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Operational management of fishing vessels, maritime navigation, and cold chain logistics during fish landing.

Operational management of fishing vessels, marine navigation, and cold chain logistics in seafood discharge

Operational management of fishing vessels, maritime navigation and logistics of the cold chain when unloading fish

Luciano Wilson Cabral

Education and professional experience: Specialist with over 25 years of experience in the fishing, aquaculture, and business management sectors. Holds a degree in Aquaculture Technology from the Federal Institute of Santa Catarina (IFSC), with advanced training in navigation and deck management from the Brazilian Maritime Authority (Port Captaincy Delegation in Itajaí/SC) and theoretical and practical training in Biofloc Farming Systems (BFT) from the Marine Aquaculture Station of the Federal University of Rio Grande (EMA/FURG). Provides operational, logistical, and administrative leadership for fishing and aquaculture ventures, including Wilson Cabral and LWC Participações.

SUMMARY

Contemporary fishing activity demands integration between operational management of vessels, navigation safety, fish preservation, port logistics, and cold chain maintenance. The interval between capture and landing represents a crucial stage for the quality, safety, commercial exploitation, and economic value of the fish. In this context, this article analyzes, from a technical-scientific and managerial perspective, the main factors that condition the efficiency of fishing vessel operations and their connection with the stages of landing, packaging, transport, and fish preservation. This is a qualitative, exploratory, and descriptive study, based on a bibliographic and documentary review of Brazilian legislation, technical documents from international organizations, and specialized literature on maritime safety, fish quality, cold preservation, logistics, and fisheries management. The analysis shows that the performance of the operation does not depend exclusively on the capture capacity, but on the articulation between voyage planning, the structural condition of the vessel, the competence of the crew, safe navigation, post-capture handling, temperature control, landing infrastructure, traceability, and managerial decision-making. It is also demonstrated that quality losses can occur even before the fish arrives at the port, especially when there are delays in cooling, physical damage, hygiene failures, inadequate storage, or interruptions in the thermal chain. It is concluded that the integrated management of maritime and logistical operations constitutes a strategic instrument to increase economic efficiency, reduce losses, strengthen worker safety, and preserve the quality of fish throughout the production chain.

Keywords: commercial fishing; fishing vessels; maritime navigation; cold chain; landing; fish logistics; operational management.

ABSTRACT

Contemporary fishing activities require integration among fishing vessel operational management, navigational safety, seafood preservation, port logistics, and cold chain maintenance. The period between capture and landing represents a critical stage for seafood quality, safety, commercial utilization, and economic value. Within this context, this article analyses, from a technical, scientific, and managerial perspective, the main factors influencing the efficiency of fishing vessel operations and their connection with landing, handling, transportation, and seafood preservation processes. This is a qualitative, exploratory, and descriptive study based on a bibliographic and documentary review of Brazilian legislation,

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technical documents issued by international organizations, and specialized literature concerning maritime safety, seafood quality, cold preservation, logistics, and fisheries management. The analysis demonstrates that operational performance does not depend exclusively on fishing capacity, but rather on the integration of voyage planning, vessel structural conditions, crew competence, safe navigation, post-harvest handling, temperature control, landing infrastructure, traceability, and managerial decision-making. It also demonstrates that quality losses may occur before seafood reaches port, particularly when cooling is delayed or when physical damage, inadequate hygiene, improper storage, or interruptions in thermal control occur. The study concludes that integrated management of maritime and logistics operations constitutes a strategic instrument for increasing economic efficiency, reducing losses, strengthening worker safety, and preserving seafood quality throughout the production chain.
Keywords: commercial fishing; fishing vessels; maritime navigation; cold chain; seafood landing; seafood logistics; operational management.

1 INTRODUCTION

Fishing is a productive activity characterized by the ongoing interaction between factors. biological, environmental, technological, economic, and human factors. Unlike chains productive processes in which the raw material can remain relatively stable during the During transport, fish has a high perishability rate and undergoes biochemical changes. microbiological and sensory changes immediately after capture. For this reason, the efficiency of a A fishing operation cannot be evaluated solely by the quantity caught; it must also... also consider the conditions under which the product is handled, stored, unloaded and directed to consumer markets. Brazilian legislation establishes that the activity Fishing involves a wide range of processes, including capture, preservation, transportation, processing and marketing of fishery resources (BRAZIL, 2009).

In this scenario, the fishing vessel should be understood as a productive unit. complex. Its performance is linked to mechanical availability, autonomy, capacity storage, navigation and communication equipment, security, organization of Deck, crew qualifications, and adequacy of onboard procedures. The Organization Maritime International highlights that fishing remains among the professional activities of greater risk in the marine environment, precisely because of the particular characteristics of vessels, operating conditions and working environment (IMO, 2026).

Alongside the security of the operation, there is a second fundamental dimension: the Preservation of fish quality. The period between capture and processing or consumption. determines a significant part of the final product quality. Huss (1995) demonstrates that Temperature, physical damage, autolytic changes, and microbial activity are factors. fundamental to the evolution of fish quality after capture. The work, published by the FAO.

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such as *Fisheries Technical Paper No. 348,* it remains an international reference in
Technology and fish preservation.

Based on this reality, the cold chain ceases to be merely a technological resource and becomes...
to represent a strategic component of operational management. Proper cooling reduces the
The rate of deteriorative changes, while maintaining the temperature during
Storage and transportation contribute to preserving the product's characteristics. In the case of
For frozen fish, temperature control needs to remain continuous throughout the entire process.
subsequent changes, since temperature fluctuations can compromise physical attributes,
chemical and sensory (GONÇALVES; NIELSEN; JESSEN, 2012).

Therefore, this article aims to analyze the operational management of vessels.
fishing and its relationship with maritime navigation, the handling of fish on board, the
The study focuses on the unloading and cold chain logistics, seeking to understand how decisions are made regarding the process.
Even during the travel planning phase, these issues can have economic and health consequences.
The moment of fish delivery, as well as discussing management mechanisms capable of integrating
safety, productivity, quality, traceability and logistical efficiency.

2 METHODOLOGY

This study is characterized as qualitative, exploratory, and descriptive research.
developed through bibliographic and documentary review. The methodological choice stems from
due to the multidisciplinary nature of the object of investigation, which involves management knowledge.
fishing, navigation, maritime safety, fish processing technology, food preservation and
Logistics. The study does not present primary data collected directly from a vessel.
This is specific and therefore does not intend to generalize quantitative results for a particular fleet.
or region.

The documentary research focused on official and normative institutional sources.
especially Brazilian legislation, documents from the Ministry of Fisheries and Aquaculture (MPA),
materials from the Brazilian Navy, FAO, IMO and regulatory instruments related to
Safety, monitoring, recording, conservation, and inspection of fishing activity.

Brazilian legislation was considered particularly relevant because Law No. 11,959/2009
establishes the foundations of the National Policy for Sustainable Development of
Aquaculture and Fisheries, encompassing aspects related to management, inspection,
Conservation, processing and quality of fish products (BRAZIL, 2009).

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The literature review included technical and scientific literature on post-mortem changes.
Preservation by ice, freezing, fish quality, onboard operations and supply chain.
cold. Sources with authorship, responsible institution, publication date and were prioritized.
possibility of document tracking. Among them, the publication *Quality and* stands out .
quality changes in fresh fish, by Huss (1995), published by the FAO, considered a reference.
international news regarding the changes occurring in fresh fish.

The analysis was organized into six main areas: operational management of vessels;
Navigation and safety; fish handling and conservation; landing and infrastructure; supply chain
of cold and logistics; and management integration, traceability and sustainability. The interpretation of
The content sought to establish relationships between the different links, avoiding addressing the capture, the
Disembarkation and logistics as isolated activities.

As a reliability criterion, sources of a non-encyclopedic nature were excluded.
specialized content, content without verifiable authorship, commercial texts without technical basis.
and materials whose origin could not be identified. Documents were prioritized.
official institutional documents, legislation, technical and scientific publications, and specialized literature with
traceable bibliographic reference.

The approach adopted also considers that administrative norms and systems can be
updated over time. For this reason, recent official documents from the Ministry of
Fishing and aquaculture were considered in the discussion on monitoring and regulation of
vessels. Similarly, recent international changes to the STCW-F were
considered in the discussion on crew qualification and safety. The IMO reports that
Changes to the STCW-F and the new STCW-F Code came into effect on January 1, 2026.
reinforcing minimum competence and training requirements for personnel covered by
Convention (IMO, 2026).

Finally, the results of the review were organized from an applied perspective, seeking
To bring the scientific fundamentals closer to the operational reality of companies, shipowners,
Masters, crews, terminals and other agents involved in the fish production chain.

3. Operational Management of Fishing Vessels

Managing a fishing vessel begins before it leaves port. Planning
The proper execution of the operation involves defining the fishing area, estimated trip duration,
fuel capacity, availability of ice or refrigeration system, conditions

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meteorological conditions, fish storage capacity, safety equipment and available human resources. The trip, therefore, should be understood as a project. temporary operational, in which limited resources need to be coordinated to achieve a specific productive outcome without compromising crew safety.

A vessel's production capacity should not be confused with its capacity. nominal catch. A vessel may have a high catch potential and, Simultaneously, poor economic performance when its storage structure is Inadequate, when the fish is poorly packaged or when the unloading logistics generate long waiting periods. The effective outcome depends on the relationship between capture, conservation, travel time, operating costs, and value obtained from the product sold.

Mechanical availability also has a decisive influence. Motors, pumps, systems hydraulics, refrigeration equipment, generators, communication equipment and Navigation instruments need to be considered integral elements of productivity. A failure in any of these systems can have consequences that go beyond the cost. Immediate repair is necessary, as an interruption during the trip can reduce the catch and increase the risk. return time or compromise the preservation of the fish.

Preventive maintenance, in this sense, is a management tool. Its objective is not... Not only to prevent equipment breakdowns, but also to reduce the likelihood of interruptions in Critical moments. In fishing operations, maintenance must be linked to planning. from travel, to the availability of parts, to the crew's ability to perform checks and the existence of emergency procedures.

Another essential aspect is the management of human resources. The fishing operation depends on Specific technical skills, including navigation, machine operation, and handling of fishing equipment, first aid, fire fighting, communication and procedures emergency. The IMO establishes minimum training requirements for certain professionals on fishing vessels, highlighting related skills. personal survival, fire prevention and fighting, first aid, procedures emergency and accident prevention on board (IMO, 1995; IMO, 2026).

Operational management should also incorporate systematic record keeping. Information about fuel consumption, trip duration, catches, storage conditions, Mechanical occurrences, use of ice, and landing times allow for comparison. travel and identifying patterns. Without records, management tends to rely excessively. from individual memory, making it difficult to identify bottlenecks and make informed decisions.

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based on evidence.

In the Brazilian context, the vessel's document management is also important.
Strategic. Law No. 11,959/2009 establishes aspects related to registration and authorization.
of fishing activity, as subsequent instruments for regulation and monitoring.
This has increased the need to update information on vessels and their operations.
(BRAZIL, 2009).

Thus, managing a fishing vessel means coordinating people, equipment,
Information, financial resources, and raw materials in a highly variable environment.
Efficient management is that which transforms this variability into controllable parameters.
establishing routines, indicators, procedures, and responsibilities.

4. Maritime Navigation, Safety and Operational Control

Maritime navigation is one of the most sensitive components of fishing activity.
Displacement occurs in an environment subject to weather changes, currents, waves,
Reduced visibility, maritime traffic, and limitations inherent to the vessel. Therefore, the
Safe navigation needs to be associated with planning and not just the ability to...
reaction to adverse situations.

The technological resources currently available have expanded the possibilities of
Monitoring and guidance. Positioning systems, radio communication, radar and
Electronic navigation equipment can enhance the crew's situational awareness.
However, technology does not eliminate the need for nautical knowledge. It must be
understood as a tool to support decision-making.

Safety also depends on the physical condition of the vessel. Stability, integrity
structural, electrical systems, machinery, pumps, fire-fighting equipment and
Lifesaving devices need to remain in proper condition. The IMO emphasizes that...
Fisheries security involves aspects related to the particular characteristics of
Vessels, training, equipment and procedures designed to protect life at sea.
(IMO, 2026).

Another important aspect is the management of the cargo and the fish. Inadequate weight distribution
can affect the stability and behavior of the vessel, while the movement of boxes,
Ice and equipment on deck can create occupational hazards. Planning for
Storage should therefore consider not only volumetric capacity, but also

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Weight distribution and crew safety.

Communication is also a component of operational safety. Information regarding weather conditions, location, mechanical difficulties, and need for assistance They need to be transmitted in a clear and timely manner. The existence of systems of Reliable communication contributes to the ability to respond to situations of emergency.

Internationally, the IMO recognizes that fishing remains among the activities The most dangerous professions at sea. The STCW-F establishes minimum training requirements. and certification for professionals in specific segments of the fishing fleet, being complemented by international instruments aimed at the safety of vessels and ships. crews (IMO, 1995).

In Brazil, the operation of fishing vessels is also subject to these requirements. from the maritime authority and the fishing management instruments. Monitoring of Vessels contribute simultaneously to fisheries management, monitoring, and safety. of the operations.

Therefore, navigation and operational management should not be treated as independent areas. route planning, maintenance, crew qualification, communication, Monitoring and evaluating the vessel's condition constitutes a unique system of risk control.

5. FISH HANDLING ON BOARD AND PRESERVATION OF QUALITY

The catch represents only the beginning of the commercial fish production process. From then on From that moment on, a race against natural processes of deterioration begins. The matter- The raw material may undergo microbiological, enzymatic, chemical, and physical changes, so that... The final quality is a direct result of the handling conditions to which the fish is subjected.

Huss (1995) demonstrates that temperature is one of the most important factors in the speed of Fish spoilage. The rapid reduction in temperature slows down the rate of deterioration processes. deteriorating factors, which is why ice and other refrigeration systems play a role. fundamental in the preservation of fresh fish. Huss's work is recognized by the FAO as A benchmark for technology and quality control in the fish industry.

The time between capture and cooling should be minimized. The efficiency of the process It also depends on the contact between the fish and the refrigerant, and on the size of the particles.

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of ice, the arrangement of the raw material, and the heat removal capacity. It's not enough,
Therefore, having ice on board is necessary; it needs to be used in a technically appropriate manner.
Physical damage is another relevant factor. Falls, compression, crushing, friction and
Excessive handling can cause injuries that accelerate deterioration and reduce the
Commercial appearance. Management should be planned to reduce movement.
Unnecessary and avoid improper stacking.
Hygiene is equally essential. Surfaces, containers, equipment, and hands of...
Food handlers can act as sources of contamination. Brazilian health legislation
It establishes principles related to good practices and operational procedures.
Standardized for food production and processing establishments.
Preservation can be achieved through various technologies. For fresh fish, the use of...
Proper ice management remains an important solution, especially in operations where...
The trip duration allows for the maintenance of desired characteristics. For longer trips
long-term mechanical refrigeration or freezing systems can extend the capacity of
preservation.
In the case of freezing, thermal stability is fundamental. (Inspection Regulation)
The Industrial and Sanitary Regulation of Products of Animal Origin establishes specific parameters for
frozen products, reinforcing the need to maintain thermal conditions.
appropriate during subsequent stages (BRAZIL, 2017).
Consequently, the handling of fish on board should be understood as a step in
Quality control. Catching more fish without ensuring its preservation can result in...
Lower economic value, greater loss, and reduced overall operational efficiency.

6. DISEMBARKATION, PORT INFRASTRUCTURE AND OPERATIONAL FLOW

The landing area marks the transition point between maritime operations and the land-based supply chain.
At this point, the fish leave the onboard environment and begin to circulate through structures.
port areas, reception areas, processing units, vehicles or facilities of
storage. The more organized this transition is, the lower the risk of loss of
time, temperature and quality.
One of the main operational problems is related to waiting. When a vessel
It returns to port and remains waiting for equipment, workers, documentation,
buyers or storage space, the total time between capture and processing.

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This increases. For highly perishable products, this interval should be treated as a variable.
relevant operational aspects.

The infrastructure needs to facilitate fast and organized flows. Reception areas, floors, drainage systems, handling equipment, adequate water supply, ice facilities and Cold storage chambers must be sized according to the volume of goods handled.

Brazilian legislation links fishing activity to conservation, processing, transportation and commercialization of the products, demonstrating that the chain does not end with capture (BRAZIL, 2009).

Physical organization also contributes to hygiene. The flow of fish should avoid contact. Unnecessary with residue, contaminated surfaces, or products in different conditions. A Operational logic should prioritize organized movements and reduce overlaps between product, people, waste and equipment.

Another important element is the standardization of receiving information. Information about the species, Volume, origin, vessel, arrival time, and temperature conditions can be recorded in the reception. This practice creates a minimum basis for traceability and allows for identification. problems later on.

According to Brazilian law, the inspection of fishing activity encompasses different phases. of the chain, including unloading, preservation, transportation, processing, storage and commercialization. This demonstrates that unloading is not a marginal step, but integral part of the production chain control system (BRAZIL, 2009).

Efficient disembarkation also depends on synchronization between the vessel and the land-based system. If the fish arrives at the port without a vehicle, ice, cold storage, or crew available, the Planning done at sea loses efficiency. Logistics must therefore begin before the... return of the vessel.

Therefore, the port should be conceived as a logistics unit and not simply as... docking location. The quality of the fish can be preserved or lost during a few... Minutes of movement, depending on the organization, infrastructure, and operational discipline. existing.

7. Cold Chain and Fish Logistics

The cold chain refers to the set of operations designed to keep the product at the correct temperature. adequate thermal conditions from initial storage to subsequent stages of

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storage, transport, processing and distribution. In the case of fish, its importance is amplified by the high perishability of the raw material and the speed of the changes that They occur after capture.

The first principle of the cold chain is continuity. Properly cooling the fish... The label is not sufficient if the product remains exposed to unsuitable temperatures during the process. disembarkation. Similarly, an efficient cold storage chamber does not compensate for a Inadequate transport. Thermal quality must be preserved during the transition between each stage.

For fresh fish, ice remains an important means of preservation. The literature Huss's technique (1995) demonstrates the relevance of temperature reduction in decreasing The rate of deterioration and the preservation of the characteristics of fresh fish. Therefore, Ice should be understood as an instrument of technological control and not simply as an operational input.

In the case of frozen fish, the control is even more rigorous. The product must remain in conditions that prevent partial thawing and changes resulting from temperature fluctuations. Brazilian legislation establishes specific requirements for the storage and transport of frozen animal products (BRAZIL, 2017).

Logistics also involves time. A product may need to remain thermally suitable and, However, it will still lose economic value if it does not reach the market within the commercial timeframe. as expected. In this way, logistics management must work simultaneously with the variables. temperature, time, distance, volume, cost and demand.

Digital monitoring enhances control capabilities. Temperature sensors, Electronic recorders and tracking systems can provide data about the trajectory. Thermal exposure of the product. These records allow for the identification of exposure events and support decision-making. management. The contemporary trend is to replace evaluations based exclusively on perception through objective information.

Literature on frozen fish processing reinforces that the temperature should be... controlled throughout the entire chain, including freezing, storage, transportation and product display. Gonçalves, Nielsen and Jessen (2012) highlight the importance of Maintaining the cold chain is essential for preserving the quality of frozen fish.

Therefore, the cold chain must be managed as a system. Its performance depends on... Interaction between vessel, terminal, chamber, vehicle, logistics operator, and destination. How much The greater the number of transfers, the greater the need for standardized procedures and

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Records capable of demonstrating that the product's condition was preserved.

8 Integrated Management, Traceability and Economic Efficiency

Integrated management represents an evolution compared to the isolated administration of each stage. Instead of considering fishing, navigation, landing, storage and transport as independent departments, the integrated approach seeks to understand how decisions of One step affects the others.

A simple example relates to planning for a return. The decision to stay. Spending more time in a particular fishing area can increase the catch, but it can also increase the time it takes to fish. onboard storage. If storage capacity is limited, the gain A quantitative improvement may be accompanied by a reduction in quality. The best decision, therefore, is... It is not necessarily the one that maximizes capture.

Economic evaluation should consider direct costs and indirect losses. Fuel, ice, Maintenance, labor, food, port fees, and transportation represent costs. Observable factors. Deterioration, disposal, price reduction, delays, and market loss, on the other hand, constitute... Costs that are often less visible, but equally important.

Traceability allows you to connect travel information to the product being sold. Data of the vessel, period of operation, type, quantity, unloading, storage and Transportation documents can form a documentary sequence. Brazilian legislation establishes mechanisms for regulating and monitoring fishing activity, reinforcing the need for reliable information throughout the chain (BRAZIL, 2009).

Data quality has therefore become a dimension of management. Incomplete records or Inconsistent systems hinder audits, cost planning, and decision-making. Digital technologies can help reduce errors, but technology needs to be accompanied by... procedures and training.

Integrated management is also directly related to sustainability. Law No. Law 11.959/2009 establishes the sustainable development of fishing as an objective, reconciling resource utilization, economic benefits, environmental preservation, and development. socioeconomic (BRAZIL, 2009). Reducing losses after capture means making better use of resources. a resource that has already been removed from the environment, although this does not replace conservation policies. of the stocks.

Another aspect is safety. More efficient operations are not necessarily those that...

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They put pressure on the crew to capture more in less time. Security needs to be addressed.
as a condition for business continuity. The IMO and partner organizations recognize the
need for specific training, equipment and procedures to protect
fishing workers (IMO, 2026).
Integration finally allows for the construction of performance indicators. Travel time,
fuel consumption per unit of production, time between capture and cooling, time
Waiting time at disembarkation, percentage of product classified in each quality category,
Physical losses and temperature deviations are examples of indicators that can guide the...
administration.

9 Contemporary Challenges and Perspectives for Management FISHING

The fishing industry faces an increasingly complex operational environment. Companies
They need to reconcile rising costs, environmental demands, sanitary requirements, and safety.
maritime, traceability, labor availability, and the need for competitiveness.
This context requires management to abandon models based exclusively on
informal experience and progress towards data-driven management systems.
Digitization presents a significant opportunity. Positioning systems,
communication, temperature monitoring, electronic records and databases enable
To monitor the operation with greater precision. However, the adoption of technology must consider
the economic reality of each undertaking and the workers' ability to utilize it.
appropriately.
Another challenge is related to port infrastructure. Even technically capable vessels
suitable methods may yield limited results when landed on structures with
Insufficient capacity for refrigeration, handling, or processing. The investment needs to be...
Therefore, it must be systemic, considering the different links in the chain.
Professional qualifications also remain essential. Sophisticated equipment is not
They eliminate the need for trained professionals. The IMO establishes that the training of
Fishing personnel must possess specific safety and emergency skills, and
Updates that came into effect in 2026 reinforce the importance of minimum competence.
standardized for workers covered by the STCW-F (IMO, 2026).
Economic sustainability represents another challenge. The fishing enterprise needs

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produce sufficient revenue to finance maintenance, equipment renewal,
Training and compliance with standards. Reducing waste and improving quality can...
to contribute to this balance without relying exclusively on increasing the volume captured.
It is also necessary to expand the culture of prevention. In maintenance, preventing a
A failure usually costs less than repairing a breakdown during a trip. In terms of quality, avoid
Breaking the cold chain is generally more effective than trying to recover it later.
A deteriorated product. In security, anticipating risks is always preferable to responding to them.
accidents.

The use of monitoring systems also strengthens governance. Information about
Fishing effort, vessels, production, and characteristics of the activity can contribute to
Public and private planning. In this sense, the quality and reliability of the data.
They become strategic components of fisheries management.
The future trend, therefore, is towards greater integration between navigation, production, logistics,
Quality and information. A competitive fishing enterprise will be one capable of...
Transforming operational data into actionable decisions, while maintaining security.
of the workers, the quality of the fish, economic efficiency and respect for regulations
fishing spot.

CONCLUSION

The analysis demonstrates that the efficiency of fishing activity cannot be reduced to
Catch performance. The operation constitutes a complex system in which navigation,
safety, machinery, crew, fish handling, landing, storage and
Transportation is permanently connected.
The fishing vessel should be understood as a productive and logistical unit. Its
The ability to generate economic results depends not only on its aptitude to capture
fish, but also its ability to keep the product in suitable conditions up to that point.
from the landing.
Safe navigation occupies a central position in this system. Planning, maintenance,
Communication, equipment, professional training, and monitoring reduce risks and
They contribute to the continuity of operations. The instruments developed by the IMO and FAO contribute to the continuity of operations.
ILO and other organizations demonstrate that maritime safety must be treated as a structural component of...
fishing activity (IMO, 2026).

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Fish preservation, in turn, begins immediately after capture. Temperature,
Time, hygiene, and physical integrity are important factors in the evolution of quality. Huss
(1995) demonstrates the importance of temperature control and management conditions for
To slow down deterioration processes and reduce post-capture losses.
The disembarkation represents a particularly critical stage because it concentrates the transfer.
between two operating systems. If this transition is slow or disorganized, investments
Costs incurred on board may be partially eliminated. The existence of adequate infrastructure,
Prepared teams and prior planning are therefore crucial for preserving the
product value.
The cold chain must be treated as a continuous process. Thermal control needs to be...
To track the fish from onboard storage to transport and preservation.
later. For frozen products, Brazilian legislation establishes specific requirements for
preservation, reinforcing that temperature control does not end at the moment of
freezing (BRAZIL, 2017).
Traceability is also becoming increasingly important. Information about the vessel,
Capture, landing, temperature, storage, and transport allow for the reconstruction of
The path of the fish and identifying points of failure. The existence of national instruments for
Monitoring and regulation demonstrate the progress of fisheries management guided by
information.
From an economic standpoint, reducing post-capture losses represents an opportunity.
A concrete way to increase efficiency. Making better use of fish already caught can mean...
greater financial return without the gain necessarily depending on increased effort of
fishing. This perspective is consistent with the need to reconcile economic development,
conservation of resources and social benefits as provided for in Brazilian legislation (BRASIL, 2009).
It can therefore be concluded that the operational management of fishing vessels must evolve towards
an integrated approach, in which maritime safety, production, quality, cold chain,
Logistics, traceability, and sustainability should be managed as parts of the same system.
system. More than increasing the amount captured, the contemporary challenge lies in
to deliver to the market a safe, preserved and economically valuable product, while at the same time
This is a time when workers and the natural resources that support the activity are protected.

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