SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2025
ORGANIZATION AND MANAGEMENT SERIES NO. 220

THE ROLE OF SUPPLIER EVALUATION IN ENHANCING SUPPLY CHAIN EFFICIENCY AND COLLABORATION

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Purpose: This paper aims to evaluate the significance of the supplier assessment process in supply chain management, with a focus on its role in improving supplier relationships and ensuring overall supply chain efficiency. The research investigates key performance criteria and their impact on collaboration with suppliers.
Design/methodology/approach: The study uses a diagnostic survey method, employing an electronic questionnaire completed by 150 internal customers from six countries. The evaluation focused on 186 key suppliers representing 15% of the total supplier base. The analysis incorporated predefined scoring criteria, including price, quality, delivery timeliness, flexibility, and service quality. Results were categorized to inform subsequent supplier management actions.
Findings: The majority of suppliers (74%) fell into the average performance group, while only 1% exceeded expectations. However, 25% of key suppliers performed below expectations, highlighting areas requiring corrective action. The findings underscore the importance of supplier assessment as a critical auxiliary process that influences supplier collaboration and the effectiveness of the supply chain.
Research limitations/implications: The research focuses on a single company within the TSL (Transport-Forwarding-Logistics) sector and a limited regional supplier base. Future studies could explore cross-industry supplier assessments and develop frameworks for broader application.
Practical implications: The research provides actionable insights for supply chain managers, emphasizing the need for regular supplier evaluations. It recommends strategies for improving relationships with underperforming suppliers and reducing reliance on those with consistently low scores. These practices can enhance supply chain reliability and operational efficiency.
Social implications: The study indirectly promotes sustainable supply chain practices by encouraging accountability and collaboration among suppliers. Improved supplier performance can contribute to better resource utilization and adherence to quality and environmental standards.
Originality/value: This paper highlights the supplier assessment process as a strategic tool for supply chain optimization. It offers a practical framework for evaluating and managing suppliers, providing value to academics, supply chain professionals, and policymakers aiming to improve supply chain performance and resilience.
Keywords: Supply chain, Management, Supplier evaluation.
Category of the paper: Research paper.

1. Introduction

Supply chains play a crucial role in the economy by ensuring the continuous flow of goods. Every product available on the market has interacted with some form of supply chain, making it evident that society is deeply interconnected with them. The key to an efficient supply chain lies in its links, which, through collaboration and strong relationships, enable the smooth movement of goods from their point of origin to the end customers. These links are commonly referred to as suppliers, as each link in the chain supplies goods to the next. Therefore, maintaining strong relationships with suppliers is an equally important aspect of supply chain management.

Efficient supply chains are essential to the economy. In the age of globalization, companies strive to lead their industries, and achieving this is only possible through effective supply chain management and associated processes. One such process is supplier evaluation, which directly impacts relationships and collaboration between the downstream tiers of the supply chain. Furthermore, this process is repeated at various stages within any supply chain, making it critically important for companies.

The main objective of this study is to analyze and evaluate the significance of the supplier evaluation process within the supply chain. Additionally, the paper seeks to achieve the following specific objectives:

1. Outline the nature of the supply chain.
2. Analyze the supplier evaluation process using a selected company as an example.
3. Present the results of supplier assessments and their importance in supply chain management.

The research focuses on a single company within the TSL (Transport-Forwarding-Logistics) sector and a limited regional supplier base. The study uses a diagnostic survey method, employing an electronic questionnaire completed by 150 internal customers from six countries.

2. The Essence of the Supply Chain

The concept of a supply chain has been defined in various ways throughout the literature. These definitions often differ significantly, reflecting the diverse perspectives of their authors. Such differences arise from the reference to distinct industries, issues, and the scope that each definition covers. Additionally, discrepancies may result from inaccurate translations of the term or from conflating the concepts of "supply chain" and "supply chain management".

To properly define the supply chain, it is essential first to consider its context and environment (Kos, 2013). According to Gołembska (1999), a supply chain is "the activity associated with the flow of products and services—from their original source, through all intermediate forms, to the state in which they are consumed by the final customer". In this definition, the customer is not merely a passive recipient but an integral part of the supply chain.

Fertsch (2008) takes a similar view, describing a supply chain as "a group of companies performing activities necessary to meet the demand for specific products across the entire flow chain—from the acquisition of raw materials to delivery to the final customer. These activities include development, production, sales, service, procurement, distribution, resource management, and various supporting processes". This definition is particularly comprehensive, as it explicitly incorporates after-sales services.

La Londe and Masters (1994) define the supply chain as "a collection of companies that transmit materials and products to the market. It includes a large number of independent companies involved in producing products and delivering them to the end buyers. Members of the supply chain include all raw material and component producers, product assemblers, wholesalers, retailers, and transport companies".

Lambert, Stock, and Ellram, (1998) on the other hand, emphasize collaboration, describing the supply chain as "the collaboration of firms to deliver products or services to the market".

The most general definition, however, is provided by Mentzer (2001), who defines a supply chain as "three or more firms directly connected by one or more flows of goods, services, finance, and information from source to customer". Figure 1 illustrates an example of an extended supply chain, providing a visual representation of these interconnected activities.

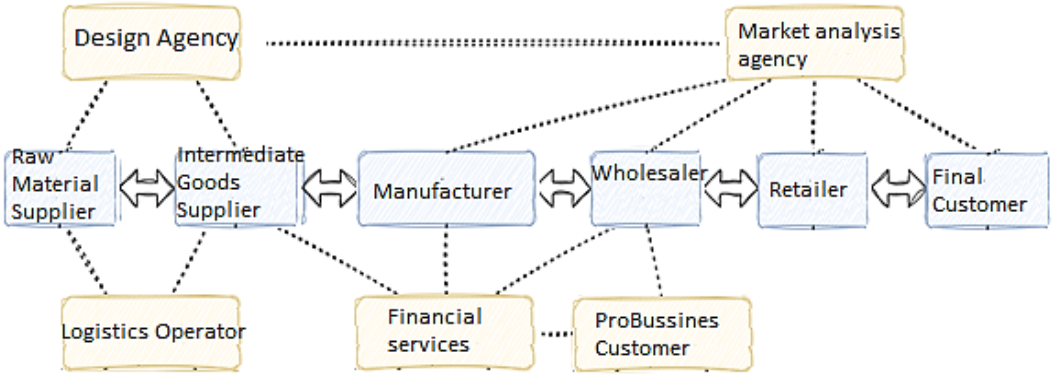

Figure 1. Example of an extended supply chain.

Source: own elaboration based on Mentzer, 2001.

An example of a supply chain includes links such as the supplier of raw materials, the supplier of intermediate goods, the manufacturer, the wholesaler, the retailer, and the final customer. These links play a crucial role in the overall efficiency of the supply chain. Service providers, such as design agencies, logistics operators, financial service providers, business customers, and market analysis agencies, are also integral parts of the chain. These service providers, often marked in yellow in illustrative diagrams, form essential links in the flow of goods. It is also important to note that neighboring links in the supply chain always maintain a supplier-customer relationship. Rutkowski (2002) describes this as a defining feature of supply chains, where each recipient acts as a supplier to the next link, continuing up to the final customer. In an extended supply chain, numerous dependencies and relationships exist between the links.

Definitions of a supply chain may vary depending on the author's perspective. To better understand supply chains, it is helpful to outline some basic classifications. Frankowska (2014) identifies three primary types of supply chains based on the range of functions performed by participants:

- Direct supply chain.
- Extended supply chain.
- Comprehensive supply chain.

Supply chains can also be categorized by the organizational and spatial relationships between their links:

- Internal supply chains: Operate within a single organization, such as the flow between a supply warehouse, manufacturing plant, machining plant, finished goods warehouse, and distribution warehouse (Pimor, Fender, 2008).
- Intra-organizational supply chains: Comprise links from different plants operating in various markets but under the same company.
- Inter-organizational supply chains: Consist of two or more independent companies, each managing their own internal flows while collectively forming a single supply chain (Stadtler, Kilger, 2005).
- International supply chains: Include companies managing the flow of goods, services, information, or finances across different countries (Eksogliu, 2001).

The described examples are shown in Figure 2.

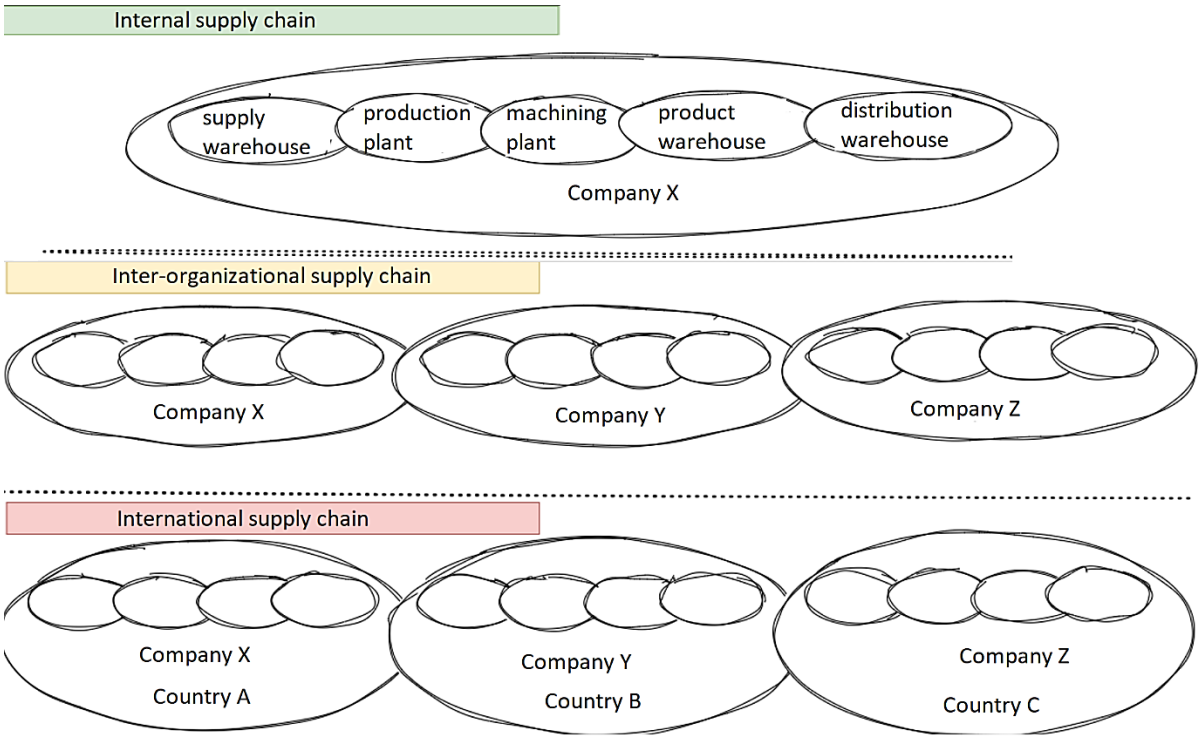

Figure 2. Example of classification due to organisational-spatial relationships.

Source: own elabroration base on Pimor, Fender, 2008; Stadtler, Kilger, 2005; Eksioglu, 2001.

3. Supply Chain Management

Supply chain management involves overseeing the entire process of delivering a product, requiring collaboration among suppliers, manufacturers, distributors, and customers. The goal of supply chain management is to maximize market competitiveness, optimize costs, and increase profits. Rutkowski (2002) emphasizes that the objective of cooperation between supply chain links is to maximize the efficiency of both individual companies and the entire network. This can be achieved through integration, coordination, and optimizing the added value contributed by each link in delivering the final product to the customer (Rutkowski, 2002).

Several methods and tools support comprehensive supply chain management, including:

Lean Management (LM): Lean Management focuses on eliminating waste and improving efficiency by reducing unnecessary resources. This concept emphasizes producing only what is needed at a given time while using minimal manpower (Ohno, 1988). Piasecka-Głuszak (2014) notes that this approach aims to eliminate activities that do not add value to the customer, treating the gains and losses of each link as integral to the entire supply chain. Any changes made must affect the entire chain to ensure the supply chain functions as a cohesive unit.

Quick Response (QR or QRM): Quick Response Manufacturing focuses on reducing lead times, particularly in low-volume or custom-designed production. Pyrek notes that the full benefits of QRM can only be realized when both suppliers and customers participate. Suppliers must deliver smaller batches quickly, improve product quality, and reduce costs, while customers need to accept smaller batch deliveries at acceptable prices (Pyrek, 2006).

Agile Management (AM): Agile Management, as the name suggests, emphasizes flexibility and responsiveness. In manufacturing, it involves the ability to produce low-cost, high-quality products with short delivery times, offering customization to increase customer value (Frankováa, Drahošováb, Balcoa, 2016). Kowalska and Sikora (2016) explain that an Agile supply chain is entirely customer-focused, emphasizing adaptability to current demand rather than relying on demand forecasts or increased inventories. The Agile approach prioritizes quick responses to market changes and evolving consumer needs, especially under uncertain conditions.

Supplier Evaluation Process

The supplier evaluation process is one of the most critical processes within companies. While it is classified as an auxiliary process in the supply chain, meaning it does not directly affect the company's core operations, its significance cannot be overstated. The requirement for systematic supplier evaluation arises from EN ISO 9001:2015, an international standard referring to a "Quality Management System" in organizations. Furthermore, supplier assessment is closely linked to enterprise risk management, which is vital for the overall functioning of the supply chain. Suppliers are a fundamental link in the supply chain. If a supplier fails to perform its role correctly, the entire chain is at risk. For this reason, companies should conduct periodic supplier evaluation to maintain ongoing control over contractors. Another critical aspect of supplier evaluation is fostering relationships with suppliers. The primary output of the process is the evaluation result, which provides the foundation for future cooperation. By assessing suppliers, companies clarify their expectations, verify whether those expectations are being met, and provide feedback to suppliers.

Evaluating suppliers for sustainability is a critical process for businesses aiming to minimize environmental impact, uphold ethical practices, and ensure long-term resilience. This guide outlines key criteria, methodologies, and best practices for sustainable supplier evaluation (Amri et al., 2021; Chang et al., 2021; Ghosh, Mandal, Ray, 2023).

To begin the process, companies must acquire input data, starting with a database of current suppliers to be evaluated. According to the authors (Szűcs, Pató, Kiss, 2019), the next step involves defining the evaluation criteria for the supplier evaluation form. These criteria can vary between companies but typically include the following, as outlined by Zamostny:

- Price: While often considered the most obvious criterion, it is not always the most important.
- Quality of goods: Assesses whether the goods meet technical specifications.

- Timeliness of delivery: Measures the supplier's ability to meet agreed deadlines, which is crucial for Just-In-Time (JIT) delivery.
- Flexibility of delivery: Evaluates the supplier's ability to adjust to changes in orders, meet special requests, and respond to dynamic market changes.
- Completeness of deliveries: Assesses the proportion of correctly executed orders relative to the total customer orders.
- Certified Quality Management System: Considers whether the supplier holds a recognized certification.
- Product certification: Evaluates required documents, such as approvals, certificates, and labels.
- Purchase conditions: Examines the terms of the contract.
- Payment terms: Longer payment periods are typically more favorable for the company.
- Quality of service: Encompasses aspects like responsiveness and support.

Once the evaluation criteria are defined, a supplier evaluation form is created and distributed to internal customers for completion. After collecting the completed evaluations, the results are analyzed, and suppliers are scored based on predefined ranges. The scoring system should be tailored to the company's industry and operations. Wolniak and Skotniciej-Zasadzień (2008) provide an example scoring system:

- 90% and above: Category I - Qualified suppliers.
- 80%-89%: Category II - Qualified suppliers.
- 70%-79%: Category III - Reserve suppliers.
- 60%-69%: Category IV - Reserve suppliers.
- Below 60%: Category V - Does not meet customer requirements; cooperation is discontinued.

Once suppliers are classified into categories, the company must follow through with actions based on the assessment results. Suppliers should be informed of their scores and classifications, followed by debriefing discussions. For suppliers scoring low, corrective action plans should be implemented unless they provide rare or irreplaceable products/services. In most cases, cooperation with underperforming suppliers is terminated.

4. Supplier Evaluation Results and Relevance to Supply Chain Management

Company X, a Polish subsidiary of a global corporation, is part of a larger supply chain group operating within the TSL (Transport-Forwarding-Logistics) industry. The parent company manages end-to-end supply chain solutions and operates in more than 160 countries with over 58,000 employees.

The supplier evaluation process for Company X was conducted using a diagnostic survey method, with an electronic questionnaire as the primary tool. The survey involved 150 employees of the company. While specific contractor names are not disclosed, the process itself is described in detail.

Table 1 summarizes the activities involved in the supplier evaluation process, including the duration of each activity, responsible individuals, and their respective departments. All information regarding suppliers and internal procedures was obtained from confidential company records and databases, which are not shared in this paper.

Table 1.
Steps in the Supplier Evaluation process

No.	Stage of the Supplier Evaluation process	Duration [working days]	Responsibility	Department
1.	Data preparation	10 days	Tools and Systems Specialist + Purchasing Category Managers	Purchasing Department
2.	Preparation of assessment forms	5 days	Tools and Systems Specialist	Purchasing Department
3.	Preparation of contact list and content of e-mail message	1 day	Tools and Systems Specialist	Purchasing Department
4.	Preparation of presentations for information meetings	1 day	Tools and Systems Specialist	Purchasing Department
5.	Distribution of the message to Warehouse Managers and Supplier Evaluation	10 days	Tools and Systems Specialist	Purchasing Department
6.	Distribution of the message to operational teams	1 day (during point 5)	Warehouse managers	Operations Department
7.	Information meetings	3 days (during point 5)	Tools and Systems Specialist + Operations Teams	Purchasing Department + Operations Department
8.	Collection of survey results	2 days	Tools and Systems Specialist	Purchasing Department
9.	Compilation of results and preparation of the form for Category Supervisors	5 days	Tools and Systems Specialist	Purchasing Department
10.	Final Supplier Evaluation	5 days	Category Supervisors	Purchasing Department
11.	Analysis of results	5 days	Tools and Systems Specialist	Purchasing Department
12.	Preparation of the report	5 days	Tools and Systems Specialist	Purchasing Department
13.	Publication of the report	1 day	Tools and Systems Specialist	Purchasing Department

Source: Own compilation based on company documents.

The company's Supplier Evaluation process is conducted according to the procedure outlined in the table. Subsequent actions with suppliers are closely tied to the results of the evaluation. The process operates under the following assumptions:

- <50%: Cooperation with the supplier is reviewed, leading to one of the following outcomes:
  - Termination of the partnership.
  - Reduction of cooperation and identification of an alternative supplier.
  - Implementation of corrective actions with the supplier.
- 50-75%: No immediate action is taken, following an individual supplier approach.
- >75%: Further development of the relationship with the supplier, potentially designating them as a preferred supplier.

The implementation of these actions is overseen by the Purchasing Category Supervisors. Once the evaluation report is published, suppliers are contacted and the results are shared with them. Meetings are arranged with suppliers who have achieved above-average results and those with very poor results. However, meetings are not conducted with average-performing suppliers due to the high volume of suppliers.

During the meetings, the Supplier Evaluation results and the prospects for continued cooperation or termination are discussed. Suppliers with poor results often express a willingness to improve. In such cases, a remediation plan is introduced, typically lasting 1 to 3 months. During this period, the supplier's performance is monitored by specific operational departments. After the remediation period, the supplier is reassessed.

The referenced Supplier Evaluation process involved 150 of the company's internal customers from six countries, all of whom acted as respondents. The assessment focused exclusively on suppliers with whom the respondents had worked during the year. A total of 186 suppliers were evaluated. This represents a significant number of suppliers, given the company's operations across multiple markets, though it accounts for only 15% of the total suppliers in these countries. Only key suppliers, those critical to the company and representing the highest expenditure, were assessed. Table 2 presents the evaluation results by country and evaluation range.

Table 2
Results of Supplier Evaluation

Country/Outcome	>75%	50-75%	<50%	TOTAL
Poland	2	66	35	103
Czech Republic	0	16	7	23
Slovakia	0	9	1	10
Austria	0	8	1	9
Hungary	0	17	2	19
Romania	0	21	1	22
TOTAL	2	137	47	186

Source: Own compilation based on company data.

Only two Polish suppliers scored above respondents' expectations. The majority of assessed contractors were in the average group, comprising 137 suppliers (74% of assessed suppliers). The lowest-scoring group included 47 suppliers (25%). This group consists of key suppliers whose performance is unsatisfactory despite the company's significant turnover with them.

The company plans to focus its attention on these suppliers by initiating discussions to identify the reasons for their low ratings. Corrective actions may also be implemented. Notably, only 1% of the evaluated suppliers scored above average.

5. Summary

Supply chains are the backbone of today's economy. Virtually every business is part of a smaller or larger supply chain. Increasingly, supply networks—more complex systems with multiple links and connections—are also emerging.

Supply chains involve numerous processes, some of which occur within companies while others take place between the links in the chain. The literature classifies these processes into three main categories: main processes, auxiliary processes, and general processes. Each of these processes, regardless of its classification, plays an essential role in the efficiency of the supply chain. This paper, however, focuses specifically on the supplier evaluation process.

The supplier evaluation process can be understood in two ways:

- Pre-contract evaluation: Assessing suppliers before contracting them to determine if they meet the organization's expectations.
- Annual evaluation: Reviewing the performance of current contractors.

This thesis frames the supplier evaluation process in the context of annual evaluations. Despite being classified as an auxiliary process, it has proven to be a critical process for both the company and the entire supply chain. This is due to the significant impact that supplier assessment outcomes have on supplier collaboration and overall supply chain performance.

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