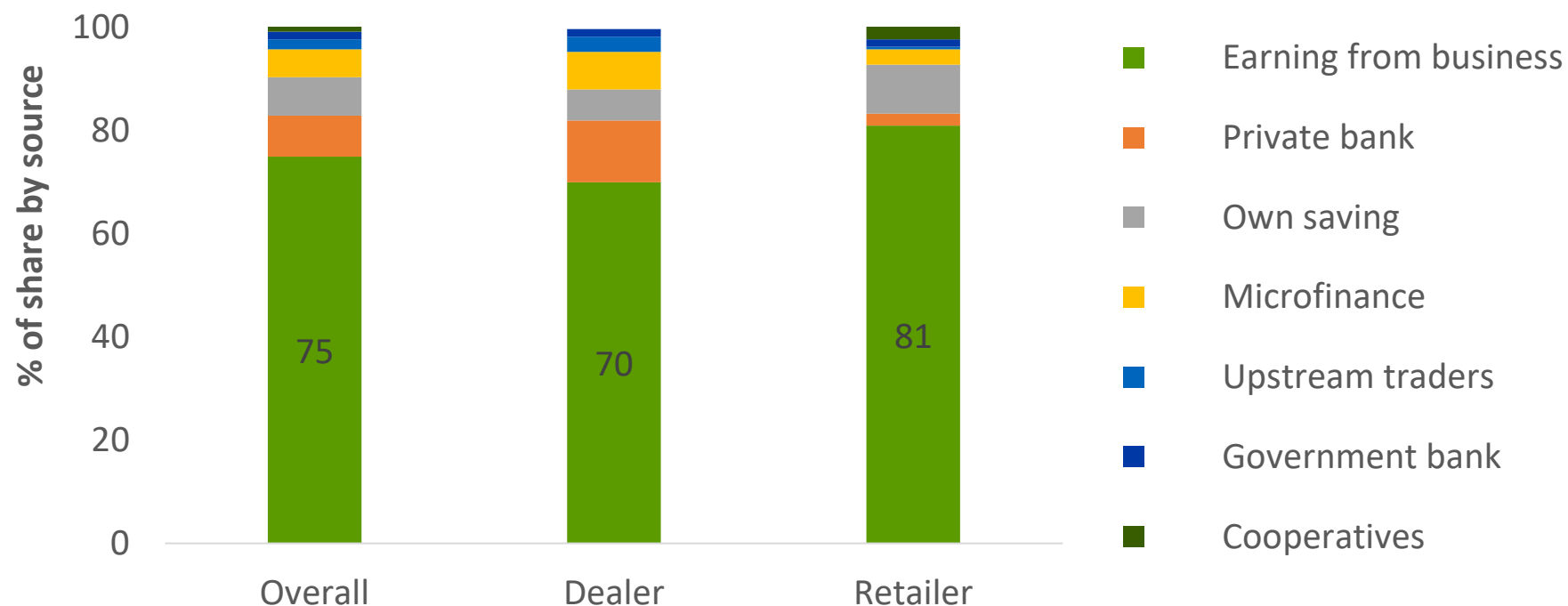
## Mean working capital per trader



- Dealer **need large amount of working capital** compared to retailer to operate feed trading business **indicating larger trader categories**

# RESULTS AND DISCUSSION

## Sources of working capital



- **> 83% of working capital** was from earning from **own business or saving**
- However, **some dealers received** small shared of working capital from **bank**

# RESULTS AND DISCUSSION

## Employment generation

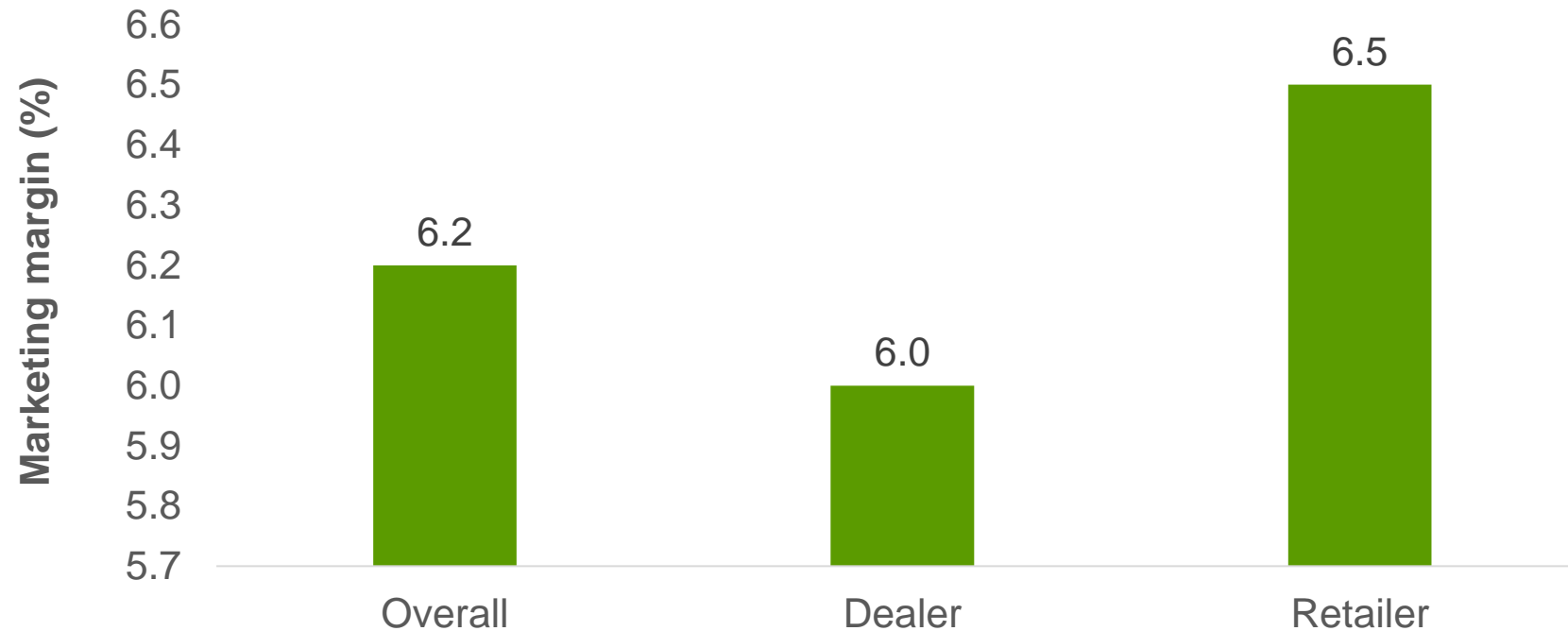
- Feeding trading is **family owned and operated business** and family members **participated in all activities associated with the business**
- Our surveyed traders generated **1,258 full time equivalent (FTE) jobs**, which were distributed **59% to family labor, 34% to long term labor, and 7% to casual labor**
- Employment created by feed trading was performed **almost exclusively by men (>99%)**, and predominantly by **individuals over 29 years of age (75%)**

# RESULTS AND DISCUSSION



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## Mean profit margin in recent transaction



- Traders earned relatively **modest profit margins** compared to other trading business



# TAKE HOME MESSAGES

- **The volume of traded feed almost doubled** over the last 10 years and the **growth of floating feed was faster** than **sinking and non-formulated feed**
- Feed trading **creates significant employment** and performed almost **entirely by men**, with limited youth involvement
- **Feed handling practices are efficient**, with rapid stock turnover **minimizing opportunities for spoilage**, and minimal feed loss and waste occurring between mill and farm
- **Profit margins are relatively modest**, without interlocking markets for feed and fish, or feed and chemicals
- Feed supply segment of the aquaculture value chain **is dynamic, well-developed, and relatively competitive and efficient**, which is contrary to the common image of feed supply chains performing poorly



# ACKNOWLEDGMENT

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**Thank you!**



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