

The Role of Engineering Change Notice (ECN) Management in Enhancing Customer Relationships and Business Retention: A Study with Reference to Spark Minda Corporation Ltd

Janani M

II MBA, Department of Management Studies, Saveetha Engineering College

ABSTRACT

Engineering Change Notice (ECN) management is a critical process in the auto manufacturing industry where redesign and production processes often need to be altered or updated in accordance with customer demands for improved product quality. ECN management ensures that engineering changes will be documented, evaluated and implemented on various business units within the company. The objective of this research is to delve into ECN management in relation to customer relationships and business retention within the context of manufacturing organizations. The study examines the different ECN management techniques employed during the internship in Spark Minda Corporation Ltd. This study constitutes a descriptive research design based on both primary data and secondary sources of data. Primary data were obtained from observation and interviews conducted by the internship of employees of the engineering change process and secondary data were gathered from scientific publications and industrial reports. An effective ECN management helps inter-departmental coordination across engineering, supply chain, process engineering, product planning committee, quality department, costing, and marketing departments. An efficient engineering change control helps to maintain product quality, run efficiently and delight the customers. Accordingly, the ECN control structure affects customer relations and long-term business retention in the automotive manufacturing industry.

Keywords: Engineering Change Notice (ECN), Customer Relationship Management, Business Retention, Automotive Manufacturing, Change Management.

INTRODUCTION

Automotive components manufacturing sectors have a strong demand for efficiency. In terms of technology related industry practices in which firms must continuously optimize the products and production processes they offer and continuously improve the product or meet consumers' needs. Changes such as new product development to develop because of innovations, technical problems and customer input are unavoidable. Engineering Change Notice (ECN) management is a formal structured procedure for the organisation in relation to control and control application of design and process changes. ECN ensures that any changes in design and process taken in engineering are captured, checked, approved and executed, and are without the requirement of affecting the quality of the product or efficiency of the process. ECN handling in manufacturing companies like Spark Minda Corporation Ltd can be divided

between engineering, supply chain management, process engineering, product planning committee, quality, costing and marketing departments or department heads. From a technological, operational and commercial impact point of view, each department analyses the potential impact of the engineering change being proposed. ECN management is a major contributor to customer relationship management from a marketing perspective. Successful implementation of engineering improvements enables products to deliver to customer specifications and quality standards. It is important as it rooted customer confidence, building long-term relationships between companies. That means the management of ECN is an actual need at the front end to ensure that business is kept running, while increasing efficiency from the operation point.

PROBLEM STATEMENT

Changes in engineering practice are a feature found in such manufacturing firms, as they develop technologically and respond to technology adoption, and market needs and consumer demand and need for better products. Well-managed engineering modifications will avoid production bottlenecks, quality issues, and inter-departmental communication breakdowns without coordination. These issues can result in decreased customer satisfaction and long-term detrimental impacts on business relationships due to poor engineering change management. This is why companies require formal ECN management frameworks for those engineering changes to be made without deteriorating the production performance or consumer confidence.

RESEARCH GAP

Although research studies have dealt with engineering and engineering change management in the manufacturing industries, few studies have focused on the relationship between ECN and customer relationship management. Specifically, there has been less exploration by the research community for ECN and CCRM relationship; in particular, there is very limited empirical research into the relationship between the ECN and customer management and customer satisfaction and the company's business continuity of manufacturing companies in automotive components manufacturing organizations. This study aims to address this research gap by examining ECN management practices and their influence on customer relationships and business sustainability, by discussing and considering ECN practices and the effects of ECN management at Spark Minda Corporation Ltd on the success or otherwise of the project and on the business relationship and business sustainability.

OBJECTIVES OF THE STUDY

- To study the Engineering Change Notice (ECN) management process in Spark Minda Corporation Ltd.
- To analyse the role of ECN management in improving product quality and operational efficiency.
- To examine the relationship between ECN management and customer satisfaction.
- To evaluate how ECN management contributes to business retention.

LITERATURE REVIEW

Many other fields have explored engineering change management as it concerns the quality of products and efficiency of production. Clarkson and Eckert (2005) argued that engineering updates are a must in

the ongoing development of product and management of engineering modifications is crucial for ensuring that disruption of manufacturing processes do not occur.

Jarratt et al. (2011) underlined that structured engineering change management systems, which are in place to aid communication between different lines of work and to assure systematic implementation of product modifications, were more productive. Good ECN processes allow companies to follow design changes and ensure traceability throughout the product life cycle.

Kotler and Keller (2017) underscore that maintaining product quality and meeting consumer needs and the ability to change their behaviours, in reaction to customer demand as well as the right product quality will build up a solid rapport. As we know, organizations that react efficiently to customer requirements, are the ones that are most likely to retain customers and grow for a long time.

In a similar vein, Ulrich and Eppinger (2015) noted that product development systems must adopt structured change management practices that will facilitate the smooth execution of engineering changes. So, Engineering change management ensures organizational efficiency and is responsible for the success of the employees as well as the customers.

CONCEPTUAL FRAMEWORK OF ECN MANAGEMENT



Figure 1: Conceptual Framework of Engineering Change Notice (ECN) Management Process

Conceptual Framework of Engineering Change Notice (ECN) Management Process figure1 reveals an organized way of workflow for ECN and ECN management in place within a company.

During the internship observation experience at Spark Minda Corporation Ltd, it has been observed that the ECN process has three main stages-initial stage, commercial stage, and approval stage.

Initially, the Engineering change request is evaluated by the Engineering Department, Supply Chain Management (SCM), Process Engineering (PE), Product Planning Committee (PPC), and the Quality Department

In the commercial stage, the Quality Department, Costing Department, and Marketing Department determine the financial and customer factors relating to the proposed engineering change.

At the time of approval, the Engineering Change Notice gets official approval and deployed in the production system as needed. Effective implementation of ECN results in the betterment of the quality of the product, customer satisfaction and long run business continuity.

RESEARCH METHODOLOGY

Research Design: Therefore, the research design is descriptive and focuses on the impact of ECN management on improving customer relations and on achieving business retention.

Data Sources:

Primary Data: Data were collected through interviewing employees through the ECN process and through observation during an internship.

Secondary Data: Thereafter, the secondary data were obtained from academic publications, the academic review and the industrial reports that addressed engineering change management.

Methods of Analysis: The analysis was conducted by descriptive analysis to see the impact of ECN workflow on operational efficiency and customer satisfaction.

DATA ANALYSIS AND INTERPRETATION

During the internship at Spark Minda Corporation Ltd, it was observed that engineering change approvals follow a structured workflow involving multiple departments. It starts with the engineering department where any change request originating from changes made in product design or customer needs. The request is forwarded to the Supply Chain Management department material availability and supplier-related considerations are examined. The Process Engineering department then studies its prospects for making such a change happen within the manufacturing process. The Product Planning Committee reviews the proposal to determine the effect on production planning. The Quality Department confirms the compliance with quality standards before proceeding with a commercial evaluation of the process. In the commercial phase, Costing Department assesses the monetary implications that the engineering change poses and Marketing Department determines the effect on customer needs and market demands. Once this change is approved by all departments, the Engineering Change Notice is issued and implemented to the production system.

FINDINGS

- ECN management enhances collaboration among numerous departments in the organization.
- Documentation of the changes to engineering prevents manufacturing errors.
- Cross-functional assessment guarantees that engineering adjustments are aligned with both technical and commercial needs.
- Use of ECN systems promotes customer contentment
- Well-constructed ECN management leads to long-term customer relations and business survival.

SUGGESTIONS

- Companies need to adopt digital ECN management systems to facilitate monitoring and document management.
- Cross-departmental communication must be enhanced to see that engineering changes can be authorised more quickly.
- Educate staff on engineering change management practices.

CONCLUSION

There is a critical role for engineering change notice management in a product manufacturer and in industrial organisations for efficient introduction of the design and process changes. And the good ECN will affect the product quality, get the cooperation of various parts of company and customer requisite satisfied. It shows that to an organization like Spark Minda Corporation Ltd; implementation process of the engineering change, clear and trustable can be applied through effective ECN management. An

efficient ECN management increases customer satisfaction and results in long-term business retention in automotive manufacturing business.

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