SCM Challenges and Opportunities in the Timber Construction Sector

K. Reitner, F. Staberhofer, W. Ortner, M. Gerschberger
Agenda

- Who we are and what we do
- Motivation for Research Project
  - Methodology
  - Quick Scan Audit Method - QSAM
- Findings
- Contribution to Theory and Practice
- Conclusion and Further Research
Who we are…

The Logistikum in Steyr, Upper Austria is the location for logistics and business networks: with approximately 350 students, 35 research associates, 15 professors and over 60 lecturers on site we provide innovative logistics solutions in the form of

- projects
- company placements/internships
- bachelor papers and master theses
- applied research, and
- fundamental research

The Logistikum Steyr is the preferred partner in logistics.

education and research from a single source
Who we are…
- Development since 2006

Beside the economic success of the past years we have also reached international (scientific) visibility.
What we do…
- Logistics education and research at Steyr

EDUCATION

- Bachelor Studies in International Logistics Management (ILM)
- Master Studies in Supply Chain Management (SCM)

RESEARCH

- Research Area Logistics Management (LM)
- Research Area Supply Chain Management (SCM)
- Research Area Transport Logistics (TLOG)
What we do…
- At current state…

• We lead 1 Marie Curie – EU project „SCComplexity“
• We are members in 5 EU funded projects
• We lead 2 international (nationally funded) projects
  • „QSAM“, „FINCA“
• We lead more than 20 nationally funded research projects

Beyond that we are partner in more than 50 nationally and regionally funded research projects.
What we do in…
- Logistics Management

WE HELP ORGANIZATIONS TO
IMPROVE INTERNAL LOGISTICS PROCESSES.

Focal Points:
• Logistics Optimization
• Commerce & Last Mile
• Logistics Technology

Selected Projects:
• BioBoost
  As a partner in this EU project, the Logistikum creates and optimizes a logistics model to determine economic and ecologic viability and sustainability of various energy-rich intermediates from biogenous residues.
• Pfeiffer
What we do in…
- Supply Chain Management

WE INCORPORATE COMPANIES INTO INTERNATIONAL NETWORKS.

Focal Points:

• Supply Chain Design
• Supply Chain Complexity
• Supply Chain Resilience

Selected Projects:

• SCComplexity
  The project consortium aims to better understand and manage complex interdependencies within SCs.

• Quick Scan Audit Methodology for Supply Chains
  The Logistikum further develops a methodology which helps companies to identify major pains in SCs.

• ReSCUE
  Project objective is to identify and develop individual and organizational capabilities to increase supply chain resilience.

• FINCA - forecasting indicators to understand volatility
What we do in...
- Transport Logistics

WE INTEGRATE
ECONOMY AND TRANSPORT.

Focal Points:
• Transport Systems
• Multimodality
• Mobility & Traffic Telematics

Selected Projects
• LNG Masterplan Rhine-Main-Danube
  The Logistikum project provides a strategy and pilot deployments for liquefied natural gas (LNG) as fuel for inland vessels.
• FLAVIA
  Improves corridor logistics and validates trade and transport processes, Implementation of improvement actions.
• ChemLog (T&T)
  - Chemical Logistics Cooperation in Central and Eastern Europe
  - Tracking and Tracing Solutions for Improvement of Intermodal Transport of Dangerous Goods in Central and Eastern Europe
Agenda

- Who we are
- Motivation for Research Project
  - Methodology
  - Quick Scan Audit Method - QSAM
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Motivation for Research Project
- Industry Perspective

• To remain profitable companies are under immense pressure to reduce costs and optimize utilization of resources

• Companies are facing…
  • a big variety of products
  • a high number of potential suppliers
  • increased customer expectations
  • increased number of individuals and organizations carrying out activities on the product before end consumption
  • inconsistencies in human behaviors and actions challenges the companies

→ This is especially true for the furniture and timber construction sector

“Your individually customized kitchen in 9 working days – made in Austria”
Motivation for Research Project
- Research Perspective

- To consequently apply the Quick Scan Audit Methodology (QSAM) and disseminate the ability to conduct QSAM in our organization.

- To further enlarge the applicability of QSAM \( \rightarrow \) cross company comparison

Until now QSAM was applied 40+ times worldwide with a single company focus.

<table>
<thead>
<tr>
<th>Country</th>
<th># QSAMs</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>16</td>
<td>Lucas Automotive, Princes Soft Drink, Corus Strip Steel, …</td>
</tr>
<tr>
<td>New Zealand</td>
<td>12</td>
<td>Westland Milk Products, Carter Hold Harvey Mill, Heinz Watties, …</td>
</tr>
<tr>
<td>Thailand</td>
<td>8</td>
<td>Trisilp Furniture, Image Technology, Central Power Cable, …</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3</td>
<td>Koopmans Meel, Thomason Compressors, Wehr Group Pumps</td>
</tr>
<tr>
<td>Germany</td>
<td>2</td>
<td>Automotive Brakes, Hirschvogel Forging</td>
</tr>
<tr>
<td>Australia</td>
<td>2</td>
<td>Ipd Industrial Products, Focuspress</td>
</tr>
<tr>
<td>Austria</td>
<td>1</td>
<td>voestalpine Straßensicherheit</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>44</strong></td>
<td></td>
</tr>
</tbody>
</table>
Methodology

- Literature review following guidelines from Tranfield et al. 2003
- Multiple case study
  - 6 companies from furniture & timber construction cluster in Upper Austria

<table>
<thead>
<tr>
<th>Company</th>
<th>Products</th>
<th>Customer structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kitchen, doors, floors, burial</td>
<td>Private and business customers</td>
</tr>
<tr>
<td>2</td>
<td>Shop equipment, furnishing, architecture</td>
<td>Pharmacies, Doctors, Private customers, Opticians</td>
</tr>
<tr>
<td>3</td>
<td>Shop/business equipment, kitchen, windows, facade engineering, winter gardens</td>
<td>Private and business customers</td>
</tr>
<tr>
<td>4</td>
<td>Furnishing, stairs, doors, parquet flooring, interior design</td>
<td>Private and business customers</td>
</tr>
<tr>
<td>5</td>
<td>Hotel equipment, furnishing</td>
<td>business customers/Hotels, Private customers</td>
</tr>
<tr>
<td>6</td>
<td>Equipment for hospitals, hotels, restaurants and discotheques, private objects, stairs</td>
<td>Hospitals, Hotels, Restaurants, Discotheques, Private customers</td>
</tr>
</tbody>
</table>
Methodology - QSAM

- Tool of **diagnosis** to identify
  - current problems,
  - individual barriers &
  - specific improvement opportunities & potentials

→ **Holistic view of supply chain structures of a company**

- Developed by Childerhouse at al. 1999 at Cardiff University and regularly applied in international cases studies (n = 44) from several universities
  - University of Groningen
  - University of Wollongong
  - Thammasat University
  - Upper Austria University of Applied Sciences
Methodology QSAM

**Workshop 1**
- Kick-off-Presentation
- Theory of Process Management, Process Identification & Documentation

**Coaching 1**
- Company Tour
- Data Collection
- Identification & Documentation of own Processes
- Collect Benchmarking Data

**Workshop 2**
- Exchange of Experiences
- Methodologies for Processes analysis
- Methodologies for analysing collected data

**Coaching 2**
- Analysis of identified processes and collected data
- On-site investigation

**Workshop 3 & Final Presentation**
- Discussion of Results of Process Analysis
- Identification of Improvement Opportunities and next steps
- Exchange of Experience and Lessons Learned

**Final Report**
### Findings

<table>
<thead>
<tr>
<th>Company/Attributes</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Showroom</td>
<td>Study of architects</td>
<td>Interior design unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production strategy</td>
<td>ETO</td>
<td>ETO</td>
<td>MTO</td>
<td>MTO</td>
<td>ETO</td>
<td>ETO</td>
</tr>
<tr>
<td>Order stability</td>
<td>Low (60%)</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Predictability of orders</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Utilization of machines</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Restricted storage space</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Quick Scan Audit Methodology
Contribution to Practice

- Based on these identified challenges an individual action plan was set up for each carpentry.
- This action plan shows activities prioritized based on effort, benefit and time for implementation.

<table>
<thead>
<tr>
<th>Action</th>
<th>Effort</th>
<th>Benefit</th>
<th>Time</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reorganize the storage of material</td>
<td>L</td>
<td>M</td>
<td>MT</td>
<td>4</td>
</tr>
<tr>
<td>Define process of post-order-calculation</td>
<td>L</td>
<td>H</td>
<td>ST</td>
<td>3</td>
</tr>
<tr>
<td>Identify and document production steps (additional work) for extraordinary products</td>
<td>L</td>
<td>H</td>
<td>ST</td>
<td>1</td>
</tr>
<tr>
<td>Define after-sales process</td>
<td>L</td>
<td>H</td>
<td>ST</td>
<td>2</td>
</tr>
<tr>
<td>Acquire new customers/establish another mainstay</td>
<td>M</td>
<td>M</td>
<td>MT</td>
<td>5</td>
</tr>
</tbody>
</table>

H=high, M=medium, L=low
LT=long-term, MT=medium-term, ST=short-term
Contribution to Theory

- To further enlarge the applicability of QSAM
  → cross company comparison

<table>
<thead>
<tr>
<th>Workshop 1</th>
<th>Companies 1 – 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kick-off Presentation, QSAM explanation, Theory of Process Management</td>
<td></td>
</tr>
<tr>
<td>Coaching 1</td>
<td>Company 1 – 6</td>
</tr>
<tr>
<td>Company 1</td>
<td>Company 2</td>
</tr>
<tr>
<td>Company 3</td>
<td>Company 4</td>
</tr>
<tr>
<td>Company 5</td>
<td>Company 6</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Workshop 2</th>
<th>Companies 1 – 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange of Experiences, Findings from Value Stream Analysis, Methodologies for analyzing collected data</td>
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</tr>
<tr>
<td>Coaching 2</td>
<td>Company 1 – 6</td>
</tr>
<tr>
<td>Company 1</td>
<td>Company 2</td>
</tr>
<tr>
<td>Company 3</td>
<td>Company 4</td>
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<tr>
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<td>Company 6</td>
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<table>
<thead>
<tr>
<th>Workshop 3 &amp; Final Presentation</th>
<th>Companies 1 – 6</th>
</tr>
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<tbody>
<tr>
<td>Identification of Improvement Opportunities and Next Steps</td>
<td></td>
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<tr>
<td>Exchange of Experience and Lessons Learned</td>
<td></td>
</tr>
<tr>
<td>Company 1</td>
<td>Company 2</td>
</tr>
<tr>
<td>Company 3</td>
<td>Company 4</td>
</tr>
<tr>
<td>Company 5</td>
<td>Company 6</td>
</tr>
</tbody>
</table>
Conclusion and Further Research

• It is remarkable that these companies are willing to cooperate despite they are direct competitors - coopetition

• QSAM was successfully applied in a cross-company evaluation → next step: detailed cross-company evaluation based on one process (scheduled for Winter 2014: distribution process of 3 steel producing and processing companies in Austria)

• Test applicability of QSAM in Service Industry (e.g. Hospitals,…)

• Increase importance of soft facts (skill level of employees, willingness to innovate/to change…)
Thank you for your attention!

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References


