Methods for Identifying Part Quality Issues and Estimating Their Cost with an Application Using the UH-60

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This research report explores the feasibility of using readily available Army demand and end item maintenance history to identify potential issues with repair part or process quality and estimate their associated incremental costs. The value of this approach is its power to analyze the performance of thousands of parts, and by estimating a cost, prioritize corrective actions for the parts with the highest potential return on investment.

? RESEARCH QUESTIONS

- How can the U.S. Army estimate the total costs due to poor-quality repair parts?
- How can the U.S. Army efficiently focus a root cause analysis to identify a source that could be disproportionally contributing to maintenance costs?
- How can the U.S. Army prioritize engineering and maintenance corrective action initiatives to improve their return on investment?
- How can the U.S. Army monitor the effect of corrective actions over time?

★ KEY FINDINGS

Many Army organizations are concerned with part and process quality.

- While several Army organizations are responsible for varying aspects of part and maintenance quality, only limited information, focused on the number of Product Quality Deficiency Reports (PQDRs) and how long they are open, is communicated to Army Materiel Command leadership. The current process does not provide the depth of information needed to make strategic decisions and monitor the progress of corrective actions regarding top cost drivers.
- PQDRs focus on manufacturing issues, while other issues, such as maintenance practices, part design flaws, training gaps, etc., are not addressed. For these reasons, the Army manually examines logbook narratives to identify parts that are being affected by these other types of quality issues. This manual

process requires significant resources that could be redirected to determine the root cause of an identified part issue.

The Army lacks an enterprise-level view of cost of quality.

- Currently, Army Materiel Command leadership has limited visibility of emerging or existing part or process quality problems that could lead to diminished readiness and increased costs. Often, problems are brought to the attention of leadership only after they have generated or are about to generate substantial costs.
- There are multiple potential sources for poor part quality, including depot repair, inadequate test equipment in the field, defective manufacturing, poor design, etc.
- The true cost of poor quality may be underestimated if only the cost of the part is considered. Looking at total system costs will increase the Army's opportunities improve part reliability and reduce costs.

Significant cost avoidance is achievable through early detection and improved root cause analysis.

- The Army does not have a systematic process to identify the source of poor part quality. Using the method presented in this research report can provide the Army with early detection and starting point for root cause analysis.

RECOMMENDATIONS

- Army Materiel Command (AMC) should establish a pilot to test and validate the tools presented in this report and to establish systematic reporting of the cost of poor quality across the enterprise.
- AMC should define metrics that will require the Life Cycle Management Commands (LCMCs) to report progress toward cost and quality goals and systematically report this information to AMC leadership in regularly scheduled management reviews.

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