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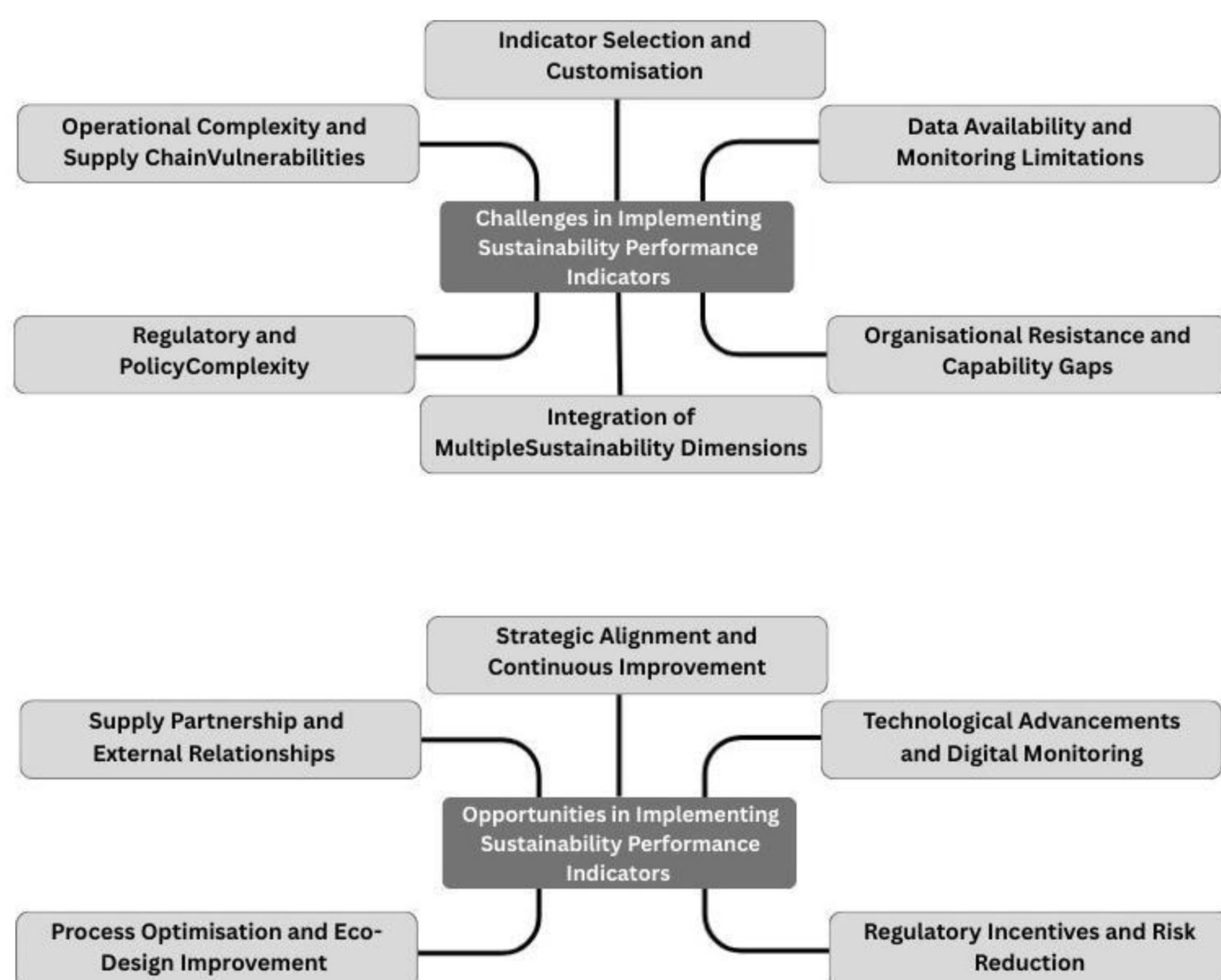
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ENHANCING GREEN TRANSITION STRATEGIES: THE ROLE OF PERFORMANCE INDICATORS IN SUSTAINABLE MANUFACTURING

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As manufacturing faces growing environmental regulations and stakeholder demands, companies must align economic, environmental, and social goals. This thesis explores how sustainability-focused performance indicators (PIs) can enable resource efficiency, collaboration, and informed decision-making. Through a systematic literature review and interviews with representatives from two manufacturing companies, the study identified key challenges and highlighted opportunities. Findings suggest that PIs can serve as catalysts for cultural change, continuous improvement, and long-term competitiveness.

What challenges and opportunities do manufacturing companies face in implementing performance indicators for sustainability?



How can manufacturing companies overcome challenges and improve opportunities using performance indicators?

Strategies to Address Challenges and Enhance PI Implementation			
Strategic Alignment and Continuous Improvement	Technological Advancements and Digital Monitoring	Supplier Partnerships and External Relationships	Themes
Align PIs with organisational goals and needs	Integrate digital tools and AI for accurate data collection	Partner with networks for knowledge sharing	Strategies
Monitoring improvements and strategic learning	Apply life-cycle analysis and eco-control systems	Set goals with suppliers to reduce environmental impact	
Apply Triple Bottom Line approach	Use data analytics to identify trends and inefficiencies	Align targets across the supply chain	
Use for learning and strategic adaptation	Invest in technology to make PIs precise and actionable	Develop multi-level network strategies	
Process Optimisation and Eco-Design Improvement	Regulatory Incentives and Risk Reduction	Employee Engagements	
Pilot small sustainability projects using PIs	Engage with regulators and follow industry standards	Train employees on sustainability PIs	
Embed sustainability in product innovation and eco-design	Integrate regulations into production and monitoring systems	Empower teams to use PIs for better decision-making	
Review and refine PIs regularly	Align goals with international standards like the SDGs	Improve employee skills to boost sustainable practices	
Align PIs with lean to reduce waste and improve quality	Communicate PIs publicly to enhance trust and reputation	Cultivate engagement to drive innovation and sustainability	

Results

For the first question, the findings highlight key challenges, including choosing the right indicators, limited data, organisational resistance, regulatory complexity, and supply chain issues. The findings also highlight opportunities for strategic alignment, digital tools, process improvements, and enhanced collaboration.

For the second question, the findings indicate that manufacturing companies can overcome these challenges by aligning PIs with their strategy, investing in digital monitoring, engaging employees, and collaborating closely with suppliers and regulators.

Implications

Performance Indicators (PIs) can be more than compliance tools; they can drive the green transition in manufacturing. By overcoming barriers such as limited data, organisational resistance, and regulatory complexity, and by leveraging opportunities in digitalisation, collaboration, and strategic alignment, PIs may become catalysts for cultural change, continuous improvement, and long-term competitiveness.

