ABSTRACT

The new product development (NPD) is the process by which a new product concept is initiated, investigated, taken through the design process, manufactured, marketed and serviced. This typically, in the automotive industry, consists of five phases: “Plan and Define Program”, “Product Design and Development”, “Process Design and Development”, “Product and Process Validation”, and “Production Launch, Feedback Assessment and Corrective Action”. These phases may be processed concurrently or may have correlated activities. Managing these improperly lead to poor process performance. Based on the literature reviews and automotive process-based approach, this paper proposed a process-based NPD performance measurement model focused on Quality of PFMEA Process through Quality of PFMEA Process Factor and Quality of PFMEA Process Output, PFMEA Effectiveness, and NPD Process Performance. The findings of the research indicate that Quality of PFMEA Process Factor positively enhances Quality of PFMEA Process Output, Quality of PFMEA Process Output positively enhances PFMEA Effectiveness, Quality of PFMEA Process Output positively enhances NPD Process Performance, and PFMEA Effectiveness positively enhances NPD Process Performance. This study also found that, PFMEA Effectiveness has a Direct Effect on NPD Process Performance, Quality of PFMEA Process Output has a Direct Effect and an Indirect Effect on NPD Process Performance, and Quality of PFMEA Process Factor has an Indirect Effect on NPD Process Performance. In addition, the top five observed variables which influence the NPD process performance are as follows: 1) Internal Defects, 2) Customer Claims, 3) Rework, 4) Process Capability (Cpk), and 5) Failure Mode Determination, respectively. Impacts of the NPD Process Performance on the business success, and application of PFMEA on other industries are recommended for further research.