

AMAZON - ROBOTICS

Developing A Supplier Assessment Framework

Student Team:

Shreyas Parab - Master of Engineering in Industrial & Operations Engineering
Jackie Whittaker - Master of Business Administration

Project Sponsors:

Mike Anderson - Senior Manager, Technical Operations
Paul Seay - Senior Manager, Advanced Manufacturing Engineering

Faculty Advisors:

Ravi Anupindi - Ross School of Business
David Kaufman - College of Engineering

Amazon Robotics (AR) is a subsidiary of Amazon.com, Inc., responsible for providing automation and robotic integration within Amazon's fulfillment, sortable, and last mile delivery centers. AR designs, manufactures, and tests warehouse robotics solutions. Amazon has 175+ fulfillment centers, of which AR services 50+ as robotic fulfillment centers. To support an upcoming 100+ site launches over the next year, AR is rapidly expanding in complexity and volume.

To meet the pressures of AR's rapid growth and scope expansion, AR charged the Tauber team to develop a holistic framework for supplier selection that enhances the decision-making process, mitigates biases in supplier selection, and supports the planned expansion of the supplier base by 2x year over year. While each decision-maker in the supplier selection process offers a unique and important perspective, AR lacks a structured method to capture these stakeholders' judgement, make trade-offs, and reach a consensus efficiently. To facilitate effective cross-functional decision-making at scale, the Tauber team's primary goal focused on developing holistic assessment mechanisms.

The Tauber team used a DMAIC (Define, Measure, Analyze, Improve, and Control) approach to conduct 38 interviews with key stakeholders as part of a root cause analysis. The analysis identified seven common pain points and refined the following four recommendations through 3 pilot tests with different commodities: (1) implement go/no-go filters based on industry standards, (2) incorporate cross-functional criteria for holistic assessment, (3) implement an Analytical Hierarchy Process decision-making model to reduce biases through data-driven tools, and (4) use a Rapid Site Assessment tool to consistently assess efficiency and effectiveness.

By implementing the recommended mechanisms to establish data-driven processes and controls, AR will reduce the time and costs associated with searching for qualified suppliers, evaluating pre-assessment data, and conducting on-site audits with suppliers that do not meet AR's standards. The benefits of implementing these piloted recommendations are reducing decision biases while improving agility and effectiveness in supplier selection.