

Financial Performance of Fishing Cooperatives in the Republic of Croatia

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Fisheries are a strategic sector of the economy in the Republic of Croatia and an important driver of development, particularly in the Adriatic Croatia, with fishing cooperatives representing a significant business segment within it. A fishing cooperative is a specific type of cooperative whose primary activity is fishing, while the activities of its members include commercial fisheries, farming, and processing of fishery products, including their placement on the market. In accordance with specific regulations, fishing cooperatives in the Republic of Croatia must contribute to the ecologically sustainable exploitation and protection of marine biological resources and ecosystems, strengthen the competitiveness of producers in fisheries and aquaculture, improve market transparency by providing relevant information to consumers and ensuring product traceability, secure market stability through production planning and supplying consumers with quality and healthy food, improve skills, working conditions and occupational safety, encourage innovation aimed at the development of the blue economy, and foster both national and international cooperation. The aim of this study was to determine the financial performance and business stability of fishing cooperatives in the Republic of Croatia in the period from 2018 - 2023. A financial analysis was conducted on nine active fishing cooperatives over the analysed period. Financial performance was assessed using indicators of liquidity, activity, indebtedness, efficiency and profitability, while business stability was evaluated using the revised Altman Z-score model for privately held companies. The results of the financial analysis indicate relatively sound financial performance and business stability for the majority of fishing cooperatives throughout the analysed period.

KEYWORDS

- ~ Fishing cooperative
- ~ Financial analysis
- ~ Performance
- ~ Business

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1. INTRODUCTION

Fishing cooperatives can contribute to the resilience of fishing communities, increase market competitiveness, reduce costs, and facilitate access to financing (Ostrom, 1990; FAO, 2008). In Croatia, the beginnings of cooperative organization in fisheries date back to 1864, while formal fishing cooperatives started to be established from 1910 onwards (Bašić, 2006). By the mid-20th century, more than 150 cooperatives operated in Croatia, but most of them disappeared due to various political and socio-economic reasons (Dragić, 1994). After the independence of the Republic of Croatia, a new legislative framework enabled the revitalization of cooperatives with the aim of strengthening competitiveness, innovation, and safety in the fisheries sector. Despite the relatively small number of active fishing cooperatives, they represent a significant business segment of Croatian fisheries and aquaculture. According to specific regulations, fishing cooperatives in the Republic of Croatia must contribute to the ecologically sustainable use and protection of living marine biological resources and ecosystems, strengthen the competitiveness of producers in fisheries and aquaculture, improve market transparency by providing relevant information to consumers and ensuring product traceability, ensure market stability through production planning and the supply of consumers with high-quality and healthy food, improve skills, working conditions and occupational safety, promote innovation aimed at developing the blue economy, and foster national and international cooperation.

Since 2021, the Republic of Croatia has, for the first time, adopted a regulation on the recognition of producer organizations (NN 137/2021, etc). This regulation defines the criteria under which a fishing cooperative may obtain recognition as a producer organization in the fisheries and aquaculture sector. The primary objective of producer organizations is to strengthen the bargaining power of their members in relation to European Union institutions and to contribute to a more effective implementation of the Common Fisheries Policy (Ministry, 2021). In the Republic of Croatia, four fishing cooperatives have been formally recognized by the Ministry of Agriculture, Forestry and Fisheries as producer organizations: RZ Omega 3, RZ Zadar, RZ Friška Riba and RZ Istra (EC, 2025).

Research on the cooperative system in the Republic of Croatia highlights fishing cooperatives as the segment of the cooperative sector that stands out for its strong business results in 2014 and 2017 (Stanojević, 2015; Broz et al., 2019).

Since there is a lack of systematic research on the operations of fishing cooperatives in the Republic of Croatia, the aim of this paper is to determine their financial performance and business stability in the period 2018–2023.

2. METHODOLOGY

In the first phase of the research, data on registered and active fishing cooperatives in the Republic of Croatia were collected using the databases of the Financial Agency (FINA), the Croatian Chamber of Economy (HGK), and the Ministry of Agriculture, Forestry and Fisheries of the Republic of Croatia.

Based on the collected data, a financial analysis was conducted for nine continuously active fishing cooperatives in the period 2018–2023. To determine the financial performance of the fishing cooperatives, selected financial indicators were used: liquidity (current liquidity ratio), activity (total asset turnover ratio), indebtedness (total debt ratio), efficiency (overall business efficiency), and profitability (return on total assets) (Van Horne et al., 2014; Belak, 2014; Žager et al., 2021). The financial indicators were analysed using appropriate descriptive statistical measures.

To determine business stability, the revised Altman Z-score model for private companies not listed on the stock exchange was used, which is mathematically expressed by the following formula (Zenzerović et al., 2006; Bogdan et al., 2019):

$$Z = 0,717X_1 + 0,847X_2 + 3,107X_3 + 0,420X_4 + 0,998X_5 \quad (1)$$

where:

Z – value of the discriminant function

X₁ – working capital / total assets

X₂ – retained earnings /total assets

X₃ – earnings before interest and taxes (EBIT) / total assets

X₄ – book value of equity / total liabilities (book value)

X₅ – sales revenue / total assets

The threshold values of the revised Altman Z-score model are defined so that entities with a score above 2.90 are considered financially stable, while entities with a score below 1.23 are considered to be at risk of bankruptcy.

3. RESULTS AND DISCUSSION

The average value of net profit of nine fishing cooperatives shows positive results and the increase over the years from 51.543,72 € in 2018 to 189.148,11 € in 2023 (Table 1). The minimum values show that some of the cooperatives are dealing with the loss in almost all years (three cooperatives). Maximum values are showing that some of the cooperatives are achieving very high profits (1.860.191,00 €). However, the standard deviation is very high which demonstrates large disparities in financial results between cooperatives.

The average net salary per employee show a generally positive trend (Table 1). In 2018, the average net salary per employee in cooperatives amounted to around 531 €, while in 2023 it increased to approximately 737 €, indicating improvements in employee compensation over time. Additionally, it is important to highlight that the average net salary in Croatia in 2023 was around 1.148,00 €. Compared to this level, the average net salaries in fishing cooperatives remain considerably lower and, despite the increase, do not follow the general labor market trend.

Between 2018 and 2023, the number of employees in fishing cooperatives shows relatively stable averages, ranging from 13 to 15 employees per cooperative, with a gradual increase in maximum values over time (from 75 in 2018 to 89 in 2021) (Table 1). This indicates some expansion in the largest cooperatives during the middle of the observed period. In 2017, there were 8 employees on average in fishing cooperatives (Broz et al., 2019). However, the minimum number of employees remains consistently very low (1–2 employees, and even 0 in 2023), suggesting that a few cooperatives operate with minimal or no permanent staff. Among the cooperatives, Omega 3 has the highest employment level.

Economic value	Year	Minimum	Maximum	Mean (\bar{x})	Standard deviation (s)
Total revenue	2018	25.996,42	9.853.197,43	2.920.094,56	3.023.846,77
	2019	22.979,10	9.441.662,62	2.758.515,85	2.896.911,62
	2020	23.347,53	9.559.989,51	2.850.293,95	2.897.776,97
	2021	34.056,27	9.178.656,18	2.460.471,70	2.827.854,46
	2022	38.999,94	9.785.326,43	2.574.953,26	3.123.883,13
	2023	72.681,00	12.327.209,00	2.723.370,67	3.902.108,93
Total expenses	2018	25.428,23	9.341.243,21	2.856.865,35	2.876.676,49
	2019	23.010,68	2.684.239,99	2.669.994,28	2.684.239,99
	2020	22.997,68	8.968.732,90	2.778.047,93	2.727.052,94
	2021	33.842,19	8.347.132,26	2.379.730,37	2.582.220,69
	2022	38.373,36	8.787.228,46	2.497.851,63	2.817.670,72
	2023	72.356,00	10.050.484,00	2.487.628,44	3.201.849,15
Total profit (loss)	2018	568,19	2.370.976,57	326.429,98	784.697,22
	2019	-670,38	742.369,90	88.521,57	245.371,25
	2020	-13.871,26	591.256,62	72.246,02	195.512,89
	2021	-136.651,54	831.523,92	80.741,33	285.433,42
	2022	-181.544,24	998.097,97	77.101,63	352.474,51
	2023	-89.277,00	2.276.724,00	235.742,22	766.408,42
Net profit	2018	522,80	418.091,18	51.543,72	137.733,52
	2019	-670,38	605.266,18	71.840,98	200.168,74
	2020	-13.871,26	491.904,17	60.701,48	162.668,01
	2021	-136.651,54	674.027,21	62.647,53	233.957,06
	2022	-181.544,24	831.336,54	58.206,14	298.288,32
	2023	-89.277,00	1.860.191,00	189.148,11	627.897,50

The average net salary per employee	2018	56	690	531	201
	2019	150	872	590	208
	2020	167	896	615	275
	2021	268	1189	701	301
	2022	262	971	675	273
	2023	205	1263	737	438
Number of employees/cooperative	2018	1	75	15	25
	2019	1	81	15	26
	2020	2	85	15	27
	2021	2	89	14	28
	2022	2	86	14	27
	2023	0	84	13	27

Table 1. Economic values of 9 fishing cooperatives in the period from 2018 to 2023 (Source: FINA data and authors' calculations)

The main difference between cooperatives and profit-oriented companies lies in the use of net profit. While profit-oriented companies focus on generating profit and ensuring a return on invested capital, cooperative members primarily seek the benefits provided by the cooperative, such as more favorable prices and business conditions (Harrington et al., 2013; Shamsuddin et al., 2018). Due to these differing objectives, performance assessment of cooperatives is more complex, but standard financial indicators of liquidity, activity, indebtedness, efficiency, and profitability are most commonly used (Chesnick, 2000).

Financial indicator	Year	Minimum	Maximum	Mean (\bar{x})	Standard deviation (s)
Current liquidity ratio	2018	0.11	2.37	1.30	0.72
	2019	0.45	7.19	2.00	2.12
	2020	0.30	4.17	1.61	1.28
	2021	0.14	2.29	1.25	0.73
	2022	0.11	2.60	1.23	0.82
	2023	0.23	5.25	1.72	1.85
Total asset turnover ratio	2018	0.91	6.21	2.52	1.57
	2019	0.98	6.22	2.92	1.82
	2020	0.86	6.46	2.91	1.91
	2021	0.91	4.53	2.35	1.39
	2022	0.68	4.58	2.43	1.45
	2023	0.48	6.88	2.55	2.00
Total debt ratio	2018	0.09	0.97	0.57	0.26
	2019	0.04	0.94	0.52	0.26
	2020	0.09	0.96	0.56	0.28
	2021	0.26	0.97	0.57	0.25
	2022	0.16	0.98	0.56	0.28
	2023	0.14	0.95	0.58	0.28

Overall business efficiency	2018	1.00	1.05	1.01	0.02
	2019	1.00	1.09	1.01	0.03
	2020	0.99	1.07	1.02	0.02
	2021	0.93	1.10	1.01	0.04
	2022	0.57	1.11	0.96	0.15
	2023	0.53	1.23	0.96	0.20
Return on total assets	2018	0.00	7.21	1.90	2.53
	2019	-0.27	11.49	1.79	3.76
	2020	-1.37	10.28	2.15	3.75
	2021	-7.27	13.34	1.31	5.33
	2022	-51.24	14.99	-4.56	18.48
	2023	-42.42	27.74	-1.97	19.20

Table 2. Financial indicators of 9 fishing cooperatives in the period from 2018 to 2023 (Source: authors' calculations)

The average values of the current liquidity ratio throughout the entire analysed period indicate favourable liquidity, which corresponds with the results from the previous period (Broz et al., 2019). However, minimum values below 1 were recorded throughout the analysed period, suggesting that some cooperatives face serious challenges in maintaining liquidity. On the other hand, the maximum current ratio values exceeded 2 in all years and showed an increase in the last three years of the analysed period.

The average values of the total asset turnover ratio were similar throughout the entire observed period. Based on the average results, it can be stated that in 2018 the cooperatives generated 2.52 € of revenue for every euro of total assets, while in 2023 this amount was similar at 2.55 €, indicating efficient use of assets (Table 2).

The average values of the total debt ratio range from 0.52 (2019) to 0.58 (2023), indicating that most cooperatives finance more than half of their assets from external sources (Table 2).

The total operating efficiency ratio shows positive results, as the average value of this indicator was around 1.01 from 2018 to 2021. A slight decline is observed in 2022 and 2023 (Table 2).

The average values of the return on total assets (ROA) ratio were above 1 in the period from 2018 to 2021 (Table 2). In 2022 and 2023, the average values of this ratio were negative, which is a result of significant losses recorded by two fishing cooperatives during that period. Since the number of active fishing cooperatives is small, extreme values have a greater impact on the financial indicators. The high maximum values of this ratio are due to the profitable operations of the fishing cooperatives Omega 3 and Adria.

The graphical representation of the Altman Z-score model clearly shows that four fishing cooperatives (RZ Friška Riba, RZ Punta Zub, RZ Omega 3 and RZ Zadar) have financially stable operations. According to this synthetic indicator, one fishing cooperative (RZ Adria) is relatively financially stable, while three cooperatives (RZ Istra, RZ Rivanj, and RZ Liburnija) fall within the so-called 'grey zone'. Only one active fishing cooperative (RZ Komiža) had Altman Z-score values below 1.23 throughout the entire analysed period, indicating the possible emergence of serious financial problems (Figure 1).

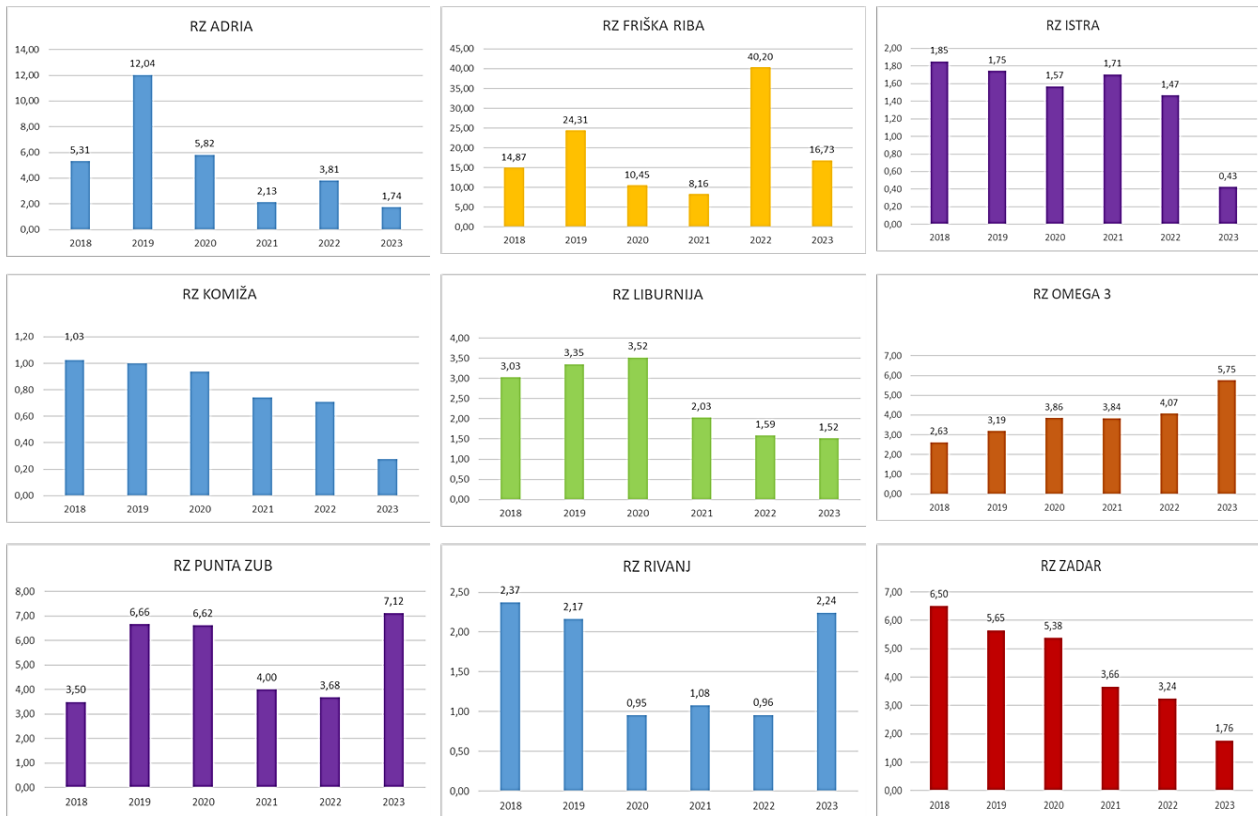


Figure 1. Altman Z score of 9 fishing cooperatives in the period from 2018 to 2023 (Source: authors' calculations)

4. CONCLUSIONS

Unlike companies, whose primary goal is profit maximization, fishing cooperatives primarily operate in the interest of their members, ensuring them more favorable business conditions. This difference in objectives makes it more difficult to apply standardized assessments of financial performance; however, financial indicators still provide an analytical insight into key aspects of the operations of fishing cooperatives.

The operations of fishing cooperatives in the Republic of Croatia have been analyzed based on financial statements covering a six-year period (2018–2023). Five groups of indicators were formed for the analysis (liquidity, activity, indebtedness, efficiency, and profitability). The values of the financial indicators suggest relatively satisfactory financial performance of the fishing cooperatives during the analyzed period.

The results of the Altman Z-score model show that four fishing cooperatives operate with financial stability, one cooperative has relatively stable financial operations, while three cooperatives fall within the so-called “grey zone.” Only one active fishing cooperative recorded Z-score values below 1.23 throughout the entire analyzed period, indicating a potential risk of serious financial difficulties.

Although most fishing cooperatives demonstrated satisfactory financial performance and financial stability during the analyzed period, the results highlight the importance of systematic monitoring of financial operations and the need to strengthen management capacities within cooperative entrepreneurship in fisheries.

CONFLICT OF INTEREST

Authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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