



Towards the economic viability of local seafood programs: Key features for the financial performance of community supported fisheries



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ABSTRACT

Community supported fishery (CSF) programs are emerging as appealing alternatives to large-scale industrial fisheries for some seafood consumers and commercial fishers. While CSFs provide many social, economic, and environmental benefits to their local communities, the associated financial costs can make it difficult for such programs to remain solvent. The goal of this research was to identify specific features that influence the financial performance of CSF programs. Using data collected online and from surveys of past and current North American CSFs, this research identified a combination of three key features associated with positive profit margins: engaging in social media, offering a retail option, and having a fisher as a founding member. The potential reasons behind the influence of these features on financial performance is explored, and recommendations for how they can be incorporated into CSF programs are presented. It is hoped that through integrating these features, prospective and currently operating CSFs could potentially improve their long-term financial performance, enabling them to focus on their non-financial goals and increase their overall economic viability.

1. Introduction

Over the last century and a half, the environmental impacts and economic inefficiencies of large-scale industrial fisheries have resulted in an increased focus on alternative fishing practices [1–3]. Today, capture fisheries rely on large vessels, mechanization, and advanced technology to meet the global demand for seafood [4]. With current exploitation rates, these industrial fishing techniques are largely ecologically unsustainable [2,5]. The economic health of global fisheries is no better, as marine capture fisheries produce \$50–60 billion USD per year in economic waste [6,7] and industrial fleets regularly rely on subsidies to remain operational [5,8,9]. While modern fisheries struggle with these environmental and economic problems, consumers seeking to make informed seafood purchases face barriers such as seafood mislabeling [10,11], long supply chains with little transparency [12], and conflicting definitions of ‘sustainable seafood’ [13–15]. Cumulatively, these issues have led to a push for smaller, direct market commercial fisheries that operate on local scales [2,16].

Community supported fisheries (CSFs) are a type of local seafood program that aims to connect small-scale commercial fishers with consumers [17]. Based on community supported agriculture (CSA),

CSFs seek to provide fair compensation to small-scale fishers, increase access to locally caught seafood, and create shortened, transparent supply chains [18]. CSFs sell seafood directly to consumers, often through pre-payments (frequently referred to as ‘shares’) at the beginning of a fishing season [19]. Advance payment systems aim to help cover fishing costs, share food production risks, and assure sufficient sale volumes. Like other forms of seafood direct marketing, including farmers’ markets and dock sales, CSFs try to minimize payments to ‘middlemen’, such as brokers, processors, and retailers, in order to increase the price that fishers receive for their catch [20].

Community supported fisheries can provide important social, environmental, and economic benefits to their local communities. Even before the first CSF was established, community-level processes and practices were identified as key elements for the future of ecosystem-based fisheries management [21]. The rise of CSFs coincided with the emergence of many community-level initiatives aiming to engage the skills and resources of local people, from grassroots endeavors conceived locally to projects initiated by global institutions like the World Bank and the Food and Agriculture Organization (FAO) [22]. Community supported fisheries are examples of such initiatives, and they provide a suite of market (e.g., employment and fair prices)

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and non-market values (e.g., traceability and education) that benefit both small-scale fishers and their communities [23]. Small-scale fishers typically earn less money for their fishery products than any other entity in the industry [24], and CSFs address this discrepancy by providing fair and consistent compensation to small-scale fishers for their catch [17,25]. Community supported fisheries provide environmental benefits as well; in addition to decreasing the carbon footprint of seafood, CSFs reduce environmental disturbances at local scales by supporting the use of lower impact fishing gear and developing markets for bycatch, fish waste products, and underutilized species [26]. Overall, many benefits that CSFs provide align with those of CSAs [18], which contribute to community vitality by giving consumers the opportunity to support their community's food producers and local economy [27].

Despite the demonstrated and potential benefits of CSFs to fishers, consumers, and their communities, small-scale commercial fishing operations can find it difficult to compete with large-scale industrial fisheries and their supply chains in a globalized seafood marketplace [2,28]. CSFs face market competition for consumers, product supply issues (e.g., seasonal or failed stocks), high start-up costs, and practical challenges when integrating supply chain operations, including the processing, transportation, and storage of their products [20,23]. In many cases, the costs of these challenges make it difficult for these small businesses to maintain operations after their start-up year [29–31]. Identifying key strategies that CSFs can use to remain financially successful is critical for the long-term viability of these programs.

1.1. Study goal

The goal of this study was to highlight key features that influence the financial performance of CSFs. These types of programs are still evolving, with the first CSF having been established within the last decade [17]. The rapid and recent emergence of CSFs presents an opportunity to examine the factors that can improve the financial performance of these businesses while best practices are still being established. Establishing positive financial performance is necessary for the long-term financial viability of CSFs, and along with social and ecological factors like public outreach and product sustainability, it is a critical component contributing to their overall economic viability [32]. There is large variation in CSF structure [19], including differences in the products they sell, their social media presence, and the payment options they offer. There is also variation among CSFs in terms of their financial stability, with some CSFs becoming well-established and profitable, and others being unable to attract enough shareholders to achieve profitability [17]. These financial differences could be linked to CSF structure, but to date there has been no research examining the relationship between program design decisions and the resulting financial performance of these businesses. By identifying features of financially successful CSFs, this study aims to fill this gap in the literature and provide insight for prospective and current owners in the development, growth, and viability of their programs.

2. Methods

To assess features important for the financial performance of CSFs, this study identified North American CSF programs and collected data related to their finances and operations. There is no standard definition for a CSF [20]; rather, the diversity of CSFs is such that a single definition would be insufficient [19]. Acknowledging this diversity, this study established criteria for programs to be included in the study, only collecting data from programs in North America that self-described as CSFs and that strived to: 1) provide a transparent chain-of-custody from fisher to consumer; 2) increase access to locally caught/produced seafood to consumers; and 3) provide at or above market prices to fishers for their catch. A list of CSFs that met these criteria was

compiled from online local seafood networks [33,34], published literature, grey literature, and online media sources, and was used as the study's sample.

2.1. Survey methods

Data used in this study were collected in two ways: 1) directly from CSF websites and their social media platforms in December 2014, and 2) through phone and email surveys between January and June 2015. Online data were collected for the 47 North American CSFs that met the study's criteria (see Section 2), including programs that were no longer operational at the time of data collection. Surveys were distributed after online data collection to obtain additional information that was not accessible from online sources. Surveys were sent electronically to all 47 CSFs, with 24 CSFs returning completed surveys or opting to respond by phone (see Section 2.2 for types of data collected and Appendix A for a list of the survey questions). Surveys contained only questions to which objective, factual answers could be given; no opinions or personal information were asked of respondents. Identifying information, including CSF names, has been excluded from this manuscript and all [Supplementary Materials](#) to maintain the anonymity of the respondents.

2.2. CSF features

The CSF data collected online and through surveys were broken down into four main categories and ten total features within these. The first category was the CSF's online and social media presence, which included whether the CSF had a website, whether it offered online sales, and the number of social media accounts held by the CSF (e.g., Twitter, Facebook, Instagram, Pinterest, YouTube). The second category involved the purchasing options offered by the CSF, including the furthest distance from seafood landing sites to sales locations, and whether the CSF offered retail sales as a payment option. Retail sales allow customers to purchase seafood directly from the CSF without a pre-paid share; this option has also been termed 'à la carte' [19] and 'pay-as-you-go' [35]. The third category concerned the CSF's financial and advisory support, including information on whether a fisher was part of the founding team and whether the CSF had external funding (e.g., through government or non-governmental grants). The final category examined the CSF's infrastructure, specifically whether it was self-sufficient in its product storage, processing, and transportation. Appendix A provides a complete list of the study's survey questions.

2.3. Profit margin and analysis

Financial performance was quantified using each CSF's profit margin. Of the 24 CSFs that responded to email or phone surveys, 19 supplied their profit margin for their most recent year of operation. Profit margin for a CSF was calculated as the ratio of its total annual income (including grants) to its total operating costs [36]. Profit margin was used in this study to measure financial performance as it is a simple way to quantify the financial health of a business, and requires easily accessible data for respondents.

Key features for financial performance were identified by exploring the relationships between the features described in Section 2.2 and CSF profit margins. Features that were associated with a minimum 50% increase in mean profit margin were considered to have a strong influence on profit margin. To determine whether profit margins were significantly greater than zero for CSFs with different combinations of these identified features, a one-tailed *t*-test was used. See Edgar et al. [37] for an analogous exploratory analysis.

3. Results

As of December 2014, 47 CSF programs meeting the study's criteria

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