

Ramadan-induced demand shifts and sales adaptations in the dried fish market of Tawi-Tawi, Philippines

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Abstract. Ramadan market dynamics (RMD) is a significant practice in Tawi-Tawi that provides livelihood opportunities for its inhabitants. It is a traditional practice observed every month in Ramadan, where local food products or seafood products are sold, and most of these are consumed during iftar (breaking the fast). In this study, we surveyed the market sales practices of dried fishery products (DFP) during the RMD season in Tawi-Tawi. The vendors of DFP (N = 32) were interviewed using a structured questionnaire containing relevant information regarding their current selling practices during the RMD season. Results indicated that selling DFP during the RMD season is one of the primary sources of income for the local communities in Tawi-Tawi, southern Philippines. Most vendors were male, married, between the ages of 31 and 40, Muslim, belonging to Sama and Badjao tribe, and practicing selling DFP for 9-10 years. The majority of the vendors personally harvest the fishery product and dry it to sell in the market, where they dry it in sunlight or with salting before drying it in sunlight. However, some vendors purchase their DFP from fishermen and wholesale, and the majority come from Panglima Sugala, Tawi-Tawi. Vendors usually begin selling DFP between 1:00 PM - 3:00 PM and finish by 6 PM. Different DFPs have different prices associated with them, where the most expensive ones are the dried small squids in a bundle and in octopus by piece. They also sell dried fish with bones and boneless, of which the majority are from the siganids fish. Moreover, DFP vendors mostly practice hawking to increase sales, as well as barker transactions (*Magsaliyu*), where they exchange sea DFP for mostly vegetables, fruits, and Iftar sweets (local food products), including fresh fish. Thus, these findings provide insights into the sales practices and strategies of DFPs in Tawi-Tawi during the RMD period.

Key Words: dried fishery product, hawking, *magsaliyu*, Ramadan market dynamic, sales practices, Tawi-Tawi.

Introduction. Tawi-Tawi, situated in the southernmost part of the Philippines, is widely known for its abundant marine biodiversity and highly productive fishing grounds (Muallil et al 2020). Fisheries-related activities remain fundamental to the province's economy, as many coastal households rely heavily on marine resources for both livelihood and daily subsistence (Brugère et al 2008). Within local trading systems, various fishery commodities circulate through community markets, among which dried fish holds particular cultural and economic significance. Beyond being a commonly consumed food item, dried fish serves as a vital income source for small-scale fishers, processors, and market vendors (Siddhnath et al 2024). Its role is especially important in island provinces, where preservation techniques are necessary to prolong shelf life, reduce post-harvest losses, and maintain product value (Chrispin & Kumar 2024).

In predominantly Muslim communities such as Tawi-Tawi, the observance of Ramadan brings about notable yet often understudied changes in food consumption patterns and market behavior. Ramadan, the ninth month of the Islamic lunar calendar, is marked by fasting from dawn until sunset and the daily practice of "iftar", the evening

meal that breaks the fast (Salim 2020; Arni et al 2024). These religious practices naturally influence household food choices, purchasing priorities, and consumption habits. During this period, families frequently prefer food items that are affordable, accessible, and easy to prepare, increasing the importance of preserved products (Sarri et al 2025). Due to its convenience, longer storability, and relatively low cost, dried fish often becomes a practical and reliable component of Ramadan food consumption. A growing body of literature suggests that religious observances and cultural events can substantially reshape food markets by affecting demand patterns, pricing behavior, and supply chain adjustments (Lopez-Martin 2022; Sarri et al 2025). Studies focusing specifically on Ramadan have documented shifts in consumer preferences, purchasing decisions, and expenditure patterns across Muslim-majority regions (Sandıkçı & Ger 2011; Sarri et al 2025). Despite these insights, limited research has explored how Ramadan influences fisheries-related commodities, particularly dried fish, within small-scale and geographically isolated markets. This gap remains significant, given the economic importance of dried fish and its close connection to coastal livelihoods.

Dried fish is not merely a dietary staple but also a livelihood opportunity that supports numerous actors within local fisheries value chains (Pradhan et al 2022). Fluctuations in demand associated with culturally significant periods, such as Ramadan, may create temporary economic opportunities or challenges for fishers and vendors (Sarri et al 2025). Examining how sales practices respond to these seasonal variations can provide a clearer understanding of market adaptations, trading behavior, and livelihood strategies in fisheries-dependent communities. Against this backdrop, the present study examines the dried fish trade in Tawi-Tawi during the Ramadan period, with particular emphasis on sales practices and market dynamics. By examining vendor strategies, product distribution, and market interactions, this study aims to generate insights into the ways religiously influenced consumption patterns shape local trading systems. The findings are expected to contribute to broader discussions on small-scale fisheries economies, seasonal market behavior, and the socio-economic realities of coastal communities.

Material and Method

Study site. This study was conducted during Ramadan in the province of Tawi-Tawi, Philippines, specifically in the municipalities of Bongao and Panglima Sugala (Figure 1). Researchers visited two local markets (*Tabuh*) in Tawi-Tawi: Bongao Public Market and Budega in Bongao, as well as Bato-Bato Public Market at Panglima Sugala Municipal Fish Port. The study took place from March 16 to April 6, 2024, during Ramadan and focused on evaluating the sales practices of dried fishery products (DFP) in relation to the Ramadan market dynamics (RMD).

Market survey. This study employed specific tools for data collection, including a semi-structured questionnaire and a smartphone. The semi-structured questionnaire, a widely used method in scientific research, particularly in research studies (Adeoye-Olatunde & Olenik 2021) was utilized to conduct one-on-one interviews with respondents. A smartphone was also used due to its portability, multifunctionality, and wireless connectivity, making it a powerful tool for mobile data collection. The survey questionnaire was divided into five sections. The first section focused on the vendors' demographic profiles, including age, gender, civil status, religion, income, and the number of family members involved in selling. The second section addressed the types of dried fishery sold during the Ramadan period. The third section explored selling methods, profit margins, and sales practices. The fourth section covered preservation techniques, and the final section examined challenges affecting sales.

Data analysis. The interview data were compiled and analyzed using descriptive statistics, specifically percentage frequency, with the aid of Microsoft Excel 2021.

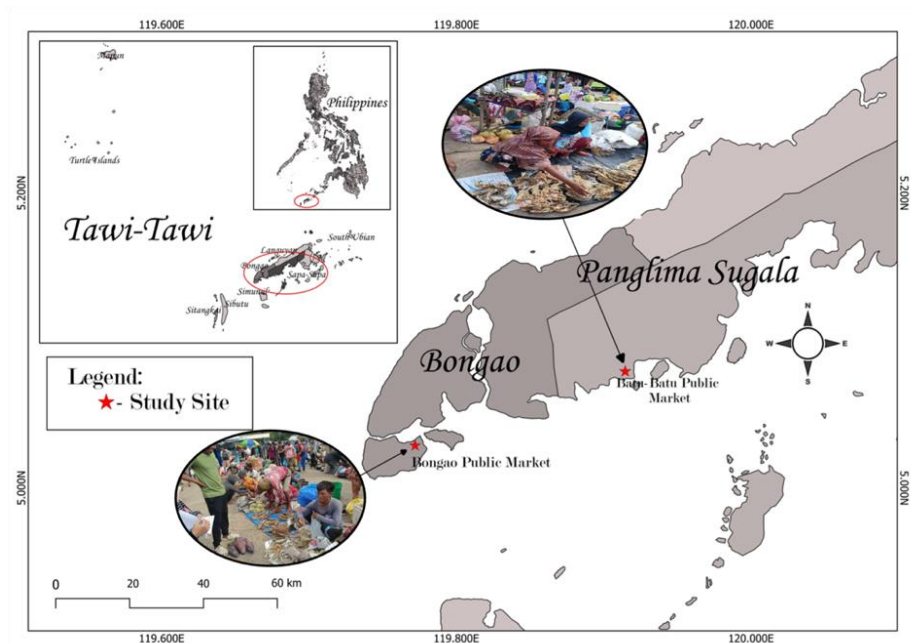


Figure 1. Map showing the location of survey sites in Tawi-Tawi, Philippines.

Results

Socio-demographic profile. Table 1 shows the profile of the dried fishery products vendors. A total of 32 vendors selling dried fishery products were interviewed in Tawi-Tawi, particularly in the Bongao Municipality and Panglima Sugala Municipality, during the Ramadan market trends. Most of the respondents fall within the age range of 31-40 years (34.38%), followed by 21-30 years and 51-60 years (21.87% each). The majority of them were male (65.62%), and the remaining were female (34.38%). In addition, 81.25% of the respondents were married, followed by 12.5% who were single and 6.25% who were widowed. All respondents are followers of Islam (100%), with Badjao's (71.88) highest percentage, followed by Tausug's (28.12). It has been reported that all of the vendors (100%) practiced selling dried fishery products every month of Ramadan. The majority of them practiced for about 9-10 years (34.38%), followed by 7-8 years (18.75%). It was also noted that selling dried fishery products was the primary income of the vendors, where the majority of them (34.38%) have 3-4 family members involved in selling, followed by 1-2 family members (28.12%) and 5-6 family members (28.12%), then 7-8 family members (9.38%) involved.

Table 1

Profile of the dried fishery products vendors

<i>Profile of the vendors</i>	<i>No. of dried fish vendor</i>	<i>Frequency (%)</i>
<i>Age (years)</i>		
10-20	1	3.13
21-30	7	21.87
31-40	11	34.38
41-50	6	18.75
51-60	7	21.87
<i>Gender</i>		
Male	21	65.62
Female	11	34.38
<i>Civil status</i>		
Single	4	12.50
Married	26	81.25
Widow	2	6.25

<i>Religion</i>		
Christianity	0	0
Islam	32	100
<i>Tribe</i>		
Tausug	9	28.12
Badjao	23	71.88
<i>Do you sell every Ramadan?</i>		
No	0	0
Yes	32	100
<i>If yes, how many years of practice?</i>		
1-2	3	9.37
3-4	3	9.37
5- 6	5	15.63
7-8	6	18.75
9-10	11	34.38
11-12	2	6.25
13-14	2	6.25
<i>Income</i>		
Primary	32	100
Secondary	0	0
<i>Number of family members involved in selling</i>		
1-2	9	28.12
3-4	11	34.38
5-6	9	28.12
7-8	3	9.38

Source of dried fishery product. Table 2 provides information on the source of the dried fishery products being dried. About 71.87% of respondents have personally dry the fishery products they sell and only 28.13% did not personally dry their fishery products. A total of 34.88% of the respondents purchased dried fishery products from a source, of which 45.45% were both from wholesale and fishermen, while 9.10% were from the local fish market. The majority of the respondents dried their fishery product through sun drying (59.37%), followed by the application of salt and sun drying (40.63%). Moreover, about 39.47% of the respondents obtained the dried fishery products from the municipality of Panglima Sugala Tawi-Tawi, followed by 15.79% from the municipality of Simunul and the municipality of Languyan, then 13.16% from the municipality of Bongao and municipality of Sitangkai and only 2.63% from the municipality of Subutu.

Table 2

Source of dried fishery product

<i>Source of dried fishery product</i>	<i>No. of dried fish vendor</i>	<i>Frequency (%)</i>
<i>Do you personally dry the fishery product for selling</i>		
No	9	28.13
Yes	23	71.87
<i>Do you buy dried fishery products from a source?</i>		
No	21	65.62
Yes	11	34.38
<i>If yes, which source?</i>		
Local fish market	1	9.10
Wholesale fisherman	5	45.45
	5	45.45
<i>How is the fishery product being dried?</i>		
Just sun dried	19	59.37
With the application of salt and sun dried	13	40.63

<i>Source of dried fishery products (municipality)</i>		
Bongao	5	13.16
Sibutu	1	2.63
Sitangkai	5	13.16
Simunul	6	15.79
Languyan	6	15.79
Panglima Sugala	15	39.47

Practice of selling dried fishery product. Table 3 shows the vendors' selling practices of dried fishery products during the month of Ramadan. The majority of vendors (81.25%) indicated that there is no cost associated with the location for selling dried fishery products, however, 18.75% reported that there is a cost associated with the location, wherein they paid ranging from 50 to 250 PHP per day. Most vendors start selling between 1:00 pm and 3:00 pm (65.62%) and end between 5:00 pm and 6:00 pm (87.5%). Different types of dried fishery products have been sold in the province of Tawi-Tawi; these include boneless dried fish (12.50%), bone-dried fish (46.87%), dried squid (17.19%), and dried octopus (6.25%). The majority of the vendors (93.75%) responded that the price of dried fishery products varies according to different types of fish or other fishery products. The vendors sold their dried fishery products in bundles/bunches (51.30%) without the use of cellophane; instead by just tying the dried fishery products, it was followed selling in kilogram (26.96%) and then in bundles/bunches with cellophane (21.74%). Vendors' profits range from 10 to 60%. Most vendors (34.37%) earn between 10 and 20%, while 31.25% make between 21 and 30%. Only a small percentage (3.13%) of DFP vendors earn the highest profits, ranging from 51 to 60%. A total of 68.75% of the vendors did not engage in hawking. However, 31.25% of the vendors still practiced hawking with the majority performed by a family member (80.00%). Additionally, 68.75% of vendors practiced barter transactions, mostly trading dried fishery products for other commodities or goods such as vegetables (47.74%), fruits (36.36%), Iftar sweets (11.36%), potatoes (2.27%), and fresh fish (2.27%).

Table 3

Selling practices of dried fishery products in the province of Tawi-Tawi

<i>Selling of dried fishery products</i>	<i>No. of dried fish vendor</i>	<i>Frequency (%)</i>
<i>Any cost associated with the location for dried fishery products?</i>		
No	26	81.25
Yes	6	18.75
<i>If yes, how much per day?</i>		
50-100	3	50
151-200	1	16.67
201-250	2	33.33
<i>Selling time started</i>		
5:00 am - 7:00 am	4	12.5
8:00 am - 9:00 am	7	21.88
1:00 pm - 3:00 pm	21	65.62
<i>Selling time ended</i>		
2:00 pm - 4:00 pm	2	6.25
5:00 pm - 6:00 pm	28	87.5
7:00 pm - 8:00 pm	2	6.25
<i>Types of dried fishery products being sold</i>		
Dried fish (boneless)	8	12.50
Dried fish (with bones)	30	46.87
Dried squid	11	17.19
Dried octopus	4	6.25
Other (rays, skates, and sharks)	11	17.19

<i>Price of dried fishery products vary according to different type of fish or other fishery products</i>		
No	2	6.25
Yes	30	93.75
<i>If yes, what are those fishery products?</i>		
<i>Dried fish (boneless) - mainly rabbit fish (PHP)</i>		
50-150	4	50.00
151-250	2	25.00
251-350	1	12.50
351-450	1	12.50
<i>Dried fish (with bone) - mainly emperor fish, flying fish, parrot fish, anchovies, silverbiddies, trevally, goatfish, needlefish, catfish, and sardines (PHP)</i>		
50-150	16	51.62
151-250	6	19.35
251-350	6	19.35
351-450	3	9.68
<i>Dried squid - mainly common squid, flying squid, bobtail squid, and arrow squid (PHP)</i>		
150-300	3	27.27
301-600	6	54.55
601-900	2	18.18
<i>Dried octopus - mainly common Octopus (PHP)</i>		
100-150	1	25.00
151-200	3	75.00
<i>Others (cartilages fish such as stingrays, skates, and sharks) (PHP)</i>		
100-200	7	63.64
201-300	4	36.36
<i>How do you sell dried fishery products?</i>		
By kilo	31	26.96
By bundle/bunches (without cellophane)	59	51.30
By bundle/bunches (with cellophane)	25	21.74
<i>What percentage of the profit do you generate from the initial capital</i>		
10-20%	11	34.37
21-30%	10	31.25
31-40%	6	18.75
41-50%	4	12.5
51-60%	1	3.13
<i>Practice of hawking</i>		
No	22	68.75
Yes	10	31.25
<i>If yes, who is involved?</i>		
Family	8	80.00
Friends	2	20.00
<i>Practice barter transactions (Magsaliyu)</i>		
No	10	31.25
Yes	22	68.75
<i>If yes, what commodities/goods?</i>		
Fresh fish	1	2.27
Potatoes	1	2.27
Iftar sweets	5	11.36
Fruits	16	36.36
Vegetables	21	47.74

Storage technique and challenges impacting the sales. Table 4 presents survey results on storage techniques used for dried fishery products, materials used for storage, and challenges impacting sales. A total of 75% indicated that their dried fishery products sell out within a day, and only 25% are not able to sell their product in a day. The majority of these vendors (78.12%) reported proper storage in a cool condition as their storage technique, and only 21.88% others. For materials used for storage, the most common options were sacks (42.11%), followed by wooden boxes (26.32%) and carton boxes (23.68%). The vendors were asked about challenges impacting sales, of which the majority of vendors (59.61%) reported intense competition in the selling market, while 23.08% reported price fluctuations nearing the end of Ramadan as a challenge, and 17.31% reported other challenges. These results suggest that proper storage techniques are essential for maintaining the quality of dried fish products, and competition is a significant challenge for vendors in the market.

Table 4

Preservation technique and challenges

<i>Storage technique</i>	<i>No. of dried fish vendor</i>	<i>Frequency (%)</i>
<i>Can your dried fishery products sell out within a day?</i>		
Yes	24	75.00
No	8	25.00
<i>If No, how do you store it?</i>		
Proper storage in cool condition	25	78.12
Others	7	21.88
<i>Materials used for storage</i>		
Sacks	16	42.11
Carton box	9	23.68
Wooden box	10	26.32
Others	3	7.89
<i>Challenges impacting the sale</i>		
Intense competition in the selling market	31	59.61
Price fluctuations nearing the end of Ramadan	12	23.08
Others	9	17.31

Discussion. Ramadan plays a significant role in shaping the socioeconomic conditions of street vendors, influencing food consumption patterns, and driving the purchase of religious items (Rasul & Uddin 2023). During this holy month, the demand for fishery products, especially DFP, rises as these items are favored for their longer shelf life, aligning with the dietary practices observed during Ramadan. This increased demand provides fishers and vendors with opportunities to expand their market presence and creates avenues for small-scale entrepreneurs to enter the industry. This study focuses on the selling practices of various aquatic products, with a particular emphasis on DFP, in Tawi-Tawi during Ramadan. The majority of DFP vendors have been identified as married males, predominantly between the ages of 31 and 40, belonging to the Muslim Badjao tribe. These vendors typically have 9-10 years of experience selling DFP during Ramadan. Operating as a family business, DFP selling becomes the primary source of income for many households during this holy month. In addition, research in the Philippines has highlighted the increasing involvement of men in the fishery sector, particularly in fishing, marketing, and selling aquatic products (Siason 2004; Harper et al 2013; Gopal et al 2020). Additionally, men predominantly participate in the capture fisheries sector, taking on roles such as fishing and other physically demanding activities (Bennett 2005; Santos 2015). In predominantly Muslim regions like Tawi-Tawi and Sulu, cultural norms and religious beliefs emphasize that men should engage in physically demanding work, further supporting their active role in this sector (Mateo et al 2021).

Several studies have indicated that vendors of aquatic fishery products obtain their supplies from fishermen and subsequently sell them in the market (Carnaje 2007;

Binay & Villenas 2024). In the current study, the majority (72%) of vendors selling DFP personally dried their products before selling them in the market, whereas the remaining vendors (28%) did not engage in the drying process themselves. Moreover, fish drying is a widely practiced preservation method in the Philippines, particularly in coastal communities, to extend shelf life and minimize post-harvest losses (Entee 2015; Akintola et al 2022; Rabiepour et al 2024). The most common techniques include sun drying, smoking, and mechanical drying, with sun drying being the most cost-effective approach (Sharma et al 2009; Janjai & Bala 2012). Salt application, through dry salting or brining, is often integrated with drying to enhance preservation, prevent microbial growth, and improve texture (Man 2007; Rysová & Šmídová 2021). Many producers combine salting and sun drying to produce traditional dried fish products such as *danggit* (dried rabbitfish), *tuyo* (dried salted sardines), and *daing* (dried marinated fish), which are widely consumed in Filipino households and contribute to both local and export markets (Maranan & Maranan-Goldstein 2016; Fernandez 2019). In this study, 72% of vendors selling DFP personally dried their products, with 59% relying solely on direct sun drying and 41% utilizing a combination of salt application and sun drying as their preservation method. These findings show that traditional fish drying methods remain widely practiced, with most vendors using either direct sun drying or a combination of salting and sun drying.

Market spaces serve as key hubs where vendors acquire aquatic fishery products from fishermen and subsequently resell them in the market (Stillerman 2006; Dewar & Watson 2018; Suryanto et al 2020). In Tawi-Tawi, Philippines, the majority of vendors (81%) selling DFP operate in their own designated spaces, which they own and use as their primary source of income throughout the year, including during Ramadan. However, 19% of the respondents rented spaces by paying fees, allowing them to operate legally and efficiently while selling their products, particularly during peak periods such as Ramadan, indicating variations in ownership and access to selling areas. Furthermore, *Iftar*, the meal that ends the daily fast during Ramadan in Islamic tradition, occurs at sunset after the *adhan* (call to prayer) for the maghrib prayer (Siddiqi 2014; Ibrahim 2018). It typically begins with dates and water, followed by a more substantial meal to restore energy after a day of fasting (Ryan 2005; Baab 2006). Since *Iftar* is usually eaten after sunset, around 6 PM in the southern Philippines, particularly the province of Tawi-Tawi, most vendors selling DFP plan their sales accordingly. About 66% start selling between 1 PM and 3 PM, while 88% finish by 5 PM to 6 PM, as these products are commonly consumed for *Iftar*. In the Philippines, dried fishery products are classified as with bones or boneless (Hernandez 2020; Macabudbud et al 2024). Common varieties with bones include *tuyo* (salted, dried herring), *danggit* (rabbitfish), and *dilis* (anchovies), which are often fried or used in dishes (Fernandez 2019). Boneless options include boneless *danggit*, and boneless *tuyo*, which are easier to eat and commonly grilled or fried (Maranan & Maranan-Goldstein 2016). These dried fish products are a staple in Filipino cuisine, enjoyed for their rich flavor and long shelf life (Maranan & Maranan-Goldstein 2016; Fernandez 2019). In the province of Tawi-Tawi, a variety of dried fishery products are sold, as reported by respondents. These include bone-in and boneless dried fish, dried squid, and dried octopus, along with dried rays, skates, and sharks (Figure 2). These products support the local economy by providing livelihood opportunities for vendors and contributing to the province's seafood trade.

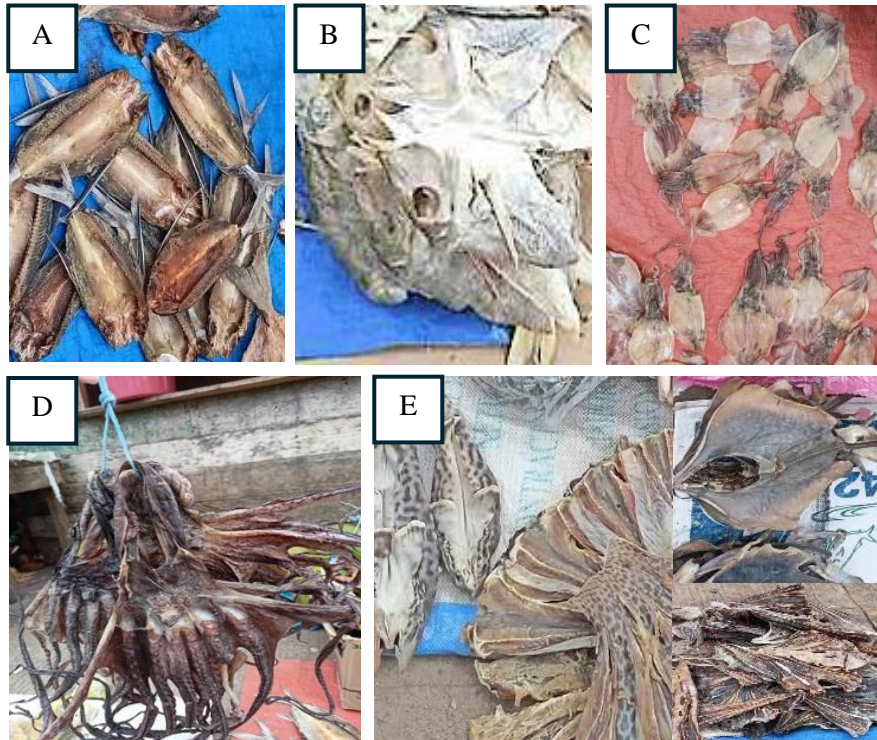


Figure 2. A variety of dried fishery products are sold in the province of Tawi-Tawi, southern Philippines. A, with bone-dried fish; B, boneless dried fish; C, dried squid; D, dried octopus; E, dried rays and skates.

Hawking as a selling practice involves actively attracting potential customers by calling out in public spaces, often in a loud and engaging manner (Morshed 2020). Hawkers typically conduct their business in high-traffic locations such as streets, markets, and other bustling areas, aiming to capture the attention of passersby. However, in the present study, only a small portion (31%) of DFP vendors in Tawi-Tawi, southern Philippines, engaged in hawking, which is performed by a family member, while the majority (69%) conducted their sales from designated spaces they own, which serve as their primary source of income throughout the year, including during Ramadan. Moreover, barter transactions, locally known as *Magsaliyu*, remain a common practice in the province of Tawi-Tawi, particularly among vendors, farmers, and fishers (Dumilag 2019; Sarri et al 2025). This traditional system of exchange allows traders to negotiate and trade goods or services without using money. *Magsaliyu* is considered an innovative and flexible form of transaction, enabling individuals to acquire essential products by exchanging items of mutual value. This practice was also observed in the present study, where dried fishery products were traded for fresh fish, potatoes, *Iftar* sweets (*Bang-Bang Sug*), fruits, and vegetables (Figure 3). It continues to thrive in local markets, fostering strong economic and social ties among traders in the community. Furthermore, challenges in selling products include strong market competition, maintaining customers, and setting the right prices which most vendors adjust their strategies to stay competitive and sustain their businesses in a dynamic market (Cohen et al 2006; Tuli et al 2007; Neslin & Shankar 2009). As part of this study, vendors were interviewed about the challenges they faced in selling dried fishery products during Ramadan. The findings revealed that intense market competition and price fluctuations toward the end of Ramadan were their primary difficulties. These results highlight the importance of proper storage techniques to preserve the quality of dried fish products and emphasize that market competition remains a significant challenge for vendors.



Figure 3. The actual practice of *Magsaliyu* (barter transaction), where dried fishery products are exchanged for vegetables.

Conclusions. This study underscores the significant role of Ramadan Market Dynamics (RMD) in sustaining the livelihoods of communities in Tawi-Tawi, with dried fishery products (DFPs) being a key source of income. The results indicate that vendors, primarily from the Sama and Badjao tribes, use traditional methods such as self-harvesting, sun drying, and salting, as well as sourcing from local fishers, to meet market demands. As one of the main income-generating activities during Ramadan, this trade is predominantly carried out by married men aged 31 to 40, with 9 to 10 years of experience in selling DFPs. Vendors employ innovative sales strategies, such as hawking and bartering, to increase profitability and foster community exchange. These practices illustrate a blend of cultural heritage and economic adaptability, highlighting the importance of RMD as a socio-economic cornerstone in the region. The findings provide valuable insights into the sustainability and resilience of traditional fisheries within a culturally significant framework.

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