

THE PURCHASING PROCESS AND THE CRITERIA FOR EVALUATING VENDORS ACCORDING TO FSSC 22000 VER 6.0 CONTRIBUTING TO THE GREEN FOOD ECONOMY

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ABSTRACT

This paper proposes a structured vendor selection process tailored for food processing factories, integrating both economic evaluation and food safety compliance in accordance with the FSSC 22000 Version 6.0 standard. The study contributes to the green food economy by ensuring that suppliers not only meet traditional criteria—such as pricing, delivery, and capacity—but also comply with food safety regulations and sustainability practices. A practical framework is developed, including a step-by-step purchasing process, risk-based evaluation forms, and scoring tables. Supplier assessment criteria are divided into two main categories: economic (e.g., cost, quality, delivery) and food safety (e.g., certification, traceability, food defense, internal audit). A hypothetical case study demonstrates the feasibility of the framework in selecting suitable suppliers. The proposed model enhances transparency, compliance, and consistency in procurement activities for food manufacturers.

Keywords: Food safety, FSSC 22000, food raw material purchasing, food vendor, green economy.

1. INTRODUCTION

One of the most critical functions of a procuring department is the selection of vendors. Traditionally, vendors are chosen based on their capacity to satisfy the quality requirement, delivery performance, and price. Nevertheless, it is imperative to take into account a variety of factors when selecting a dependable vendor, as they are chosen to satisfy not only the immediate need but also food safety management system requirements.

The selection and assessment for suppliers involves identifying manufacturing organizations that provide quality products and services at competitive prices, with appropriate productivity and timelines [1]. Selecting the high-quality suppliers from a vast pool, distinguished by their capabilities and potential, is a challenging task. In modern supply chains, effective actions of suppliers are not only based on cost standards but also on many other criteria beyond traditional methods [2]. Besides quality factors, delivery time, prices, and services, some complex standards, such as environmental standards, social problems, policies, and customer satisfaction, are also among the criteria used for assessing and selecting suppliers [3].

Numerous studies have already been implemented for assessing suppliers, utilizing criteria such as pricing, delivery, quality, responsiveness, infrastructure, attitude, and discount policy [4, 5, 6]; product origin, communication system, environmental management system,

green contribution [7, 8]; process control [8, 9]; technical level, flexibility, reputation, and trust [10, 11].

The detailed requirements for assessing suppliers are outlined in the food safety management system in accordance with the national standard TCVN ISO 22000:2018 [12], which is a mandatory part to comply with FSSC 22000 Ver 6. These are shown in Clause 4.1 of ISO 22000:2018 — the organization context must be defined, as well as external issues such as suppliers; control of externally provided processes, products, and services is included in Clause 7.1.6; the organization must clearly understand supplier capacity (Clause 7.2); and ensure that suppliers have awareness and knowledge of food safety (Clause 7.3).

In this research, the criteria for assessing suppliers will be established with the objectives of evaluating, selecting, and monitoring the performance of external providers of products, processes, and/or services — ensuring that externally provided processes, products, or services do not negatively affect the ability to respond consistently to the food safety management system (FSMS).

2. METHODOLOGY

Criteria construction

The Food Safety Criteria were created directly from the FSSC 22000 V6 standard's criteria and clauses, notably those dealing with supplier control, hazard analysis, risk management, and monitoring.

Economic criteria were developed following a thorough analysis of the available literature on supplier selection in the food processing sector. Prior research and industry best practices helped to identify key variables such as cost efficiency, delivery reliability, quality consistency, and financial stability.

Expert consultation in food sector was conducted with three food processing factory. These experts reviewed the draft criteria and provided feedback on clarity, completeness, and practical relevance.

3. RESULTS AND DISCUSSION

3.1. Establish the purchasing process

Selecting the initial supplier is crucial for the company's production stability, food safety and hygiene, and quality. The factories will be able to maintain consistency in the purchasing process by establishing a purchasing process. The purchase team's function has become increasingly critical within organizations, frequently involving financial values [10]. The departments will complete the purchasing request form with the necessary information when they require a product or service. Purchasing staff start to search potential suppliers if suppliers have not been identified. For suppliers, which are available, proceed with the purchase. It is crucial to not only rely on existing vendors but also to seek for and uncover new ones in order to survive in the intensely competitive market. F. Hedderich et al. [5] have emphasized the significance of viable new vendors. The list of vendors will be established to implement an evaluation suppliers in accordance with the identified standards. If the evaluation results are satisfactory, suppliers will be chosen. If not, request suppliers have the improved actions or return vendor finding step. The supplier who meets evaluation criteria will be included in the list of suppliers, which will be submitted to the Board of Directors for approval. After removing unsuitable vendors, it is necessary to maintain and update the inventory of approved vendors. For this reason, it is imperative to maintain a positive relationship with the vendor

and conduct regular reviews and evaluations of their performance. These steps are similar to research by Jayshingpure et al. [10]. The vendor selection process is illustrated in Table 1.

Table 1. Flow chart for vendor selection

A job step	Flow chart	Explaining flow chart	Responsibility	Records
1		When the departments have the needs for purchasing a product or service	The department that generates purchasing needs	Purchasing request form
2		If suppliers are available, proceed with the purchase. If suppliers have not been identified, do a search potential suppliers.	Purchasing staff	The list of vendors
3		Implement an evaluation suppliers in accordance with the identified standards	Purchasing staff	Supplier assessment form
4		If the evaluation results are satisfactory, suppliers will be chosen. If not, request suppliers have the improved actions or return step 2.	Purchasing staff Quality staff	
5		The supplier who meets evaluation criteria will be included in the list of suppliers, which will be submitted to the Board of Directors for approval.	Purchasing staff	Approval on approved supplier evaluation form
6		Present the supplier evaluation form with the best results and be selected to the board of directors for approval Update the name of suppliers into the list of approved supplier for monitoring.		The list of approved suppliers

3.2. Establish the criteria for evaluating suppliers according to FSSC 22000 Ver 6

3.2.1. Establish the economical criteria for evaluating suppliers

Initially, conduct a brief assessment of the supplier by reviewing published information and a brief assessment of the company's technical level, technology level, flexibility, reputation, reliability, and reputation [13, 4]. If the aforementioned criteria are satisfied,

submit an evaluation form that includes the contents of supply capacity, product and service quality, price, payment method, and delivery method [3, 10, 11], food safety management system, traceability system [13, 4] (8.3 clause, TCVN ISO 22000:2018), and also satisfies the requirements outlined in TCVN ISO 22000:2018 [8]. Lastly, a supplier checklist that includes content related to infrastructure and management systems will be submitted through an evaluation form, as outlined in [3, 10, 7, 8]

Table 2. Assessment based on score scale

Number	Assessment score	Score scale			Score
		1	2	3	
1	Product and service quality	There are still deficiencies that require improvement.	Meets requirements	Higher than required	
2	Selling price	Retail price	wholesale price	Policies are differentiated according to the quantity.	
3	Supply capacity	< 50% -70%	70% - 90%	No restrictions	
4	Delivery time	> 30 days	>= 15 days	< 15 days	
5	Payment time	Payment in advance	7 days to 15 days	> 15 days	
Score Total					0

Hypothetical Scenario: Evaluating Packaging Suppliers for ABC Dairy Factory

ABC Dairy Factory is seeking a supplier of PET plastic packaging for its yogurt and UHT milk products. Three potential suppliers (Supplier A, B, and C) have been shortlisted from the initial list of candidates. The procurement team has decided to use the Assessment Score Table (Table 2) and the Overall Evaluation Criteria (Table 3) to select the most suitable supplier.

Supplier B was evaluated across five key criteria using the established scoring framework. In terms of product and service quality, the supplier’s packaging products comply with the technical specifications and hygiene standards required by ABC Dairy Factory. While the products are suitable for current production needs, they do not exceed expectations, resulting in a score of 2 (Meets requirements). Regarding selling price, Supplier B offers a stable wholesale pricing model that is more competitive than typical retail prices. However, the lack of differentiated pricing based on order quantity limits flexibility for bulk purchasing, which also yields a score of 2 (Wholesale price). For supply capacity, the supplier has committed to meeting up to 90% of the factory’s demand during peak periods. This demonstrates a relatively strong capacity, though not entirely unrestricted, and is rated as 2 (70% – 90%). In terms of delivery time, Supplier B performs well, with an average lead time of 12 days from order placement to delivery. This timely delivery supports production continuity and earns the highest score of 3 (< 15 days). Finally, in the area of payment terms, the supplier offers deferred payment up to 20 days after delivery (Net 20), which provides the company with valuable cash flow flexibility. This favorable term is rated as 3 (> 15 days).

Overall, Supplier B achieved a total score of 12, indicating an acceptable performance with some areas for improvement, particularly in supply capacity and pricing policy.

Assessment Conclusion

Based on the total score of 12, Supplier B falls into the category of “Review and ask suppliers for improvements” according to the scoring criteria in Table 3. While the supplier demonstrates strong performance in delivery and payment terms, there is room for improvement in:

- Product and service quality (to exceed minimum requirements),
- Pricing structure (e.g., introducing quantity-based price differentiation),
- Supply capacity (to ensure full demand fulfillment without constraints).

Therefore, Supplier B can be conditionally accepted, with a recommendation for periodic monitoring and targeted improvements over time.

3.2.2. Establish the food safety criteria for evaluating suppliers

Gather all quality and food safety conformance certificates, including but not limited to ISO 22000, HACCP, BRC, and Viet Gap.

The supplier selection assessment must be conducted at the supplier's location for suppliers in the high-risk group, unless they have been certified in accordance with the standards outlined in Table 3.1. The frequency of the assessment is as follows: The price of the supplier is updated every 12 months. Evaluation can be conducted using questionnaires or the information provided by the supplier for suppliers in the low-risk group. The frequency of assessments for suppliers in the medium risk category is lower than that of high risk suppliers, which is every 18 months.

Table 3. Score criteria

Score	Assessment criteria
16 scores to 24 scores	Pass
12 scores to 15 scores	Review and ask suppliers for improvements
8 scores to 11 scores	Fail

Table 4. Assessment standards

Score	Assessment standards
NA	The supplier does not apply this standard, explain why? (write in notes)
0	Serious non-compliance with quality - food safety and law
1	Major nonconformities or deficiencies in the prerequisite operating program
2	Minor nonconformities or deficiencies in the prerequisite operating program
3	Satisfied and meets standard requirements.

In the following instances, the supplier selection assessment should not be conducted in accordance with the aforementioned regulations: The supplier is appointed by the customer and is the exclusive supplier approved by the board of directors. However, they are unable to promptly collect information about suppliers for evaluation purposes due to force majeure, such as epidemics or war. However, they are required to verify the quality of imported goods in accordance with raw material standards upon arrival at the factory.

Enhanced control measures must be implemented in the event of exceptions, including the verification of conformity declarations, certificates of analysis, shipment inspection records, and certificates of authorization (CoA)... Enhance the sampling and inspection process during the reception stage; send samples to external entities for testing; and closely monitor the transaction transfer process.

Table 5. Scoring and evaluation methods

1.0	CERTIFICATE	0	1	2	3	NOTES
1.1	Certificate of quality - food safety: HACCP, FSSC 22000, BRC, Viet Gap, or equivalents.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.0	ALLERGEN CONTROL	0	1	2	3	NOTES
2.1	Are allergens produced or stored in the factory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.2	Is there documentation of maintaining allergen control?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.3	Do the vehicles transporting materials supplied to us transport them with other types of allergens?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.0	FOREIGN OBJECT HAZARD MITIGATION PROGRAM.	0	1	2	3	NOTES
3.1	Are there programs and procedures in place to minimize foreign object hazards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.2	Are transport vehicles disinfected/cleaned & fully documented before shipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.3	Is there control over the hygiene, tightness and safety of the transport vehicle during the process of transporting raw materials to the factory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.4	Are the delivered goods at risk of containing glass, metal, hard plastic, wood and other impurities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.5	Is there documented testing of glass, hard plastics, ceramics, metals being performed at the prescribed frequency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.0	ORIGINAL TRACEABILITY	0	1	2	3	NOTES
9.1	Are there records that track raw materials through processing, reprocessing, semi-finished products and finished products?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9.2	Is the storage time consistent with applicable TC requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9.3	Is it possible to trace the origin of products to raw materials and vice versa?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.0	FOOD FRAUD PROGRAM	0	1	2	3	NOTES
5.1	Is there food fraud program?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5.2	Is a food fraud vulnerability assessment performed on the products supplied to us?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.0	FOOD DEFENSE	0	1	2	3	NOTES

The purchasing process and the criteria for evaluating vendors according to FSSC 22000...

6.1	Is there a food defense program?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.2	Is a food defense vulnerability assessment performed on the product supplied to us?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.0	FOOD SAFETY CULTURE	0	1	2	3	NOTES
7.1	Have a food safety culture policy in place.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.2	Communicated in appropriate language to all employees/members at all levels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7.3	Have tools to measure food safety culture (e.g., test employee understanding of food safety culture, collect other feedback from employees) and necessary follow-up actions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8.0	INTERNAL FOOD SAFETY ASSESSMENT REPORT	0	1	2	3	NOTES
10.1	Are internal food safety assessments performed periodically?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10.2	Are nonconformities in internal audit reports corrected and corrective actions implemented as planned?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Total						

Hypothetical Scenario: Supplier Evaluation for a Ready-to-Eat Food Factory. GreenFresh Co., a factory specializing in the production of ready-to-eat meals (e.g., frozen rice bowls, soups, and pasta), is in the process of selecting a new supplier of raw vegetables and spices. Due to increasing food safety and regulatory demands, the factory's Quality Assurance (QA) team has decided to evaluate the shortlisted supplier using the detailed food safety scoring framework shown in Table 5, based on the evaluation standards in Table 4.

Supplier Evaluation – Supplier X

Supplier X was evaluated across eight core areas using the structured food safety assessment framework. The evaluation revealed both strengths and areas requiring improvement. In terms of certification, Supplier X holds a valid FSSC 22000 certificate, fully meeting the standard requirements (Score: 3). Under allergen control, the supplier has documentation in place; however, vehicle segregation during transport is inconsistently applied, resulting in a score of 2. For foreign object hazard mitigation, Supplier X has implemented standard procedures to prevent contamination and conducts regular testing for glass and metal particles. Nevertheless, the cleaning and disinfection documentation for transport vehicles is incomplete, which lowers their score to 2. In the area of traceability, the supplier demonstrates strong performance with a system that tracks raw materials and semi-finished products using QR-code technology. This system is fully compliant with internal control (IC) and customer requirements (Score: 3). Regarding the food fraud program, the supplier maintains a formal fraud prevention plan and performs annual vulnerability assessments, meeting expectations (Score: 3). Similarly, in the domain of food defense, a basic plan exists, but the risk assessment was last updated over two years ago, leading to a slightly lower score of 2. The food safety culture at Supplier X shows partial implementation. While policies are visible and training is conducted, mechanisms for gathering and responding to employee feedback are limited, leading to a score of 2. Finally, in the area of internal food

safety assessment, the supplier conducts audits; however, delays in implementing corrective actions were observed in the audit reports. This results in a score of 1, highlighting a need for stronger follow-through.

The summary of scores is as follows: Total possible points: 66 Supplier X score: 48

This performance indicates that Supplier X meets most of the food safety and compliance expectations but requires targeted improvements in audit responsiveness, allergen control during transport, and food safety culture engagement. The supplier is considered conditionally approved, with a follow-up action plan recommended.

4. CONCLUSION

The purchasing process and assessment criteria are essential for the administration of factories, as it have a significant impact on quality or cost for final products and/or services. In fact, for numerous organizations, the selecting and assessment process for vendors is not a simple one. Especially for food manufacturing factories, vendors not only meet economical requirements but also food safety requirements such as FSSC 22000 Ver 6. A flow chart for vendor selection is necessary to unify the purchasing steps in the organization and ensure that vendors are suitable for purchasing. The criterial for evaluating suppliers are establish include economical criterial such as product and service quality; Selling price; Supply capacity; Delivery time; Payment time and food safety criterial such as certificate; allergen control; foreign object hazard mitigation program; original traceability; food fraud program; food defense; food safety culture; internal food safety assessment report to meet FSSC 22000 requirement.

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TÓM TẮT

QUY TRÌNH MUA HÀNG VÀ TIÊU CHÍ ĐÁNH GIÁ NHÀ CUNG CẤP THEO TIÊU CHUẨN FSSC 22000 PHIÊN BẢN 6.0 GÓP PHẦN PHÁT TRIỂN KINH TẾ THỰC PHẨM XANH

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Bài viết này đề xuất một quy trình lựa chọn nhà cung cấp có cấu trúc dành cho các nhà máy chế biến thực phẩm, tích hợp cả tiêu chí đánh giá kinh tế và tuân thủ an toàn thực phẩm theo tiêu chuẩn FSSC 22000 phiên bản 6.0. Nghiên cứu đóng góp vào sự phát triển của nền kinh tế thực phẩm xanh bằng cách đảm bảo rằng các nhà cung cấp không chỉ đáp ứng các tiêu chí truyền thống như giá cả, giao hàng và năng lực, mà còn tuân thủ các quy định về an toàn thực phẩm và thực hành bền vững. Một mô hình thực tiễn đã được xây dựng, bao gồm: quy trình mua hàng theo từng bước, biểu mẫu đánh giá dựa trên mức độ rủi ro và bảng chấm điểm chi tiết. Các tiêu chí đánh giá nhà cung cấp được chia thành hai nhóm chính: **kinh tế** (ví dụ: chi phí, chất lượng, khả năng giao hàng) và **an toàn thực phẩm** (ví dụ: chứng nhận, khả năng truy xuất nguồn gốc, bảo vệ thực phẩm, kiểm tra nội bộ). Một nghiên cứu tình huống giả định minh họa tính khả thi của mô hình này trong việc lựa chọn nhà cung cấp phù hợp. Mô hình đề xuất giúp tăng cường tính minh bạch, khả năng tuân thủ và sự nhất quán trong hoạt động thu mua của các doanh nghiệp sản xuất thực phẩm.

Từ khóa: An toàn thực phẩm, FSSC 22000, Mua hàng, Nhà cung cấp, Kinh tế thực phẩm xanh.