

Triumph Gear Systems

A Quantitative, Feature-based, Risk Management Approach for New Product Development

Executive Summary

New product development (NPD) is the complete process of bringing a new product to market. It is often referred to as The Stage-Gate innovation process. New product development is a crucial process for the survival of firms. The business environment today is very dynamic and competitive, and for new or small enterprises to withstand competition from multinationals, they have to continuously update their products to conform to current trends.

Therefore, studying risks and developing a reliable and easy-to-use risk assessment approach is a must for NPDP. Risk management is the continuous process of identifying possible and potential risks, assessing their level, making decisions to avoid their occurrence and consequences, and developing a mitigation plan to reduce their future occurrence.

In this project, a quantitative, feature-based, risk management approach is developed for New Product Development Process (NPDP). The five phases of the NPDP are designed and their key outputs are mapped. Five groups of risks are identified, namely, general (financial and strategic), geometry, material, process, and planning risks. The evaluation criteria are proposed for severity, occurrence, and detection of risks. Roles and responsibilities of the executives of Triumph are introduced.

A simple user-friendly, EXCEL-based, risk assessment form is developed to define the risk level from four determined levels (low, moderate, high, and extreme), to define the critical risk parameter (cost, quality, or schedule), and to find the most critical risk type that will be faced during the NPDP. The Process Failure Mode Effects Analysis (PFMEA) has been chosen to be the core of our risk assessment approach. It is required to be implemented for each feature/operation of manufacturing the product to analyze all possible and potential risks. A case study is presented to show the validity and the effectiveness of our proposed risk assessment approach. At the end, a list of conclusions and recommendations are presented to Triumph.