Savings on the Cost of Production of Phinisi Ships in After-Sales Condition Through Quality Cost Budgeting

Muh Rum[a], Andi Muh. Nurjalal[b]
a Postgraduate Program, Muhammadiyah University of Makassar, Makassar, Indonesia
b Undergraduate Program, Muhammadiyah University of Makassar, Makassar, Indonesia
*Corresponding author. E-mail address: muh.rum@unismuh.ac.id

ARTICLE INFO

Article history:
Received
November
Accepted
December

Keywords
Cost of Quality, Production Cost, Phinisi Ship

ABSTRACT

This study aims to reduce the cost of production of phinisi ships by reducing after-sales claims through quality cost budgeting planning. Phinisi ships are products that have high cultural and economic value. However, in the production process, various risks can affect the quality and completion time. The research method used is quantitative descriptive using management accounting methods, and case studies of phinisi ship manufacturing in Bulukumba Regency, South Sulawesi. Data were collected through observation, interviews, and documentation studies. Data analysis includes identifying components of production costs, and quality costs, then calculating the present value per unit of ship time with quality costs and the present value per unit of ship time without quality costs. The results of the study indicate that quality costs in the production of phinisi ships can reduce the value of the cost of production. Can increase production efficiency in the long term. The present value of the ship with docking costs assuming an effective interest rate of 10% per year is obtained at Rp 2,332,815, while the ship produced without quality cost budgeting is obtained at a present value of Rp 53,494,941. So production costs can be saved by Rp. 51,162,125,-

1. Introduction

As a result of after-sales claims, it will reduce the profits of phinisi ship craftsmen. Profits that do not increase require further research to determine the cause. As a production problem, a study is needed to compare expenditures that maintain quality with the resulting production. Costs associated with the quality of ship products include all costs incurred due to efforts to prevent, assess, and handle low-quality products (Muttaqin, 2022) . Quality costs focus on prevention costs, assessment costs, and operational failure costs of products. Factors that influence the lack of growth in profits of phinisi ship entrepreneurs can include various aspects, such as labor productivity, social capital, marketing strategy, quality costs, supervision, and other external factors. Further research can be done to explore these factors and determine appropriate actions to increase the capitalization of phinisi ship entrepreneurs. Thus, phinisi ship manufacturers can identify the causes of their lack of capital growth and take appropriate steps to increase profits and business continuity. Prevention costs include costs to prevent errors in production, assessment costs include costs to assess product quality, and failure costs include costs incurred due to defective or non-standard products. A study conducted by Misbah M and Edi P (2019) found that quality costs can absorb around 20% to 30% of total sales, and attention to improving quality can increase company value by increasing customer demand and reducing company costs.

How important is the cost of quality in the phinisi ship industry? If the ship manufacturer informs the specifications of the ship's product along with the quality of the wood materials used and the facilities equipped in the ship, the advantages of the ship in various functions, then the ship buyer will physically evaluate the suitability of the information with the facts obtained. The Purchasing Decision by Aliyah (2019) is closely related to the availability of quality costs that guarantee the operation of the products produced, the findings of Misbah M's research and Edi P (2019) that partial prevention costs do not have a significant effect on product quality. As for quality costs by Hansen

and Mowen (2009) have great potential to help decision making. The goal of quality costs is to maximize business while minimizing costs. The usual reality is not profitable if quality costs are real and estimated at least 25% of production costs. Implementing Quality Costs can help businesses understand the amount of resources that must be allocated to the right channels to maintain customer satisfaction, quality, and ultimately profit.

1.1 Background

Phinisi ships have long been known as one of the proud icons of the people of South Sulawesi and Indonesia in general. Phinisi ships have been known since the 14th century as proven by the discovery in the La Galigo palm leaf manuscript. Phinisi ships are national icons as a symbol of the greatness of the Bugis Makassar tribe. The ship was built traditionally with different capabilities from the design process of modern ships. The function of this ship, especially in Indonesia, is that it can be used as a fishing boat, passenger ship, and cargo ship. In the fisheries sector, the role of traditional wooden ships is still important because the capital for building modern ships is relatively expensive. Initially, phinisi ships were often used by Konjo, Bugis, and Mandar sailors to transport goods. The characteristic of phinisi ships is equipped with 7-8 sails, and two main masts located at the front and rear of the ship. With a weight of 1000 tons for each unit. Not only recognized as part of the history and customs of the South Sulawesi community, phinisi ships are also a symbol of the traditional shipping techniques of the archipelago. Its toughness also makes phinisi ships contribute to much trade traffic on international shipping routes. One of them is recognition from the World Organization, the United Nations Educational, Scientific, and Cultural Organization or UNESCO. In 2017, phinisi ships were officially designated as Intangible World Cultural Heritage by UNESCO and became strong evidence of the recognition of phinisi ships in the international world. Unlike modern ships in general, phinisi ships use wood as the main material. The use of wood also makes phinisi ships have their characteristics. The types of wood commonly used as the main material on phinisi ships include teak, bitti wood, ironwood, and also kandole/punaga wood. Uniquely, the wood used to form parts of the ship does not use nails or glue as an adhesive, but rather with pegs. Wooden pegs to glue parts of the ship also usually come from leftover pieces of wood. Therefore, the use of wood on phinisi ships looks so dominant without leaving many parts that are wasted.

The demand for phinisi ships is quite increasing but the ability to complete the work takes longer. This is due to several influencing factors, namely labor productivity, economic literacy, digital literacy, and technological developments in the phinisi shipbuilding industry. According to research conducted in the area, the factors that influence the productivity of the phinisi shipbuilding industry workforce include respondent characteristics, worker income, economic literacy, digital literacy, and marketing skills. In addition, technological developments also play an important role in increasing the efficiency of phinisi ship production. For example, the use of machines in the shipbuilding process can speed up work that was previously done manually, but this can also affect the completion time of the work. In addition, if quality costs are not managed properly, the risk of damaged or defective products can increase, which can affect product completion time and production costs. In addition, risks in construction projects, such as work safety, unsafe working conditions, and poor maintenance of machinery and equipment, can also affect labor productivity and project risks. Therefore, good risk management and quality cost management can help reduce the risk of product completion that takes longer and improve product quality on phinisi ships.

1.2 Problem Statement

The cost of goods sold can increase due to after-sales claims. Ship owner claims generally occur due to problems after the sale, and are still the responsibility of the seller, especially additional repair costs. But engine damage or technical matters are certainly often experienced by many ships because there are many causes. The problem of broken rudders can occur because, in our seas, wind and rain conditions currently cause garbage and tree branches, and many foreign objects carried by

floods to often be the cause. The claim in question is a customer request for after-sales problems or problems that arise after the sale of the phinisi ship is operational. Other claims also occur in electricity and piping. With these claims, the phinisi ship craftsmen spend a lot of money outside the costs charged in the cost of production. These costs are losses and these costs can be avoided if the company has issued quality costs earlier. The quality costs in question according to Misbah M and Edi P (2019) is the expenditure of costs to avoid problems in the future. Thus, to reduce claims from customers, the company can spend some quality costs that are relevant to the planning and construction of the phinisi ship.

Planning quality cost expenditures in the phinisi ship industry to avoid claims in after-sales conditions. Quality products are a realistic effort to produce, but companies must always monitor and improve the quality of their products so that optimal results will be obtained. Increased quality will reduce claims because increased quality will result in costs that continue to decrease and increase market share (Fahirah, 2020) . By planning a quality cost budget, management will obtain information on the costs that must be incurred by the company to maintain product quality consistently. Quality costs are one component of various cost threats in producing product quality and have an impact on the total amount of all costs of a product. Effective business control supports savings efforts to reduce other costs. With quality costs, you can find out the level of efficiency that has been achieved and management can be motivated to continuously improve quality while being able to control the costs that have been set in the Company's planning stage.

1.3 Objectives and Scope

Avoidable costs are costs that can be eliminated if a decision is made to change the direction of a project or business. This study refers to the concept of *Avoidable Costing,* which is a cost that can be avoided where the cost that would not be incurred if a particular activity was not carried out. Avoidable costs mainly refer to variable costs that can be eliminated from business operations, while fixed costs are paid regardless of the level of activity of the company. Fixed costs can be avoidable costs if the business costs can be eliminated by no longer performing a particular business activity. Then perform poorly, thus eliminating the costs associated with that product line. Methods to reduce or eliminate costs associated with a product line that is performing poorly or is unprofitable. Variable costs are not completely avoidable in the short term. This is because the company may still be bound by contracts with workers for direct labor or with suppliers for direct raw materials. When these agreements end, the company will be free to write off the costs. Therefore, avoidable costs refer not only to the goods purchased but also the period of purchase. Companies must frequently conduct company cost analysis and determine how to shift unavoidable costs to avoidable costs. Thus, the company can reduce its operational risk and can

Avoidable and unavoidable costs are never explicitly stated in a company’s financial statements. However, certain notes to the financial statements usually indicate the specific types of costs that describe the types of expenses reported. As part of its financial statement notes, these quality cost expenses might be considered avoidable by some. On the other hand, the company then discusses its manufacturing purchase obligations as well as other purchase obligations. When discussing its manufacturing purchase obligations, the company notes that these agreements are essentially irrevocable. Even if Apple were to never produce another product again, it would likely still be contractually obligated to pay these costs. These types of costs are examples of unavoidable costs. Avoidable costs offer lower risk and greater flexibility because a company can choose not to incur the cost if it does not want to (or cannot financially afford to). Unavoidable costs such as fixed-term contracts may be beneficial to companies that want to scale up operations. Costs are avoidable if no fixed contract requires the company to incur the cost. In addition, avoidable costs often move with operations. If the cost is incurred as a result of the company's desire to produce one additional unit, it is often avoidable. Avoidable costs are not explicitly stated in a company's financial statements. Instead, a company may include a statement in the notes to its financial statements indicating whether the company could have avoided a particular cost. Companies are not required to

report avoidable costs externally, and avoidable costs are typically only reported internally for strategic purposes. So companies that want to reduce risk and increase flexibility may be better off undertaking an avoidable cost study. Avoidable costs are costs that a company can easily avoid. This type of cost is the opposite of unavoidable costs, which are often fixed costs that a company must pay no matter what.

Buyers continue to check and test the purchased phinisi ship products when they are operated for some time. Ship providers also have and send quality improvement teams to analyze prevention costs that can be planned and designed before ship delivery is carried out. Based on the evaluation results, it is possible to find that buyers give a rating for poor ship use, especially if they find information on past conditions because users receive their products in an untested state. This condition can be improved by issuing internal failure costs. Ship manufacturers must pay quickly to fix it. The company also decided to give customers a repair schedule until they reached the specifications that have been offered. As for external failure costs. The company should invest more budget in assessment and prevention costs so that they can avoid paying larger internal and external failure costs. So quality is the result of a carefully built cultural environment. Quality must be part of the organization, not part of the whole. Quality Costs have four main components, namely:

	Quality Cost Components	*Examples of Quality Costs*
Good Quality	*Appraisal Costs*	*Inspection, Audits*
	Prevention Costs	*Maintenance, Planning, Education, Training*
Poor Quality	*Internal Failure Costs*	*Rework, Delays, Validation*
	External Failure Costs	*Customer Returns, Warranty, Lawsuits*

Sumber: *https://www.scilife.io/glossary/cost-of-quality*

Based on the background of the problem above, the formulation of the problem in this study is whether quality cost budgeting can reduce claims and control the cost of goods sold in phinisi ship craftsmen? This study can be used as input for phinisi ship craftsmen so that quality cost budgeting can control the cost of goods sold of phinisi ship products . The results of this study can be used as a basis for providing references for further research related to the indication of quality costs against the risk of completing phinisi ship products.

2. Literature Review

The quality costs budgeted by the company are expected to be responsible for quality control, the company is expected to set standards for quality costs that must be removed (Achmad Daeng GS, Mahjudin, Eka Tupiana, 2014). Control over quality costs must also be accompanied by increased sales. Cost analysis of quality costs must be carried out at the expense of quality control can increase cost efficiency and company productivity. The emergence of quality costs according to Hansen and Mowen (2009) because there may or have been poor quality products. Quality costs are related to the prevention, identification, repair, and correction of low-quality products and *the opportunity cost* of lost production and sales time as a result of low quality so that it must be spent due to defective goods (Misbah and Edi P, 2019). To increase the efficiency of production costs, but in reality, product quality and delivery time are less considered, so there are companies that have to spend a lot of money related to reworking defective products, repairing defective product warranties, and refunding customers, as well as other costs to find and fix errors. By creating quality products, it will reduce costs such as warranty costs for defective product construction costs, and improve the quality of the Company's products. For this reason, Rosdiana *et al* ., (2020) that quality costs are costs incurred by the company due to defective goods, in other words, these costs are incurred to improve product quality or achieve predetermined standards.

The main targets of quality costs in production are prevention costs, appraisal costs, and failure costs. Prevention costs include costs to prevent errors in production, appraisal costs include costs to assess product quality, and failure costs include costs arising from defective or non-standard products. According to Hansen and Mowen (2009), ship product quality cost indicators are costs incurred by companies to produce quality products. Quality costs are grouped into three categories, namely prevention costs, appraisal costs, and failure costs. Here are some indicators of ship product quality costs. Prevention costs are costs incurred to prevent defects in products produced by the company. Thus, the greater the prevention costs incurred, the number of defective products produced will decrease and the cost of failure will be smaller. This includes employee training, quality planning, and process control. As for appraisal costs, these are costs incurred to determine whether products and services have met the established quality requirements. The main purpose of this assessment function is to avoid errors and damage to products to consumers.

In controlling production costs, companies can carry out good production cost planning by preparing an appropriate production cost budget. Companies can also calculate standard costs and variances. Production costs according to Hansen and Mowen (2009) are costs related to the product of an item. Siti Irawati (2023) is related to all costs incurred in producing finished products and ready for use. The production cost control process according to Siti Irawati (2023) is carried out in stages by determining the standards to be used, measuring implementation, comparing implementation or results with standards determining deviations if any, and taking corrective actions if there are deviations so that implementation and objectives are by the plan.

2.1 Related Work

When we refer to the cost of quality we can examine the balance between how much resources are spent on preventing and maintaining good quality versus how much internal and external quality failures cost the company. In this way, we can represent the Cost of Quality (CoQ) with the formula CoQ = CoGC (cost of good quality) + CoPC (cost of poor quality). The costs of good quality fall into two categories—prevention costs and appraisal costs. Prevention costs are any costs aimed at keeping failures low, including setting product specifications, product development, employee training, and using a QMS such as Reliance's ETQ. Appraisal costs are incurred while maintaining acceptable levels of quality, such as material inspections, quality audits, and supplier assessments. The costs of poor quality can also be divided into two separate categories—internal and external failures. Internal failures include problems that occur before the product reaches the customer–for example, excessive scrap, machine breakdowns, and waste due to inefficient processes. External failures occur after the product reaches the customer, such as warranty claims, shipping damage, and product returns.

2.2 Research Gap

The main goal in calculating the cost of quality is to find ways to reduce the cost of good and bad quality without reducing the actual quality of your product. Cost reduction begins with addressing costly problems before systemic problems occur. Risk According to Haidar *et al.*, (2022) is a danger, result or consequence that can occur due to an ongoing process or future event. Risk can be interpreted as a state of uncertainty, where if an undesirable condition occurs it can cause a loss, dividing risk into 3 meanings, namely the possibility of loss, uncertainty, and the probability of an outcome that is different from the expected *outcome.* Corrective and Preventive Action (CAPA): namely a review to the root cause and actions to be followed up. Corrective Action to ensure that problems do not go undetected. Actions that indicate which problems should be addressed first. Risk-based screening allows work to be prioritized, preventing costly delays. The human element when dealing with quality problems. Can design the most sophisticated production system imaginable and still have quality problems if people. Automate workflows: Automated workflows mean you can customize procedures, and help standardize your processes while ensuring critical requirements and objectives are met. Reducing the cost of quality requires effective risk management. A quality management

system allows you to build risk tools into any process, including bowtie analysis, decision trees, and risk matrices. The capabilities of an audit management system clearly show which items are at high risk (and likely to contribute the most to quality costs), helping you prioritize follow-up strategically. The benefits of a quality management system allow you to identify high-risk gaps that need to be fixed first. This way, you can ensure you're spending your time in the most effective way possible. This includes software validation regulations that govern the health and life sciences industry, which require up-to-date software to be an absolute requirement. Centralized reporting capabilities that use risk as a common benchmark allow teams to make more informed, strategic decisions while reducing the cost of quality. Risk-based decision-making is at the heart of continuous improvement. It provides an objective measure to determine whether your work has reduced risk to an acceptable level.

3. Methodology

The type of research used in this study is a quantitative descriptive approach to describe and explain the relationship between phenomena and research. According to Sugiyono (2017), the quantitative descriptive research method aims to describe a phenomenon, event, symptom, and incident that occurs factually, systematically, and accurately. Phenomena can be in the form of forms, activities, relationships, characteristics, and similarities or differences between phenomena. This research was conducted on phinisi ship craftsmen in Bonto Bahari District using the management accounting method.

3.1 Data Collection

The data of this study were obtained through primary data, namely collected from the management of phinisi boat craftsmen, both through interviews, observations, and direct checks in the field. Then this study also uses secondary data obtained indirectly or from books, articles, and other media. The research unit is in phinisi boat craftsmen in Bontobahari District. With the reason that the development of the transportation sector is expected to increase to support phinisi boat products and increase economic income in Bulukumba Regency so that the transportation sector is very interesting to study.

3.2 Analysis Techniques

The technical analysis of this research is descriptive quantitative by comparing the Present Value per unit of ship time with quality costs with the Present Value per unit of ship time without quality costs.

3.3 Validation

The analysis unit is cluster, namely taking several boat craftsmen and the number of boats produced exceeds 30 boats. Data collection techniques are carried out by searching, collecting, reading, studying, and understanding reference literature from books, journals, and other sources that are relevant to the problems being studied in order to obtain clarity of concepts and theoretical foundations related to the discussion. The information collected is valid data including data on raw material costs, labor costs and factory overhead costs involved in the process produced by a product.

4. Results and Discussion

Based on the analysis of table 1, table 2, and table 3, descriptively management accounting in the implementation of quality cost budgeting. So in a few years, it will delay the docking time, this study has supported the implementation of quality costs in the phinisi ship business. So that the activities studied can provide added value, namely a larger profit margin, and lower operating costs.

Quality costs in the development of phinisi ships are very helpful and provide higher profits. Ships produced by budgeting quality costs can delay docking times for up to 20 years, while those that do not apply quality costs can speed up docking times. Then the present value of ships with docking costs assuming an effective interest rate of 10% per year is obtained at Rp 2,332,815, while ships produced without budgeting quality costs are obtained at a present value of Rp 53,494,941. So the production cost can be saved by Rp. 51,162,125,-

Table 1 Production Cost Report

Cost Components	Information	Quantity	Unit	Unit price	Amount
Production Capacity		**Boat**	**4**		
Production Time Production		**Year**	**1**		
Docking period		**Year**	**20**		
Raw Material Cost	Wood	100	Cubic	8,000,000	800,000,000
		Working Hours/day	**Number of employees**	**Wages**	
Labor costs	Assembly	8	4	200.000	800.000
	Painting	7	4	175.000	700.000
	Finishing	7	4	175.000	700.000
Biaya Overhead	Paku A	Kg	26	15.000	390.000
	Paku B	Kg	30	20.000	600.000
	Amplas A	Grit	104	30.000	3.120.000
	Amplas B	Grit	100	35,000	3,500,000
	Thinner	Liter	40	70,000	2,800,000
	Glue	Kg	8	12,000	96,000
	Paint	Liter	200	100,000	20,000,000
	Screw	Two	2000	3,700	7,400,000
	Glossy	Liter	36	300,000	10,800,000
	Electricity cost	Watt	2600	1,352	3,515,200
Total Production Cost					**854,421,200**

Table 2 Cost of Quality Report

Cost of Quality	Electrical Safety	Circuit Breakers	15,000,000
		Surge Protector	30,000,000
		Grounding and bonding	15,000,000
		Fire and Electrical Leakage Detection System	150,000,000
			210,000,000
	Plumbing and Drainage	Pipes and Fittings	15,000,000
		Pumps and Valves	15,000,000
		Installation	30,000,000
			60,000,000
		Standard Regulator	30,000,000

	Regulator on the Machine	Advanced and Special Regulator	100,000,000
			130,000,000
	Additional Exterior Painting	Anti-Corrosion Paint	600,000
		Waterproof Paint	500,000
			1,100,000
Total Cost of Quality			**401,100,000**
Total Production Cost With Quality Cost			**1,255,521,200**

Table 3 Present Value Per Unit of Ship Time with Quality Cost Assuming an Effective Interest Rate of 10% per year

Production Cost Per Unit of Phinisi Ship	213,605,300
Production Cost Per Unit of Phinisi Ship with Quality Cost	313,880,300
Completion Time	1 year
Docking Time	20 years
Value Per Unit Time of Ship With Quality Cost	15,694,015
Discount factor	0.14864
Present Value Per Unit Time of Ship With Quality Cost	2,332,815

Table 4 Present Value Per Unit Time of Ships Without Quality Assuming an Effective Interest Rate of 10% per year

Total Production Cost Without Maintenance Cost	854,421,200
Production Unit	4
Cost of Production Per Unit of Phinisi Ship	213,605,300
Completion Time	1
Docking Time	3
Value Per Unit of Ship Time Without Quality Cost	71,201,767
Discount factor	0.14864
Present Value Per Unit Time of Ship without Quality Cost	53,494,941

The following data is processed to carry out a two-way ANOVA test, to find out whether there are similarities between phinisi boats that use quality costs and those that do not use quality costs.

Next, a two-way ANOVA test was carried out at a 95% confidence level.

Cost of Quality	At the Cost of Quality	No Cost of Quality	Ti	Ti^2
Production cost	854,421,200	854,421,200	1,708,842,400	2,920,142,348,037,760,000
Electricity	210,000,000		210,000,000	44,100,000,000,000,000
Piping and Drainage	60,000,000		60,000,000	3,600,000,000,000,000
Regulator on the Machine	130,000,000		130,000,000	16,900,000,000,000,000
Additional Painting	1,100,000		1,100,000	1,210,000,000,000
Tj	1,255,521,200	854,421,200	2,109,942,400	2,984,743,558,037,760,000
Tj ^{2}	1,576,333,483,649,440,000	730,035,587,009,440,000	4,451,856,931,317,760,000	

Row Sum of Squares		
2,984,743,558,037,760,000	4,451,856,931,317,760,000	
1	10	
2,984,743,558,037,760,000	445,185,693,131,776,000	2,539,557,864,905,980,000
Column Sum of Squares		
4,451,856,931,317,760,000	4,451,856,931,317,760,000	
3	10	
1,483,952,310,439,250,000	445,185,693,131,776,000	1,038,766,617,307,480,000

Total Sum of Squares	
730,035,587,009,440,000	730,035,587,009,440,000
44,100,000,000,000,000	-
3,600,000,000,000,000	-
16,900,000,000,000,000	-
1,210,000,000,000	-
794,636,797,009,440,000	730,035,587,009,440,000
Total Sum of Squares	
1,524,672,384,018,880,000	4,451,856,931,317,760,000
4	10
381,168,096,004,720,000	445,185,693,131,776,000

Sum of Squares Error	- 64,017,597,127,056.000	2,539,557,864,905.980,000	1,038,766,617,307.480,000	- 3,642,342,079,340.520,000

Scale	db	Sum of Squares	Total of Squares	F Count	F Table	Note
Cost of Quality (Row)	4	2,539,557,864,905,980,000	634,889,466,226,496,000	2,445	6,940	Rejected
Production Cost (Column)	1	1,038,766,617,307,480,000	1,038,766,617,307,480,000	4,000	6,390	Rejected
Error	4	1,038,766,617,307,480,000	259,691,654,326,869,000	-		

4.1 Key Findings

The findings of this study are that in terms of value, quality costs can reduce production costs in after-sales conditions. After-sales conditions are still a guarantee for phinisi boat craftsmen to make repairs or become a burden for phinisi boat craftsmen. What was found in this study was that in terms of current value, the production costs of a phinisi ship in after-sales condition, or all repair costs due to damage to the ship during the phinisi ship sales guarantee, were considered to be a burden on the cost of production, and by issuing quality costs, the ship's docking period was extended and the value of the cost of production was reduced.

4.2 Interpretation of Results

Berdasarkan hasil analisis dan pembahasan, maka kesimpulan dari penelitian ini adalah penerapan biaya mutu pada produksi kapal phinisi dapat menekan nilai biaya produksi. Hal tersebut dapat meningkatkan efisiensi produksi dalam jangka panjang terutama jika menggunakan modal pinjaman investasi, selain itu dapat mengurangi waktu docking dan mengurangi perlunya pengerjaan ulang yang pada akhirnya dapat menekan total biaya.

5. Discussion

The results of the study indicate that the cost of quality can reduce the value of production costs. For that, phinisi ship craftsmen need to implement quality management to achieve better profits and prioritize high-risk quality dimensions that can be achieved within an optimal budget. Maintaining the quality of phinisi ship production is very important, which is achieved at the micro level of all quality lines. The balance between quality and cost and achieving the best profit needed by phinisi ship manufacturers. The expectation of phinisi ship product quality is not only on the specification offer but can be shown in technical durability and economic value.

5.1 Comparison with Prior Research

This study is different from previous studies, because this study describes the management accounting method of the difference in value measured by the present value against the value issued in the future. While previous studies tested associative statistics to measure the effect of quality costs. By implementing quality cost, phinisi shipbuilding companies can budget more on quality costs, in addition to educating and training employees, and selecting high-quality raw materials. This can reduce the cost of repairing and replacing defective products in after-sales conditions, thereby reducing the cost of production cost value. The quality cost method often reduces the number of product defects. By minimizing defects, companies reduce warranty costs, repairs, and material waste, which contributes to reducing total costs even though the initial investment may be greater.

5.2 Limitations

This study basically has limitations because it only examines medium-tonnage phinisi ships, and does not see the details of the contract made regarding the condition of ship damage borne by the ship's craftsmen if damaged. In addition, the production cost report was prepared by the researcher based on information from the phinisi ship manufacturer manager, where the researcher adjusted it to the financial report of production costs and adjusted it to the objectives of the analysis to be carried out. In addition, the costs incurred are not stated in the form of a certain currency value for repair costs so that the author assumes that all these expenses are stated in Rupiah currency, although many buyers also come from other countries.

5.3 Future Research

For further researchers who will research production costs and production cost control of Phinisi ships, it is recommended to research the quality management information system related to scheduling the use of quality cost budgets based on urgency.

6. Conclusion

Based on the results of the analysis and discussion, the conclusion of this study is that the implementation of quality costs in the production of phinisi ships can reduce the value of the cost of production. It can increase production efficiency in the long term, especially if using investment loan capital, in addition it can reduce docking time and reduce the need for rework, which ultimately reduces total costs.

7. Recommendation

For some managers of phinisi ship builders or craftsmen in the Bontobahari District, Bulukumba Regency, it is expected to form a quality assessment unit as one of the shipbuilding service divisions and provide input to the leadership to form a quality cost budget if necessary. It is

also recommended to form a management information system related to Quality Management to ensure the certainty of the high quality of the products made before being delivered to the buyer. In this way, it can also help improve the company's reputation and win customer trust. Investing in quality costs can increase customer satisfaction and reduce costs associated with product returns and customer complaints. Thus, even though the initial cost is higher, the company may see savings in customer service costs and increased sales from satisfied customers. Spending on quality can include investing in safety equipment and accident prevention procedures, which can reduce costs associated with workplace accidents and equipment breakdowns.

Acknowledgement

This research was conducted with independent funds that were used by students in collecting field data. For that, the author would like to thank the Phinisi ship managers in the Bonto Bahari sub-district, Bulukumba district, South Sulawesi province, because of their openness and cooperation, this research could be carried out.

REFERENCES

[1] Achmad Daeng GS, Mahjudin, Eka Tupiana. (2014) Cost of quality control to improve production cost efficiency and sales productivity (Case study on companies in Sidoarjo) . *The Indonesian Accounting Review* Vol. 4, no. 2, , pages 115 – 128

[2] Aliyah, J. (2019). The Influence of Price, Product Quality on Purchasing Decisions of Honda Brand Motorcycles (Study on Students Using Honda Brand Motorcycles at ITB AD Lamongan Campus). *Angewandte Chemie International Edition, 6(11), 951–952.* , *2* .

[3] Fahirah, S. (2020). *The Relationship Between Product Quality and Price with Samsung Smartphone Purchasing Decisions (Case Study on Students of the Faculty of Economics, Pakuan University)*.

[4] Haidar, Monalisa, Pratama, AA, Siswantoro, F., & Purba, HH (2022). Risk Management Analysis in Port Construction Projects: A Systematic Literature Review. *Journal of Industrial and Engineering System*, *3* (1), 14–31. https://ejurnal.ubharajaya.ac.id/index.php/JIES/article/view/851

[5] Hansen and Mowen.(2009). Managerial Accounting. Book 1 8th edition. Jakarta: Salemba Empat.

[6] Misbah, M. and Edi P. (2019). September 2019. *Current History*, *118* (811), 328–328. https://doi.org/10.1525/curh.2019.118.811.328

[7] Muttaqin. (2022). *The Influence of Product Quality and Price on Consumer Purchasing Decisions on Kyungmi Shoes. Indonesian University of Education | repository.upi.edu | perpustakaan.upi.edu* .

[8] Rosdiana, YM, Iriyadi, I., & Wahyuningsih, D. (2020). Assistance in Increasing the Efficiency of Production Costs of Heriyanto MSMEs Through Quality Cost Analysis. *Journal of Community Service Dedication Unity* , *1* (1), 1–10. Https://Doi.Org/10.37641/Jadkes.V1i1.311

[9] Siti Irawati1, Agus Putranto, Susanti, MT (2023). *Analysis of Production Costs Using the Full Costing Method on Company Income Calculation (Case Study of a Tofu Factory in Wonosobo Regency)* . *3* , 111–122.

[10] Sugiyono. 2017. Educational Research Methods (Quantitative, Qualitative and R&D Approaches). Bandung: Alfabeta

[11] *https://www.scilife.io/glossary/cost-of-quality. Cost of Quality (CoQ) and Its Role in your Business*