

Examining the Fishing Industry for a Web-Based Profit-Sharing Information System

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Abstract: *The study intends to investigate the difficulties that the fishermen face under the current profit-sharing arrangement in Placer, Surigao del Norte, Philippines. Driven by the goal of improving the manual profit calculation in the local fishing industry, the research problem focuses on efficiency fairness and transparency in the distribution of profit sharing. With a mixed-method approach, the study looks at the existing profit-sharing scheme to suggest an integrated web-based scheme and makes suggestions for improving the current scheme. Based on the findings fishermen still have concerns about equity ($W = 4.66$) and delays in profit distribution ($W = 3.34$) even though they generally thought the current system was transparent and fair ($W = 4.26$). However, stakeholders indicate a positive attitude toward technological solutions ($W = 4.67$) highlighting features like historical data analytics, a user-friendly interface, real-time updates, and enhanced security. In order to benefit boat owners and fishermen, this system seeks to guarantee an equitable and effective profit distribution. The suggestions underscored the necessity of equity and efficient communication emphasizing fair profit-sharing arrangements and compassion for the difficulties faced by fishermen. The study concludes that technological innovation and effective communication are important to promote a more just and enhance stakeholder satisfaction to contribute the sustainability within the fishing industry*

Keywords: web-based profit-sharing system technology investors satisfaction profit-sharing fishing industry equity and transparency

I. INTRODUCTION

The Municipality of Placer in Surigao del Norte, located in the north eastern part of Mindanao Island, is facing the Hinatuan Passage to the east [1]. The town is known for its thriving fishing industry with a port presence and has become a trading center for fish products. Based on the consolidated results from the National Stock Assessment Program (NSAP), a standard data gathering of fisheries catch and the effort determined by gear, there are a total of 113, 422 kilos of fish caught using multiple hook and line in municipality from 2020-2023. The crew members receive payment through various profit-sharing systems instead of receiving a set wage [2]. Basically, the income of the fishermen comes from the earnings of their hard work [3]. A prior research study indicated that in certain fishing operations, fishermen, or fishing crews get compensated on a share or "lay" basis [4]. The profit sharing encourages workers because it is frequently utilized over a fixed compensation that boost productivity. The harder these fishermen work, the more they can earn [5].

However, there studies that have highlighted the gap in the profit-sharing arrangement between the regular crew and the boat owner which resulted in notable gap in their income [6]. Most fishermen feel unfair in the percentage policy allocated to them [7]. Currently, many boat owners suffer some issues in the manual processes of profit distribution. The problems and errors occurred are related to lack of transparency, inaccuracies of gain, delays of profit distribution, and discrepancies of reports that often lead to discontentment and low performance among the fishing crew. This became the basis of this study to investigate the profit-sharing scheme among fishermen and boat owner in the fishing industry of Placer, Surigao del Norte.

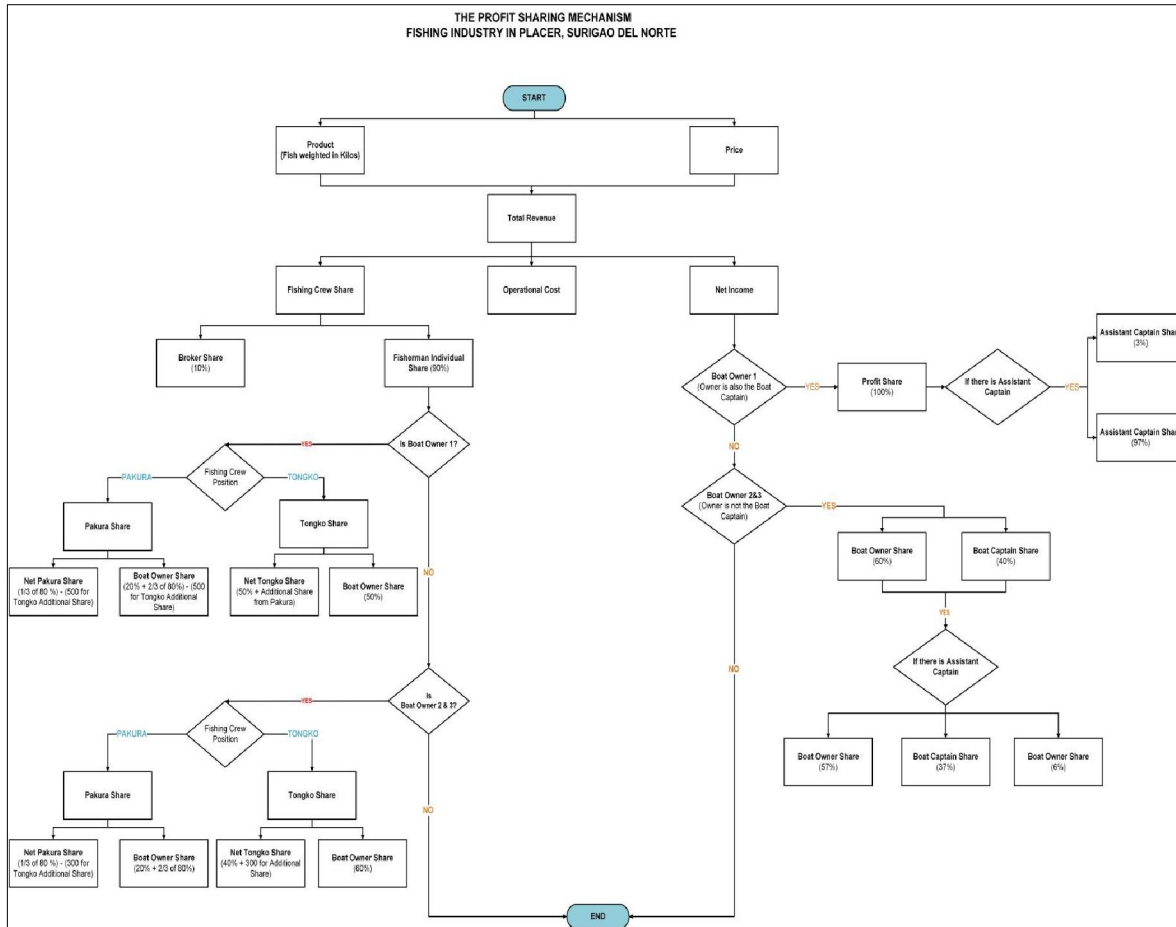


Figure 1.0 Distribution of Profit-Sharing for Commercial Fishing Industry

Figure 1.0 emphasizes the process flow of the profit-sharing system that is carried out in the commercial fishing sector of Placer, Surigao del Norte, specifically using hook and line methods. The boat owner, broker, boat captain, and fishing crew (“Pakura” and “Tongko”) are the individuals participating in this system. The systematic and equitable distribution of income between the boat owner and the fishing crew is defined by a profit-sharing setup. Each boat owner has a unique profit-sharing arrangement depending on their classification. Boat Owner 1 means that the owner of the boat is also the boat captain while Boat Owner 2&3 means that the owner of the boat is not the boat captain.

The first step in the profit-sharing process is to multiply the fish catch by the market price to determine the total revenue. The boat owner, boat captain and fishing crew split the net income after operating expenses are subtracted. The pay of the fishing crew is determined by each member’s catch. For the fishing crew (left side of the diagram), they receive 90% of the net income after the broker cuts off 10% for the marketing and negotiating better prices. The fishing crew is composed of fishermen and boat owner. The fishing crew are also classified as Pakura or Tongko. The Pakura crew is the one who operates the small fishing vessel to navigate and catch fish, while the Tongko crew is the one who catches fish within the fishing boat. The division of the profit among the fishing crew also depends on the whether one of them is a boat owner or all of them are fishermen. The boat owner’s share in the Pakura crew is determined by deducting 20% from the 90% share and dividing the remaining 80% of the amount into three portions: 1 share for pakura share and 2 shares for the boat owner. The Tongko crew members get half of the earnings plus an extra portion which guarantees equitable distribution according to specific roles and catches.

Meanwhile, for boat owner (right side of the diagram) who is also a boat captain receives 100% of the profit but this is deducted by 3% if there is an assistant captain. If a boat owner is not a captain, the profit is split as follows: 60% goes to the boat owner while 40% goes to the captain. But, if an assistant captain is present, there are additional adjustments

made. The different roles in the profit-sharing scheme entail different levels of efforts and risks. This kind of structured profit-sharing schemes is believed to promote fairness and equitable shares among the person involved. Since operating costs are deducted before shares are distributed, the strategy is thought to ensure financial sustainability and promotes the roles with more responsibility. This fuelled the desire of the researchers to propose an automated system that can streamline a clear and structure of profit-sharing scheme to reduce the possibility of disputes. With the integration of the proposed system, it can foster trust amongst all parties involved thus facilitating a more transparent and equitable revenue distribution within the fishing community.

II. OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

- To investigate the current profit-sharing arrangement that is currently in place in the fishing industry of Placer, Surigao del Norte.
- To propose a web-based profit-sharing system for the fishing sector.
- To formulate suggestions for further enhancing the fishing industry's present profit-sharing scheme.

III. RELATED LITERATURE

Over the years, several studies concentrated on analyzing and understanding the mechanism of profit-sharing in the fishing industry. The qualitative study of Syahrizal [8] investigated the profit-sharing systems prevalent in fisherman society that focused on issues of inequality and fairness. By analyzing the perceptions and experiences of fishermen, it provides valuable insights into the challenges and opportunities associated with profit distribution in the fishing industry. In the study of McConnell, K. E., & Price, M. [3] delved into the historical origins and implications of the lay system in commercial fisheries. They have examined the profit-sharing arrangements and their effects on stakeholders. The study also offered valuable insights into the dynamics of profit distribution within the industry. In a similar study of Guillen, J., Boncoeur, J., Carvalho, N. et al. [2] examined the remuneration systems used in the fishing sector and their consequences on crew wages and labor rent creation. Through empirical analysis, it sheds light on the effectiveness and fairness of different profit-sharing mechanisms.

The Philippine Information Agency provided a detailed account of the economic contributions of the fishing industry to the local economy of Surigao del Norte. The agency discussed the fishing and pottery business that boast the local economy of the province. It was mentioned that there were various profit-sharing practices employed within the industry and their impact on the socioeconomic development of the place [1].

The comprehensive review made by Mahajan, K., Shukla, S., & Soni, N. [9] revealed the functionalities and benefits of computerized profit-sharing systems. It examined the role of technology in streamlining profit-sharing processes, enhancing accuracy, and improving efficiency in profit distribution. Another research by Dumancic, S. et. al, [10] presented innovative approaches to automated profit-sharing management using automated reasoning and learning techniques. It leveraged artificial intelligence to optimize profit-sharing processes and improve system performance.

Agile methods were also utilized to analyze and improve the profit-sharing system. The researchers Hindarto, D., & Nurfaizi, K. [11] emphasized the importance of achieving efficiency and fairness in profit-sharing processes through iterative development and continuous improvement strategies. The systematic literature review examined the implementation of profit-sharing accounting information systems in Indonesia. It synthesized existing research to provide insights into system design, adoption strategies, and implementation challenges in the Indonesian context [12].

Examining profit-sharing systems revealed the economic significance of the fishing industry. It marked the varied profit-sharing practices and their impact on local economies. Further insights provide context for understanding the evolution and implications of profit-sharing arrangements. Compensation structures in the fishing industry explore how profit-sharing mechanisms affect crew earnings, providing complex insights into fairness and equal treatment. The fairness and inequity of profit distribution schemes are clarified by qualitative investigations. Transitioning to automated profit-sharing systems, insights emphasize the benefits of technology in modernized profit-sharing processes, while research explores innovative approaches to optimize profit-sharing management through automated reasoning and learning techniques. Together, these literature sources offer a rich complexity of insights that inform the study's objectives of investigating current profit-sharing systems, developing a web-based profit-sharing system, and

formulating recommendations for improvement. The synthesis served as a robust foundation for advancing understanding and driving positive change within the fishing industry's profit distribution and profit-sharing management practices.

III. METHODOLOGY

3.1 Research Approach

This study utilized a mixed research approach, which integrates both qualitative and quantitative methods, to achieve a comprehensive understanding of profit-sharing mechanisms in the fishing business. It also intended to propose a customized web-based integrated profit-sharing system. Using one-on-one interview, this technique was used to acquire in-depth information about the experiences and difficulties faced by 55 respondents including boat owners and fishermen. The quantitative information was presented as numbers and closed-ended questions in a structured questionnaire with Likert scale responses. This method was used to collect numerical data on profit-sharing practices and respondents' assessment on the current fishing industry profit-sharing mechanism.

3.2 Research Instrument

Data collection process was achieved using two primary research instruments: the questionnaire and the interview schedule. A questionnaire was designed to gather quantitative data in which respondents were asked to answer the structured, closed-ended questions pertaining on profit-sharing practices and assessment among fishermen and boat owners. The survey will have checkboxes and Likert scale items that let respondents select several pertinent options. As a result, the respondents were able to give thorough information regarding a variety of experiences and viewpoints. Using a Google form the survey questionnaire was implemented on an online platform.

During the interview respondents were provided with open-ended questions to respond to in order to facilitate follow-up questions. This methodology allowed participants to freely share their experiences opinions and recommendations in detail which made it easier to collect thorough qualitative data.

3.3 Participants of the Study

Participants referred to as a group of fishermen (volunteers) who have common characteristics and are identified by the researcher as target respondents or participants. From this, 55 fishermen and 3 boat owners were selected as respondents to collect the primary data.

3.5 Sampling Method

The purposive sampling method was conducted to collect the data from the fishermen of different ages and different boat owners. They were chosen to answer the survey questionnaire and undergo with the interview for the purpose of the study. The participants were guided by the researchers while answering the online survey to ensure that they can comprehend with the questions and able to complete the entire survey. An interview guide questions were also utilized in the conduct of the personal interview.

3.6 Data Gathering Procedure

This research employed a dual method to data collection, combining primary and secondary sources to guarantee a thorough examination of the study's goals. By means of surveys and interviews, the researchers directly gathered the primary data, which is widely considered to be the most trustworthy information. The in-depth qualitative analysis of important patterns and challenges were facilitated by follow-up questions and interviews, while participants were given structured questionnaires suited to the study objectives and obtain quantitative insights. At the same time, the use of secondary data from previous studies with permission from the original publishers or authors can supplement primary findings and give further context to the research analysis, secondary data will be gathered from published studies and literature reviews.

3.7 Data Analysis

The descriptive analysis was used to study the profit-sharing patterns among in commercial fishing sector using hook and line in the Municipality of Placer. The quantitative data collected were analyzed using descriptive statistical treatment such as frequency distribution, weighted mean score, standard deviation, and ranking. The findings of the study were presented in diagrams and tables to observe the overall patterns and differences. Table 1.0 presents the guide to determine the assessment level of the respondents in the current profit-sharing mechanism of the fishing industry in Placer, Surigao del Norte.

Table 1.0 The Interpretation of Range of the Weighted Mean

Range of the Weighted Mean	Interpretation
4.51 – 5.00	Strongly Agree (for the questions asked)
3.51 – 4.50	Agree (for the questions asked)
2.51 – 3.50	Moderately Agree (for the questions asked)
1.51 – 2.50	Disagree (for the questions asked)
1.50 and below	Strongly Disagree (for the questions asked)

The quantitative data were analyzed using descriptive and constructive statistics. A qualitative research approach involves collecting data through words and open-ended questions, such as follow up questions interview, allowing respondents to answer freely.

IV. RESULTS AND DISCUSSION

In this chapter, the findings of the study were presented and discussed in a form of diagrams and tables. It includes the profile of the respondents, the respondents' assessment of the current profit-sharing system utilized in the fishing business, the structure of the proposed web-based profit-sharing system for profit-sharing, and the recommendations for further improvement of the profit-sharing system in the fishing business.

4.1 Demographics Profile of the Respondents

Table 2.0 Profile of the Respondents in Terms of Classification

Age Range (Years)	Frequency	Percentage (%)
Fishermen	55	94.83%
Boat Owner	3	5.17%
TOTAL	58	100.00%

Table 2.0 as presented the profile of the respondents in terms of classification As can be seen on the table, there are out of 55 respondents 94.83%(55) is Fishermen and 5.17%(3) are Boat Owner. This implies that majority of the respondents who participated in the survey are Fishermen.

Table 3.0 Profile of the Respondents in Terms of Gender

Gender	Frequency	Percentage (%)
Male	56	96.55%
Female	2	3.45%
TOTAL	58	100.00%

Table 3.0 indicates the profile of the respondents according to gender As can be seen on the table, there are out of 56 respondents 96.55%(56) is Male and 3.45%(2) are Female. This implies that majority of the respondents who participated in the survey are Female.

Table 4.0 Profile of the Fishermen Respondent in Terms of Age

Age Range (Years)	Frequency	Percentage (%)
1-20	5	9.09%
21-30	15	27.27%
31-40	15	27.27%
41-50	15	27.27%
Over 51	5	9.09%
TOTAL	55	100.00%

Table 4.0 presents the profile of the fishermen respondents according to age. As can be seen on the table, there are out of 55 respondents 27.27% (15) belong to the age group 21-30 years, 31-40 years, and 41-50 years, accordingly, while 9.09% (5) belong to the age group 1-20 years and over 51 years. This implies that majority of the respondents who participated in the survey are adults.

Table 5.0 Profile of the Boat Owner in Terms of Age

Age Range (Years)	Frequency	Percentage (%)
1-20	0	0%
21-30	1	33.33%
31-40	0	0%
41-50	1	33.33%
Over 51	1	33.33%
TOTAL	3	100.00%

Table 5.0 As presented the profile of the boat owner respondents according to age. As can be seen on the table, there are out of 3 respondents 33.33%(1) belong to the age group of 21-30 years, 41-50 years, and over 51 years old, accordingly, while 0%(1) belong to the age group 1-20 years and 31-40 years old . This implies that majority of the respondents who participated in the survey are adults.

Table 6.0 Profile of the Fishermen Respondents in Terms of Years of Experience in the Fishing

Experience in Years	Frequency	Percentage (%)
Less than a year	0	0.00%
1 - 5	11	20.00%
6 - 10	18	32.73%
11 - 20	12	21.82%
Over 21	14	25.45%
TOTAL	55	100.00%

As can be seen in Table 6.0 is the profile of the fishermen respondents according to years of experience. Majority of the fishermen are having As can be seen on the table, there are out of 55 respondents 32.73% (18) has 6-10 years of experience; 25.45% (14) has over 21 years of experience; 21.82% (12) has 11- 20 years of experience; 20.00% (11) has 1-5 years of experience; and 0.00%(0) has less than a year of experience.. This implies that majority of the respondents who participated in the survey are skilled fishermen.

Table 7.0 Profile of the Boat Owner Respondents in Terms of Years of Experience in the Fishing Industry

Experience in Fishing (Years)	Frequency	Percentage (%)
Less than a year	0	0.00%
1 - 5	0	0.00%
6 - 10	2	66.67%
11 - 20	1	33.33%
Over 21	0	0.00%
TOTAL	3	100.00%

As can be gleaned on Table 7.0 is the profile of the boat owner respondents according to years of experience as boat owner respondents. A total of 3 respondents 66.67% (2) has 6-10 years of experience and 33.33% (1) has 11-20 years of experience. This implies that majority of the respondents who participated in the survey have intermediate levels of experience, with fewer individuals representing both less experienced.

Table 8.0 Profile of the Fishermen Respondents in Terms of Education

Education	Frequency	Percentage (%)
Primary Education	44	80.00%
Secondary Education	11	20.00%
Vocational/Technical Training	0	0.00%
Bachelors Degree	0	0.00%
TOTAL	55	100.00%

Table 8.0 presented the profile of the fishermen respondents in terms of education. As can be seen on the table, there are out of 55 respondents 80.00% (44) has gain primary education while 20.00% (11) gain secondary education. This implies that majority of the respondents who participated in the survey has only gained basic education.

Table 9.0 Profile of the Boat Owner Respondents in Terms of Education

Education	Frequency	Percentage (%)
Primary Education	1	33.33%
Secondary Education	0	20.00%
Vocational/Technical Training	2	66.67%
Bachelor Degree	0	0.00%
TOTAL	3	100.00%

Table 9.0 shows the profile of the boat owner respondents according their educational attainment. As can be seen on the table, there are out 55 respondents 33.33% (1) gain primary education and 66.67% (2) gain Vocational/Technical Training. This implies that majority of the respondents who participated in the survey are skilled fishermen.

4.2 Assessment of the Respondents on the Current Profit-Sharing Mechanism Utilized in the Fishing Industry

Table 10.0 Assessment of the Respondents on the Current Profit-Sharing System Utilized in the Fishing Industry

No	Question Statements	Weighted Mean	Interpretation
1	I believe the proposed profit-sharing policy is fair.	4.26	Agree
2	I am satisfied with the percentage of profits allocated to crew members and boat captain	4.67	Strongly Agree
3	I understand how profits are shared and calculated among fishermen.	4.76	Strongly Agree
4	The profit-sharing statements are presented in a format that is easy for me to understand.	3.98	Agree
5	I have access to Income statements (statements that reflects kilos, prices and income)that show how profits are generated and distributed that allows me to verify the accuracy of my profit share.	3.74	Agree
6	I have felt that share of profits was unfairly distributed compared to other fishermen	4.66	Strongly Agree
7	I feel confident that the profit-sharing statements accurately represent my earnings.	4.66	Strongly Agree
8	The breakdown of expenses and deductions in my profit-sharing statements is transparent.	4.03	Agree
9	The profit-sharing statements provide clear explanations for any discrepancies in my earnings.	4.60	Strongly Agree

10	The profit-sharing statements include all necessary information about my earnings.	4.66	Strongly Agree
11	I experience delays in receiving profit-sharing statement.	3.34	Neutral
12	I am satisfied with the level of transparency and accuracy in the profit-sharing statements.	4.47	Agree
13	I trust that the profit-sharing statements accurately reflect my contributions and earnings.	4.67	Strongly Agree
14	I believe implementing technology a Web-Based Profit Sharing System will help address any challenges face in the current profit-sharing system.	4.67	Strongly Agree
AVERAGE WEIGHTED MEAN=		4.37	Agree

Table 10.0 shows the level of assessment respondents in the current profit-sharing system utilized in the fishing industry in Placer, Surigao del Norte. According to the evaluation of the existing profit-sharing scheme the majority of respondents have a favorable opinion of it. The proposed profit-sharing policy has a (W=4.26) which indicates that stakeholders think it is equitable and thus fair. Survey participants were highly satisfied (W=4.67) with the portion of earnings given to boat captains and crew. The (W=4.76) indicates that fishermen have a solid understanding of profit calculations. Still a (W=3.98) suggests that income statements could be more easily accessed. Profit-sharing statements nevertheless are usually clear and easy to understand. With a (W=4.67) among respondents the fairness of profit distribution is highly regarded. With a (W=4.03) there is a favorable perception of transparency regarding costs and deductions and strong confidence in the accuracy of profit-sharing statements (W=4.66). The necessary information is provided in profit-sharing statements obtaining a (W=4.67) and explanations for earnings discrepancies are understandable (W=4.60). However profit-sharing statements which had (W=3.34) are a cause for concern due to delays in delivery. The overall results indicate that there is high satisfaction with transparency and accuracy (W=4.47) and strong trust in the accuracy of profit-sharing statements (W=4.67). A (W=4.67) shows that there is strong support as well for putting in place an online profit-sharing system to deal with the present problems. The (WA=4.30) indicates that stakeholders view the current system favorably and targeted improvements may raise trust and satisfaction even further.

4.3 The Proposed Web-Based Profit Share System

4.3.1 Features and Functionalities of the Proposed Web-Based Profit Share System

Table 11.0 Features and Functionalities of Proposed Web-Based Profit Share System According to Fishermen Respondents

What specific features and functionalities would you consider important for a proposed Web-based profit-sharing system for profit-sharing in the fishing business: (select all that may apply)	Frequency	Percentage	Rank
Provide historical earnings data and analytic for earnings comparison	52	10.00%	1
Easy-to-use interface with intuitive navigation	52	10.00%	2
Detailed breakdown of profit-sharing calculations	52	10.00%	3
Real-time updates on earnings and deductions	52	10.00%	4
Secure access to personal profit-sharing information	52	10.00%	5
Request cash advances directly through the system	52	10.00%	6
Notifications/alerts for important updates and approvals	52	10.00%	7
Integration with mobile devices for on-the-go access	52	10.00%	8
Customize reporting options for personalized insights. (ex. Like	52	10.00%	9

filtering of information)			
Collaboration tools for communication among fishermen and boat owners	52	10.00%	10
TOTAL	520	100%	

Table 11.0 shows that features and functionalities identified in the table collectively enhance the effectiveness, efficiency, transparency, and user satisfaction of a Web-based profit-sharing system for profit-sharing in the fishing industry. Prioritizing user experience, transparency, security, efficiency, analytical insights, and collaboration is crucial for designing a system that meets the diverse needs of stakeholders and facilitates smooth and transparent profit-sharing processes. By addressing these preferences and priorities, the proposed system can effectively support profit-sharing practices, ultimately contributing to the overall success and sustainability of the fishing industry.

Table 12.0 Features and Functionalities of Proposed Web-Based Profit Share System According to Boat Owner Respondents

What specific features and functionalities would you consider important for a proposed Web-based profit-sharing system for profit-sharing in the fishing business: (select all that may apply)	Frequency	Percentage	Rank
Historical data and analytic for tracking past earnings	3	10.71%	1
User-friendly interface for easy navigation and accessibility.	3	10.71%	2
Customization options to tailor the system to the specific needs of the fishing business.	2	7.14%	3
Transparency features providing clear insight and detailing breakdown into profit calculations and distributions.	2	7.14%	4
Ability to generate and download detailed reports/profit sharing statements, Automated reminders and notifications.	2	7.14%	5
Real-time updates on profit-sharing data (like earnings and deductions) to keep stakeholders informed.	2	7.14%	6
Secure document storage for storing important contracts or agreements.	2	7.14%	7
Collaboration tools for communication and coordination between boat owners, brokers, and fishermen.(ex. messaging)	2	7.14%	8
Interactive dashboards for visualizing profit-sharing metrics at a glance.	2	7.14%	9
Secure access to personal profit-sharing information	2	7.14%	10
Option to Approved cash advances by fishermen directly through the system	2	7.14%	11
Notifications/alerts for important updates and approvals	2	7.14%	12
Customize reporting options for personalized insights (ex. Like filtering of information)	2	7.14%	13
TOTAL	28	100%	

Table 12.0 shows the features and functionalities of Web-Based Profit-sharing System enumerated in the table; Focus on historical data and analytic, user-friendly interface, customization for specific needs, emphasis on transparency, real-time updates and notifications, security and confidentiality, collaboration and coordination tools implies that boat owner prioritize this features to enhance system effectiveness, user satisfaction, transparent profit-sharing process.

4.4. Conceptual Framework of the Proposed Web-based Integrated Profit-sharing System

Figure 2.0 depicts the conceptual framework of the proposed Web-based Integrated Profit-sharing System. The process starts with boat owners and fisherman ensuring that only authorized users can log in using special credentials. Then

collect data, boat owner input/ upload catches details like (type, quantity, price, expenses, cash advances). Then, Database management efficiently keeps separate records while securely storing all data. Using this information, the profit calculation accounts for expenses and catch value. After then profits are distributed according to preset guidelines or customized settings via profit distribution. Providing reports on catch statistics, performance, and profit distribution along with informing users guarantees transparent communication.

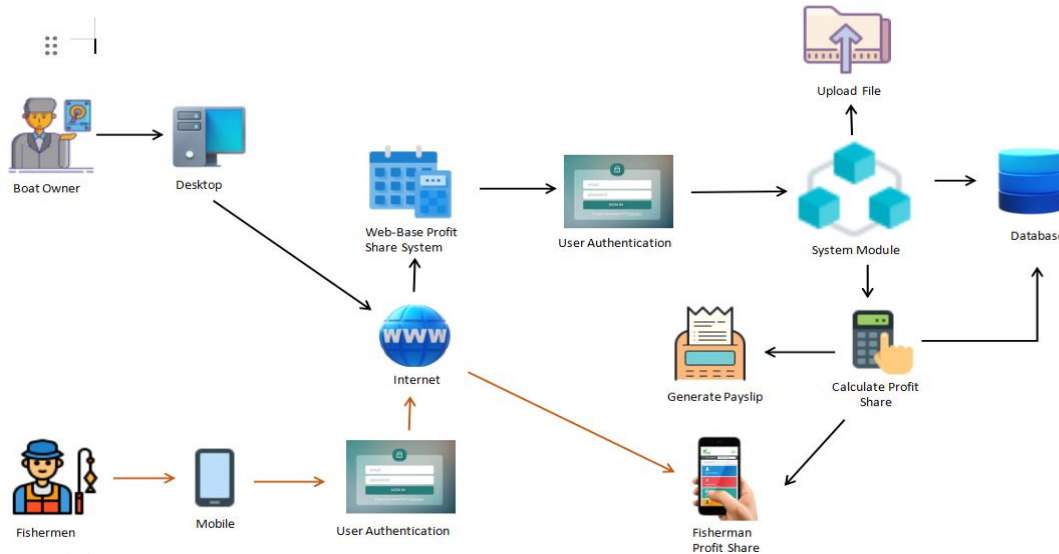


Figure 2.0 System Development Process of the Proposed Web-based Integrated Profit-sharing System

4.5 System Development Process of the Proposed Web-based Integrated Profit-sharing System

Figure 3.0 illustrates the System Development Process of the Proposed Web-based Integrated Profit-sharing System. The process begins with Requirements Gathering and Analysis phase involves conducting one-on-one interviews and surveys with fishermen and boat owners to understand existing profit-sharing practices. Data collected from these interactions are analyzed to identify both functional and non-functional requirements for the system. System Design phase, the architecture of the system is outlined, detailing backend components, wireframes for the user interface (UI/UX), database schema to securely store profit-sharing data. Development phase Hypertext Preprocessor and Mysql for backend logic is developed, and HyperText Markup Language and Cascading Style Sheets for frontend interfaces. The Testing phase is carried out to guarantee seamless communication between various modules, with user acceptance testing (UAT) being conducted to verify the system against user requirements with the involvement of stakeholders. After passing the testing phase, the system is prepared for Deployment and is installed on either a server or cloud platform. Fishermen and boat owners are trained to become familiar with the system, guaranteeing a seamless shift from development to active use. Lastly, the Maintenance and Support phase involves continuously monitoring system performance and collecting user feedback to pinpoint areas that can be enhanced. Changes and improvements are made according to feedback and developing profit-sharing methods to uphold the system's efficiency and effectiveness long-term.

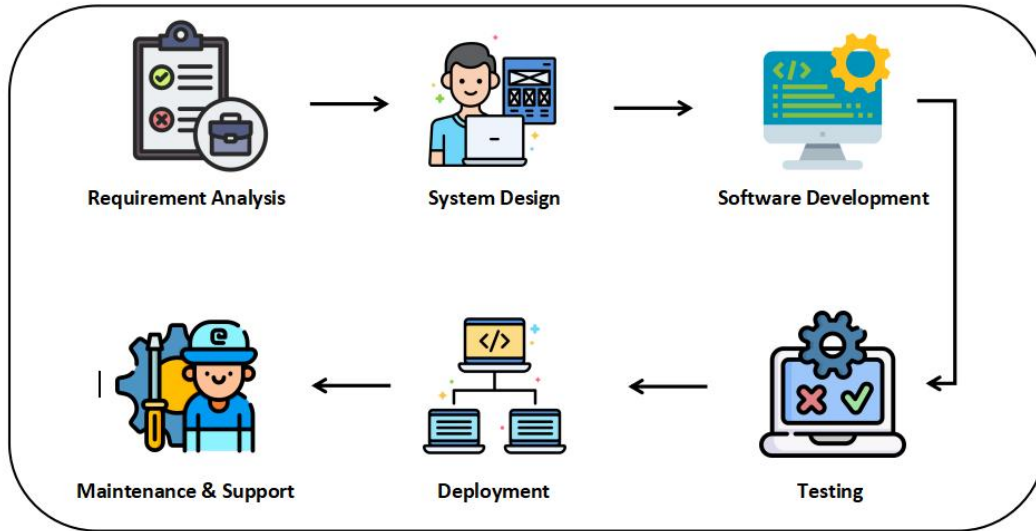


Figure 3.0 System Development Process of the Proposed Web-based Integrated Profit-sharing System

4.6 Recommendations and suggestions of the current profit-sharing mechanism

The respondents mentioned about the important areas for improvement noted by boat owners and fishermen generally. Firstly, it is clear that several fishermen expressed their discontent which emphasizes the need between boat owner and fishermen as well as communication. Fisherman also concur that profit-sharing rules ought to be changed to better serve fishermen and that boat owners ought to receive equitable treatment. The crew expressed concerns about profit proportion policies and profit statement transparency and it was recommended that boat owners provide their overall income statements in an honest and transparent manner. It is also emphasized that openness and transparency in communication are essential between boat owners and fishermen.

V. CONCLUSIONS AND RECOMMENDATIONS

Examining the profit-sharing arrangement in the fishing sector of Placer, Surigao del Norte, to enhance equity and effectiveness through a web-based profit-sharing system. It is essential to comprehend and enhance these procedures to support the economic and social welfare of the nearby fishing communities. The research objectives were: to examine the current profit-sharing system, develop a web-based profit-sharing system, and formulate recommendations for improvement. Findings revealed that while fishermen generally perceive the current system as fair and transparent, concerns about equity and issues such as delays and discrepancies in profit distribution indicate areas for improvement. Developing of a web-based profit-sharing system was determined to be the favorable solution to guarantee an equitable and effective profit distribution. Suggestions underscored the necessity of equity and efficient communication emphasizing fair profit-sharing arrangements and compassion for the difficulties faced by fishermen. In order to promote a more just and enhance stakeholder satisfaction to contribute the sustainability within the fishing industry the study concludes that technological innovation and effective communication are important.

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REFERENCES

- [1]. PIA. (2021, July 30). Fishery, Pottery Boost Local Economy of Surigao Norte LGU. Philippine Information Agency. <https://mirror.pia.gov.ph/news/2021/07/30/fishery-pottery-boost-local-economy-of-surigao-norte-lgu>
- [2]. Guillen, J., Boncoeur, J., Carvalho, N., Frangoudes, K., Guyader, O., Macher, C., & Maynou, F. (2017). Remuneration systems used in the fishing sector and their consequences on crew wages and labor rent creation. *Maritime studies*, 16, 1-36.
- [3]. McConnell, K. E., & Price, M. (2006). The lay system in commercial fisheries: Origin and implications. *Journal of Environmental Economics and Management*, 51(3), 295-307. ISSN 0095-0696. <https://doi.org/10.1016/j.jeem.2005.09.004>.
- [4]. Hiroaki Sasaki. (2016). Profit sharing and its effect on income distribution and output: A Kaleckian Approach. *Cambridge Journal of Economics*, 40(2), 469-489. Oxford University Press.
- [5]. Hendrik, H., Hamid, H., Alvionita, D., & Alfrendo, A. (2020). Wage System and profit sharing in fish catching business using lift net in Ocean Fishing Port of Belawan. IOP Conference Series: Earth and Environmental Science. 12 September 2019. Pekanbaru, Indonesia.
- [6]. Siti Nur Syahiirah Mohd Faizal, Alfian Zein*, & Mohd Hanafi Idris. (2021). Inequality of profit sharing system in fishing business in kuala marang, marang, terengganu, *Journal of Sustainability Science and Management*, Volume 16 Number 8, December 2021: 193-204. <http://doi.org/10.46754/jssm.2021.12.013>
- [7]. Shettima, B. G., Mohammed, S. T., Ghide, A. A., & Zindam, P. L. (2014). Analysis of socio-economic factors affecting artisanal fishermen around Lake Alau, Jere Local Government Area of Borno State, Nigeria.
- [8]. Syahrizal. (2019). Fishermen and inequality: Study about profit sharing system in fisherman society. The International conference on Socials Sciences, Humanities, Economics and Law. 5th-6th September 2018. Padang, Indonesia. 5-9.
- [9]. Mahajan, K., Shilpa Shukla², Nitasha Soni³. A Review of Computerized Profit-sharing System *International Journal of Advanced Research in Computer and Communication Engineering* Vol. 4, Issue 1, January 2015
- [10]. Dumancic, S., Meert, W., Goethals, S., Stuyckens, T., Huygen, J. and Denies, K. 2021. Automated Reasoning and Learning for Automated Profit-sharing Management. *Proceedings of the AAAI Conference on Artificial Intelligence*. 35, 17 (May 2021), 15107-15116. DOI:<https://doi.org/10.1609/aaai.v35i17.17774>.
- [11]. Hindarto, D. and Nurfaizi, K. 2023. Analysis and Improvement of Profit-sharing Systems Using Agile Methods to Achieve Efficiency and Fairness. *International Journal Software Engineering and Computer Science (IJSECS)*. 3, 3 (Dec. 2023), 437–442. DOI:<https://doi.org/10.35870/ijsecs.v3i3.1871>.
- [12]. Tobing, K.S.L., Lantana, D.A. and Digidowiseiso, K. 2023. The Implementation of Profit-sharing Accounting Information Systems In Indonesia: A Systematic Literature Review. *INTERNATIONAL JOURNAL OF ECONOMICS, MANAGEMENT, BUSINESS, AND SOCIAL SCIENCE (IJEMBIS)*. 3, 2 (May 2023), 577–591. DOI:<https://doi.org/10.59889/ijembis.v3i2.253>