

Analysis of relationship between operational
performance and supply chain sustainability:
A case of logistics service providers
in Finland and Russia

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Goal:

To explore the relationship between operational performance and supply chain sustainability metrics in case of Finnish and Russian road freight transportation companies

Objectives:

1. to study the impact of operational performance measures on environmental company's performance and vice versa
2. to explore whether there is significant difference in operational and environmental performance between Finnish and Russian road freight transportation companies
3. to develop a model that can be further used by management team for self-estimation of company's performance in environmental and operational dimensions

Theoretical background

Triple bottom line approach



Research gap

1. Lack of research on logistics service providers



2. Lack of research on relationship between concrete company's metrics



3. No cross-country analysis



Operational performance

- Delivering expedited shipments
- Offering greater proportion of on time and accurate delivery
- Offering short delivery lead-time
- Delivering goods in an undamaged state
- Providing higher customer satisfaction ratings
- Lowering customer complaints

Environmental performance

- Reduction of air emission
- Limiting transportation and other operations related waste and noise pollution
- Minimization of consumption of non-renewable resources
- Decreased consumption of hazardous/harmful/toxic materials

Hypotheses

Operational → Environmental

H1. Delivering higher number of expedited shipments, while offering greater proportion of on-time and accurate delivery, leads to reduction in air emissions.

H2. Ensuring short delivery lead time, while delivering goods undamaged, leads to limiting transportation and other operations-related waste and noise pollution.

Hypotheses

Environmental → Operational

H3. Minimization of consumption of non-renewable resources, decreased consumption of hazardous/harmful/toxic materials lead to providing higher customer satisfaction ratings.

H4. Minimization of consumption of non-renewable resources, decreased consumption of hazardous/harmful/toxic materials lead to lowering customer complaints (percentage of total sales).

Hypotheses

H5. **Reduction of air emission** is significantly higher in case of Finnish than in Russian road freight transportation companies.

H6. **Limiting transportation and other operations-related waste and noise pollution** is significantly higher in case of Finnish than in Russian road freight transportation companies.

H7. **Providing higher customer satisfaction ratings** are significantly higher in case of Finnish than in Russian road freight transportation companies.

H8. **Decrease in customer complaints** is significantly higher in case of Finnish than in Russian road freight transportation companies.

Sample

91 respondents: 52 Finnish companies (r. r. 13%)
39 Russian companies (r. r. 10%)



1-50 employees: 88 % Finnish companies
72 % Russian companies



Service: fleet management (Finland) (77 %)
freight forwarding (Russia) (75 %)



Geographic coverage: 67 % - only Finland
51 % - Russia + world



Data analysis. Results

Offering short delivery
lead-time
(p-value = 0,021)



Limiting transportation
and other operations
related waste and noise
pollution

Decreased consumption
of hazardous, harmful,
toxic materials
(p-value = 0,003)



Providing higher
customer satisfaction
ratings

Decreased consumption
of hazardous, harmful,
toxic materials
(p-value = 0,018)



Lowering customer
complaints

Data analysis. Results

Reduction of air emission (FIN)

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Reduction of air emission (RUS)
(3/7)



Limiting transportation and other operations related waste and noise pollution (FIN)

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Limiting transportation and other operations related waste and noise pollution (RUS)



Providing higher customer satisfaction ratings (FIN)

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Providing higher customer satisfaction ratings (RUS)



Lowering customer complaints (FIN)

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Lowering customer complaints (RUS)



Conclusions

1. Optimization and increase of accurate delivery do not lead to decrease in reduction of air pollution
2. Offering short delivery lead-time has a great impact on limiting transportation and other operations related waste and noise pollution
3. Decreased consumption of hazardous/harmful/toxic materials has a great impact on both providing higher customer satisfaction rating and lowering customer complaints as a percentage of total sales
4. Finnish companies are more satisfied with their company's environmental characteristics whilst Russian ones have higher estimation of operational performance

Implications

Logistics managers:

1. Offering short delivery lead-time → Limiting transportation and other operations related waste and noise pollution
2. Decreased consumption of hazardous/harmful/toxic materials
 - Providing higher customer satisfaction ratings
 - Lowering customer complaints

General:

1. Self-assessment tool for company's operational and environmental performance

Thank you for attention!

Looking forward to answer your questions!

