

WRITTEN TECHNICAL REPORT

Weighting: 70%

Module: ACMA4039 – Engineering Applications & Study Skills

Assessment: Root Cause Analysis – Technical Report

Student: Dominic Jowitt

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Engagement with Literature Skills (15 marks)

Mark awarded: 12 / 15

Dominic showed good engagement with relevant literature related to risk management and RCA within the engineering sector. The report makes appropriate use of UK legislation (e.g. COSHH, Management of Health and Safety at Work Regulations), HSE guidance, and the IMechE Code of Conduct. These sources are relevant and clearly linked to the topic of workplace risk management.

The discussion of sustainability pillars and preventative frameworks (such as PPRR) shows awareness beyond basic risk assessment. However, the literature review relies largely on guidance and regulatory sources, with limited use of peer-reviewed academic research.

What was done well

- Appropriate use of legislation and professional standards.
- Clear explanation of why risk management is critical in engineering environments.
- Literature generally supports the discussion points made.

What could be improved

- Greater inclusion of academic journal sources would strengthen academic depth.
- More comparison between sources would improve critical engagement rather than description.

Suggested enhancement

- Add a comparison table summarising *RCA*, *PPRR*, and *traditional risk assessments*, outlining their purpose, strengths, and limitations in manufacturing contexts.

Knowledge and Understanding Skills (25 marks)

Mark awarded: 20 / 25

The report demonstrates a solid understanding of risk management concepts and the role of RCA within manufacturing engineering. Dominic clearly explains why risk management is essential for health and safety, quality, cost control, and sustainability.

The explanation of RCA and FMEA concepts, including Severity, Occurrence, Detection, and RPN, shows sound understanding. The link between numerical scoring and decision-making is explained clearly.

What was done well

- Clear explanation of risk management principles.
- Good understanding of RCA structure and numerical scoring.
- Appropriate linkage between safety, quality, and operational risks.

What could be improved

- More application-specific explanation of the engineering process under investigation would strengthen understanding.
- A brief comparison with alternative RCA tools (e.g. Fishbone or 5 Whys) would add depth.

Suggested enhancement

- Include a process flow diagram of the stencilling operation to clearly show where risks are introduced.

Cognitive and Intellectual Skills (20 marks)

Mark awarded: 17 / 20

Dominic demonstrated strong analytical thinking through the interpretation of RCA results. The use of before-and-after data, particularly the comparison of Severity, Occurrence, Detection, and RPN values, shows effective evaluation of improvements.

The justification comments explaining the level of RPN reduction demonstrate reflection on the effectiveness of corrective actions.

What was done well

- Logical explanation of why scores changed after preventative actions.
- Clear interpretation of numerical data.
- Good linkage between actions taken and risk reduction.

What could be improved

- More explicit discussion of residual risks would strengthen critical depth.
- Some justifications could be expanded to explain why certain risks remain higher than others.

Suggested enhancement

- Add a summary table highlighting the top three risks before and after mitigation with short explanatory notes.

Practical Application Skills (20 marks)

Mark awarded: 18 / 20

The practical application of RCA is a strong aspect of this report. The stencilling machine case study is realistic and well supported by a detailed RCA table. Multiple failure modes are identified, and corrective actions are clearly linked to improved outcomes.

The use of real production-based issues demonstrates good industrial relevance and practical engineering judgement.

What was done well

- Detailed and realistic RCA table.
- Clear linkage between causes, effects, and corrective actions.
- Effective demonstration of numerical improvement after mitigation.

What could be improved

- Brief discussion of implementation challenges (e.g. cost, time, training impact) would add realism.
- Detection controls could be discussed more explicitly.

Suggested enhancement

- Include an annotated image or schematic of the stencilling machine highlighting where key risks occur.

Transferable Skills for Life & Professional Practice (20 marks)

Mark awarded: 17 / 20

The report is clearly structured and follows a logical technical report format. Figures, charts, and tables are used effectively to support the discussion, particularly the bar chart comparing RPN values before and after preventative actions.

The writing style is generally clear and professional, suitable for an engineering audience.

What was done well

- Logical structure aligned with the brief.
- Effective use of graphs to support analysis.
- Professional tone throughout.

What could be improved

- Some sections could be more concise to reduce repetition.
- Minor grammatical and formatting issues could be refined.

Suggested enhancement

- Add a final summary flowchart showing *risk identified* → *RCA* → *corrective action* → *outcome* to strengthen the conclusion.

Written Report Mark Summary (70%)

Criterion	Mark
Engagement with Literature	12 / 15
Knowledge & Understanding	20 / 25
Cognitive & Intellectual Skills	17 / 20
Practical Application Skills	18 / 20
Transferable Skills	17 / 20
Total (Written Report)	84 / 100

Weighted Contribution to Module (70%):
58.8 / 70