



Evaluation of Accounting Records and Design of an Accounting Information System for the "JozJiz" Salted Egg MSME in Bojonegoro

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ABSTRACT

Purpose: This study evaluates the accounting record-keeping practices of the "Telur Asin JozJiz" salted egg MSME in Bojonegoro, identifies problems in recording consignment sales, damaged eggs, and duck mortality, and designs a simple accounting information system that fits the needs of a business that combines duck farming, egg processing, and consignment selling.

Method: A descriptive qualitative case study was conducted through interviews and observation of the business owner. The initial phases of the System Development Life Cycle (SDLC) were applied: the current process was analysed, and the proposed process was modelled using a Level 0 Data Flow Diagram (DFD), Business Process Model and Notation (BPMN) for the sales, purchasing, and recording processes, and decision trees for sales and purchasing.

Findings: Record-keeping remains rudimentary: the owner tracks only goods and cash coming in and going out. Personal and business finances have been separated, but no invoices or receipts are used. Recording goods consigned to local stalls is the main problem because the owner cannot easily determine how many units have been sold and how many remain. Rotten and cracked eggs and duck deaths are not recorded routinely or classified clearly. The models identify the documents, data stores, and control points needed to close these gaps.

Implication: A more orderly record-keeping system covering assets, expenses, consignment sales, inventory, damaged goods, biological assets, and cash flows is needed to provide clearer business information, to support decisions on pricing and purchasing, and to enable reporting under SAK EMKM. The design also supports SDG 8 (decent work and economic growth) and SDG 12 (responsible consumption and production) by formalising a rural micro-enterprise and making food losses measurable.

Originality: The study integrates duck farming, salted egg processing, and consignment sales within a single MSME, a combination rarely examined in previous research, which has tended to study biological assets and consignment separately.

Keywords: accounting records, accounting information system, consignment sales, MSME salted eggs, SDG 8, SDG 12.

JEL Classification: L26, M15, M41, Q13.

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1. INTRODUCTION

Micro, small, and medium enterprises (MSMEs) play an important role in the Indonesian economy, particularly in creating jobs and improving community welfare (Pemerintah Republik Indonesia, 2021). In theory, an accounting information system collects, records, and processes transactions into financial information that is relevant for decision making (Romney & Steinbart, 2018). Previous studies show that a sound accounting system in MSMEs can improve the effectiveness of business management and business performance (Faizal et al., 2021). In practice, however, many MSMEs still face difficulties in managing their finances, mainly because their records are unstructured and manual (Nugraha et al., 2023). Records that are limited to cash receipts and cash payments cannot support business decisions optimally (Wahyuningsih, 2023).

The main problem is the limited availability of accurate and integrated financial information. Without financial statements such as an income statement or a statement of financial position, owners find it difficult to understand the overall financial condition of their business (Kirowati, 2019). In addition, the absence of a clear separation and classification of production costs can lead to inefficiency in cost management (Datar & Rajan, 2018). Manual stock records are also prone to recording and calculation errors (Oka Pradnyawati et al., 2023). These conditions reveal a gap between actual financial management practice and the accounting information system concepts that should be applied, especially in MSMEs with a substantial production scale.

These problems are present in the "Telur Asin JozJiz" MSME in Bojonegoro, which raises laying ducks and processes their eggs into salted eggs. The business has about 500 ducks with a laying rate of roughly 80% per day, or about 400 eggs, which are sold as raw salted eggs at IDR 2,000 each and as cooked salted eggs at IDR 3,500 each. Although production potential and demand are high, financial records remain simple, consisting only of cash receipts and payments, without transaction documents or systematic financial statements. This makes it difficult for the owner to understand the overall performance of the business, including calculating profit, controlling costs, and managing inventory (Datar & Rajan, 2018; Kieso et al., 2020; Kirowati, 2019).

The characteristics of JozJiz, which combines farming, processing, and consignment sales to local stalls, create additional complexity. Problems arise in recording consignment sales, even though consigned goods remain the property of the consignor until they are sold to a third party (Hermelinda, 2020; Pujiati et al., 2024). Damaged goods, such as rotten and cracked eggs, are not yet treated differently (Kieso et al., 2020), and the death of ducks, which are biological assets, is recorded only during periodic checks (Erawan & Julianto, 2020; Sujana & Yudiantara, 2022). Studies of poultry farms have generally focused on biological assets (Febrianti & Rahma, 2023), whereas consignment studies have usually been conducted in retail businesses, so research that integrates all three aspects in one MSME remains limited. This indicates a research gap that warrants further study.

The case is also relevant to the Sustainable Development Goals (SDGs) adopted by the United Nations (2015). JozJiz is a rural micro-enterprise in a village in Bojonegoro that turns local duck farming into a processed food product sold through neighbourhood stalls, so its growth contributes to local income and economic activity in line with SDG 8 (decent work and economic growth), in particular target 8.3 on the formalisation and growth of micro-enterprises. At the same time, rotten and cracked eggs and the death of ducks represent losses of food along the production chain. Target 12.3 of SDG 12 (responsible consumption and production) calls for the reduction of food losses along production and supply chains, and such losses can be reduced only if they are first measured. A record-keeping system that captures damaged products and mortality is therefore not only an accounting requirement but also a starting point for more responsible production.

Based on these conditions, this study aims to analyse the record-keeping practices and current business processes of the Telur Asin JozJiz MSME, to identify problems in recording consignment sales, damaged goods, and duck mortality, and to design a simple accounting information system that fits the needs of the business through the initial phases of the System Development Life Cycle (SDLC)

(Valacich & George, 2020). Business processes are mapped using Business Process Model and Notation (BPMN) (Dumas et al., 2018; Nuzulita et al., 2020), while data flows and decision logic are depicted using Data Flow Diagrams (DFD) and decision trees (Kendall & Kendall, 2019). The study uses a descriptive qualitative approach based on interviews and observation of a single business (Sugiyono, 2019). Because it examines a single business, the results are contextual and cannot yet be generalised to other MSMEs. The findings are expected to help the owner manage the business's finances more systematically and to serve as a reference for developing accounting systems in similar MSMEs.

2. LITERATURE REVIEW

2.1 System Development Life Cycle (SDLC)

The System Development Life Cycle (SDLC) is a sequence of phases used to build and develop information systems with the aim of producing quality systems that meet user needs and predetermined objectives. The SDLC covers a series of processes that describe how software is planned, designed, developed, maintained, and improved so that it runs effectively and efficiently (Suryaningrum, 2024). It can therefore be understood as a process for developing or changing a software system by applying models and methodologies that have been used in previous system development (Rahmi et al., 2023). In accounting system design for small businesses, the early SDLC phases (planning, analysis, and design) are particularly important because they translate the owner's informal practices into explicit requirements before any tool is built (Valacich & George, 2020; Purnamasari & Melati, 2026). This study covers these early phases.

2.2 Gantt Chart

A Gantt chart is a method for planning and managing projects that presents activity information visually. Each activity is shown according to its sequence and the time required, so that project progress can be monitored in a more structured way. Gantt charts help project managers supervise work, track the progress of activities, and evaluate the plan that has been prepared. They therefore support planning and work management so that projects become more effective and better organised (Hertadi et al., 2026). In this study, a Gantt chart was used internally to schedule the analysis, modelling, and reporting activities.

2.3 Data Flow Diagram (DFD)

A Data Flow Diagram (DFD) is a visual representation of how data move and are processed within an application. It maps where data come from, how they are processed, where they are stored, and which reports the system eventually produces. A DFD consists of external entities, processes, data flows, and data stores, with the context diagram as the most general level and Level 0 as the decomposition of the main processes. Applying DFDs to the revenue cycle of MSMEs has been shown to clarify the flow of transaction data and to support internal control (Tjoe & Wakang, 2026; Toisuta et al., 2025). DFDs also help analysts identify the functional requirements of an information system (Nugraha et al., 2026).

This understanding is consistent with the view that DFDs are modelling tools that depict data flows in an organisation or system visually and systematically, making the movement of data between processes and their transformation into information easier to understand (Tuasamu et al., 2023). A DFD has four main components: external entities, processes, data stores, and data flows. It is drawn in levels: a Level 0 DFD shows the main processes of the system and the data flows between processes, entities, and data stores without internal detail, which can be decomposed further at subsequent levels.

The use of DFDs in this study rests on three considerations. *First*, DFDs are suitable for businesses whose records are still manual. Many small businesses still rely on manual records that are error-prone and time-consuming (Nugraha et al., 2023; Faizal et al., 2021). A similar condition was found at Family Optic, where transactions were recorded by hand, so that transaction documentation was unstructured, inventory monitoring was limited, and revenue estimates were based on assumptions (Purnamasari & Melati, 2026). Nearly the same problems, namely the absence of receipts, inventory that is hard to monitor, and simple records, are faced by Telur Asin JozJiz.

Second, DFDs fit the analysis and design phases of the SDLC. [Purnamasari and Melati \(2026\)](#) used the SDLC to design a Microsoft Excel-based accounting information system, while [Putri and Fatma Ginoga \(2024\)](#) prepared a system design covering system requirements and functions, data flow diagrams, and input and output designs for a business whose sales and inventory were not yet computerised. DFDs thus map the current process before a recording system is built. Comparable DFD-based designs have been produced for the revenue cycle of a mobile-phone shop ([Noija et al., 2023](#)) and the production cycle of a concrete-products MSME ([Serang et al., 2025](#)).

Third, DFDs help identify the data and documents that must exist in a system. At JozJiz, purchases and sales are not yet supported by receipts or invoices. Through a DFD, documents such as sales receipts and purchase receipts can be mapped as data flows that connect customers, the owner, and suppliers with the recording and financial reporting processes. Because its notation is simple, the DFD also complements BPMN in creating a shared understanding between the designer and the owner. [Tuasamu et al. \(2023\)](#) likewise used DFDs together with flowcharts to describe the design of a revenue cycle in an accounting information system.

Accordingly, DFDs are used in this study to model the data flows of sales, purchasing, transaction recording, and financial reporting at Telur Asin JozJiz as the basis for designing an Excel-based recording system.

2.4 Business Process Model and Notation (BPMN)

Business Process Model and Notation (BPMN) is a standard visual notation used to describe business workflows and operating procedures. By using specific symbols for activities, decision points, and the division of roles, BPMN makes it easier for business owners and system developers to share the same understanding of a process before a system is designed ([Hamdi & Purwani, 2024](#); [Dumas et al., 2018](#)).

In MSMEs, BPMN is often used first to capture the current business process. From this picture, the parts of the process that can be improved can be identified so that business activities become more efficient and effective ([Hananto et al., 2024](#)). The resulting diagrams also make it easier for owners to understand and manage their own processes.

BPMN is frequently combined with DFDs in accounting information system design. [Setiawan et al. \(2025\)](#) used both to design the accounting system of a coffee-shop MSME divided into purchasing, sales, expense payment, and transaction recording cycles. In that design, BPMN showed the sequence of work and the interactions between the owner, employees, buyers, and suppliers, while the DFD mapped the external entities and the direction of data flows. The results showed that a business flow depicted in BPMN can be understood by an owner without an accounting background. Similar accounting design studies of small food and beverage businesses published in SBAMER and SBAMR have used the same combination of process models and SAK EMKM-based outputs ([Permatasari et al., 2025](#); [Perpatih et al., 2025](#); [Ardiansyah et al., 2025](#)).

On this basis, BPMN is used in this study to model the sales process (including the consignment channel to stalls), the purchasing of materials, and transaction recording at Telur Asin JozJiz. BPMN thus complements the DFD, which focuses on data flows.

2.5 Decision Tree

A decision tree maps a line of reasoning into a branching structure resembling a tree. Each branch represents a condition, and each end point (leaf node) represents a final decision. In systems analysis, decision trees are used to document structured decisions, breaking a complex problem into clear and systematic rules so that the conditions and actions involved can be checked for completeness ([Kendall & Kendall, 2019](#)). By tracing the branches from the root to the leaves, the analyst can verify that every combination of conditions leads to a defined action. In this study, decision trees are used to formalise the owner's sales and purchasing decisions.

2.6 Micro, Small, and Medium Enterprises (MSMEs)

MSMEs are independent productive businesses run by individuals or business entities that are not subsidiaries of large companies. They are classified according to their business capital or annual sales and play a crucial role in driving the economy and absorbing local labour. The criteria for micro-enterprises are set on the basis of business capital and annual sales ([Pemerintah Republik Indonesia, 2021](#)). With about 400 eggs per day sold at IDR 2,000–3,500 each, JozJiz's annual sales are far below

the IDR 2 billion threshold for micro-enterprises, so it is classified as a micro-enterprise and SAK EMKM is the relevant reporting framework ([Kirowati, 2019](#)).

3. RESEARCH METHOD

3.1 Research Design

This study used a descriptive qualitative approach with a case study design at the JozJiz salted egg MSME in Bojonegoro. The approach was used to describe directly the condition of the business's financial records and operations, from purchasing, production, and inventory to sales and cash flows. The case study design made it possible to examine the business in depth in line with the problems that arose, and the qualitative approach was suitable for understanding the simple recording processes and habits of the business.

The research began by identifying the business activities currently carried out, observing how transactions flow, and identifying the parts of the process that still cause recording difficulties. The results were then used as the basis for designing a more orderly recording system that fits the needs of the business. This is consistent with [Ardiansyah et al. \(2025\)](#), who emphasise that the development of a simple accounting system must be tailored to the characteristics and needs of micro-enterprises.

3.2 Research Object and Data Collection

The research object is the salted egg business managed by Mr Nuriadi, located in Setro Hamlet, Ngranggonanyar Village, Kepohbaru District, Bojonegoro Regency, East Java. Data were obtained through interviews with the owner about the activities of the business and through observation of its operations. The information collected covered transactions, purchasing, production, inventory, sales, costs, assets, and cash flows, as well as problems such as consigned goods, damaged products, and duck deaths during production.

Data were collected in order to understand the existing recording conditions before designing the system. The data were then grouped by type of business activity so that the relationships between transactions and the problems they cause could be seen clearly. This step was necessary so that the design would not remain theoretical but would fit the real needs and conditions of the owner.

3.3 Data Analysis

The analysis was descriptive and qualitative, aimed at identifying the recording practices and operational activities of Telur Asin JozJiz. The first step examined how transactions are recorded, how inventory and production are managed, and how receipts and payments are recorded. This showed that several main activities are recorded, but with limitations, because not all transactions have supporting evidence or structured records.

The results of this identification were then used to design a more structured recording system so that transaction flows and financial information would be easier to understand. The design is expected to improve financial management and to provide the information needed for various business activities. [Setiawan et al. \(2025\)](#) also show that designing an accounting information system can improve the accuracy of financial reporting for small and medium enterprises. Data credibility was supported by comparing the owner's statements with observations of the production and sales activities and by confirming the resulting models with the owner.

4. RESULTS AND DISCUSSION

4.1 Business Profile

Telur Asin JozJiz is a micro-enterprise established in 2024 and located in Setro Hamlet RT/RW 04/02, Ngranggonanyar Village, Kepohbaru District, Bojonegoro Regency, East Java. It is owned and managed independently by Mr Nuriadi. Current production capacity is supported by about 500 laying ducks, with average production of about 400 eggs per day. The products consist of three variants: raw salted eggs, cooked salted eggs, and plain (unsalted) duck eggs. The production process includes procuring feed (mixed by the owner or bought from a manufacturer for cash), coating the eggs in a

mixture of salt and brick powder in a ratio of 3:2 for about two weeks, and then washing, steaming, and packing the eggs. Routine monthly expenditure on feed and raw materials ranges from IDR 19,000,000 to IDR 20,000,000, plus about IDR 500,000 for electricity and water, and the business is supported by a duck house and a vehicle.

"I started this business in 2024. Now there are about five hundred ducks, and on a good day about eighty per cent of them lay, so I collect around four hundred eggs. The raw salted eggs I sell for two thousand rupiah, and the cooked ones for three thousand five hundred." (Owner)

4.2 Problem Identification

The owner runs the business conventionally, without a structured system of transaction documents. As a result, purchases and sales are not supported by written evidence such as receipts or invoices, and recording relies only on the flow of goods in and out. The owner also finds it difficult to record consignment sales (products left at local stalls), so he cannot monitor precisely how many units have been sold and how many remain at the stalls. Another problem is that damaged goods are not classified optimally: rotten eggs are recorded as failed products that cannot be sold, whereas eggs that crack after steaming can still be sold at a lower price. In addition, duck deaths are recorded only at the end of a period or during periodic checks, so the size of the flock is not monitored routinely.

"Eggs that are rotten I just throw away, they cannot be sold. But if they crack after steaming, I still sell them, only cheaper. I have never written these separately; I only know roughly how many." (Owner)

"If a duck dies I usually only notice when I count them, not every day. So the number in my book is only updated at certain times." (Owner)

Table 1 summarises the recording problems identified, their accounting consequences, and the requirements that the proposed system must meet.

Table 1. Recording Problems, Consequences, and System Requirements at Telur Asin JozJiz

Problem identified	Accounting consequence	System requirement
No receipts or invoices for purchases and sales	No source documents; transactions cannot be traced or verified	Sales and purchase receipts as source documents
Consigned goods at stalls not tracked	Sold and unsold units cannot be distinguished; revenue and inventory may be misstated	Consignment record per stall (units delivered, sold, returned, remaining)
Rotten and cracked eggs not classified	Losses mixed with sales; cost of goods sold and inventory unclear	Separate record of rotten (written off) and cracked (sold at a discount) eggs
Duck deaths recorded only periodically	Biological assets not monitored; productive capacity unclear	Routine record of flock size and mortality
Records limited to cash in and out	No income statement or statement of financial position	Journal, ledger, and simple SAK EMKM statements

Source: Compiled by the authors from interviews and observation (2026)

4.3 Process Modelling with a Data Flow Diagram

The interview with the owner provided a picture of the business process and the way transactions are recorded. The process begins with raising the ducks and collecting eggs from the duck house. The eggs are then processed into salted eggs through several stages: washing, coating in a paste of salt and brick powder, salting for about two weeks, washing again, steaming, cooling, and packing before sale.

"The process of making salted eggs starts with the eggs taken from the duck house. They are collected and washed until clean. After that, the eggs are coated with red-brick powder mixed with salt in a ratio of 2:3, that is, 2 kg of brick powder and 3 kg of salt. The eggs are then left for about two weeks. When the salting is finished, the eggs are washed again until clean. The cooked salted eggs are then steamed, cooled, and packed before they are sold." (Owner)

For sales, products are marketed directly to consumers, through resellers, or by consignment to stalls. Most payments are made in cash, while some buyers pay on short credit, with payment due by the afternoon of the same day.

"Usually they are sold directly to consumers, through resellers, and left at stalls. Most payments are in cash. But there are also buyers who pay later, at the latest by the afternoon." (Owner)

On the basis of this flow, the authors depicted the relationships between the parties involved, the business processes, and the data entering and leaving the recording system of Telur Asin JozJiz using a Level 0 Data Flow Diagram, as shown in Figure 1.

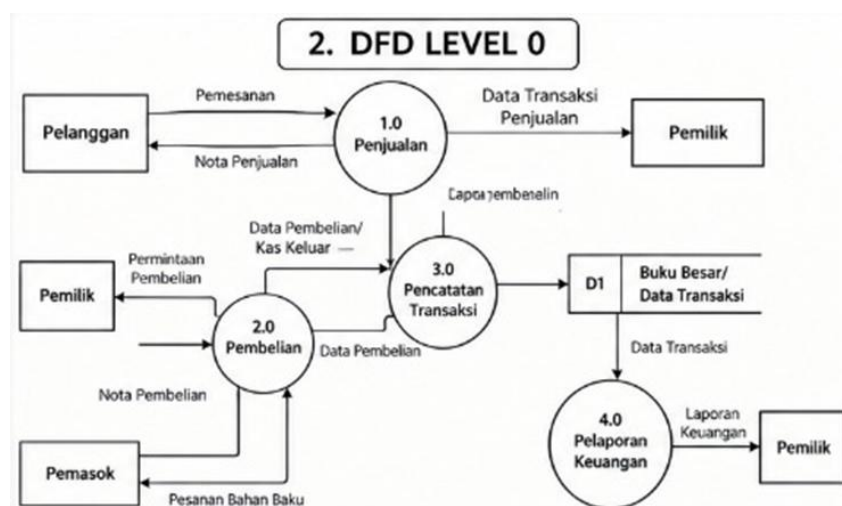


Figure 1. Level 0 DFD of the Telur Asin JozJiz Recording System

Source: Compiled by the authors (2026)-in Bahasa Indonesia

Figure 1 shows the flow of the accounting information system at Telur Asin JozJiz. The process begins when a customer orders products from the owner; the products sold are raw salted eggs, cooked salted eggs, and plain eggs. After the order is received, the owner prepares the products and completes the sale (process 1.0, Sales), returning a sales receipt to the customer and passing sales transaction data to process 3.0. Most payments are in cash, while some buyers use short-term credit due by the afternoon.

The Level 0 DFD depicts the main data flows of the sales, purchasing, and transaction recording system as a whole, without showing smaller internal processes. The system involves three external entities (customers, the owner, and suppliers) and four internal processes: sales, purchasing, transaction recording, and financial reporting. In the purchasing process (2.0), the owner submits a purchase request, a raw-material order is sent to the supplier, and the supplier returns a purchase receipt; purchase data and cash outflows are passed to process 3.0. In practice, the owner does not yet use receipts for purchases or sales, so the receipts shown in the diagram represent the documents that the proposed system requires rather than current practice.

All sales and purchase data are then gathered in the transaction recording process (3.0) and stored in data store D1 (General Ledger/Transaction Data). The records include the number of eggs produced, eggs still being salted, salted eggs ready for sale, goods consigned to stalls, goods already sold or still at the stalls, cash received and paid, rotten or cracked eggs, and dead ducks.

The recorded transaction data become the basis for financial reporting (4.0), which produces financial statements for the owner. Because business and personal finances have already been separated, data relating to business activities can be used to determine the financial condition, inventory, sales, and expenses of the business. The Level 0 DFD thus shows the data flows between

customers, the owner, and suppliers, and the internal processes of sales, purchasing, transaction recording, and financial reporting at Telur Asin JozJiz.

“Money for the house and money for the business I already keep apart. What I still lack is proof: when I buy feed or sell eggs, there is no receipt, so later I cannot check it again.”
(Owner)

4.4 Sales Process Modelling with BPMN

The interview provided a picture of the sales process. The products sold by Telur Asin JozJiz are raw salted eggs, cooked salted eggs, and plain (unsalted) eggs, marketed through three channels: direct sales to consumers, sales through resellers, and consignment to stalls.

“The products we sell are raw salted eggs and cooked salted eggs.” (Owner)

In the sales process, the owner sells directly to consumers, through resellers, or by leaving products at stalls. After the products are handed over, payment is made as agreed. Most transactions are in cash, but some buyers pay later, by the afternoon at the latest. Selling prices may change at certain times, especially during Eid and the Prophet's Birthday (Maulid). The owner adjusts prices to prevailing market prices.

“Sales and the price of salted eggs also sometimes change at certain times, especially at Eid or Maulid. As for the price, it usually follows the market price.” (Owner)

The owner does not yet issue transaction evidence such as receipts for sales; transactions are recorded only on the basis of goods in and goods out. This is a key point to address in modelling the sales process. On this basis, the authors depicted the sales process of Telur Asin JozJiz in BPMN, as shown in Figure 2.

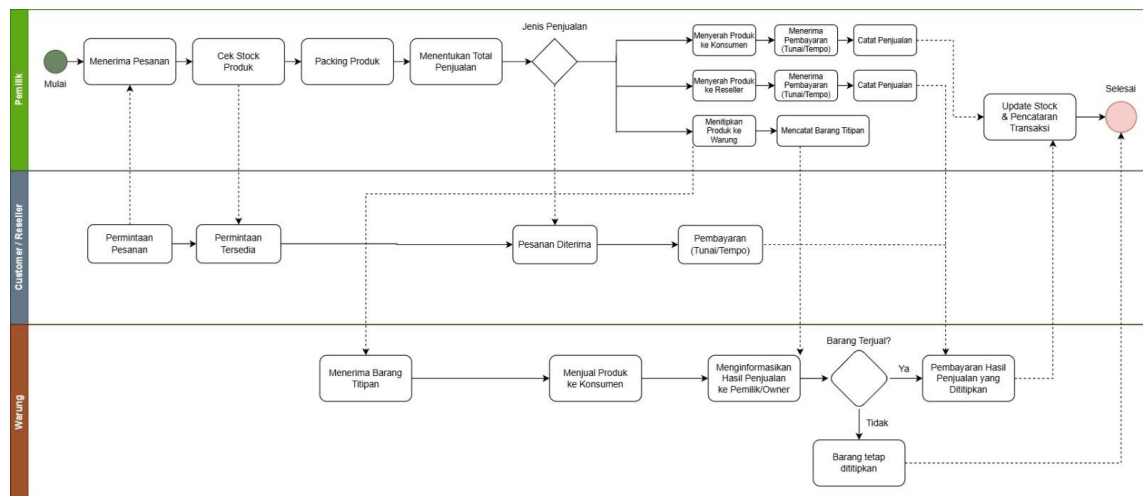


Figure 2. BPMN of the Sales and Transaction Recording Process at Telur Asin JozJiz

Source: Compiled by the authors (2026)-in Bahasa Indonesia

Figure 2 describes the sales and transaction recording process, which involves three main parties: the owner (Telur Asin JozJiz), consumers/resellers, and stalls (consignment). The process begins when the owner receives an order or request from a consumer or reseller. The owner then checks product availability to ensure that the stock can meet the order, prepares the products, and sets the selling price according to market conditions before choosing the type of sale.

Sales are then divided into three channels: direct sales to consumers, sales through resellers, and consignment sales to stalls. In direct sales, the owner hands the products to the consumer and receives payment in cash or on short credit, after which the sale is recorded as evidence of the

transaction. In sales through resellers, the owner delivers the products and receives payment as agreed, in cash or on credit, and the transaction is recorded as a sale.

In the consignment channel, the owner leaves products at a stall and records the goods consigned. The stall receives the goods and sells them to consumers, then informs the owner of the results. The model then checks whether the consigned goods have been sold. If they have, the stall pays the proceeds to the owner; if not, the goods remain at the stall and form part of the consigned inventory that must still be monitored. From an accounting perspective, consigned goods remain part of the consignor's inventory, and revenue is recognised only when the stall reports that the goods have been sold to third parties (Hermelinda, 2020; Kieso et al., 2020).

"The difficult part is the stalls. I leave twenty or thirty eggs at each one, and when I come back I have to ask how many sold. If I forget what I left there, I cannot know if the money they give me is right." (Owner)

After direct sales, reseller sales, and consignment proceeds are received, the owner updates the stock and records the sales. This recording is a key element of the accounting information system because it provides information on the number of products sold, the payments received, and the goods still available or on consignment. The diagram thus describes the entire sales process of Telur Asin JozJiz, from receiving orders, checking availability, preparing products and setting prices, selling through each distribution channel, and receiving payment, to recording the transaction, updating the stock, and completing the transaction in an integrated manner.

4.5 Purchasing (Procurement of Tools and Materials) Process Modelling with BPMN

The interview also provided a picture of the purchasing or procurement of materials used to support the business. The materials used in production include duck feed, vitamins, salt, brick powder, and other materials needed to make salted eggs. Feed is procured according to the needs of the business. The owner uses his own feed mixture and sometimes factory-made feed, which is bought for cash.

"For duck feed, I usually use my own mixture and sometimes factory-made feed. Feed is bought in cash." (Owner)

In addition to feed, the business needs vitamins and materials for making salted eggs. Total spending on feed, vitamins, and salted-egg materials ranges from IDR 19,000,000 to IDR 20,000,000 per month, plus about IDR 500,000 for electricity and water.

"The cost of duck feed, vitamins, and materials for salted eggs is about IDR 19,000,000 to IDR 20,000,000 per month. In addition, there is about IDR 500,000 for electricity and water." (Owner)

Once obtained, the materials are used for raising the ducks and producing salted eggs. Production begins with eggs collected from the duck house, which are washed, coated in the salt and brick-powder mixture, left for about two weeks, washed again, steamed, cooled, and packed before sale.

"I buy salt and brick powder when the stock starts to run out, usually from the same seller nearby. I check first whether there is enough money; if not, I buy a smaller amount first." (Owner)

On this basis, the authors depicted the purchasing process of Telur Asin JozJiz in BPMN, as shown in Figure 3. The figure represents the proposed (to-be) process, which introduces the documents and checks that are missing in current practice.

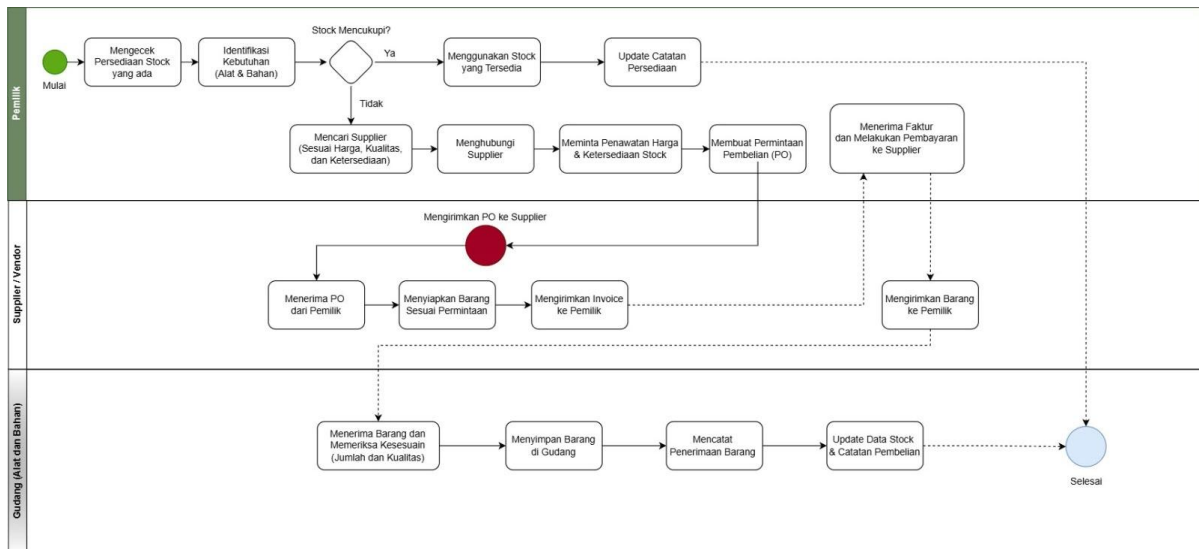


Figure 3. BPMN of the Purchasing Process (Proposed)

Source: Compiled by the authors (2026)-in Bahasa Indonesia

Figure 3 shows the procurement of tools and materials, which involves three main parties: the owner, the supplier, and the warehouse (tools and materials). The process begins when the owner identifies the need for tools and materials based on stock levels and the production plan, and then checks the inventory to see whether the available quantity is sufficient for operations.

If the stock is sufficient, the owner uses the available stock and updates the inventory record, so no purchase is needed. If it is not, the owner proceeds with procurement by selecting a supplier on the basis of price, quality, and availability. The owner contacts the supplier by telephone or WhatsApp to ask about prices and confirm availability, requests a quotation, and then prepares a purchase order (PO).

The PO is sent to the supplier, who prepares the goods as requested and delivers them with an invoice as the purchase document. The goods received are taken to the warehouse and checked for quantity and quality. Once the goods are declared acceptable, they are stored, the receipt is recorded, and the stock data are updated together with the purchase records. Meanwhile, the owner receives the invoice from the supplier and pays the agreed amount. Compared with current practice, in which purchases are made in cash without any document, the proposed process creates three pieces of evidence (the PO, the invoice, and the record of goods received) that allow purchases to be matched with payments and with stock.

4.6 Transaction Recording Process Modelling with BPMN

The interview showed that the owner already separates personal and business finances, so business transactions are recorded separately from personal needs.

“As for financial records, I already separate personal money and business money. So, the records for personal needs and for the business are kept separately.” (Owner)

In purchasing and sales, the owner does not yet use transaction evidence such as receipts or invoices; he records goods coming in and going out. He also keeps track of inventory, such as the remaining feed, eggs still being salted, and cooked salted eggs, in a simple book.

“When I buy and sell I do not use receipts. I only write down the goods that come in and go out. To know how much feed is left, how many eggs are still being salted, and how many cooked eggs there are, I write them in my book.” (Owner)

One of the recording problems concerns products consigned to stalls: the owner finds it difficult to know which products have been sold and which are still at the stalls. According to the owner, this is the

problem he feels most strongly, especially in identifying which consigned goods have been sold and which remain.

"What bothers me most is the goods left at the stalls. It is hard to record them, especially to know which ones have already been sold and which ones are still there." (Owner)

Based on the interviews, the records required by the business cover purchases of materials, the number of eggs produced, eggs being salted, cooked salted eggs ready for sale, sales, goods consigned to stalls, goods sold and goods still at the stalls, cracked eggs, dead ducks, electricity and water costs, business assets, and cash coming in and going out. On this basis, the authors depicted the transaction recording process of Telur Asin JozJiz in BPMN, as shown in Figure 4.

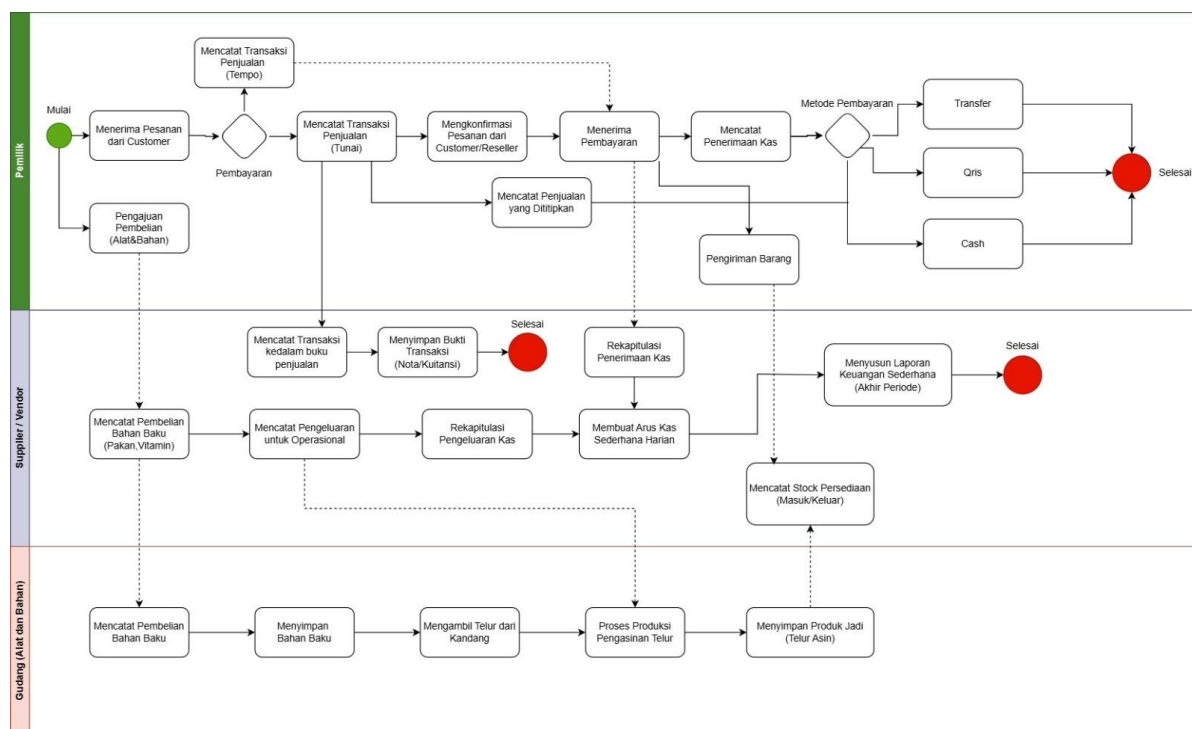


Figure 4. BPMN of the Sales, Financial Recording, and Inventory Management Processes (Proposed)
 Source: Compiled by the authors (2026)-in Bahasa Indonesia

Figure 4 describes the sales, financial recording, and inventory management processes. It involves three functional areas: the owner, recording/finance, and inventory/goods. The flow begins when the owner receives an order from a consumer and determines whether payment will be made in cash or on credit. If payment is on credit, the owner records a credit sale and an account receivable to be collected later; if it is in cash, the sale is recorded as a cash sale and the owner proceeds to receive payment.

After the sale is recorded, the owner confirms the order with the party that receives or distributes the product (a distributor, reseller, or stall). Payment is then received; credit sales are recorded as receivables, while cash received is recorded as a cash receipt. The owner then identifies the payment method used (transfer, QRIS, or cash). Each sale thus has a record that is linked to the payment method and to the business's cash receipts.

In the recording/finance area, transaction documents such as receipts and invoices are kept as evidence, and sales are recorded in a sales book. Operating expenses, such as purchases of feed and salt and costs such as electricity and water, are also recorded. Credit sales are recorded as receivables so that the amounts still to be collected from customers can be monitored. Cash receipts and payments are summarised into a simple daily cash flow, and a simple set of financial statements is prepared at the end of the period.

In the inventory/goods area, the process begins with the receipt of raw materials such as feed and salt, which are stored together with other production materials. Eggs are collected from the duck house, salted and processed into finished salted eggs, and stored as finished goods inventory, with stock movements recorded. At this stage, the condition of the goods is checked to determine whether the products are saleable or rotten.

If the salted eggs are saleable, they can be sold to consumers, resellers, or stalls; if they are damaged or rotten, they are recorded as damaged goods that cannot be sold. Information about the condition of goods becomes part of the inventory records, so that the available stock can be known more accurately. Separating rotten eggs (a loss that reduces inventory) from cracked eggs (sold at a lower price) also prevents losses from being hidden in the sales figures, in line with the treatment of inventory write-downs described by [Kieso et al. \(2020\)](#). Recording duck deaths at the time they occur, rather than only at periodic counts, keeps the biological-asset records consistent with the actual flock, as recommended in studies of SAK EMKM-based records for laying-hen businesses ([Sujana & Yudiantara, 2022](#); [Febrianti & Rahma, 2023](#)).

4.7 Sales Decision Tree

The interviews showed that Telur Asin JozJiz is a duck farming and egg processing business established in 2024, with about 500 ducks producing about 400 eggs per day. Its products are raw salted eggs, cooked salted eggs, and unsalted duck eggs.

In its operations, the owner records goods in and out in a simple way and manages inventory on the basis of direct observation. The main difficulty lies in recording products consigned to stalls, because the owner cannot easily determine how many have been sold and how many remain. Rotten eggs and dead ducks are also not recorded routinely.

Sales are made directly, through resellers, and by consignment. These conditions show that JozJiz's recording system is still simple and needs to be improved so that information on inventory, sales, and cash flow is clearer and helps the owner make business decisions.

"If someone orders and the cooked eggs are not ready yet, I tell them honestly. I would rather say there are none than promise and then not deliver." (Owner)

As shown in [Figure 5](#), the decision tree describes the sales process at Telur Asin JozJiz. The process begins when order data are received from a customer. The owner then checks the availability of salted egg stock. If stock is not available (N), the order is rejected or cancelled; if stock is available (Y), the order can be processed and recorded. Stock availability is therefore the main consideration in deciding whether a customer's order can be fulfilled, which is why accurate inventory records, including consigned stock, are a precondition for the sales decision.



Figure 5. Sales Decision Tree

Source: Compiled by the authors (2026)-in Bahasa Indonesia

4.8 Purchasing Decision Tree

The interviews showed that, to support production, Telur Asin JozJiz buys several items such as duck feed, salt, and salting materials. The owner usually buys directly from suppliers or nearby shops when stock starts to run low. Purchases are recorded only informally, so it is hard for the owner to know how much material has been bought, how much remains, and how much money has been spent.

[Figure 6](#) shows the purchasing decision tree. The process begins with checking the stock of materials. If stock is running low (Y), the owner first checks whether there is enough cash. If there is (Y), the materials are bought from the supplier and recorded; if there is not (N), the purchase is postponed or the quantity is reduced. If the stock is still sufficient (N), no purchase is needed. Stock

levels and cash availability are therefore the two factors that most strongly determine purchasing decisions, and both depend on information that the proposed recording system is designed to provide.

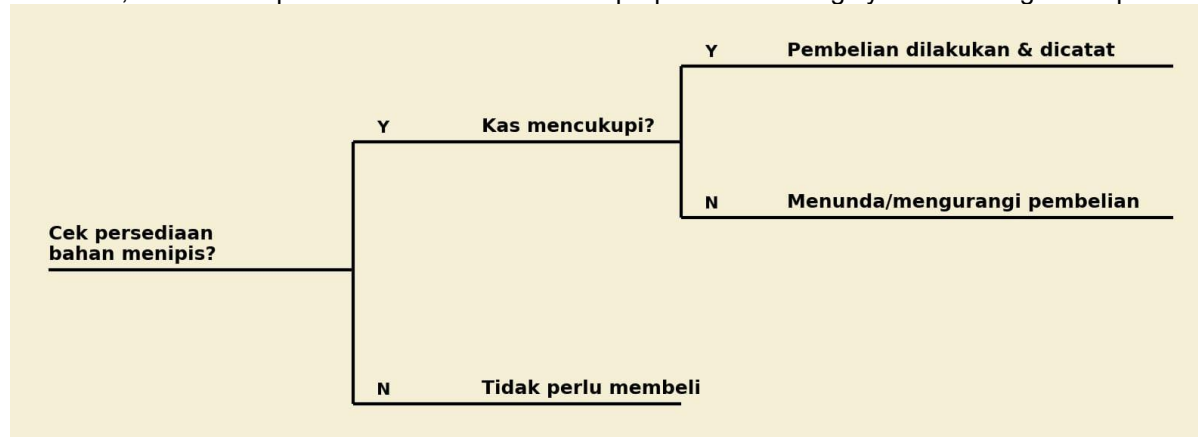


Figure 6. Purchasing Decision Tree

Source: Compiled by the authors (2026)-in Bahasa Indonesia

4.9 Discussion and Comparison with Previous Studies

The models show that the problems of JozJiz arise not from a lack of willingness to record but from the absence of documents and of a structure that links the farm, the processing activity, and the sales channels. The Level 0 DFD defines the documents and data store that must exist, the BPMN models define who does what and when, and the decision trees make the owner's implicit rules explicit. This combination is consistent with [Setiawan et al. \(2025\)](#) and [Tuasamu et al. \(2023\)](#), who found that pairing BPMN or flowcharts with DFDs helps owners without accounting backgrounds understand their own processes.

Two aspects distinguish this case from previous studies. First, consignment is usually studied in retail stores ([Hermelinda, 2020](#)), whereas, at JozJiz it coexists with direct and reseller sales of perishable products, so unsold consigned eggs also carry a spoilage risk. A consignment record per stall that shows units delivered, sold, returned, and remaining is therefore needed both for revenue recognition and for inventory control ([Pujiati et al., 2024](#)). Second, studies of biological assets in poultry farming focus on measurement under PSAK 69 or SAK EMKM ([Erawan & Julianto, 2020](#); [Sujana & Yudiantara, 2022](#); [Handayani & Suryaningrum, 2021](#)), but at JozJiz the same flock is also the source of a processed product, so mortality directly affects production capacity and must be recorded together with egg output. Integrating these records follows the suggestion that MSMEs adopt SAK EMKM-based reporting only after basic records exist ([Kirowati, 2019](#); [Wahyuningsih, 2023](#)).

These two aspects also connect the design with the Sustainable Development Goals. The consignment record and the recording of damaged eggs make visible, for the first time, the quantity of products lost through spoilage, cracking, or unsold consigned stock, which allows the owner to identify where losses occur and to adjust production and delivery quantities. This is the kind of measurement on which reductions in food loss under SDG target 12.3 depend (United Nations, 2015). Likewise, records that separate business and personal finances and that lead towards SAK EMKM-based statements strengthen the position of a village micro-enterprise as a formal economic actor, consistent with SDG target 8.3. Because the design has not yet been implemented, these contributions should be understood as potential rather than demonstrated.

5. CONCLUSION

Telur Asin JozJiz keeps simple records of its transactions, stock, production, and cash flows. Personal and business finances have already been separated, so business activities are kept apart from personal needs. Nevertheless, the records are still incomplete because not all transactions are supported by receipts or organised transaction evidence. The situation is more complicated for consignment transactions, damaged products, and duck deaths related to production.

The use of DFD, BPMN, and decision trees provides a structured picture of data flows, process steps, and decision rules in the business. These three tools help align current recording practice with the requirements of a more structured accounting information system. With this mapping, purchasing, production, inventory, sales, and transaction recording can be explained more clearly and can serve as the basis for building the system.

The design is still conceptual and has not been implemented or tested directly. Further development should therefore focus on a digital accounting information system that can manage consignment records, damaged products, inventory, and the monitoring of production and duck mortality. Development can also be extended to similar MSMEs so that the design can be compared and adapted to different types of business.

5.1 Implications

Theoretically, the study enriches the literature on accounting information systems in food-sector MSMEs, particularly in supporting transaction recording, inventory management, and the control of business activities (Tjoe & Wakang, 2026). It also shows that consignment, damaged goods, and biological assets must be seen as a single whole in businesses that combine farming and processing. The need for more structured records covers the number of eggs produced, the salting process, finished products, sales, consigned goods, damaged products, dead ducks, operating costs, assets, and cash flows.

Practically, the design can serve as a guide for Telur Asin JozJiz to manage business information in a more structured and easily monitored way. It helps the owner record purchases of feed, vitamins, salt, and brick powder; production output and egg inventory; and sales transactions. It also helps resolve the problem of recording consigned goods, so that the owner knows how many have been sold and how many remain at the stalls. More orderly records will also enable the business to prepare appropriate financial statements in accordance with SAK EMKM (Kirowati, 2019). Beyond the business itself, the design supports SDG 8 (decent work and economic growth) by helping a rural micro-enterprise move towards formal financial reporting, and SDG 12 (responsible consumption and production) by making food losses from damaged eggs and duck mortality measurable.

5.2 Limitations and Future Research

The study has several limitations. Its scope is limited to the early analysis and conceptual design phases of the System Development Life Cycle; it does not extend to software implementation, trials of a recording application, or direct evaluation by users in the business environment. In addition, it uses a single case, the Telur Asin JozJiz MSME in Bojonegoro, whose business combines duck farming and salted egg processing, so the resulting design is contextual and may not apply directly to MSMEs with different business models.

There are also limitations in data availability. Most data were obtained through interviews and observation with an owner who still uses manual records, so the financial data obtained are not fully documented, particularly regarding the separation of production costs, inventory records, and the accurate measurement of profit. Several figures, such as estimated operating costs and production volumes, are approximations that may affect the accuracy of the analysis and design.

Future research is therefore recommended to carry the design forward to implementation and testing of a digital system directly in the MSME, so that its effectiveness and ease of use can be assessed in real conditions. The system can also be extended with more complex features, such as stock management for consignment, recording of rotten or failed eggs, and structured monitoring of flock condition, production rates, and duck mortality. Further studies are also encouraged to include several similar MSMEs so that the accounting information system design becomes more comprehensive and generalisable.

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Abbreviations

BPMN: Business Process Model and Notation

DFD: Data Flow Diagram

MSME: Micro, Small, and Medium Enterprise (UMKM)

PO: Purchase Order

SAK EMKM: Financial Accounting Standards for Micro, Small, and Medium Entities

SDLC: System Development Life Cycle

Authors' Contributions

ARA wrote the introduction and contributed to the limitations section. MRS developed the Business Process Model and Notation (BPMN) models. BAYH wrote the results and discussion. AIA wrote the research method, conclusion, and implications. MHF wrote the abstract and the sales decision tree. NZH wrote the literature review and the purchasing decision tree. ABA is responsible for validation and revising the article in English. All authors contributed to the discussion, revision, and refinement of the manuscript.

Conflict of Interest

All authors declare that there are no financial or non-financial conflicts of interest related to this research and the preparation of the manuscript.

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Availability of Data and Materials

The data used in this study consist of interview and observation results from the Telur Asin JozJiz MSME. They are not publicly available in order to protect the confidentiality of business information, but are available from the corresponding author upon reasonable request.

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