

Circular Economy and Resilience: A Pathway to Sustainability in Australian SMEs

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Agenda

- Background
- Conceptual Model
- Methodology
- Findings
- Conclusion



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Background

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Background

Australia has 2.6 million small and medium-sized businesses (SMEs), which account for 98% of all businesses in Australia (ASBFEO, 2023).

The circular economy can significantly improve sustainability practices by reducing waste, promoting resource efficiency, encouraging innovation, creating new jobs and economic growth, and driving sustainability into the mainstream (Dey et al., 2022; Dey et al., 2020).

Background

For SMEs, resilience and sustainability are important for maintaining business operations, adapting to changing conditions, and securing a future for the business. SMEs can enhance their resilience by diversifying their products, services, and markets, building strong relationships with suppliers and customers, and having contingency plans for unexpected events.

The circular economy and resilience are important concepts for achieving sustainability in businesses, especially SMEs. The adoption of circular economy practices can significantly improve sustainability practices, while resilience can contribute to the long-term viability of the business.

Research Questions

– How does Resource Efficiency, Energy Efficiency and Waste Management influence adoption of Circular Economy in SMES?

RQ1

– Does Circular Economy lead to supply Chain Resilience in SMEs?

RQ 2a

– Does Circular Economy lead to Sustainability in SMEs?

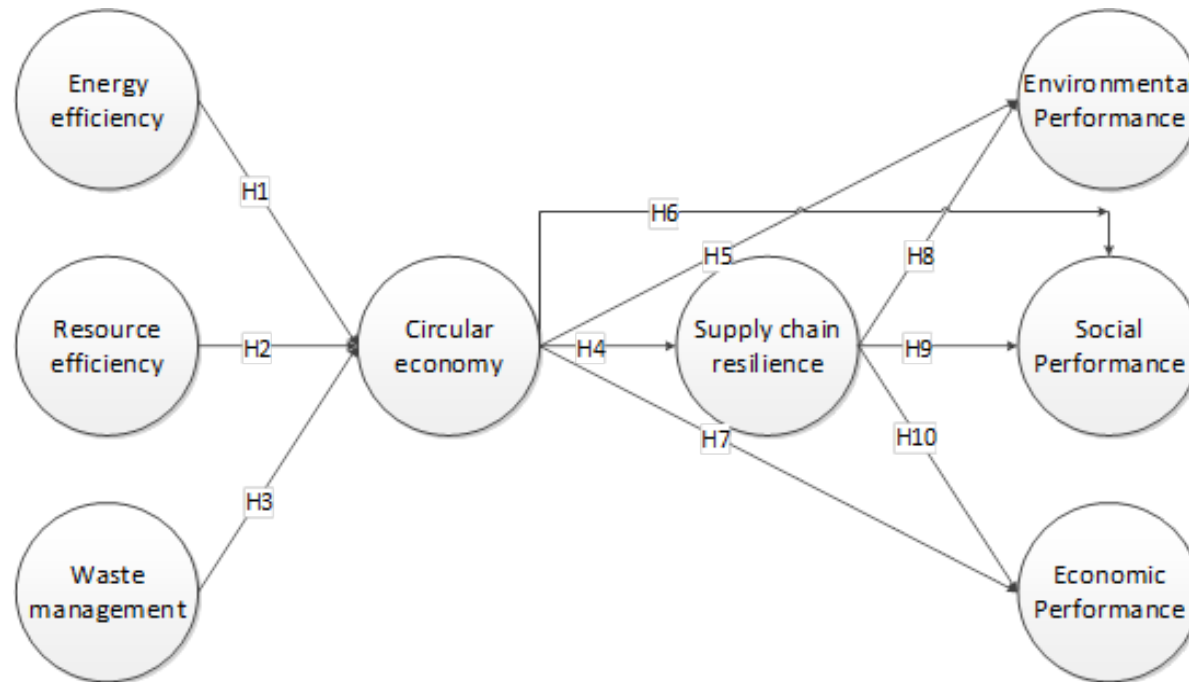
RQ 2b

– Can Supply Chain Resilience promote Sustainability in SMEs?

RQ 3

Conceptual Model

- In this study we base our study on **RBV** and investigate the relationship of resources efficiency, energy efficiency, waste management on circular economy. Additionally, we **use RBV to investigate** the role of CE to lead to sustainability and supply chain resilience.



Hypotheses

- H1: Energy Efficiency will positively influence Circular Economy
- H2: Resource Efficiency will positively influence Circular Economy
- H3: Waste Management will positively influence Circular Economy
- H4: Circular Economy will positively influence Supply Chain Resilience
- H5: Circular Economy will positively influence Environmental Performance
- H6: Circular Economy will positively influence Social Performance
- H7: Circular Economy will positively influence Economic Performance
- H8: Supply Chain Resilience will positively influence Social Performance
- H9: Supply Chain Resilience will positively influence Economic Performance
- H10: Supply Chain Resilience will positively influence Environmental Performance

Methodology

- Questionnaire survey of Australian SMEs to understand the current state of CE adoption
- Survey Instrument:
 - SECTION A: ORGANISATION DEMOGRAPHICS
 - SECTION B: CIRCULAR ECONOMY ADOPTION
 - Circular Economy Actions (Design-Procure-Manufacture-Distribute-Use-Recover)
 - Opportunities and Barriers
 - Energy and Resource Efficiency
 - SECTION C: SUSTAINABLE PERFORMANCE
 - Environmental Performance
 - Economic Performance
 - Social Performance



Sample Characterization

Respondent Position	Number	Percentage
Executive Manager (C suite-position)	99	28%
Managerial Level	127	36%
Administrative	63	18%
Technical	38	11%
Others	21	6%

Sector	Number	Percentage
Service Sector	97	28%
Manufacturing & Process Based	57	16%
Food & Beverage	28	8%
Energy	19	5%
Education and training	14	4%
Retail	13	4%
Healthcare	12	3%
Heavy Industry	11	3%

- The survey was sent to **648 respondents**.
- A total of **352 useable** questionnaires were returned.
- In our case the **response rate is around 54.3%**, which is similar to the studies in this area such as Dey et al. (2020).

Certifications	Number	Percentage
ISO 9001	86	25%
ISO 14001	38	11%
ISO 18001	40	11%
OHSAS 18001	28	8%
SA 8000	9	3%
None	147	42%

Findings

Factor	Cronbach's alpha	% of variance explained
Economic performance	0.940	73.46
Environmental performance	0.928	66.57
Social performance	0.926	66.04
Energy efficiency	0.728	51.48
Resource efficiency	0.942	77.51
Waste management	0.893	65.86
Design	0.893	70.15
Operations	0.854	63.28
Distribution	0.708	77.52
Procurement	0.777	69.18
Process	0.905	60.24
Use	0.831	74.75
Recover	0.896	66.08

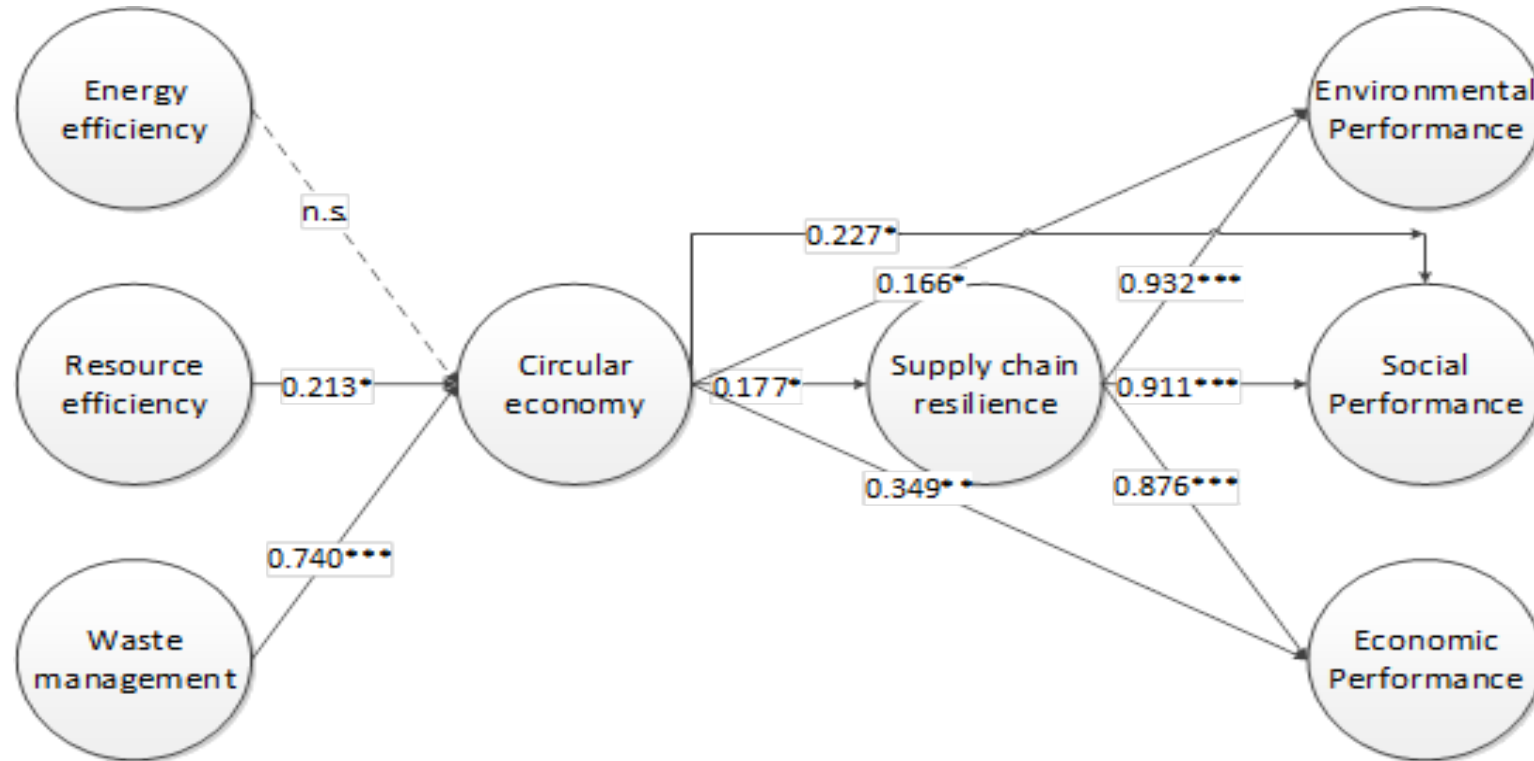
Reliability and Validity Measures for Factors of SEM Modeling

Findings

	GoF measures			
	RMR	GFI	AGFI	PGFI
Suggested model	0.075	0.904	0.877	0.863
Standard model	0.092	0.847	0.822	0.728

- Root Mean square Residual (RMR), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), and the Parsimony Goodness-of-Fit Index (PGFI).
- Typically, for a good fit the indices GFI, AGFI, and PGFI should be above 0.9, and accordingly RMR should be generally below 0.08.

Findings



Parameter Estimate Results for the Hypothesized SEM Model

Findings

Both “circular economy” and “supply chain resilience” constructs have positive statistically significant effects on all three sub-constructs of sustainability performance or SMEs.

Stronger effects are observed between “supply chain resilience” and constructs of sustainability in comparison to the connection between “circular economy” and sustainability.

Strong positive effects between “supply chain resilience” and “environmental performance” (beta = 0.932; p-value<0.01), social performance (beta = 0.911; p-value<0.01) and economic performance (beta = 0.876; p-value<0.01).

Findings

The effect of “circular economy” on “sustainability performance” is borderline significant.

These results indicate that possibly the “supply chain resilience” construct absorbs most of the positive effects of the association between “circular economy” and “sustainability performance” in Australian SMEs.

Stronger positive effect is between “waste management” and “circular economy” (beta = 0.740; p-value < 0.01).

This is a strong indication, that in Australian SMEs waste management is the main issue that is associated with circular economy in these enterprises.

Conclusion

The analysis shows that there is a stronger positive effect between waste management and circular economy.

The analysis also shows that there is the borderline association between circular economy and supply chain resilience.

Supply Chain Resilience constructs have positive statistically significant effects on all three sub-constructs of Sustainability Performance or SMEs.

There is a lack of literature on role of circular economy in leading to the supply chain resilience (Kennedy et al,2022). The study has led to the understanding of role of the resource's optimization leads to CE, supply chain resilience, and sustainability.

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Thank you!

