

RESEARCH ARTICLE



Flood-Related Operational Disruptions and Loss Recording Practices in a Small Rice Milling Business

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Abstract

Purpose	This study examines flood-related operational disruptions and loss recording practices at a small rice milling business in Gayo Lues Regency and identifies information gaps for loss measurement and recovery planning.
Design/Methodology	Data were collected through an in-depth interview with the owner as the sole key informant, supported by observation and documentation, and analyzed descriptively using the interactive model and a production variance analysis.
Findings	Flooding damaged paddy, disrupted drying and milling, and coincided with a sharp production decline. From December 2025 to January 2026, actual production was 120 bamboo against an estimated 317.46, a variance of 197.46 bamboo (approximately 296.19 kg), or 62.20%. This reflects a physical production decline, not the monetary value of an abnormal loss. The business did not separately record the quantity and value of flood-damaged inventory or other abnormal costs, limiting loss measurement.
Practical Implications	Managers should protect raw materials from flooding, prepare disaster mitigation procedures, and keep simple but systematic records. Abnormal losses should be separately identified, measured, and recorded to support cost control, pricing, and production planning.
Originality/Value	This study offers contextual evidence from a small-scale rice milling business. It distinguishes physical production decline from measurable accounting loss and identifies recording gaps relevant to inventory management and post-disaster decisions.

Keywords: Flood disruption; Abnormal loss; Loss recording; Cost accounting; Rice milling

JEL Classification: M41, Q11, Q54

SDG: SDG 8 & SDG 13

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1. Introduction

The rice milling industry is a key sector in Indonesia's agribusiness chain, playing a vital role in processing paddy into rice a staple food for the population. This industry not only supports food security but also serves as a source of livelihood for small and medium-sized enterprises in rural areas. In their day-to-day operations, rice milling businesses rely heavily on the availability of raw materials and environmental conditions that support the production process ([International Rice Research Institute](#)). However, this sector is not immune to various risks both internal and external that can affect business sustainability.

One external risk with a significant impact is natural disasters, particularly floods. The floods that occurred in Aceh Province in November 2025 serve as a concrete example of an environmental disruption that directly impacted the agribusiness sector ([Badan Penanggulangan Bencana Aceh \[BPBA\], 2025a](#)). Heavy rainfall caused rivers to overflow and led to widespread flooding in various areas, including Blang Kejeran Subdistrict, Gayo Lues Regency. These conditions not only hindered community activities but also disrupted the operations of local businesses, including rice mills, which are highly sensitive to humidity and water levels ([BPBA, 2025b](#)). Following the flash flood that occurred on November 26, 2025, the rice fields of Gayo Lues residents were buried under thick mud, and hundreds of hectares of rice fields owned by residents of Badak Village, Dabun Gelang Subdistrict, Gayo Lues Regency, suffered crop failure ([Almujawadin, 2025](#)).

One of the businesses affected is the Badak Rice Mill, which operates in Blang Kejeran Subdistrict. This mill plays a strategic role in supporting rice distribution to the surrounding community and serves as a source of income for business owners and workers involved. Its operations include sun-drying paddy, milling, and storing the finished product. However, due to the flooding, the raw material paddy was damaged by being submerged in water, and the production process was disrupted. The owner estimated that tens to hundreds of kilograms of paddy were damaged. However, this estimate was not supported by a detailed inventory count, and the available records do not establish the monetary value of the damage or its effect on business revenue. Losses arising from such conditions are unplanned and lie outside the scope of normal business operations. From a cost accounting perspective, such losses are known as abnormal losses that is, losses that occur outside normal production conditions and should not be included in the cost of goods produced ([Dewi, 2019](#)). Theoretically, abnormal losses must be separated from production costs and recognized as losses in the period in which they occur, so that financial statements can reflect the actual condition of the business and provide relevant information for decision-making.

However, in practice, particularly in small businesses such as the Badak Rice Mill, cost accounting is often not implemented optimally. Limited knowledge and record-keeping systems have resulted in flood-related losses not being systematically recorded in accordance with cost accounting principles. Based on initial observations, these losses are not clearly separated or are even mixed into production costs, leading to inaccuracies in the calculation of the cost of goods sold and operating profit. This situation not only results in inaccurate financial information but also has the potential to mislead business owners in their economic decision-making.

Previous research has generally focused more on cost accounting treatments in the context of large manufacturing companies, particularly regarding products that are damaged or defective during the production process ([Cahyani, 2024](#)). [Alfiyana and Utomo \(2025\)](#) found that abnormal losses arise due to differences between actual and expected costs in the production process. Furthermore, [Terang et al. \(2023\)](#) emphasized the importance of applying accounting treatments for damaged and defective products in the calculation of the cost of goods manufactured, as this impacts the determination of a company's profit. On the other

hand, [Nasution et al. \(2024\)](#) indicate that, in practice, procedures for calculating the cost of goods manufactured and the treatment of damaged products often do not fully align with cost accounting theory. Furthermore, research by [Khasanah and Biduri \(2025\)](#) found that in the small-scale manufacturing sector, the recording of production losses including abnormal losses is often not clearly distinguished from production costs, leading to distortions in the calculation of the cost of goods manufactured and profit. These results indicate that issues related to cost accounting treatment do not only occur in large companies but also affect small businesses that have limitations in their financial recording systems.

However, based on the literature reviewed in this study, relatively limited attention has been given to the accounting treatment of disaster-related losses in small-scale agricultural processing businesses, particularly rice mills exposed to flooding. Previous studies have examined abnormal losses in several production contexts, including shrimp cultivation ([Alfiyana & Utomo, 2025](#)), indicating that abnormal-loss assessment is not limited to large manufacturing companies. Nevertheless, limited evidence is available on how small-scale, seasonal agricultural processing businesses identify, measure, and record losses arising from natural disasters within their actual accounting practices. This gap is particularly relevant to rice milling businesses, where production and raw-material availability are highly dependent on seasonal agricultural cycles and environmental conditions. Therefore, this study focuses on the accounting treatment of flood-related losses at a small-scale rice mill and examines how such losses are identified and recorded in practice.

Therefore, this study aims to examine flood-related operational disruptions and loss recording practices at the Badak Rice Mill in Gayo Lues Regency. Specifically, it explores how flooding affected paddy storage, drying, and milling activities; how the owner identified and recorded damaged inventory and production interruptions; and what information was unavailable for measuring accounting losses. The study also examines these recording practices in relation to relevant accounting principles and considers their implications for inventory protection and operational recovery planning. Its contribution is empirical and contextual, providing evidence on the challenges of documenting disaster-related losses in a small-scale agricultural processing business.

2. Literature Review

2.1 Cost Accounting

Cost accounting is a branch of accounting that focuses on recording, classifying, summarizing, and reporting costs related to a company's production process. The cost information generated is intended to assist management in planning, controlling, and decision-making ([Dewi, 2019](#)). Cost accounting not only plays a role in determining the cost of goods produced but also serves as a tool for evaluating a company's operational efficiency. According to [Lestari et al. \(2025\)](#), cost accounting plays a key role in providing accurate and relevant cost information to support cost control and improve company performance. In line with this, [Sasongko et al. \(2025\)](#) state that an effective cost accounting system enhances the effectiveness of internal controls and operational efficiency within a company. Research conducted by [Sanubari and Yuniarti \(2026\)](#) reveals that the proper implementation of cost accounting has a significant impact on the quality of financial information in small and medium-sized enterprises.

Furthermore, [Khasanah and Biduri \(2025\)](#) points out that entrepreneurs' limited understanding of cost accounting results in poor-quality financial records. This assertion is supported by a study by [Awaludin and Ardiansyah \(2024\)](#), which found that most micro, small, and medium-sized enterprises have not yet systematically implemented cost accounting. Additionally, [Afriani and Mubarak \(2025\)](#) argue that the optimal implementation of cost

accounting can enhance business competitiveness through production cost efficiency. In the context of small businesses, the application of cost accounting is crucial to ensure that all incurred costs are accurately recorded (Sasongko et al., 2025), thereby generating reliable financial information.

2.2 Production Costs

Production costs generally consist of raw material costs, direct labor costs, and factory overhead costs (Dewi, 2019). These three components form the basis for calculating the cost of goods manufactured (COGM). The cost of goods manufactured is the total expenditure incurred to produce a good within a specific time period (Hansen & Mowen, 2015). Accurate determination of COGS is crucial because it affects a business's selling price and profit calculations (Afiani & Mubarak, 2025). Errors in cost classification can lead to distortions in COGS, which can negatively impact decision-making by resulting in inaccurate decisions.

Research by Siagian et al. (2025) shows that errors in the allocation of overhead costs can result in inaccurate COGS calculations. On the other hand, Cahyani et al. (2025) found that many small businesses have not been calculating COGS correctly, which leads to uncompetitive selling prices. Another study by Tamara and Anita (2025) states that the accuracy of COGS significantly affects a company's profitability. Furthermore, research by Nasution et al. (2025) shows that the application of appropriate cost calculation methods can improve efficiency and transparency in production costs. This is supported by Reski's (2024) study, which shows that inaccuracies in COGS calculations can lead to errors in business performance evaluations. Therefore, accurate production cost calculations are a critical element in a company's operational success.

2.3 The Concepts of Normal Loss and Abnormal Loss

Normal loss refers to an expected and unavoidable reduction in production output that occurs under efficient operating conditions and is inherent in the characteristics of the production process. In contrast, abnormal loss represents losses exceeding the level normally expected from an efficient production process and is therefore associated with unusual production conditions rather than routine operations (Al-Dahiyat et al., 2021; Dewi, 2019). The distinction is important because normal losses form part of the expected cost of producing acceptable units, whereas abnormal losses should be identified separately to prevent unusual production inefficiencies from being absorbed into normal product costs. Al-Dahiyat et al. (2021), for example, demonstrate that inappropriate measurement of normal spoilage can conceal or understate abnormal spoilage and consequently distort production-cost information.

The distinction between normal and abnormal losses also requires attention to the nature of the loss itself. Abnormal spoilage represents damaged or unusable production units exceeding the expected level of spoilage, while disaster-related losses may include physical damage to raw materials or inventories and production interruptions resulting from an external event. Therefore, a reduction in production volume following a disaster should not automatically be treated as an accounting abnormal loss because it may also reflect idle capacity, interrupted operations, reduced raw-material availability, or lost production opportunities. From a cost-accounting perspective, the primary objective is to identify the magnitude and cost of abnormal spoilage separately from normal spoilage so that management can appropriately evaluate and control production losses (Al-Dahiyat et al., 2021; Wunarso et al., 2023).

In the context of natural disasters, this distinction becomes particularly important for small businesses because flooding can generate several different economic consequences simultaneously. Empirical evidence on SMEs affected by flooding demonstrates that disaster

impacts include multiple categories of financial damage and loss, whose magnitude differs across firm size and business sector (Sakai & Yao, 2023). Small firms can be particularly vulnerable because disaster-related losses may be substantial relative to their business size. Accordingly, the present study distinguishes physical inventory damage and other measurable disaster-related costs from the broader decline in production and potential lost sales following the flood. The latter is treated as an operational or opportunity-loss indicator rather than automatically being classified as an accounting abnormal loss.

Appropriate identification of these losses is also relevant to the resilience of MSMEs exposed to natural disasters. Previous research in Indonesia shows that MSMEs are particularly vulnerable to natural hazards and require appropriate risk-mitigation and resilience strategies to maintain business continuity (Utami et al., 2021). More recent literature similarly emphasizes the connection between risk management, accounting practices, and the resilience of MSMEs, particularly because informal accounting systems may limit the use of financial information in risk-based decision-making (Edward & Mukti, 2025). Thus, separating ordinary production costs from disaster-related losses is not merely a technical accounting issue but may also provide management with more useful information for evaluating disaster impacts and planning business recovery.

2.4 Accounting Treatment of Abnormal Losses

In cost accounting, an abnormal loss is a loss that occurs outside the company's normal operating conditions and is not considered part of reasonable production costs. Therefore, abnormal losses should be identified separately from normal production costs and recognized as losses in the period in which they occur (Mulyadi, 2018). This treatment ensures that production costs reflect only the costs associated with normal and efficient production activities. Technically, abnormal losses are separated from the relevant inventory or production accounts and recognized separately as losses. Under the process costing approach, this treatment may involve debiting an abnormal loss account and crediting the relevant work-in-process or raw materials inventory account (Mulyadi, 2018).

From a financial reporting perspective, this treatment is also supported by applicable inventory accounting standards. PSAK 14 on Inventories, now renumbered as PSAK 202, provides the Indonesian normative framework for the recognition and measurement of inventories (Ikatan Akuntan Indonesia). Consistently, IAS 2 Inventories requires abnormal amounts of wasted materials, labour, or other production costs to be excluded from the cost of inventories and recognized as expenses in the period in which they are incurred (IFRS Foundation, 2022, para. 16). IAS 2 also establishes that the allocation of fixed production overhead should be based on the normal capacity of production facilities. Consequently, abnormally low production or idle facilities should not result in an excessive allocation of fixed overhead to individual units of production (IFRS Foundation, 2022, para. 13). These provisions provide a normative basis for distinguishing normal production costs from abnormal costs arising from unusual production conditions.

For micro, small, and medium-sized entities, SAK EMKM provides a relevant financial reporting framework because it was specifically developed for entities without significant public accountability and applies a simplified measurement approach primarily based on historical cost (IAI, 2016). In the context of a small-scale rice milling business, this framework is relevant for evaluating whether damaged inventory and other disaster-related economic losses are appropriately identified, measured, and reflected in the entity's financial records. Therefore, this study uses PSAK 14/PSAK 202 and IAS 2 as normative references for evaluating inventory-related abnormal costs, while SAK EMKM is considered as the financial reporting framework relevant to the characteristics of the small-scale entity examined in this study. For example, if

unhusked rice damaged by flooding has a measured carrying amount of Rp5,000,000 and no recoverable residual value, a simplified illustrative accounting entry would be:

Debit: Abnormal Loss Rp5,000,000

Credit: Raw Materials Inventory Rp5,000,000

The journal entry above is presented only as a conceptual illustration and does not represent the actual measured flood loss of the Badak Rice Mill. In an actual case, the monetary value of damaged inventory should be determined using case-specific information, including the quantity of inventory damaged, its acquisition cost, and any residual or recoverable value. This distinction is important because a decline in production volume alone does not constitute the monetary measurement of an accounting loss.

Under this accounting treatment, abnormal costs are excluded from normal production costs and recognized separately in the relevant period. According to [Hansen and Mowen \(2015\)](#), separating abnormal losses from normal production costs is important for maintaining the accuracy of production-cost information and generating information relevant to managerial decision-making. Appropriate separation also enables management to distinguish costs arising from normal operating activities from losses caused by unusual events. In small businesses, where accounting records are often relatively simple, the integration of cost accounting principles with the inventory requirements of PSAK 14/PSAK 202 and IAS 2 and the simplified reporting framework of SAK EMKM provides a more appropriate basis for identifying, measuring, and reporting disaster-related losses ([IFRS Foundation, 2022](#); [IAI, 2016](#)).

3. Research Method

This study employs a qualitative approach using a case study method to gain an in-depth understanding of the cost accounting treatment of flood-related losses at a rice mill. The case study method was selected to obtain comprehensive and contextual information regarding the actual conditions of the research subject ([Sugiyono, 2019](#)). The study was conducted at the Badak Rice Mill in Blang Kejeren Subdistrict, Gayo Lues Regency, which was purposively selected because it experienced flooding in November 2025 that disrupted its operations, including damage to raw materials and interruptions to the production process ([BPBA, 2025b](#)). The Badak Rice Mill was examined as a single case because it represents a small-scale agricultural processing business directly exposed to flood-related operational disruption, allowing the phenomenon to be examined within its actual business and accounting context.

The owner of the Badak Rice Mill was the sole key informant and was purposively selected because of his direct involvement in the business operations, production activities, record-keeping practices, and management of the business before, during, and after the flood. The unit of analysis was the accounting and operational treatment of flood-related losses at the Badak Rice Mill. Primary data were obtained through an in-depth interview with the owner and direct observation, while secondary data consisted of available financial records, production records, supporting documents, and relevant literature. Data collection through interviews, observation, and documentation focused on the condition of raw materials following the flood, production disruptions, changes in production volume, the extent of identifiable losses, and the recording practices applied by the business.

Data analysis was conducted using the interactive model proposed by [Miles et al. \(2014\)](#), consisting of data reduction, data presentation, and conclusion drawing and verification. During data reduction, information obtained from the interview, observation, and documentation was selected and organized into the main analytical categories: flood-related physical damage, production interruptions, changes in production volume, and accounting practices. The reduced data were subsequently presented descriptively and compared across

the available sources before conclusions were drawn regarding the accounting treatment of flood-related losses. In addition to the qualitative analysis, a production-variance calculation was used to describe changes in recorded production volume during the post-flood period. This comparison was interpreted as a descriptive indicator of physical production change rather than a monetary measurement of abnormal accounting loss. Following the production-comparison approach adapted from [Franklin et al. \(2019\)](#), the production variance is calculated by comparing expected normal production with actual production as follows:

$$\text{Production Variance} = \text{Expected Normal Production} - \text{Actual Production}.$$

The resulting difference is interpreted as a production decline associated with the flood period rather than, by itself, as the monetary value of an accounting abnormal loss. This distinction is necessary because a reduction in production volume may reflect several consequences of the disaster, including interrupted operations, idle production capacity, reduced availability of raw materials, and lost production opportunities. Accordingly, the accounting measurement of abnormal loss is evaluated separately based on identifiable flood-related costs and losses, particularly the quantity and cost of damaged raw materials and other measurable abnormal production costs. To distinguish the physical production decline from the monetary measurement of abnormal loss, flood-related accounting losses are evaluated separately based on identifiable costs associated with damaged resources and abnormal production conditions. The measurable abnormal loss is conceptually determined as follows:

$$\text{Measurable Abnormal Loss} = (\text{Quantity of Damaged Paddy} \times \text{Acquisition Cost per Unit}) - \text{Recoverable Value} + \text{Identifiable Abnormal Conversion Costs} + \text{Unallocated Fixed Costs during Idle Capacity}.$$

This measurement excludes unrealized sales resulting from the production disruption because lost sales represent an opportunity loss rather than an accounting loss recognized in the financial statements. In the present case, the available records do not provide sufficiently detailed information on the exact acquisition cost and recoverable value of damaged paddy or the fixed costs incurred during the temporary production shutdown. Therefore, the study does not assign an unsupported monetary value to these components.

The accounting treatment is subsequently assessed using relevant cost accounting concepts ([Hansen & Mowen, 2015](#); [Mulyadi, 2018](#)) and the applicable inventory and financial-reporting benchmarks under PSAK 14/PSAK 202, IAS 2, and SAK EMKM ([IFRS Foundation, 2022](#); [IAI, 2016](#)). Production volume in the business records is expressed in bamboo, a local unit of measurement used by the Badak Rice Mill. Based on the measurement convention applied by the business, one bamboo is equivalent to approximately 1.5 kg (1,500 grams). Accordingly, production-volume data originally recorded in bamboo are retained to reflect the business records, while kilogram equivalents are used where necessary for the physical and monetary measurement of flood-related losses.

Data credibility was assessed through methodological triangulation by comparing information obtained from the owner's interview with direct observation and available documentation. Member checking was also conducted by reconfirming the interpretation of the interview information with the owner as the key informant. The researchers acted as non-participant investigators and were not involved in the operational or accounting activities of the business. This approach was intended to strengthen the credibility and consistency of the interpretation while recognizing that the study relies on a single key informant.

4. Results and Discussion

4.1 Overview of Operations at the Badak Rice Mill

The Badak Rice Mill is a rice milling business located in Blang Kejeren Subdistrict, Gayo Lues Regency. This business is classified as small to medium-scale and plays a vital role in ensuring the availability of rice for the surrounding community. In addition to serving as a production facility, the mill also serves as a source of income for the business owner and the workers involved in its day-to-day operations. In general, the main activities at the Badak Rice Mill involve processing paddy into ready-to-eat rice. The production process begins with the receipt of paddy from local farmers and suppliers. The received paddy is then subjected to a simple sorting process to ensure its initial quality before proceeding to the next stage of processing. The next stage is sun-drying the paddy. At this stage, the paddy is dried in the sun to reduce its moisture content to meet milling standards. The drying process is highly dependent on weather conditions, making it one of the stages most vulnerable to environmental disruptions, such as heavy rainfall.

Once the drying process is complete, the paddy moves on to the milling stage. At this stage, the paddy is processed using a milling machine to remove the husk and produce rice. The milling process is carried out in stages until the desired quality is achieved. The milled rice is then sorted using a simple method to separate rice suitable for consumption from byproducts such as rice bran and broken rice. The final stage in the production process is storage. The rice is stored in a warehouse before being distributed or sold to consumers. The storage system used is still simple and highly influenced by environmental conditions, particularly humidity and potential damage from external factors.

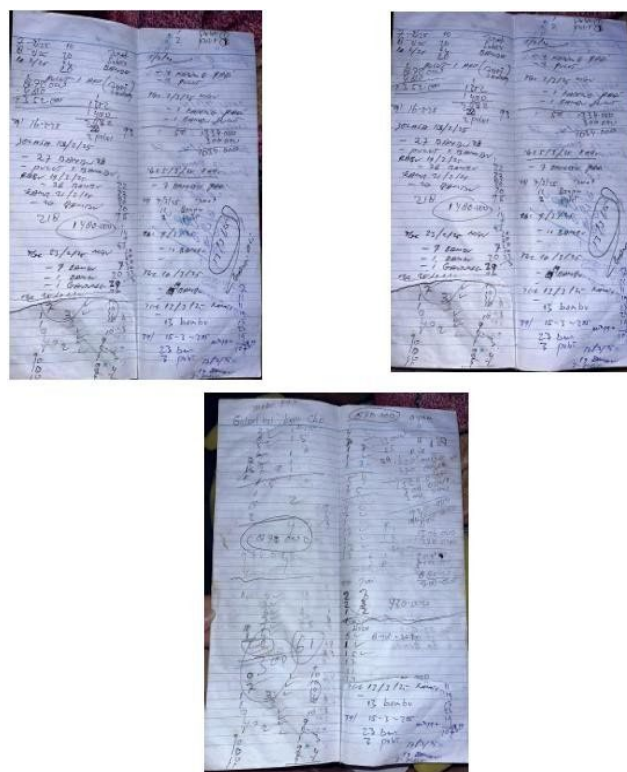


Figure 1. Documentary Overview of the Original Production and Transaction Records Maintained by the Badak Rice Mill

Source : Field Documentation (2026).

Based on observations, documentary evidence, and the interview with the owner, the record-keeping system used at the Badak Rice Mill remains relatively simple and does not systematically classify production-related expenditures into raw materials, direct labor, and production overhead. The business also does not formally calculate the cost of goods manufactured (COGM) or prepare a structured cost statement. Selling prices are primarily determined based on prevailing market prices and the owner's business experience rather than a formal unit-cost calculation. Therefore, the available records cannot be interpreted as evidence of an actual increase in formally calculated COGM following the flood. Instead, the subsequent analysis evaluates how the absence of separate identification and measurement of flood-related abnormal costs may affect the reliability and usefulness of cost information for managerial decision-making.

4.2 The Impact of Flooding on Rice Mill Production

Based on direct observation and the interview with the owner as the sole key informant, it was found that the flooding that occurred in November 2025 had a substantial impact on the operational activities of the Badak Rice Mill. The flooding was caused by heavy rainfall, which led to rivers overflowing in the area around Blang Kejeren Subdistrict. The overflowing water then flooded the production area and raw material storage facilities, disrupting the entire operational process at the rice mill. The main impact of the event was evident in the condition of the raw material unhusked rice. Most of the unhusked rice, whether already stored or currently being sun-dried, was damaged due to waterlogging. The unhusked rice became wet, discolored, and degraded in quality, rendering it unsuitable for further processing into rice for consumption. This decline in quality meant that some of the unhusked rice could not be used at all, while the rest could only be sold at a lower price.

This was reinforced by a statement from the owner (Informant 1/I1), who explained: *"During the flood, much of our unhusked rice was submerged in water, so it all got wet. Some of it can no longer be used, and some has deteriorated in quality, so it sells for a low price."* In addition to affecting raw materials, the flood also disrupted the overall production process. The drying process could not be carried out due to unfavorable weather conditions and the drying area being flooded. The milling process was also disrupted due to a shortage of usable raw materials and unworkable environmental conditions. For several days, production activities were forced to be temporarily halted until conditions returned to normal. This led to a decrease in production volume and delays in meeting market demand.

Informant 1 (I1) further described the production disruption as follows: "During the flood, we couldn't work as usual. We couldn't dry the paddy, and the machines weren't running either because there were no dry raw materials. So production came to a halt for a few days."

Based on the owner's account, the quantity of damaged paddy was estimated to range from tens to hundreds of kilograms. This approximate estimate was not supported by detailed records of damaged quantities, acquisition costs, or recoverable values. Therefore, the monetary value of the inventory damage and its effect on business revenue could not be determined. In addition to the loss of raw materials, there were also indirect losses in the form of halted production, a decline in product quality, and the potential loss of customers due to distribution delays.

The types of losses incurred in this incident can be categorized as losses due to damage to raw materials, deterioration in product quality, and operational disruptions. These losses are unexpected and occur outside of normal business operations. These findings indicate that flooding not only impacts the physical aspects of production but also causes significant economic losses for the business. These conditions form the basis for identifying abnormal losses, which will subsequently be analyzed in the context of cost accounting treatment.

Based on the results of interviews and observations, the cost recording system at the Badak Rice Mill still uses a simple, manual method. Records are kept in a daily ledger containing information on cash receipts and disbursements, without any systematic categorization of costs in accordance with cost accounting principles. In practice, business operators only record transactions deemed important, such as purchases of raw materials (paddy), labor payments, and other operating costs like fuel for machinery and transportation costs. However, these records are not broken down into categories such as raw material costs, direct labor costs, or factory overhead costs; instead, all expenses are recorded in a single category as general expenses. The recording method used can be described as follows:

Table 1. Monthly Production Volume at the Badak Rice Mill

No.	Description	Total	Unit
1	Revenue for January 2025	164	Bamboo
2	Revenue for February 2025	178	Bamboo
3	Revenue for March 2025	261	Bamboo
4	Revenue for April 2025	214	Bamboo
5	Revenue for May 2025	130	Bamboo
6	Revenue for June 2025	117	Bamboo
7	Revenue for July 2025	132	Bamboo
8	Revenue for August 2025	99	Bamboo
9	Revenue for September 2025	183	Bamboo
10	Revenue for October 2025	154	Bamboo
11	Revenue for November 2025	114	Bamboo
	TOTAL	1.746	Bamboo
12	Revenue After the Flood – December 2025	55	Bamboo
13	Revenue for January 2026	65	Bamboo
	TOTAL	120	Bamboo

Source: Author's Data Analysis (2026)

Table 1 presents the monthly production volume documented in the records of the Badak Rice Mill. The records show fluctuations in physical production volume before and after the flood, expressed in bamboo as the local measurement unit. However, because the table contains production-volume data rather than monetary transactions, it cannot by itself demonstrate that the business applies cash-based accounting or establish the monetary value of flood-related losses. Therefore, the characteristics of the mill's record-keeping practices were further examined through the owner's interview and the available documentary records. This interpretation is further supported by

Informant 1 (I1), who stated: *"We keep our records simple; the important thing is to know the money coming in and going out. If there's grain damaged by flooding, well, it isn't recorded separately—it's just treated as a regular loss."*

Furthermore, there is no formal calculation of the cost of goods sold (COGS), so business owners lack accurate information regarding total production costs per period. Selling prices are determined primarily based on market prices and past experience, rather than on structured cost calculations.

In this study, a production-variance analysis was used to compare average monthly production before the flood with actual production during the flood-affected period. This comparison describes changes in physical production volume; it does not establish the monetary value of abnormal accounting losses or isolate the effect of flooding from other operational factors. This approach was used to identify the extent of production losses resulting from the flood, which was classified as an event outside the scope of the business's

normal operational activities.

Table 2. Production Variance During the Flood-Affected Period at the Badak Rice Mill

Description	Quantity (Bamboo)	Equivalent (kg)
Total Production, January–November 2025	1,746.00	2,619.00
Average Monthly Production	158.73	238.10
Flood-Affected Period	2 months	—
Expected Production	317.46	476.19
Actual Production	120.00	180.00
Production Variance	197.46	296.19
Production Decline	62.20%	—

Source: Author's Data Analysis (2026)

In addition to the absence of specific records of flood-related losses, the production data indicate a substantial decline in the operating activity of the Badak Rice Mill during the flood-affected period. As presented in Table 1, total production from January to November 2025 reached 1,746 bamboo, equivalent to approximately 2,619 kg, with an average monthly production of 158.73 bamboo. Using this historical average as an initial production benchmark, expected production for December 2025–January 2026 was estimated at 317.46 bamboo (476.19 kg). Actual production during the same period was only 120 bamboo (180 kg), resulting in a production variance of 197.46 bamboo, equivalent to approximately 296.19 kg, or a 62.20% decline in production. As summarized in Table 2, this difference represents a physical production variance rather than the monetary value of an accounting abnormal loss.

The decline in production coincided with several flood-related operational disruptions. Based on the owner's account and field observations, some paddy stored at the mill and paddy undergoing the sun-drying process were exposed to floodwater, while milling activities were temporarily suspended for several days. These conditions reduced the mill's processing capacity during the affected period. From a cost accounting perspective, however, the entire production shortfall of 197.46 bamboo should not automatically be classified as an accounting abnormal loss.

Production during January–November 2025 varied considerably, ranging from 99 to 261 bamboo per month, with a mean of 158.73 bamboo and a standard deviation of approximately 48.35 bamboo. This variation indicates that monthly production was not constant prior to the flood. Therefore, the estimated 62.20% decline should be interpreted as an indicative production variance based on the historical average rather than as a precise measurement of the production loss attributable exclusively to the flood. November 2025 was retained in the initial baseline because the available monthly record aggregates production for the entire month, whereas the flood occurred toward the end of November 2025. Nevertheless, because November may have been partially affected by the flood, a sensitivity analysis was conducted by excluding November from the baseline.

For January–October 2025, average monthly production was 163.20 bamboo, compared with 158.73 bamboo when November was included. Under this alternative baseline, expected production for the two-month period would be 326.40 bamboo, resulting in a production variance of 206.40 bamboo, or a 63.24% decline. The relatively small difference between the two estimates (62.20% and 63.24%) indicates that the estimated magnitude of the production decline is not substantially altered by the inclusion of November 2025. A same-month comparison also provides additional context. Production in January 2025 was 164 bamboo, whereas production in January 2026 was 65 bamboo, representing a decline of 99 bamboo or approximately 60.37%. This comparison supports the presence of a substantial reduction during the post-flood period while avoiding reliance solely on the overall historical average. However, the available records do not permit the effects of

seasonality to be fully separated from the effects of the flood.

The production variance may reflect several consequences of the disruption, including damaged raw materials, temporary idle capacity, reduced processing activity, and lost production opportunities. Therefore, the production variance is used in this study as an indicator of the magnitude of operational disruption, while identifiable abnormal costs and physical inventory losses are considered separately in evaluating the accounting treatment of flood-related losses (IFRS Foundation, 2022, paras. 13, 16).

The Badak Rice Mill had not maintained separate records identifying the quantity and monetary value of flood-damaged paddy or other flood-related abnormal costs. Consequently, the available production records can demonstrate the magnitude of the decline in physical production but cannot, by themselves, establish the monetary amount of the accounting loss or the decline in operating revenue. The absence of separate loss records also limits the business's ability to evaluate how flood-related inventory damage and other identifiable abnormal costs should be recognized separately from normal production costs. This finding highlights the need for a more systematic recording system that distinguishes physical production decline from measurable accounting losses and provides more reliable information for cost control and managerial decision-making.

4.3 Discussion

The findings indicate that the accounting records of the Badak Rice Mill remain relatively simple and do not systematically distinguish normal production costs from flood-related abnormal costs. The production analysis shows a variance of 197.46 bamboo, equivalent to approximately 296.19 kg, or 62.20% of estimated production during the flood-affected period. However, as discussed previously, this figure represents a physical production variance rather than the monetary value of accounting abnormal loss. The accounting issue identified in this case concerns the absence of separate identification and measurement of damaged paddy and other identifiable abnormal costs arising from the flood. This practice differs from cost accounting principles, under which abnormal losses arising from unusual conditions should be distinguished from normal production costs and recognized separately in the period in which they occur (IFRS Foundation, 2022, para. 16). Similar limitations in cost classification and record keeping have also been identified among small businesses using relatively simple accounting systems (Khasanah & Biduri, 2025).

The findings further indicate that the Badak Rice Mill does not formally calculate the cost of goods manufactured (COGM) and does not maintain a separate account for flood-related abnormal losses. Consequently, an actual increase in COGM cannot be empirically demonstrated from the available records. From a cost-accounting perspective, however, combining identifiable abnormal costs with ordinary production expenditures could potentially overstate the costs attributed to normal production. A simple simulation illustrates this implication. Let NC represent normal production costs, AL represent measurable abnormal flood-related costs, and Q represent actual output. If abnormal costs are incorporated into normal production costs, the apparent unit production cost would be $(NC + AL)/Q$. If abnormal losses are recognized separately, normal unit production cost would instead be NC/Q , while AL would be separately recognized as a period loss. Because the Badak Rice Mill does not maintain sufficiently detailed monetary records of flood-related abnormal costs, this study does not assign hypothetical rupiah amounts to this simulation. Accordingly, the potential effect on COGM and operating profit is interpreted as an accounting implication rather than an empirically measured financial impact.

The gap between recommended cost accounting treatment and the practices observed at the Badak Rice Mill is broadly consistent with previous studies identifying difficulties in cost classification and loss recording among small businesses. Terang et al. (2023) and

Khasanah and Biduri (2025) identify weaknesses in the segregation of production losses, while Yuliastanty et al. (2024) discusses limitations in recording losses associated with external events. Similarly, Pasha et al. (2025) identify difficulties in accurately classifying production costs, and Rohadi et al. (2025) associate weaknesses in cost recording with limitations in COGS calculation and business performance evaluation. These studies support the broader finding that inadequate cost classification can reduce the usefulness of accounting information. Nevertheless, the present case differs in that the disruption arose from flooding in a small-scale, seasonal agricultural processing business, where physical inventory damage, temporary production interruption, and reduced production volume occurred simultaneously. Therefore, the accounting treatment requires these consequences to be distinguished rather than treating the entire production decline as a single abnormal accounting loss.

The findings should also be interpreted cautiously in relation to behavioral accounting. Previous literature suggests that accounting practices in small businesses may be influenced by owners' understanding, experience, and habitual financial practices (Zandra et al., 2024). However, the interview evidence in the present study is insufficient to establish these behavioral factors as direct causes of the owner's recording practices. Accordingly, behavioral accounting is used only as a contextual explanation rather than as an empirically tested explanation of the owner's behavior. The available evidence more directly demonstrates that the business uses simple records and does not separately measure flood-related abnormal costs. This interpretation avoids attributing motivations or behavioral mechanisms to the owner that were not directly examined in the interview.

From a financial-information and operational management perspective, the absence of separate measurement of flood-related abnormal costs limits the ability of the business to determine their monetary effect on production costs and profit and assess the resources required to resume operations. It cannot be concluded from the available data that COGM or COGS actually increased by a specific amount because the business does not formally calculate COGM and detailed monetary loss data are unavailable. Nevertheless, cost accounting principles indicate that including measurable abnormal costs within normal production costs could distort unit-cost information used for planning, control, pricing, and decision-making (Lestari et al., 2025). This is consistent with Afriani and Mubarak (2025), who discuss the consequences of inappropriate cost allocation for COGS determination, Muntasyah (2025), who relates the quality of cost information to decision-making, and Syifa et al. (2025), who emphasize the role of cost accounting information in supporting small-business management. In this case, separate records of damaged inventory, remaining usable stocks, and production interruptions would help the owner assess whether replacement paddy is needed, which materials can still be processed, and which constraints must be addressed before drying and milling resume. These are potential uses of improved records, rather than demonstrated recovery outcomes. The practical implication is therefore not that the study has demonstrated a specific financial loss, but that the Badak Rice Mill requires a recording system capable of separately identifying normal production costs, physically damaged inventory, measurable abnormal costs, and broader operational consequences of disasters to support both accounting assessment and operational recovery planning.

5. Managerial Implications

Based on the findings, the Badak Rice Mill needs to strengthen its inventory management, disaster risk management, and accounting record-keeping practices. As a minimum and immediately applicable measure, the business should maintain a simple disaster-loss register as part of its record-keeping system, consistent with the simplified reporting approach of SAK EMKM. The register should document the date and type of disaster, the type

and quantity of damaged inventory, acquisition cost where available, estimated recoverable value, identifiable abnormal costs, duration of production interruption, and supporting documentation such as photographs, purchase records, and production records. Such documentation would enable the business to distinguish measurable accounting losses from physical production decline and lost-sales opportunities without requiring a complex accounting system. The register should also distinguish inventory owned by the mill from customer-owned paddy and document the remaining usable stocks and the operational stages affected by the flood. This information would help the owner prioritize inventory replacement, drying arrangements, and the resumption of milling according to the resources available.

At an intermediate level, management should strengthen the physical protection of paddy inventories, establish procedures for relocating raw materials when flood risk increases, identify alternative drying locations, and periodically reconcile physical inventory with production and cost records. These practices can improve the reliability of information used for cost control, production planning, pricing, and post-disaster evaluation. However, implementation should remain proportional to the scale and administrative capacity of the business. Where internal capacity is limited, external support from local government agencies, MSME-support institutions, and accounting professionals may assist small agricultural businesses through simplified bookkeeping guidance, disaster-loss documentation, accounting literacy programs, and business-recovery assistance.

Theoretically, the findings reinforce the importance of distinguishing physical production variance from measurable abnormal accounting loss in disaster-affected small businesses. A substantial decline in production does not necessarily represent an equivalent accounting loss because damaged inventory, abnormal production costs, idle capacity, and unrealized production have different accounting implications. From a policy perspective, MSME assistance in disaster-prone agricultural areas could therefore integrate disaster-loss documentation with SAK EMKM-oriented bookkeeping support, enabling business recovery programs to rely on more systematic information regarding inventory damage and identifiable losses.

6. Conclusion, Limitations, and Suggestions

This study concludes that flooding disrupted the operational activities of the Badak Rice Mill, including paddy drying and milling, while the available records indicate a substantial decline in production during December 2025–January 2026. Actual production during this period was 120 bamboo, compared with a historical-average benchmark of 317.45 bamboo, resulting in a production shortfall of 197.45 bamboo, or approximately 62.2%. This difference represents a physical production decline rather than a measured abnormal accounting loss and cannot be attributed exclusively to flooding because seasonal variation and changes in raw-material availability were not separately assessed. The business did not maintain separate records of damaged inventory and its monetary value, preventing the measurement of flood-related accounting losses. The study therefore provides contextual evidence on flood-related operational disruptions and loss recording practices in a small rice milling business. Its managerial contribution lies in identifying the recording gaps that need to be addressed to support decisions about usable inventory, replacement paddy, and the resumption of drying and milling activities.

This study is limited to a single rice milling business and relies on the owner as the sole key informant, supported by observations and available records. Consequently, the findings provide a contextual description and cannot be generalized to all rice mills or disaster-affected MSMEs. The absence of detailed records on damaged inventory quantities, acquisition costs, recoverable values, and costs incurred during production interruptions prevents the monetary

measurement of flood-related accounting losses. Furthermore, the historical-average production benchmark does not account separately for seasonality, changes in paddy supply, market demand, or other operational factors. Future research should employ multi-case designs and longer observation periods, supported by detailed inventory, cost, and operational records. Such data would enable researchers to distinguish inventory losses from production shortfalls, measure identifiable accounting losses, and assess their implications for business recovery.

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