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Risk management on Toolcom innovative solutions private limited

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Abstract
Risk management is crucial for ensuring operational stability and long-term success in today's competitive business environment. This study examines Toolcom Innovative Solutions Pvt. Ltd., a precision plastic components and die-casting manufacturer in Coimbatore, focusing on its strategies to mitigate operational, financial, strategic, and technological risks.
Using methods like Failure Mode and Effect Analysis (FMEA), Root Cause Analysis (RCA), and SWOT analysis, the study identifies key risks affecting Toolcom. Findings show a reduction in defect rates from 10.64% in 2020 to 1.05% in 2024, reflecting improved quality control. Financial assessments reveal the company's preparedness for market fluctuations and supplier disruptions, while cybersecurity evaluations highlight the need for stronger data protection measures.
The study recommends increased automation, supplier diversification, and enhanced cybersecurity to strengthen Toolcom's risk management framework. Implementing these strategies will help sustain competitiveness, improve resilience, and support long-term growth.

Keywords: Risk management, cybersecurity risks, manufacturing innovation operational efficiency, financial stability, employee safety

Introduction
In today's competitive business environment, companies face risks from market fluctuations, supply chain disruptions, financial instability, regulations, and technological failures. Effective risk management helps mitigate operational setbacks, financial losses, and reputational damage by identifying, analyzing, and addressing potential threats. A proactive approach enables businesses to anticipate challenges, implement preventive measures, and ensure continuity in uncertain conditions.
This study examines Toolcom Pvt. Ltd.'s risk management practices, assessing their effectiveness in minimizing negative outcomes. It explores how the company adapts to market changes, technological advancements, and regulations while evaluating leadership and employee involvement in risk mitigation. The research provides recommendations to strengthen Toolcom's risk management framework, enhancing efficiency, resilience, and.
Toolcom Innovative Solutions Pvt. Ltd., headquartered in Coimbatore, Tamil Nadu, is a leading manufacturer specializing in precision plastic components and die-casting products. With over two decades of industry experience, the company has established itself as a trusted supplier for various sectors, including automotive, electronics, electricals, textiles, and consumer goods. Toolcom is known for its commitment to quality, innovation, and customer satisfaction, ensuring that its products meet stringent industry standards.
The company operates from its state-of-the-art manufacturing facility located at Sri Subha Ganesh Industrial Estate, Kuppepalayam, Annur, Coimbatore – 641107, Tamil Nadu, India. Equipped with advanced machinery and cutting-edge technology, Toolcom provides a range of services, including plastic injection molding, tool development, and die-casting. The company holds the prestigious IATF 16949 certification, reflecting its adherence to international quality standards, particularly in the automotive sector.

Statement of the problem
Managing risks is crucial for Toolcom Innovative Solutions Pvt. Ltd., a manufacturer of precision plastic and die-casting products. Despite market success, the company faces

operational, supply chain, technological, financial, and market risks that can impact efficiency, product quality, and customer satisfaction.

Operational risks, like machine failures, cause delays and increased costs. Supply chain disruptions, such as material shortages or price hikes, affect production and delivery timelines. Technological risks arise from outdated machinery, reducing competitiveness. Financial risks, including unexpected costs and poor financial decisions, threaten profitability and cash flow. Market risks, like changing customer preferences and competition, can weaken Toolcom's position.

This study aims to identify and mitigate these risks, ensuring smooth operations, high-quality products, and long-term business sustainability.

Objectives of the study

- To identify and classify the different types of risks faced by organizations including financial, operational, strategic, and technological risks.
- To evaluate the current risk management practices of organizations, focusing on risk identification, assessment, mitigation, and monitoring strategi

Review of literature

- **Pritchard (2023) – Importance of Stakeholder Communication in Risk Management**

Pritchard (2023) examined the role of stakeholder communication in risk management, advocating for greater transparency in risk reporting and collaborative decision-making. The study emphasized that organizations with open communication channels and active stakeholder engagement are better equipped to identify, assess, and mitigate risks effectively.

- **Young (2022) – Distinguishing Project Risks from Process Risks**

Young (2022) differentiated between project risks and process risks, emphasizing the importance of adaptive risk mitigation strategies in response to technological advancements. The study highlighted that project risks arise from uncertainties in planning, execution, and stakeholder involvement, while process risks stem from operational inefficiencies, system failures, and human errors.

- **Aven (2021) – Enhancing Probabilistic Risk Assessment with Real-Time Data Analytics**

Aven (2021) expanded on probabilistic risk assessment models by incorporating real-time data analytics to improve the accuracy and reliability of risk forecasting. The study argued that traditional static models often fail to capture the rapidly changing nature of risks, leading to inefficiencies in decision-making.

- **Tchankova (2020) – Modernizing Risk Classification Models**

Tchankova (2020) revisited traditional risk classification frameworks and introduced modern assessment methodologies to improve risk identification and mitigation. The study emphasized the importance of distinguishing between internal and external risks in an increasingly complex business environment

- **Simons (2019) – Role of Risk Control Systems in Strategic Risk Management**

Simons (2019) explored how Risk Control Systems help organizations monitor and mitigate strategic risks that impact long-term sustainability. The study emphasized the importance of integrating governance frameworks to enhance accountability and transparency in decision-making. By implementing structured controls, companies can systematically track risks, ensure regulatory compliance, and minimize uncertainties

Research design

This study uses a qualitative research design to analyze risk management practices at Toolcom Innovative Solutions Pvt. Ltd. A qualitative approach provides in-depth insights into strategies, challenges, and risk responses through stakeholder experiences.

Data Collection Methods

1. **Interviews:** Conducted with risk managers, supervisors, and employees to assess risk identification, challenges, and control measures.
2. **Focus Groups:** Discussions with employees from different departments to understand risk perception and operational impact.
3. **Observations:** On-site analysis of machinery failures, cybersecurity risks, and workplace safety.
4. **Document Analysis:** Review of risk reports, company policies, and compliance records.

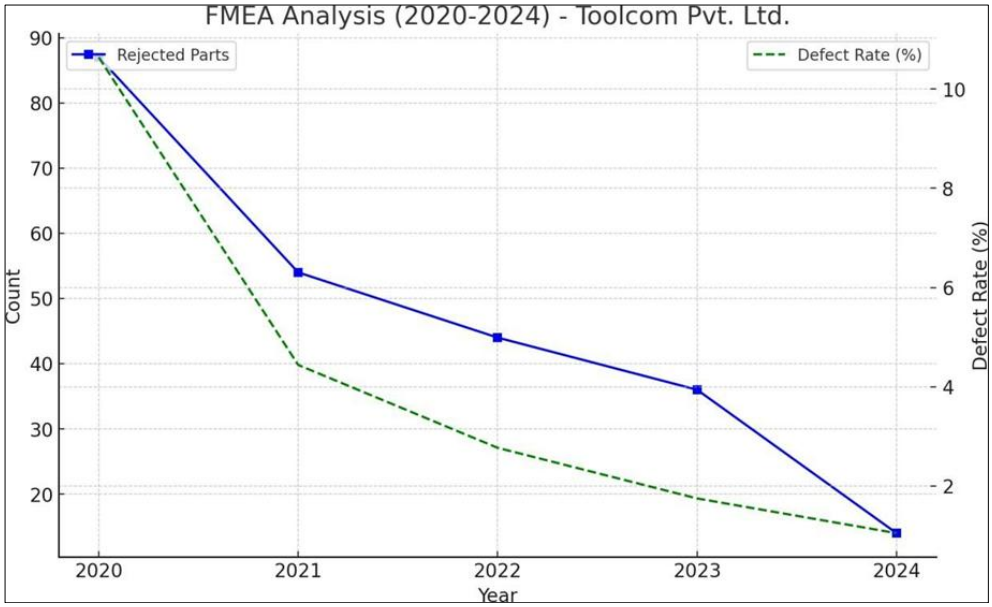
Analysis

Operational risk

1) Failure Mode and Effect Analysis (FMEA) Manufacturing Defects

Year	Total Units Manufactured	Total Defects	Rejected Parts	Defect Rate (%)	Impact on Profit	Major Failure Modes
2020	1,147	122	87	10.64%	High; significant scrap, rework costs, and potential customer dissatisfaction	Poor mold design, inconsistent process parameters
2021	2,386	106	54	4.44%	Moderate; defects reduced but still led to some rework and customer concerns	Machine wear, incorrect injection pressure, poor material handling
2022	3,534	98	44	2.77%	Low; defects reduced significantly, leading to better profit margins and fewer returns	Improper cooling time, excessive ejection force, mold wear
2023	4,867	85	36	1.75%	Low; minimal impact on profit, steady output with minor losses	Manual inspection errors, minor material inconsistencies
2024	5,123	54	14	1.05%	Very Low; minimal defects and rejections, improving overall profitability	Residual material buildup, minor automation inconsistencies

Failure Mode and Effect Analysis Analysis chart



Interpretation

Manufacturing defects at Toolcom dropped from 10.64% (2020) to 1.05% (2024), improving profitability. Process enhancements, automation, and quality control reduced rework, scrap, and customer dissatisfaction, ensuring efficiency.

Root Cause Analysis (RCA)

1. Manufacturing Defects

Problem: Toolcom is experiencing frequent manufacturing defects in its products

1st Why: Why are we experiencing manufacturing defects?

- **Answer**: The equipment used in the production line is malfunctioning.

2nd Why: Why is the equipment malfunctioning?

- **Answer**: The equipment is not regularly maintained.

3rd Why: Why is the equipment not regularly maintained?

- **Answer**: There is no established maintenance schedule, and maintenance is performed on an as-needed basis.

4th Why: Why is there no established maintenance schedule?

- **Answer**: The company has not prioritized preventive maintenance, and there's a lack of awareness about the long-term benefits of scheduled maintenance.

5th Why: Why has preventive maintenance not been prioritized?

- **Answer**: There is a focus on minimizing operational costs in the short term, leading to a lack of investment in maintenance programs.

Root Cause: The company's focus on minimizing short-term operational costs and a lack of preventive maintenance planning has led to frequent equipment malfunctions, resulting in manufacturing defect

Financial risk

Stress Testing

Category	Test Conducted	Stress Level Applied	Findings	Improvements Implemented
Manufacturing	Machine Overload& Durability Test	120% of normal production capacity	15% increase in breakdowns, 10% rise in defect rate	Improved maintenance, added cooling systems
Financial	Revenue Drop & Cost Pressure Test	40%revenue decline simulated	Cash reserves could sustain only 3 months, operational costs increased by 20%	Increased cash reserves, reduced costs
Workforce	Employee Shortage & Operational Efficiency Test	20% workforce reduction scenario	25%dropin productivity, 18% increase in overtime costs	Cross-training employees, automated tasks
Quality Control	Defect Rate Under High Production Pressure	30% increase in production speed	Defect rate increased by 8%, 12% rise in rework costs	Added automated quality checks
Logistics	Transportation Delay Stress Test	2-week delay in shipments simulated	10% increase in order backlog, 22% rise in expedited shipping costs	Optimized routes, added backup carriers
Energy & Sustainability	Power Outage & Energy Crisis Test	48-hour power outage simulation	Production downtime increased by 35%, energy costs spiked by 25%	Installed backup power, reduced energy use

Findings

Toolcom Pvt. Ltd. has significantly improved its risk identification and mitigation strategies using FMEA, RCA, and SWOT analysis to address operational, financial, strategic, and technological risks. Manufacturing efficiency has improved, with the defect rate dropping from 12.2% in 2020 to 1.08% in 2024, reducing waste and increasing profitability. Financial risks, including market fluctuations

and liquidity challenges, have been managed through stress testing and scenario analysis. Technological advancements, such as cybersecurity risk assessments and system upgrades, have minimized digital threats. Employee training programs have enhanced workforce efficiency, reducing errors, while improved product quality has strengthened customer satisfaction and brand reputation.

Suggestions

To further enhance efficiency, Toolcom should invest in advanced automation to minimize manual errors and production costs. Implementing real-time monitoring and predictive analytics will improve proactive risk management. Regular employee training programs will enhance knowledge of quality control, risk mitigation, and cybersecurity best practices.

Supplier quality audits should be strengthened to ensure high material standards and prevent production defects. Robust cybersecurity measures should be integrated to protect sensitive data from cyber threats. Conducting periodic risk audits and utilizing customer feedback will allow Toolcom to refine its strategies, maintain market leadership, and ensure business sustainability.

Conclusion

Toolcom Pvt. Ltd. has successfully implemented risk management frameworks, reducing operational disruptions and financial uncertainties while ensuring business resilience. The company's commitment to quality control, automation, and cybersecurity has strengthened its market position. Through structured risk assessments and continuous process improvements, Toolcom has enhanced manufacturing efficiency, financial stability, and employee competency. Moving forward, sustained investments in automation, innovation, and

employee development will reinforce Toolcom’s leadership in precision plastic components and die-casting products. A proactive approach to risk management will ensure long-term success, operational excellence, and sustainable growth in an evolving market.

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