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Proposal for the development of a quality charter for the prevention of nonconformities: a case study in a plastic packaging company
Proposta de elaboração de uma Carta da Qualidade para prevenção de não conformidades: um estudo de caso em uma empresa do setor de embalagens plásticas
Propuesta de elaboración de una Carta de Calidad para prevenir no conformidades: estudio de caso en una empresa del sector de envases plásticos

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Abstract:
This study aims to propose the development of a Quality Charter as a tool to support the prevention of nonconformities in a company operating in the plastic packaging industry. The proposal was developed considering the importance of Nonconforming Products (NCP), customer complaints, and product returns indicators in monitoring quality performance. Regarding the methodology, this research is characterized as exploratory, applied in nature, and qualitative in approach, conducted through a case study as its technical procedure. The development of the proposal considered the characterization of quality indicators, the production processes involved, and the tools and documents used by the company, particularly Failure Mode and Effects Analysis (FMEA), the Control Plan, and Standard Operating Procedures (SOPs). As a result, a standardized Quality Charter model was developed, containing specific fields for product and department identification, presentation of priority defects, description of their impacts on the customer's production line, critical process points, and related indicators. A proposed procedure was also established for making the charter available at production machines and for its use by the Production and Quality teams. The proposal aims to facilitate access to information, strengthen communication between departments, and contribute to the early identification of potential deviations. Since the Quality Charter has not yet been implemented, its effects on the indicators could not be measured; therefore, the improvements presented are considered expected outcomes.

Keywords:
Quality management. Nonconformities. Failure prevention. Quality indicators. Quality Chart.

Resumo:
O presente trabalho tem como objetivo propor a elaboração de uma Carta da Qualidade como instrumento de apoio à prevenção de não conformidades em uma empresa do setor de embalagens plásticas. A proposta foi desenvolvida considerando a importância dos indicadores de Produtos Não Conformes (PNC), reclamações de clientes e devoluções para o acompanhamento do desempenho da qualidade. No que tange a metodologia adotada, tem-se que a pesquisa se caracteriza como exploratória, de natureza aplicada, de abordagem qualitativa, tendo sido conduzida por um estudo de caso como procedimento técnico. O desenvolvimento da proposta considerou a caracterização dos indicadores da qualidade, os

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

processos produtivos envolvidos e as ferramentas e os documentos utilizados pela empresa, especialmente a Análise de Modos e Efeitos de Falha (FMEA), o Plano de Controle e os Procedimentos Operacionais Padrão (POPs). Como resultado, foi estruturado um modelo padronizado de Carta da Qualidade, com campos específicos para identificação dos produtos e setores, apresentação dos defeitos prioritários, descrição dos impactos na linha de produção do cliente, pontos críticos do processo e indicadores relacionados. Também foi definido um procedimento proposto para sua disponibilização nas máquinas e utilização pelas equipes de Produção e Qualidade. A proposta busca facilitar o acesso às informações, fortalecer a comunicação entre as áreas e contribuir para a identificação antecipada de possíveis desvios. Como a carta ainda não foi implementada, seus efeitos sobre os indicadores não puderam ser mensurados, sendo apresentados como melhorias esperadas.

Palavras-chave:
Gestão da qualidade. Não conformidades. Prevenção de falhas. Indicadores da qualidade. Carta da Qualidade.

Resumen:
El objetivo de este trabajo es proponer una Carta de Calidad como instrumento de apoyo para prevenir no conformidades en una empresa del sector de envases plásticos. La propuesta considera la importancia de los indicadores de productos no conformes (PNC), reclamaciones de clientes y devoluciones para supervisar el desempeño de la calidad. La investigación es exploratoria, aplicada y cualitativa y se desarrolló como estudio de caso. La propuesta se basó en la caracterización de los indicadores, los procesos productivos y las herramientas y documentos de la empresa, en particular el análisis de modos y efectos de falla (AMEF), el plan de control y los procedimientos operativos estándar (POE). Se diseñó un modelo normalizado de Carta de Calidad con campos para identificar productos y sectores, presentar los defectos prioritarios, describir su impacto en la línea de producción del cliente e indicar los puntos críticos del proceso y los indicadores correspondientes. También se definió un procedimiento para disponer la carta en las máquinas y facilitar su uso por los equipos de Producción y Calidad. La propuesta busca facilitar el acceso a la información, fortalecer la comunicación entre las áreas y contribuir a identificar posibles desviaciones de forma temprana. Como la carta todavía no se ha implementado, no se pudieron medir sus efectos sobre los indicadores y las mejoras se presentan como resultados esperados.

Palabras clave:
Gestión de la calidad. No conformidades. Prevención de fallas. Indicadores de calidad. Carta de Calidad.

1 Introduction

Quality is vital to organizational performance, especially in plastic food packaging, where production failures can compromise product integrity, generate waste and affect customer satisfaction. According to Carpinetti (2016),

> "the understanding that has prevailed in recent decades and certainly represents the future trend is to define quality as customer satisfaction. This definition encompasses both fitness for use and conformity with product specifications."

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

Quality Assurance (QA) has a central role in this context. Nonconformities can lead to nonconforming products (NCP), returns and customer complaints. Monitoring these indicators helps identify and prevent major problems. Under NBR ISO 9001, when a nonconformity occurs, including one reported in a complaint, the organization must respond, examine its cause and take action to eliminate or reduce recurrence (ABNT, 2015).

In many production processes, information about nonconformities, recurring defects and their consequences is scattered among technical documents, including FMEA, control plans and standard operating procedures (SOPs). This can make it difficult for production staff to understand major problems, their effects and their relationship to NCP, returns and complaints. Lack of clear communication between Production and Quality may also delay detection of deviations and reduce the effectiveness of preventive action.

This study proposes a preventive document called the Quality Charter, based on the analysis of indicators for NCP, returns and complaints. It draws on existing company resources: Failure Mode and Effects Analysis (FMEA), the Control Plan and SOPs. FMEA systematically identifies and assesses potential product or process failures, prioritizing risks and identifying preventive actions (STAMATIS, 2003). The Control Plan consolidates checks, methods and responsibilities needed to control product and process quality (AIAG, 2008).

The Quality Charter complements the existing resources. It presents the most relevant information in a simplified form to improve communication between Production and Quality. Staff can then better understand defects, possible consequences in production and effects on NCP, complaints and returns.

The proposal seeks to bring technical information into daily operations so possible deviations can be detected and communicated early. The study's overall objective is to develop a charter that supports quality assurance and indicator monitoring, helping prevent and reduce nonconformities at the company.

2 Theoretical background

2.1 Quality assurance (QA)

Quality assurance (QA) is the part of quality management concerned with preventing failures and meeting requirements. Under ABNT NBR ISO 9000 (2015), QA provides confidence that quality requirements will be met, through practices and procedures that prevent problems and ensure conformity. Feigenbaum (1991) argues that quality should be integrated

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

across organizational stages and departments through development, maintenance and improvement. Quality thus extends beyond final product inspection.

ISO 9000 (ABNT NBR ISO 9000, 2015) adds that QA entails processes and procedures that maintain and improve quality throughout the product life cycle. Regular audits, inspections and systematic evaluations identify and mitigate risks before they affect the final product.

Employee involvement is important to QA. Philip Crosby (1979) emphasizes that "quality should be planned and not left to chance." Organizations should establish clear policies and procedures, making staff aware of their responsibilities for maintaining quality.

Deming (1986) argues that "quality should be a shared responsibility," requiring participation from all employees at every stage. Collaboration improves understanding and promotes engagement and initiative. When employees take ownership of the final product, especially in areas such as food packaging, they actively protect consumer safety and quality. This reduces risks and builds trust in the brand.

QA also requires a quality culture. Senge (1990) argues that "learning organizations" incorporate quality into processes and practices, fostering employee commitment and better operational results. QA thus needs to be integrated across departments.

QA is a strategic approach that involves all employees at every stage and is sustained by a quality culture. It helps ensure that goods and services meet desired standards and applicable laws and regulations, preventing failures and supporting continuous improvement. This matters for competitiveness, especially where consumer safety is a priority.

2.2 Quality control (QC)

Quality control (QC) is a central part of QA. It monitors and evaluates production so products meet established standards. Juran (1992) defines it as "the process of measuring and monitoring the quality of products and services, ensuring they meet specifications."

In critical sectors such as food packaging, QC must run from raw material selection through final delivery. Deming (1986) emphasizes the integration of effective control into production. Regular inspections at different stages enable immediate identification and correction of deviations.

Statistical process control (SPC) helps monitor variation and detect deviations before they become nonconformities. Montgomery (2009) notes that statistical methods reveal trends that can affect quality and help prevent failure. FMEA, the Ishikawa diagram, the Control Plan

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

and root cause analysis (RCA) also strengthen prevention by identifying risks, investigating causes and reducing failures before they reach the customer.

QC also requires regulatory compliance. Rules from agencies such as ANVISA ensure products meet safety and quality requirements, protecting consumers and company reputation. Monitoring NCP, returns and complaints helps identify key problems, track performance and guide preventive and improvement actions.

QC is thus a strategic approach to meeting quality and safety standards, preventing failure and promoting the continuous improvement needed for competitiveness.

2.3 Quality assurance indicators

QA indicators are essential for monitoring production performance and verifying whether products meet organizational, regulatory and customer requirements. They turn operational data into measurable information, supporting decisions about deviations, action effectiveness and continuous improvement. Juran (1992) emphasizes that measurement makes it possible to monitor performance and verify progress against objectives.

In plastic food packaging, these indicators are strategically important because packaging quality affects the protection, preservation and safety of its contents. Metrics support process stability, reduced waste, prevention of nonconformities and reliable products.

This study examines three indicators the company considers strategic: customer returns, nonconforming products (NCP) and customer complaints. They reflect different aspects of QA performance, including internal efficiency and outcomes experienced by customers.

Returns occur when customers send back products that fail to meet specifications, for instance for dimensional, printing or sealing defects or other nonconformities identified after delivery. Besides replacement, rework and reverse logistics costs, returns show the effect on customer perception and help identify recurrent problems and investigate their causes.

The NCP indicator covers material identified internally as failing to meet standards before dispatch. It helps evaluate inspection effectiveness, process stability and the need for interventions involving equipment, materials, methods or labor. Fewer nonconforming products mean less waste, higher productivity and a more reliable quality management system.

Complaints represent an external view of product quality. Unlike internally detected failures, they reveal problems reaching the customer and can point to improvement

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

opportunities missed during production. Analysis identifies the nonconformities that most affect satisfaction and guides corrective and preventive action.

Joint examination of returns, NCP and complaints provides a broad view of QA performance across internal, operational and external dimensions. Carpinetti (2012) notes that reliable indicators support decisions, process control, fewer nonconformities and continuous improvement. Systematic monitoring strengthens quality management and helps implement preventive practices for customer satisfaction and competitiveness.

2.4 Quality tools

Quality tools organize, analyze and interpret production information. They help identify issues, analyze causes and make data-based decisions, supporting continuous improvement and prevention (CARPINETTI, 2012).

Tracking NCP, returns and complaints helps QA identify major deviations and steer corrective and preventive actions. Analysis reveals recurring issues and impacts on product quality and supports decisions to reduce failures and waste (CARPINETTI, 2012).

According to Carpinetti (2012, pp. 75–77), continuous product and process improvement involves identifying priority problems, observing and collecting data, analyzing root causes, planning and implementing actions, and checking results. Quality tools convert operational data into useful management information, supporting objective decisions and reducing reliance on individual experience alone.

Common tools include check sheets, Pareto charts, cause-and-effect diagrams and control charts. They help organize data, prioritize problems and monitor process variation (ISHIKAWA, 1985; MONTGOMERY, 2009).

Even simplified use of quality tools can support performance monitoring and identify improvements. In plastic food packaging this helps connect nonconformities with potential causes, supporting prevention and product reliability.

2.5 Preventive tools and standardization in quality assurance

Alongside tools that examine existing problems, QA uses preventive methods. They reduce the likelihood of nonconformity by anticipating risks, standardizing processes and setting controls for product conformity during production.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

Preventive practices allow organizations to act before problems arise and reduce waste, rework, returns and associated costs. Actions can therefore prioritize process stability and continuous improvement, strengthening the Quality Management System.

2.5.1 Failure Mode and Effects Analysis (FMEA)

FMEA identifies potential product or process failures before they occur. It evaluates each stage and its possible failure modes, effects and causes to prioritize risks requiring attention.

FMEA supports actions that reduce the likelihood of failure or improve its detection. It helps make processes more reliable and reduces nonconformities in production.

2.5.2 Control Plan

The Control Plan defines how critical product or process characteristics are monitored during manufacturing. It specifies parameters, inspection methods, check frequencies and responsible staff, increasing standardization.

The Control Plan guides production monitoring and complements previous risk analyses by ensuring continued oversight of critical points. This allows faster detection and helps keep nonconforming products from reaching customers.

2.5.3 Standard operating procedures (SOPs)

SOPs document how operations should be performed in detail. Their main aim is consistent execution by all employees, reducing variation from individual interpretations or lack of standardization.

SOPs help train new employees, share technical knowledge and make operations repeatable, reducing operational errors and increasing reliability.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

3 Method

3.1 Research design

Scientific research can be classified by objectives, nature, approach and technical procedures. These categories establish the methodological framework and route to meeting the objectives.

The objectives are exploratory: the study investigates the occurrence and prevention of production nonconformities in the company's actual setting (YIN, 2018). Gil (2019) describes exploratory studies as suitable where greater familiarity with a topic is needed.

This is applied research aimed at a concrete problem: nonconformities that result in returns, NCP and complaints. Silva and Menezes (2005) characterize applied research as practical use of knowledge for real situations and process improvement.

The approach is qualitative. The study seeks to understand production and the value of quality information for prevention. It organizes and uses the indicators to develop the Quality Charter rather than analyzing them statistically. Flick (2013) explains that qualitative research interprets phenomena within their context and examines relationships among aspects.

A case study allows in-depth examination of a specific setting: the proposed implementation of a Quality Charter to prevent nonconformities. Gil (2019) notes that case studies examine contemporary phenomena in real contexts, particularly where boundaries between them are unclear.

3.2 Methodological procedures

Quality tools support analysis of returns, NCP and complaints. They organize information, show patterns and major causes and inform the Quality Charter proposal, a preventive tool to reduce failures and strengthen QA at the company. The methodology is described below.

3.2.1 Data collection

Internal documentary sources related to quality indicators were used. Three sources were considered:

a. customer return reports with reason, product, lot, date and affected customer;

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

b. NCP records identifying the defect, the stage of detection (thermoforming, decoration or injection molding) and material disposition (rework, scrap, etc.);
c. complaint spreadsheets and recording systems with the occurrence, severity classification and actions taken.

Data covered the company's last three fiscal years to reveal patterns and changes in indicators. Collection was carried out with Quality and Production, which provide and maintain the monitoring records.

3.2.2 Data processing

Data were organized in spreadsheets to consolidate returns, NCP and complaints. Processing included:

a. standardizing descriptions by grouping equivalent terms, for example, “seal failure,” “open seal” and “incomplete seal” under one category;
b. classifying occurrences by defect type, product, process (thermoforming, decoration or injection molding) and customer when applicable;
c. arranging information for the charter, highlighting the three main defects for each product in the department where the nonconformity was identified.

Processing converted raw data into structured information and facilitated identification of critical points and prioritization of preventive actions.

Although the charter uses a standard model, information will be specific to the product and production department. Nonconformities will be analyzed at the stage where they were identified and each defect will be handled according to its features. This ensures the charter reflects the process in which the problem was identified.

3.2.3 Analysis method

Data were analyzed qualitatively and descriptively, with basic quality tools to identify the most frequent problems and their effects on indicators.

The results were then examined for probable causes and their relation to returns, NCP and complaints. The analysis guided selection of charter defects, prioritizing frequency and perceived customer impact.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

A proposal to implement a production Quality Charter was prepared to standardize recording and escalation of nonconformities. Managers of the relevant departments reviewed it in a meeting to assess fit with operations and potential to improve communication.

Expected benefits were assessed prospectively by comparing the preimplementation situation with potential improvements after adoption. The analysis considered possible reductions in returns, NCP and complaints and better communication between Production and Quality. It examined how the charter could accelerate identification, recording and handling of causes and improve quality indicators.

4 Data analysis

4.1 Quality indicators

The company develops and manufactures packaging for food, beverages, pharmaceuticals, cleaning products and household goods. It is a multinational with operations in more than 43 countries and approximately 44,000 employees worldwide. Its plastic packaging solutions serve different markets and meet requirements for protection, preservation, presentation and safety of the contents.

Given the volume and variety of products, monitoring is essential to assess performance, identify failures and guide improvements. The three QA indicators are NCP, customer complaints and returns. They provide different perspectives: NCP reveals internally detected failures, complaints identify problems perceived by customers, and returns show more serious consequences. Together they capture impacts on internal operations and customer satisfaction.

4.1.1 Nonconforming products (NCP)

The NCP indicator covers products failing to meet company or customer requirements. Defects may occur during thermoforming, injection molding or decoration, and include dimensional variations, appearance or finishing problems and other departures from packaging specifications.

At the studied site, visual inspection during or after production identifies nonconforming products. Quality identifies and holds the material so it cannot be released before a disposition decision. Depending on the assessment, products may be reworked, reassessed, reused or discarded.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

NCP affects raw material use, machine time, labor, rework, productivity and manufacturing costs. Larger quantities held in stock typically entail greater storage, handling and disposition costs.

Internal detection indicates that quality controls caught a failure before dispatch, so NCP does not necessarily represent poor performance of the quality system. Frequent NCP still calls for investigating and reducing its causes. Detection is preferable to releasing unsuitable goods. The indicator should be considered with complaints and returns to assess whether internal containment is effective.

FMEA helps identify common failure modes and effects. The Control Plan is used to check monitoring of critical parameters. SOPs are consulted to verify that procedures were followed and revised as needed to incorporate improvements identified during investigation.

Figure 1 shows how NCP is handled, from identification to selection of corrective and preventive actions.

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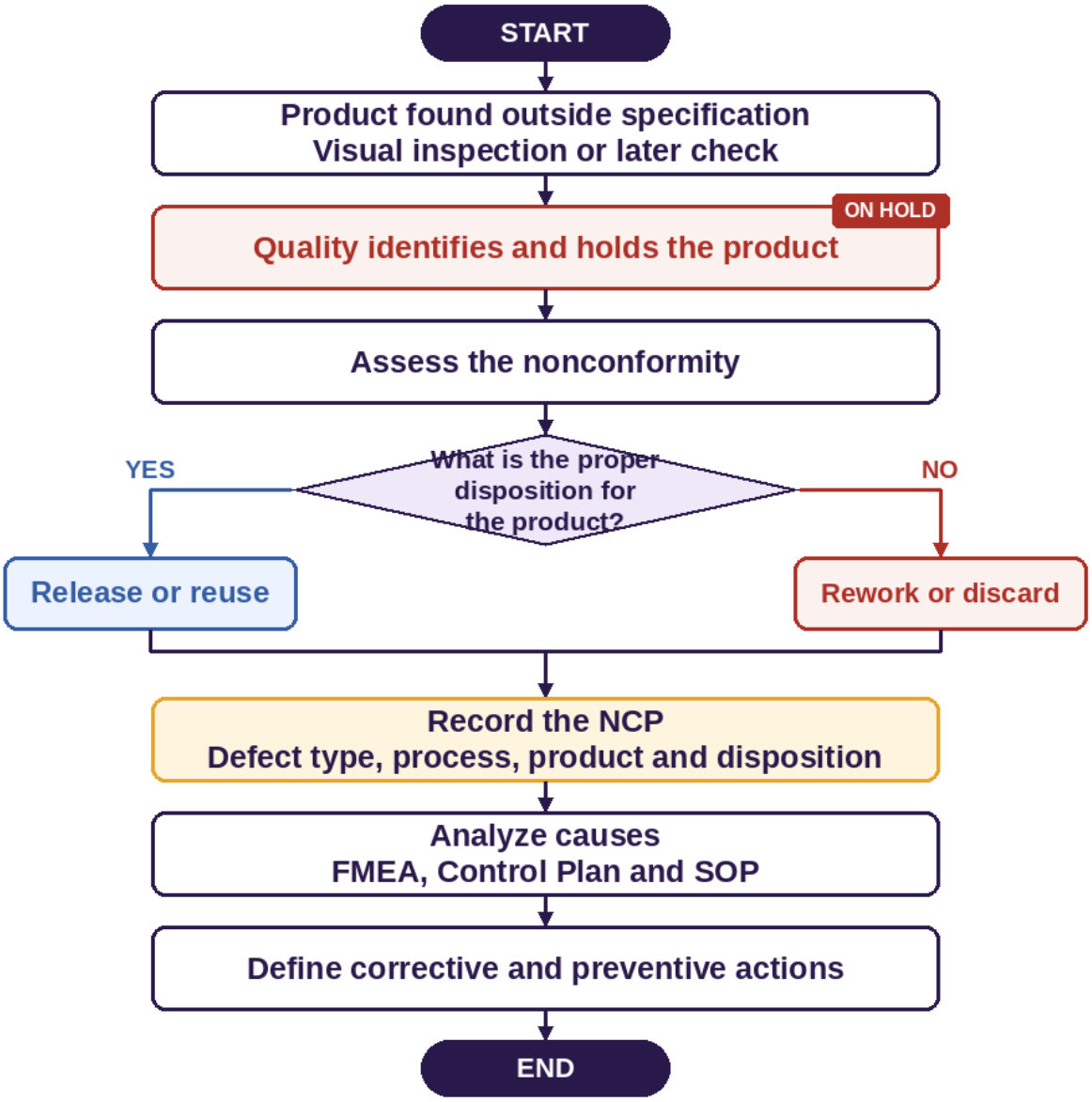
Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

Figure 1 – Flowchart for handling nonconforming products (NCP)



Source: Author (2026).

4.1.2 Customer complaints

Customer complaints concern nonconformities discovered after customers receive or use products. The indicator captures external perceptions and reveals failures that production and inspection did not detect or contain.

When a customer reports a problem, QA records the complaint, examines the information and manages the response. The review may cover product, lot, defect, quantity and the conditions in which the failure was observed.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

The company should respond within 24 hours to acknowledge the complaint and explain the steps it will take. A fuller investigation within seven days identifies the stage of failure, contributing factors and measures to prevent recurrence.

Investigation may include production records, inspection results, product samples, equipment settings, raw material conditions and similar previous events. These inform corrective and, where necessary, preventive measures. Complaints thus count incidents and identify opportunities to improve processes and quality controls.

Complaints are significant because a nonconforming product passed internal controls and reached the customer. Apart from investigation and service costs, repeated complaints may erode trust and damage the company's reputation. Reducing complaints requires correcting the individual issue and addressing root causes.

Figure 2 shows complaint handling from recording and initial response through cause investigation and corrective and preventive action.

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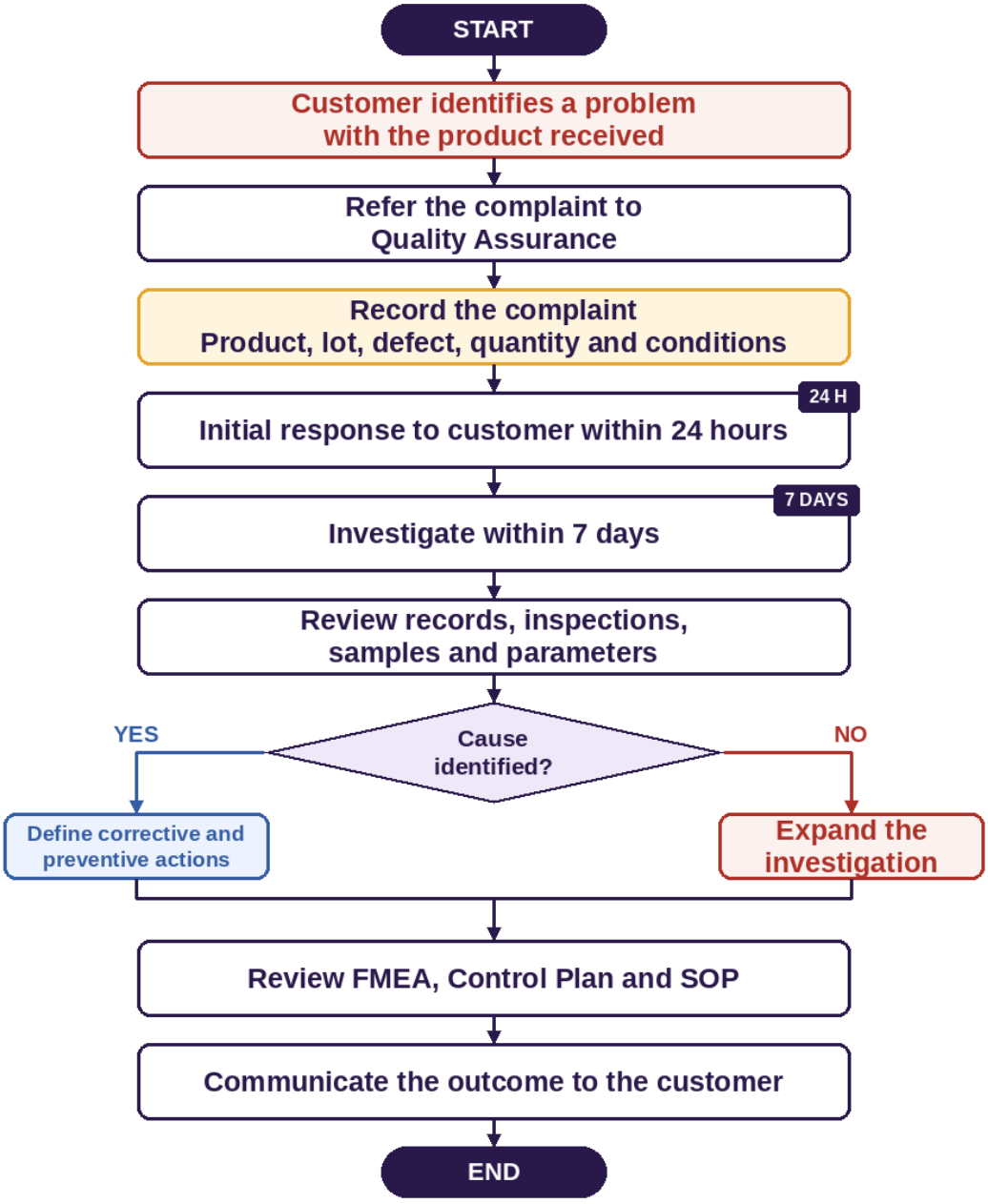
Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

Figure 2 – Flowchart for handling customer complaints



Source: Author (2026).

4.1.3 Product returns

Returns occur when the customer sends products back because of a serious defect or inability to use the material. This generally concerns problems affecting specification compliance, packaging performance or continuity of customer operations.

Returns add direct reverse logistics and transportation costs. Returned goods are reassessed to establish the extent of the problem, whether they can be reused and appropriate

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

disposition. In many cases conforming replacements must be produced and sent within the customer's deadline.

Beyond return freight, costs may include sorting, storage, technical assessment, disposal, rework and manufacturing replacements. Returns may disrupt or complicate the customer's operations, increasing the seriousness of the event and affecting business relations.

Returns therefore have greater consequences than NCP identified internally. Internally detected NCP is held before dispatch, while returns show that a nonconforming product was manufactured, released and delivered. Monitoring returns helps assess internal controls, response capability and external failure costs.

Figure 3 shows how returns are handled, from receipt of the customer's goods to cause analysis and preventive action.

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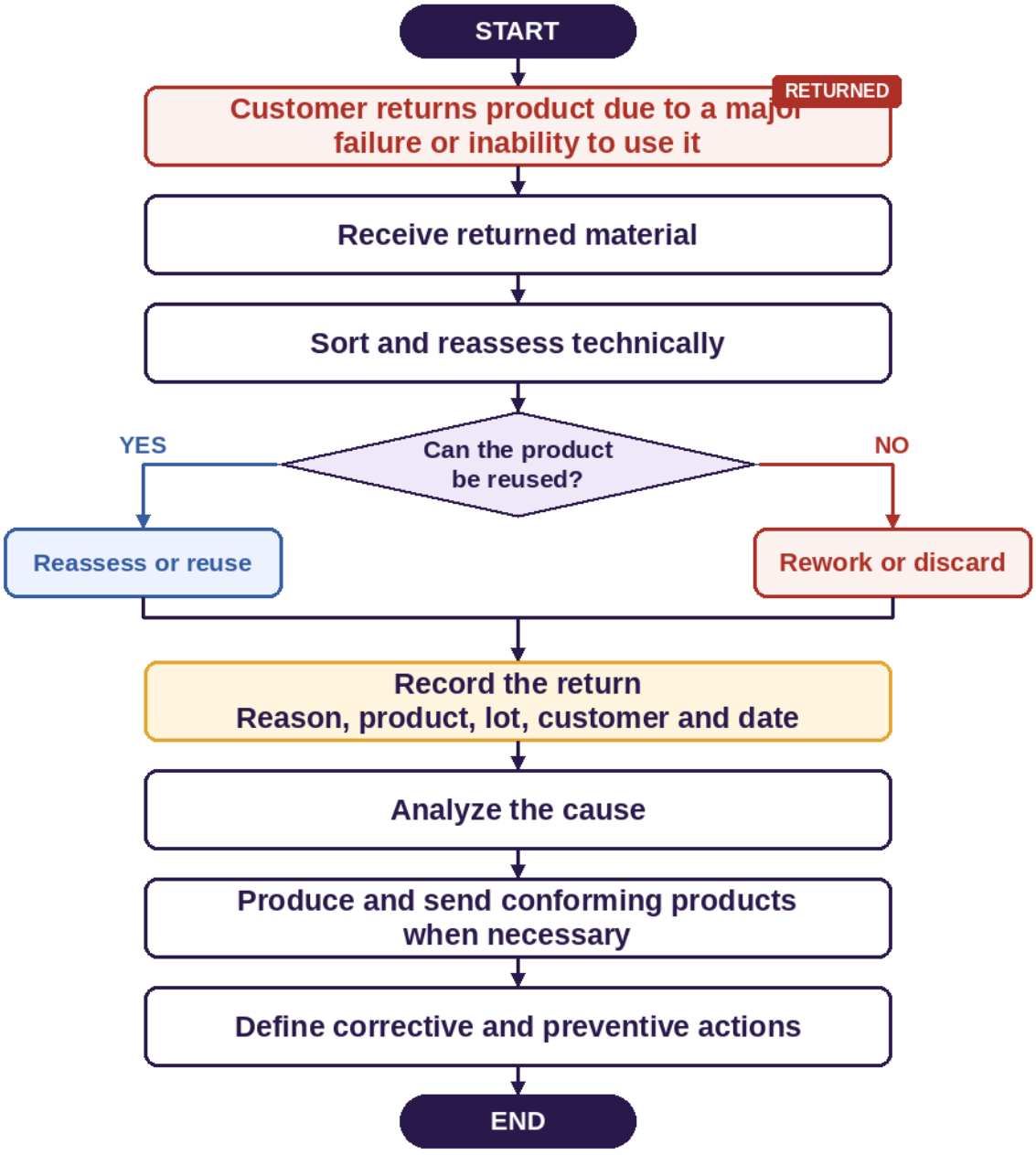
Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

Figure 3 – Flowchart for handling product returns



Source: Author (2026).

4.1.4 Relationship between indicators

These three indicators are linked and can represent different stages of one problem. NCP is detected in the factory, a complaint occurs when a customer notices a nonconformity, and a return is a more serious consequence requiring the material to be replaced or otherwise handled.

Joint analysis gives a broader view of quality performance. An increase in NCP can reflect process instability or show that internal controls are detecting problems before dispatch. Rising complaints and returns may indicate problems with detection, containment or release.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

A reduction in an isolated indicator does not establish improvement. For example, lower internal NCP may reflect a better process or more nonconforming goods sent to customers. Sound interpretation requires examining the data together, investigating causes and assessing company actions.

The three indicators provide complementary information. NCP shows internal failures, complaints show customer perceptions and returns reveal operational and financial impacts. Integrated monitoring supports preventive priorities and development of the proposed Quality Charter.

4.2 Development of the charter

The Quality Charter was proposed after analyzing NCP, complaints and returns and considering the production processes and quality documents already used in the company.

A standardized model was developed to bring together information on key defects, impacts at the customer and the critical points production staff should monitor at each relevant stage.

Figure 4 shows the model and its fields for organizing and communicating the information to the departments involved.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

Figure 4 – Quality Charter template



Source: Author (2026).

The charter begins with identification fields covering the preparation date, responsible area, item code and material description. These identify the product and context to which the information applies.

Three fields identify priority defects as Top 1, Top 2 and Top 3. The classification should be based on the available records for each product and production area, so the most important issues are highlighted without prejudging the rankings.

A field describes impacts of defects on the customer's production line and includes an image showing the consequence. It illustrates how a nonconformity can affect the customer's operations and why defects should be identified and prevented during production, as discussed in Sections 2.1 and 2.5.

The charter also draws on existing company resources, especially FMEA, the Control Plan and SOPs. These provide evidence on critical process points, current checks and how activities are performed.

FMEA identifies failure modes, effects and causes and helps explain risks in production. The Control Plan specifies monitored characteristics and controls for conformity. SOPs guide consistent performance of tasks. The charter summarizes these resources under critical process points and tests, giving operators quick access to what requires attention.

Table 1 shows how charter fields correspond to the records used to complete them.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

Table 1 – Quality Charter fields and their information sources

Charter field	**Information source**
Product identification	Product master record
Top 1, Top 2 and Top 3	NCP, complaint and return records
Description of defects	Internal records and Quality analyses
Impact on the customer's production line	Complaint and return records
Critical process points	FMEA (RPN) and Control Plan
Tests and checks	Control Plan and SOPs
KPIs	NCP, complaint and return controls

Source: Author (2026).

Table 2 provides an illustrative FMEA of failure modes, potential effects and causes, controls and risk assessment. Hypothetical severity, occurrence and detection scores illustrate calculation of the Risk Priority Number (RPN). These values are illustrative only and do not represent company data or assessments from internal documents.

Table 2 – Illustrative FMEA (RPN)

Department	**Illustrative failure mode**	**Possible effect**	**Possible cause**	**Control**	**S**	**O**	**D**	**RPN**
Thermoforming	Incomplete forming	Incorrect package geometry	Variation in forming conditions	Visual inspection and verification of characteristics	7	4	4	112
Decoration	Printing defect or absence of printing	Incomplete visual information	Improper printing conditions or setup	Visual inspection and comparison with the approved standard	7	3	5	105
Injection molding	Incomplete filling	Part with a missing section	Unsuitable processing conditions	Visual inspection and verification of part characteristics	6	5	3	90

Source: Author (2026).

RPN is the product of severity, occurrence and detection scores. It prioritizes which failure modes warrant attention, with higher scores indicating higher priority. Hypothetical scores illustrate how the method identifies critical production points. Actual use requires scores defined from the company's real criteria and records.

SOPs also help identify tasks and precautions required during operation. Table 3 uses generic examples from the departments analyzed to illustrate how SOPs inform the charter's points of attention and checks. It does not reproduce the company's internal procedures.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

Table 3 – Illustrative SOP-based operating guidance

Department	**Activity**	**Illustrative operating guidance**	**Check**
Thermoforming	Monitor forming	Monitor forming conditions against product parameters	Visually check forming and specified characteristics
Decoration	Monitor printing	Check print conditions and maintain the approved standard	Compare the print with the approved reference
Injection molding	Monitor molding	Monitor the process against the conditions specified for the product	Check molding and the specified part characteristics

Source: Author (2026).

The charter presents rejection, complaint and return indicators. Rejections are measured in kilograms of rejected material. Complaints are tracked by number of customer reports and returns by value in Brazilian reais (R$). These indicators connect the depicted defects to the company's quality measures and illustrate the importance of recorded incidents.

The charter complements existing controls and documents by consolidating major defects, customer impacts and critical manufacturing points. It improves production staff access to information, builds awareness and supports early detection. It summarizes key points of FMEA, the Control Plan and SOPs in a quick reference.

4.3 Procedure for use

After preparation and validation, the charter is made available at the machine manufacturing the product, in the department where the nonconformity was identified. It has a standard format but product- and process-specific content describing the main defects found at that production stage.

Keeping the charter at the point of production makes it easier for operators to consult during daily work and gives immediate access to defects, characteristics, possible causes and customer impacts.

A Quality intern may complete the charter from the information previously collected. Quality Control and Quality Assurance analysts then review it for consistency and fit with actual production. It will be displayed at the relevant machines after approval. The visual guide thus brings information collected by Quality into the operator's routine.

The charter at the machine also builds awareness of early detection. Operators can compare observed defects with known ones, understand the risks and determine whether to report the occurrence to Quality.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

This practice seeks to keep deviations from going unnoticed and generating more nonconforming products. Quality is a responsibility shared by all participants in production, as discussed in Section 2.1.

The following procedure is proposed for daily use:

a. Consult the charter at the machine when a defect similar to those listed is found or suspected.
b. Immediately report quality issues to Quality, providing the product, machine and shift and, when possible, a description of the defect.
c. The Quality inspector goes to the machine to assess the incident, check product conformity and identify measures needed to control the deviation.
d. Identify and contain suspect material during assessment so it cannot continue through production or be released to later stages until review is complete.
e. Continue production only after assessment and confirmation that the problem has been mitigated under company procedures.
f. Record the incident using current company systems to track the defect, the process and actions taken.
g. Whenever a new and significant nonconformity is identified, Quality reviews the charter and updates it as needed to reflect the process.

The procedure seeks faster responses to problems so production does not continue under unsuitable conditions and produce more nonconforming material.

Cooperation between the operator and Quality inspector is essential for identifying and containing deviations. Internal detection keeps unsuitable goods from reaching the customer. Prevention and control can improve process performance and customer satisfaction (Sections 2.2 and 2.3).

4.4 Assessment of the proposal

The Quality Charter was proposed to standardize Production–Quality communication and prevent recurrence of nonconformities seen through NCP, customer complaints and returns.

Data analysis identified the most frequent defects, the most affected processes and the situations with greatest customer impact, guiding content selection as discussed in Section 2.3.

The charter is preventive because it makes essential information about critical nonconformities simple and accessible. Compared with detailed FMEA, Control Plan and SOP

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

documents, it highlights points of attention in day-to-day production and emphasizes prevention.

Implementation would give the departments standardized information on recurring defects, possible causes, effects and controls. This is expected to speed detection, improve recording and facilitate transfer of information between Production and Quality.

The proposal also aims to reinforce shared responsibility for quality, since preventing failures requires participation across process stages (Section 2.1).

As described in Section 3.2.3, the proposal was discussed with managers to assess fit with operations and potential improvements in communication. They reviewed content, clarity, usability in production and compatibility with existing company controls and procedures.

This consultation examined whether the charter could be incorporated without duplicate records or operational difficulties.

The proposal was assessed prospectively by comparing preimplementation conditions with expected improvements after adoption. Company managers supported its structure and purpose and recognized its relevance for preventing production nonconformities.

Because adoption has not occurred, there is no evidence that indicators have fallen. The charter is expected to improve identification of priority defects, draw attention to critical points and help prevent recurrence.

For NCP, the charter is expected to reduce nonconforming products, especially those linked to the most common faults. Providing wider access to critical points and preventive guidance could speed identification, so material can be held and handled before dispatch.

The expected results include less rework, waste and material for disposal and greater process stability (Sections 2.2 and 2.3).

For customer complaints, prevention should reduce the likelihood of sending nonconforming products. Standardized information may also make investigations easier by allowing comparisons with previously mapped defects and guiding faster corrective and preventive actions (Section 2.3).

Returns are expected to fall because they are the most serious consequence of quality failures. Fewer nonconforming products and complaints, alongside better communication, may reduce reverse logistics, replacements, sorting, rework and disposal.

The charter may improve quality indicators and reduce costs of external failures (Section 2.3).

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

After implementation, NCP, complaint and return records can be reviewed periodically for improvement. This should include total events, relative defect frequencies, affected processes and products or customers involved.

Pre- and postimplementation comparison can test whether nonconformities have fallen, whether priority defects recur and whether preventive actions worked.

Qualitative indicators can also gauge effectiveness, including staff adherence, quality of incident records, speed of communication and departmental involvement in cause analysis.

An integrated assessment is needed because a reduction in one indicator does not by itself show that the quality system improved. For instance, it is important to determine whether lower internal NCP reflects process improvement or release of nonconforming products (Section 4.1.4).

Effects on NCP, complaints and returns should be measured after adoption. Preparing a document alone does not demonstrate that these indicators have fallen.

Continuous monitoring, periodic charter review and updates as needed can support a preventive quality culture and continuous improvement (Sections 2.1 and 2.5).

Figure 5 – Expected improvements after implementing the Quality Charter

Indicator	Expected improvement	How to identify it
NCP	Fewer products outside specification, less rework and waste	Compare the quantity and type of NCP before and after implementation
Complaints	Fewer failures reaching customers and faster investigation	Track complaint count, type and recurrence
Returns	Fewer returns, lower reverse logistics and replacement costs	Monitor return quantities, reasons and affected customers
Communication	More standardized and faster recording and escalation of nonconformities	Review records, response times and staff adherence to the charter

Source: Author (2026).

5 Conclusion

This study aimed to propose a Quality Charter for preventing nonconformities in a plastic packaging company, focusing on NCP, customer complaints and returns.

After examining the indicators, production processes and quality tools and documents, the study developed a standardized charter covering identification, priority defects, consequences for the customer, critical process points and checks.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

The charter consolidates essential information from FMEA, the Control Plan and SOPs in a quick reference so technical information from Quality is accessible during production.

The proposal also considered placing the charter on the machines where products are manufactured, making it easier for operators to consult and recognize known deviations, communicate issues and support investigation by Quality.

The goal of proposing a Quality Charter was achieved through a document model and procedure. Improvement percentages could not be presented because the charter had not been implemented. Managers reviewed it, agreed with its structure and purpose and expressed an intention to implement it.

Future work should implement the charter in the relevant departments and monitor indicators periodically. Comparing results before and after implementation can show whether the charter prevents nonconformities and improves Production–Quality communication.

The charter complements existing tools and documents by simplifying information relevant to production. Its use may strengthen prevention and shared responsibility for quality, supporting process improvement and customer requirements.

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Ano VII, v.1 2026 | submissão: 02/11/2026 | aceito: 09/11/2026 | publicação: 14/11/2026

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