
Factors Influencing the Improvement of Procurement Processes and Cooperation with Suppliers

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Abstract:

Purpose: The paper aims to indicate universal factors influencing the improvement of the procurement processes and cooperation with suppliers.

Design/Methodology/Approach: The paper analyzes supply and purchasing processes in selected enterprises. On this basis, an attempt was made to identify, assess, and verify factors in the surveyed companies that affect the processes of supply and cooperation with suppliers.

Findings: To analyze the causes of problems in the studied objects, well-known qualitative tools and methods were used, such as the Ishikawa diagram, the PDCA method or the Pareto-Lorenz diagram. The obtained results indicate a reduction in the level of defectiveness, greater efficiency of processes because of the elimination of delays or reduction of costs on both sides of the supply chain.

Practical Implications: Considering the factors that are worth paying special attention to, when auditing the supply chain, managers of the procurement process and those responsible for cooperation with suppliers can achieve better economic results, reduce delays and eliminate errors related to delivery. At the same time, it may contribute to reducing costs both among suppliers and recipients of inventories and positively affect the subsequent cooperation.

Originality/Value: The results achieved by suppliers and their impact on customer processes may indicate the effectiveness of the actions taken and the desirability of the tools used. The reduction of defective products obtained by one of the surveyed companies from the initial 25% to approximately 4% can be described as a success achieved thanks to open cooperation.

Keywords: Procurement, cooperation with suppliers, supply chain.

JEL codes: D22, L14, M11.

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1. Introduction

In each production company, the appropriate sequence of processes is associated with the efficient delivery of raw materials, semi-finished products and other parts needed to produce a new product. This requires the integration of all production factors, from energy, materials, raw materials, fuel to human resources. The supply of these goods cannot be done without creating the required material flows and their implementation at constant and regular intervals, which requires a regular and timely supply from suppliers.

Coyle *et al.* (2002) indicate that the effective supply of goods and services contributes to the competitive advantage of a given organization. The procurement process connects the participants in the supply chain and ensures the desired quality created by suppliers in this chain. The quality of materials and services "entering" the system affects the quality of "outgoing" finished products, and therefore customer satisfaction and the company's income. A close cooperation of the recipient and supplier allows, among other things, to reduce the time of order fulfilment, to reduce costs on both sides, to increase the certainty of deliveries and improve quality (Tyc-Szmił, 2007). The publication aims to analyse and evaluate the processes of supply and cooperation with suppliers in selected enterprises and an attempt to indicate factors influencing their improvement.

2. Effectiveness of Procurement Processes in the Company

The main task of supply logistics is to ensure an appropriate flow of materials for production at the lowest possible price. Despite the actions taken to reduce inventories, it is also necessary to maintain them, but a higher level of inventories freezes more funds. The supply of raw materials and materials is linked to the suppliers in the logistics chain, which, thanks to appropriate management, has a huge impact on the company's success (Koberg and Longoni, 2019). An efficiently operating supply chain should guarantee a quick response of the production department to changes in demand, as well as ensure effective cooperation of enterprises – from the place of purchase of raw materials to the final sale of the finished product. It allows customers to make a choice, minimizes delivery times and the optimal level of stocks, which results in minimizing logistics costs and increasing the level of consumer service (Rojek, 2017).

In the era of a rapidly changing external environment, the basis for an effective supply chain management is to ensure an efficient flow of information between all participants in logistics processes. For effective functioning in a dynamic environment, companies should establish alliances with other entities and create networks of connections that facilitate the achievement of the assumed goals (Sikora and Bielski, 2017). The effective functioning of the supply subsystem supports the company's competitive advantage on the market, as it has a huge impact on product

quality, costs of the logistics system, as well as the level of logistic customer service. When making procurement decisions, the basis is the analysis of supply markets, including market stability, price formation, import, market entry opportunities for new entrepreneurs, production, and technological opportunities (Foerstl, 2017). The quality of raw materials also significantly affects the quality of final products and customer satisfaction, who more and more often pay attention to this feature of a product rather than a low price (Szczepanek *et al.*, 2018; Pobereżny *et al.*, 2020). The procurement department should demonstrate knowledge and prudence in making procurement decisions because the selection of suppliers, delivery planning and negotiating payment terms and dates have a key impact on the number of costs incurred and the profit generated (Koliński *et al.*, 2016). For this reason, supply purchases are of a great strategic importance for the enterprise.

One of the most important parts of the supply chain management process are suppliers, and their proper management is becoming increasingly important. They are at the very beginning of the logistics chain, which means that an inappropriate approach to suppliers while starting cooperation will cause several problems in the further process of product implementation. The process of acquiring suppliers and improving cooperation ensuring the continuity of logistics processes in the supplier-recipient relationship has a significant impact on building an efficient supply chain (Lee, 2004).

3. Supplier Management in Modern Production Companies

The effective implementation of own processes requires the company to involve suppliers in their development and use their knowledge and potential. In modern, success-oriented enterprises, the proper management of suppliers is one of the key factors influencing its achievement. Without building proper relationships with suppliers, it is difficult to meet customer requirements and thus to achieve the required level of customer satisfaction. It is up to the suppliers to meet the deadlines for the implementation of production orders as well as the level of their quality. To manage their suppliers better, organizations are becoming to treat their suppliers increasingly as an integral part of their own process. As a result, the supplier management process is a subject to continuous improvement (Weiss and Tyszkiewicz, 2016).

One of the basic problems of the supply process is the selection of a supplier, which is made by defining various criteria for potential suppliers. The most frequently mentioned criteria are price, material quality, reliability, potential, financial condition, desired features, supplier's location. An important element is to define the conditions for delayed deliveries or lack thereof. The recipient may demand reimbursement of costs due to lost profits (Merchant and Van der Stede, 2007). A delay in the delivery date or the supplier's delivery of products or materials that do not meet the requirements will not only result in delays in the execution of orders but also the risk of delivering a defective product to the customer. This often leads to complaints on costs and loss of customer confidence. To prevent such situations, many companies decide to optimize cooperation with suppliers by implementing appropriate

management methods. Proper management of suppliers has an impact on the financial and business performance of the enterprise and competitive advantage. The smooth operation of this area is possible thanks to the integration of procurement with production logistics and distribution logistics.

In modern organizations, employees of quality and technology departments are also involved in the supplier management process. In the companies that manufacture products with a high degree of technological complexity, SQA – Supplier Quality Assurance is appointed, whose task is the comprehensive management of suppliers. It includes supplier auditing, complaint process, calibration, the first test approval and understood communication. Building relationships with suppliers based on partnership cooperation has a direct impact on creating value whose final recipient is the customer (Fertsch, 2003).

This approach is not always applied, and suppliers are often treated with claims. This means the supplier is required to meet certain requirements, regardless of whether they can meet them. This happens most often when a price is the main criterion for choosing a given supplier. The result of such proceedings is an incorrect assessment of the production capacity of a given supplier caused by the lack of applying modern methods of supplier management. This can be seen in the examples of large companies which, occupying the position of a stronger part, put pressure on their suppliers in various areas of cooperation. A common practice is to transfer your costs to suppliers. This has negative effects on both sides, making it difficult to cooperate in the supply chain. A company that cares about working well with suppliers should deal with them as if they were an integral part of its own process. Cooperation on a partnership basis means not only the actual implementation of the purchasing process but also active participation in improving the supplier's processes (Ciesielski, 2009).

The methods of continuous development of suppliers have become an element verified during customer audits and audits of Quality Management Systems. The purpose of these audits is to detect and identify weaknesses in the supplier's management system (Hoy and Foley, 2015). The audit at the supplier is carried out after prior arrangement of its date with the supplier and after sending the schedule of audit questions. The questions are arranged based on the requirements that the supplier has previously declared to meet based on a self-assessment.

When purchasing responsibilities are scattered throughout the company, often the only determinants of choice are price and short negotiation time, whereas quality, reliability and other factors are not considered. There is often not enough time to conduct an audit, contracts for the purchase of goods or services are not signed. Meanwhile, the supplier should feel that their partner is a professional. If the company is not able to check the quality of the delivered products due to the lack of personnel or procedures, the audit should be carried out at the suppliers and their sub-suppliers, checking the quality of the components, raw materials, production and storage conditions and

control of the parameters of manufactured products. In the companies where quality systems are implemented, e.g., HACCP, ISO, a formalized evaluation of suppliers is required, which should include procedures related to the audit of suppliers and evaluation of their activities from the last audit (Połoz, 2010).

In Poland, following the requirements of the PN-EN ISO 9001:2015 standard on Quality Management Systems, enterprises should implement the process of managing their suppliers. Such a process must first guarantee effective supplier assessment and ensure the possibility of comparing it with other suppliers. These assumptions are implemented by defining important areas of cooperation with the supplier and measuring them with the use of effectiveness and efficiency indicators (Budzyński, 2016). Effectiveness indicators are indicators that define the degree of implementation of the action taken about the assumed goal being the main criterion. In the case of efficiency indicators, the ratio of the resources used to concern the achievement of the assumed goal is assessed (Chan, 2003). After each audit, a report is prepared along with the determination of non-compliance and the supplier is obliged to prepare a corrective action plan based on the received report.

4. Problems Resulting from Inappropriate Approach to Suppliers

Case study 1:

The production company C01 mainly deals with the processing of plastics by injection and metal processing. The company uses 50 injection moulding machines for processing plastics, and it has numerous machines and devices for metal processing, such as presses, welders, welding robots, milling machines, etc. The factory has two production halls with a total area of 5,500 m² and employs approximately 90 people. The company uses its own injection mould manufacturing technology based on a patent application, characterized by a reduced cycle time, lower energy consumption and production costs, as well as a longer mould life cycle.

In June 2020, a questionnaire survey was conducted on 50 employees of C01 to assess the efficiency of the procurement process in the enterprise. Among the areas that should be improved, the respondents pointed to the need to improve the flow of information, to control the stock level in the warehouse and to minimize waste associated with storage.

However, the most important areas influencing the efficient functioning of the company include the timely ordering of materials, improving the timeliness of deliveries, improving communication with suppliers, reducing the number of deliveries of damaged or defective goods, clarifying the accounting of material consumption in the SAP program and long-term planning. The Covid-19 pandemic, which is now a key problem for many companies, was also highlighted. For this reason, many companies closed or limited their activities, which resulted in the search for new solutions and very clearly influenced the effectiveness of the procurement process.

Case study 2:

The company C02 is in Great Britain and is a part of an international capital group dealing with the production of food for restaurants, producing semi-finished products for other enterprises and finished products sold under its own brand. It employs about 140 employees who produce fruit fillings for confectionery, jams, juices, dairy products, frozen and processed meat products on 7 production lines. The supply process in the surveyed company is based on long-term cooperation with suppliers from all over the world. An analysis of procurement processes carried out in 2018 showed that the variety and volume of supplies have sometimes been problematic. Delays in deliveries cause shifts in production, which transfers into customer dissatisfaction, while too fast delivery fills the warehouses and generates unnecessary costs.

The company's procurement and production planning program used so far turned out to be ineffective and inadequate employee training and limited access to the program caused chaos in the entire enterprise. There were often production downtimes due to lack of raw materials in the warehouse. The implementation of the integrated SAP IT system improved the company's operation in all departments. The supply process was also carried out using the SAP program, but the company did not have a quality document of the raw materials received. Deliveries were compiled in a table and analysed by employees in MS Excel. The company's documentation contained only basic information about the supplier but did not define the basic criteria for assessing effectiveness. The Ishikawa diagram was used as a method of finding the cause of poor product quality. An effective solution turned out to be an improvement in the form of a delivery quality card, filled in by the employee receiving the delivery. It takes an employee only a few minutes to fill in such a card, and the benefits related to the verification of deliveries and suppliers have been large. The company's documentation is therefore complete and reliable.

Case study 3:

The C03 company specializes in the production of pharmaceutical products, medical devices, dietary supplements, and confectionery. Thanks to the patented method of producing lozenges, C03 started cooperation with pharmaceutical companies such as GlaxoSmithKline, Alvogen, Dr Max. The company uses natural raw materials that are obtained from trusted and proven suppliers. The plant employs 215 employees in 2 production departments, which occupy 7,000 m² of space equipped with modern machinery for the production and packaging of finished products.

Unlike C02, C03 has implemented a well-described supplier qualification procedure, which begins even before the cooperation is established. For acceptance, suppliers are required to provide documents regarding specifications, safety data sheets, certificates of quality management systems, statements regarding GMO, TSE/BSE, and the content of allergens. Full supplier qualification is possible after 3 deliveries. It is carried out based on comparing the compliance of the delivered product with the

received documents, checking the quality, conditions, and compliance of deliveries. The completed questionnaire, the company's image and the quality system are also assessed. The next stage of verification is the result of a previously planned and conducted audit and suppliers are subject to systematic periodic assessment.

The customer satisfaction level is also tested periodically in the company. The assessed parameters include timeliness and quality of offer preparation, customer service, communication, knowledge and competences, timely deliveries, the flexibility of deliveries, complaint handling, as well as trust and willingness to continue cooperation. Research carried out in 2018 indicated that careful selection and subsequent monitoring of suppliers clearly affects the quality of the production process. It is also related to the implemented quality control systems and the idea of continuous improvement.

Case study 4:

The company C04 belongs to a German producer and deals with the production of frozen products, including ready meals, fish, vegetables, and chicken products. The company has 3 factories in Germany and sales offices in 7 European countries. The company employs about 460 employees in Poland, in the factory in Bydgoszcz, and is currently one of the pillars of the parent company's production, producing over 300 different products. Integrated supply chain management systems (SAP, ProStore) have been implemented in the factory, thus ensuring professional and comprehensive service for suppliers and customers.

The company cooperates with over 150 suppliers of packaging, fresh and dry products, vegetables, meat, and fish. In total, the company uses over 1043 assortments of various types of raw materials and packaging. The analysis of the supply management carried out in the enterprise showed that one of the most important problems faced by the supply departments is untimely deliveries. During the analysis, it was found that from 25% to 27% of deliveries were untimely. The collected data showed that most of them are early deliveries, which increase warehouse occupancy by up to 130%, making it difficult to release raw materials from the warehouse and delaying the work of other departments.

To solve the problems related to late deliveries, procurement staff were asked to give their opinion on what needs to be improved in the delivery management process to improve the on-time delivery rate. The most important were more accurate notifications of deliveries to contractors, sending forecasts to suppliers, improving communication with the shipping company and commissioning transport only to reliable carriers. The introduction of delivery advice by the company resulted in a partial improvement. To achieve a 10% decrease in the rate of untimely deliveries, the data on the frequency of late deliveries at suppliers with systematic late deliveries were analysed and the focus was on enforcing compliance with deadlines. Besides, it was proposed to limit the unloading of deliveries that arrive at the company ahead of

schedule, which was to result in compliance with the agreed deadlines by suppliers and shipping companies.

Case study 5:

The C05 company is a large company acting in the field of electronics industry located in Bydgoszcz. The company employs approximately 800 employees working in a two-shift system on several production lines. The company deals with the service of electronic devices consisting of their renewal. These devices include set-top boxes, remote controls, modems, and hard drives. In addition, the company is also a service provider for smartphones from companies such as Samsung and Apple.

All suppliers dealing with the refurbishment of housing elements are Polish companies whose plants are in the vicinity of Bydgoszcz. All suppliers involved in the refurbishment of housing components own plants located near Bydgoszcz. The contacts with them regarding the possibility of future cooperation were established mainly through the recommendation of employees and found on websites. Their selection and qualification were based mainly on the price criterion and the fact of having their own means of transport allowing for the delivery of components. None of the suppliers had an implemented Quality Management System, suppliers did not monitor their processes, and did not use any indicators that could help assess the efficiency and quality of their processes. Before starting cooperation with any of C05's suppliers, no feasibility analysis, quality audit or risk analysis of improper service performance was carried out. Such a procedure made it impossible to verify the repeatability of the process at the supplier and to evaluate its efficiency. One of the effects of inadequate supplier management was an extremely high lack of supply of components, which resulted in delays in order fulfilment and in delivering the final product to the customer.

The 100% entry inspection of all deliveries, introduced at C05 in 2015, revealed a high percentage of scrap rates. The company had 10 suppliers, with the 2 largest of them providing a total of 75% of components (BM 46%, AU 29%) while generating the highest scrap (BM 19%, AU 40%). The detected defects were analysed and their detailed classification using the Pareto-Lorenz diagram. The quality improvement plan was constructed based on the data from the developed Ishikawa diagram and the PDCA cycle, according to which the corrective actions were implemented and analysed. The identified defects largely resulted from the supply to the supplier by the sub-supplier of many components that could not be properly regenerated. There was also a poor flow of information from the management to the employees involved in the process – the employees were not informed about the problems reported by the customer concerning the delivery of non-conforming products or their quantities. The implemented corrective actions consisted of introducing daily, 15-minute informational meetings.

5. Conclusions

By using various analytical methods and quality improvement tools used by companies, such as the Pareto-Lorenz diagram, the Ishikawa diagram and the PDCA cycle, the companies have been able to improve the performance of suppliers in many respects while improving the quality of their components. As early as during the implementation phase of corrective actions, C05 company noticed a significant decrease in deficiencies in the delivered components and an improvement in the overall level of their quality. After 6 months, the number of defective products dropped from 25% to approximately 4%, which can be described as a success achieved thanks to mutual and open cooperation.

The number of suppliers has also been reduced from 10 to 7 and the number of orders has been more evenly distributed between them. The elimination of the weakest suppliers made it possible to reduce the risk of non-delivery of the ordered quantities of components and strengthened cooperation with suppliers who maintain the required quality level. This solution allowed to reduce the unit prices of some components by shifting their production to suppliers offering better terms. The reduction in the level of defectiveness translated into a greater yield of remanufactured components and a reduction in costs on both sides. Recipient plant processes have become more efficient because of eliminating delays due to high component rejection during entry control.

The need to improve information flow indicated in the company C01 had an impact on the timely ordering of materials and timely deliveries, and the improvement of communication with suppliers allowed for a reduction in the number of deliveries of damaged or defective goods. This has been confirmed by the incorrect functioning of the IT system in C02, which resulted in delays in the supply of raw materials. The analysis carried out in C03 showed that the implementation of subsequent certificates contributed to the improvement of the supply systems and quality control of the production process and became a key element in the development of the entire organization, which strengthened its market position.

The results of the study conducted at C04 also show that in supply management, an important aspect is the nature of relationships with other participants in the supply chain. By initiating bilateral visits to the production plants of 05's suppliers and the customer, an improvement in communication and cooperation between employees of both parties was observed. This had a positive effect on the comfort of the work of employees in cooperating organizations. The poor flow of information between management and employees has also improved thanks to regular information meetings.

The possibilities of optimizing procurement processes and improving supplier management are influenced by many factors, the consideration of which can contribute to better economic results, reduce delays, and eliminate errors related to

delivery. At the same time, it may contribute to reducing costs both among suppliers and recipients of inventories and positively affect the subsequent cooperation.

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