



# The 33<sup>rd</sup> ANNUAL NOFOMA CONFERENCE 28 – 30 September

# **BOOK OF ABSTRACTS**

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#### Foreword

The 33<sup>rd</sup> NOFOMA annual conference was originally planned to be organized by University of Iceland and to take place early June 2021. As the effects of COVID-19 outburst continued to be problematic and affect travel it was postponed to late September 2021 as was the situation one year ago when the NOFOMA 2020 annual conference was postponed and finally turned in to an on-line event. The unfortunate reality of the pandemic brings the NOFOMA society, still one more time, behind the screen and presenters in front of the cameras for this NOFOMA 2021 annual conference.

Given this reality, the NOFOMA Board decided to take actions and ask for volunteers to establish a scientific and organising committees from the major Nordic universities that have traditionally hosted the NOFOMA conference throughout the years. This resulted in two groups, the Scientific committee, taking care of the scientific work that mainly deals with accepting abstracts early on, carry out the double-blind review process and finally to publish this Book of abstract and later the proceedings. In addition, somewhat overlapping, the Conference organizing committee was established to host the on-line conference, plan for the doctoral session, make the programme, arrange for sessions leaders and key-note speakers as well as in collaboration with the Scientific committee publish this Book of abstracts.

The theme of the conference is "Operational excellence through logistics resilience". It was chosen due to the fact that the outburst of COVID-19 has brought on the society logistical problems, in addition to the horrifying health problems and losses of lives. Logistics operations are of key importance in such times to bring the support needed for the society through humanitarian work but also with better knowledge in the field of logistics to provide support and secure supplies to industries and the citizens that rely on logistics operations to continue as needed despite problematic situations. To reflect on this situation, not only are there several papers on this topic precented at NOFOMA2021, but also keynote speeches as well. One of our most respected member from the NOFOMA society, Professor Marianne Jahre from the Norwegian Business School & Lund University will talk on "Short of drugs? Call upon operations and supply chain management". In addition, to bring further light on the problems related to the pandemic, as well as the potential solutions, representatives form Maersk, the Danish transportation company that has had its share of disruption problems during the pandemic will give a talk on "Disruptions in shipping industry and the impact on global supply chains", this will be done by Christina Torp Jacobsen that has the role of Sales Manager Denmark together with Stig Kirkegaard Jensen - Area Head of Key Clients Scandinavia. We are very grateful for your engagement.

This year's NOFOMA conference attracted initially around 70 abstracts, somewhat lower number than previous years. The NOFOMA conference has always has its stronghold in the physical arena where the meeting between peers have been carried out successfully for more than 30 years in various places in the Nordic countries and in times had over 100 presentations carried out. At the deadline for revised full papers close to 30 papers were submitted and together with several work-in-progress papers will be presented at the conference. All full papers have undergone a double-blind review process as before and we bring our sincere gratitude to those of you dedicating your time in the review process that is one of our major strengths in carrying out the NOFOMA annual conference.

The NOFOMA2021 includes a doctoral day as usual and this time with the focus on Systematic Literature Reviews and Mixed-methods in SCM research. It takes place Tuesday, September 28 and was prepared by Dr. Diego Vega, Hanken School of Economics, in collaboration with Dr. Christian Durach, Technische Universität Berlin, Dr. Joakim Kembro, Lund University, and Dr. Andreas Wieland, Copenhagen Business School that who discuss "Systematic Literature Reviews in SCM"; Hossein Baharmand, University of Agder who discusses "Mixed-methods in SCM research"; and finally Dr. Chee Wong from Leeds University Business School, chief editor of the International Journal of Physical Distribution and Logistics Management who addresses issues related to publication in journals.

#### Publications

International Journal of Physical Distribution & Logistics Management (IJPDLM) continue its collaboration with NOFOMA by publishing a special issue of the best papers from the conference. After the conference, several papers will be invited for a further process to improve their theoretical and practical relevance. Special thanks go to the editorial team of IJPD&LM for the continued support.

#### **Programme and sessions**

The Programme and Sessions programme can be found in this book but also on the NOFOMA home page nofoma.net that has been updated for this year's conference. There you can as well find a link to the Zoom meetings. All sessions A have the same link as do sessions B, hence, if you are to attend more than one session, A or B in a sequence, you can stay on the line.

All presentations will be around 8 minutes long and give you highlights of the paper by using slide shows. Either direct after each presentation or after two or more the Session chair will open up for questions that participants can ask directly, i.e. the sessions will invite all of you to take part and in a NOFOMA spirit and give feedback to the authors verbally "on-site". For that purpose, you only need to unmute yourself and open for video if you want; hence, the sessions are executed as meetings and not a webinars. In addition, you are welcome to post questions through the Zoom Chat function.

One of our milestones have been the gala dinner after the first day of the conference that is obviously not achievable now. However, to compensate somewhat for that, we will arrange an open Zoom session in end of the first day to give participants possibility to "mingle" in virtual world and exchange some ideas and thoughts.

Hope you will enjoy the conference and please take part in the discussions, that is one of the key factors in strengthening our research society.

#### The Scientific Committee

Dr. Bente Flygansvær, Norwegian Business School, bente.flygansvær@bi.no

Dr. Sini Laari, Turku School of Economics, sini.laari@utu.fi

Dr. Ole Stegmann Mikkelsen, University of Southern Denmark, osm@sam.sdu.dk

Dr. Karim Tamssaouet, Norwegian Business School, karim.tamssaouet@bi.no

Dr. Henrik Gillström, Linköping University, henrik.gillstrom@liu.se

Dr. Gunnar Stefansson, University of Iceland, gunste@hi.is

#### The Organising Committee

Dr. Bente Merete Flygansvær, Norwegian Business School, bente.flygansvær@bi.no

Dr. Ceren Altuntas Vural, Chalmers University of Technology, ceren.altuntasvural@chalmers.se

Dr. Sini Laari, Turku School of Economics, sini.laari@utu.fi

Dr. Henrik Gillström, Linköping University, henrik.gillstrom@liu.se

The doctoral sessions/day in collaboration with the main conference:

Dr. Diego Vega, Hanken School of Economics, diego.vega@hanken.fi

# Doctoral day programme:

		28 September 2021	
28/09	Sessions:		Topics:
9:30 - 11:00	D1	Diego Vega	Kick-off
			Systematic
		Christian Durach, Joakim Kembro, and Andreas Wieland,	Literature Reviews in SCM
12:00 – 13:00	D2	Hossein Baharmand	Mixed-methods in SCM research
15:00 – 16:00	D3	Prof. Chee Wong, Chief editor.	Publishing in IJPDLM

# The Main conference programme:

		29 and 30 September	
29/09	Sessions:	Sessions leaders:	Topics:
08:45- 09:00	S0	NOFOMA Scientific Committee Zoom: 66729638727 Passcode: 202109	Opening
09:00- 10:00	S1	Dr. Ole Stegmann Mikkelsen Zoom: 66729638727 Passcode: 202109	Supply Chain Risk Management
10:00- 11:00	S2	Dr. Maria Björklund Zoom: 66729638727 Passcode: 202109	Retail and e-tail logistics
11:00-		Break	
11:15- 12:00	S3	Dr. Ceren Vural Zoom: 66729638727 Passcode: 202109	Keynote: Maersk
12:00-		Lunch brake	
13:00- 14:00	S4	Dr. Uni Sallnäs Zoom: 66729638727 Passcode: 202109	Collaboration
14:00- 15:00	S5A	Dr. Ala Arvidsson Sustainability Zoom: 66729638727 Passcode: 202109	
14:00- 15:00	S5B	Dr. Tore Listou Digitalization Zoom: 66889988064 Passcode: 202109	
15:00		Break	
15:15- 16:00		Chee Wong, Chief editor, IJPDLM Zoom: 66729638727 Passcode: 202109s	Celebrating IJPDLM 50thanniversary: current state and future direction
16:00- 17:00		All –Educational issues – post pandemic trends	Zoom After work – Round-up with the NOFOMA society

30/09:	Sessions:	Sessions leaders:	Topics:
09:00- 09:45	S7	Dr. Bente Flygansvær: Zoom: 66729638727 Passcode: 202109	KEY NOTE: "Short of drugs? Call upon operations and supply chain management" Professor Marianne Jahre, BI Norwegian Business School & Lund University
09:45		Break	
10:00- 11:00	S8	Dr. Bente Flygansvær: Zoom: 66729638727 Passcode: 202109	Sustainable and resilient logistics
11:00- 12:00	S9A	Dr. Anna Fredriksson Zoom: 66729638727 Passcode: 202109	Urban Logistics
11:00- 12:00	S9B	Dr. Gunnar Stefansson Zoom: 66889988064 Passcode: 202109	Transport and logistics management
12:00- 12:15.	S10	Zoom: 66729638727 Passcode: 202109	Closing of NOFOMA 2021

Zoom access to all sessions except "B" sessions:

https://chalmers.zoom.us/j/66729638727 Passcode: 202109

Zoom access to all "B" sessions: https://eu01web.zoom.us/j/66889988064 Passcode: 202109

# Detailed programme

		29 September 2021	
29/09	Sessions/	Chairs / Authors:	Topics/Title:
	Papers:		
08:45-	S0	NOFOMA Scientific Committee	Opening
09:00		Zoom: 66/29638/2/	
00.00	04	Passcode: 202109	Sumahi Chain Diak
10.00	51	Dr. Ole Stegmann Mikkelsen	Supply Chain Risk
10.00		Passondo: 202100	Wanagement
	15	Tim Folix Sievers	The era of supply chain
	10	Daniel Langner and	disruptions: Towards an
		Frik Hofmann	approach to leverage
			mitigation capabilities and
			enhance supply chain
			resilience
	29	Daniel Ekwall and	Trade wars, embargos and
		Gyöngyi Kovacs	sanctions - implications for
			supply chain management
	36	Daniel Langner,	The power of supply chain
		Erik Hofmann and	continuity management: An
		Tim Felix Sievers	approach to leverage early
			indicators of supply chain
	<b>E</b> 4	lars Otarstaft	
	54	Jan Stentott, Ole Steamenn Mikkelson and	
		Kont Adshall Wickstram	
			FFFFCTS
10:00-	S2	Dr. Maria Björklund	Retail and e-tail logistics
11:00		Zoom: 66729638727	5
		Passcode: 202109	
	25	John Olsson	The era of supply chain
			disruptions: Towards an
			approach to leverage
			mitigation capabilities and
			ennance supply chain
	15	lookim Kombro and	Monucl outomated ar amart2
	45		Tronds in Swodish Potail's
		Andreas Norman	Warehousing
	46	Emmelie Gustafsson	EFFECTS OF VIRTUAL
	10	Klas Hiort.	FITTING TECHNOLOGY ON
		Patrik Jonsson and	ONLINE CUSTOMERS'
		Jan Holmström	SHOPPING JOURNEYS AND
			ORDER PERFORMANCE
	11	Fredrik Eng Larsson, Uni Sallnäs,	Green distribution options in e-
		Maria Björklund and	commerce – display versus
		Maria Huge-Brodin	content

	10	Yuan Virtanen, Marianna	Innovative sustainable urban
		Sobkiewicz, Kien Do Trung, Anna	last mile: A synthetic review of
		Aminon and Britta Gammeigaard	literature and media data
11.00-		Break	
11:15-	S3	Dr. Ceren Vural	Kevnote:
12:00		Zoom: 66729638727 Passcode: 202109	"Disruptions in shipping industry and the impact on global supply chains" Christina Torp Jacobsen – Sales Manager Denmark Stig Kirkegaard Jensen – Area Head of Key Clients Scandinavia Maersk Scandinavia
12:00-	0.4	Lunch brake	
13:00- 14:00	54	Zoom: 66729638727 Passcode: 202109	Collaboration
	9	Jorge Gutierrez Chiriboga, Maria Huge-Brodin and Uni Sallnäs	Business model alignment in supply chain management – a literature review
	16	Oskari Rintala	How to not lose oneself: the case for relational identity in collaborative supply relationships
	49	Elmira Parviziomran and Viktor Elliot	The effects of bargaining power on trade credit in a supply network
	50	Sahil Ahmed, Patrik Jonsson and Frida Lind	TOWARDS SALES AND OPERATIONS PLANNING (S&OP) INTEGRATION: Exploring Interfaces And Mechanisms
14:00- 15:00	S5A	Dr. Ala Arvidsson Zoom: 66729638727 Passcode: 202109	Sustainability
	55	Jan Stentoft and Morten Brinch	UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS: AN UNTAPPED POTENTIAL FOR RELEVANT SUPPLY CHAIN MANAGEMENT RESEARCH
	7	Lisa Melander and Ala Arvidsson	Green innovation networks: a research agenda
	58	Rosa Palmgren and Ville Hinkka	Reverse logistics model for increased polystyrene recycling
	5	Helena Forslund, Maria Björklund and Fredrik Lindblad	CHALLENGES IN CLOSED LOOP SUPPLY CHAINS FOR WINDOW GLASS

	19	Anna Zhuravleva	INDUSTRIAL SYMBIOSIS FOR TEXTILE REUSE AND RECYCLING: NPOs and the separate textile collection system
14:00- 15:00	S5B	Dr. Tore Listou Zoom: 66889988064 Passcode: 202109	Digitalization
	2	Bennet Zander and Kerstin Lange	Application of Industry 4.0 Technologies in Logistics – Theory and Reality
	6	Malena Zielske, Tobias Held and Athanasios Kourouklis	Application of agile methods in logistics startups - Results from a global Survey Study
	34	Stefan Selensky	Towards a process-technology fit in supply chain management – a theory-driven approach to understanding Industry 4.0
	35	Tore Listou, Per Skoglund, Thomas Ekström and Lasse Elvemo	Would you like some artificial intelligence?
15:00		Break	
15:15- 16:00		Chee Wong, Chief editor, IJPDLM Zoom: 66729638727 Passcode: 202109	Celebrating IJPDLM 50thanniversary: current state and future direction
16:00- 17:00		All –Educational issues – post pandemic trends	Zoom After work – Round-up with the NOFOMA society

		30 September 2021	
30/09	Sessions/ Papers:	Chairs / Authors:	Topics/Title:
09:00- 09:45	\$7	Dr. Bente Flygansvær: Zoom: 66729638727 Passcode: 202109	KEY NOTE: "Short of drugs? Call upon operations and supply chain management" Professor Marianne Jahre, BI Norwegian Business School & Lund University
09:45		Break	
10:00- 11:00	S8	Dr. Bente Flygansvær: Zoom: 66729638727 Passcode: 202109	Sustainable and resilient logistics
	53	Victoria Ahlqvist, Nonhlanhla Dube, Marianne Jahre, Jin Soo Lee, Tsegaye Melaku, Andreas Farstad Moe, Max Olivier, Kostas Selviaridis, Joe Viana and Christine Årdal	ROACTIVE AND REACTIVE INTERVENTIONS - REDUCING MEDICINE SHORTAGES IN (AB)NORMAL TIMES
	28	Fatima Ezzahra Zelmate, Ozgur Ozpeynirci and Aysu Gocer	A TECHNOLOGICAL BUSINESS MODEL FOR FAIR DISTRIBUTION IN HUMANITARIAN AID SUPPLY CHAINS: A SYSTEMATIC LITERATURE REVIEW
	62	Henrik Pålsson, Erik Sandberg	ADOPTION BARRIERS FOR SUSTAINABLE PACKAGING PRACTICES IN FOOD SUPPLY CHAINS
	33	Bente Flygansvær, Mehdi Sharifyazdi and Trond Hammervoll	Exploring service as a mechanism to close the loop in supply chains: An ABC classification approach
11:00- 12:00	S9A	Dr. Anna Fredriksson Zoom: 66729638727 Passcode: 202109	Urban Logistics
	60	Farah Naz, Anna Fredriksson and Linea Kjellsdotter Ivert	SERVICE BLUEPRINTING AS A TOOL TO IMPROVE CONSTRUCTION LOGISTICS EFFICIENCY
	57	Farah Naz, Anna Fredriksson and Linea Kjellsdotter Ivert	IMPROVING CONSTRUCTION TRANSPORTS-A FREIGHT

			FORWARDERS
	14	Daniel Ruben Pinchasik and	Zero-emission urban logistics
		Inger Beate Hovi	from at cost perspective
11:00-	S9B	Dr. Gunnar Stefansson	Transport and logistics
12:00		Zoom: 66889988064	management
		Passcode: 202109	
	40	Cheryl Basil Sequeira and Günter	APPLICATION OF
		Prockl	DIGITALISATION IN
			LANDLORD PORTS TO
			ACHIEVE EFFICIENCY IN
			PORT PERFORMANCE:IN-
			DEPTH CASE STUDY OF
			DANISH PORT
	59	Antje Ross and Kerstin Lange	LNG bunker ships in the North
			Sea and Baltic Sea Emission
			Control Areas
	22	Samu Rautio and Taneli Malinen	SELECTING PARTS FOR
			ADDITIVE MANUFACTURING
			IN MILITARY LOGISTICS
	26	Juha-Matti Hirvonsalo and Juha-	Cooperation and Partnership
		Matti Lehtonen	with Suppliers at the Finnish
			Defence Forces
12:00-	S10	Zoom: 66729638727	Closing of NOFOMA 2021
12:15.		Passcode: 202109	

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10	Yuan Virtanen, Marianna Sobkiewicz, Kien Do Trung, Anna Aminoff and Britta Gammelgaard	Innovative sustainable urban last mile: A synthetic review of academic literature, grey literature and media data
11	Fredrik Eng Larsson, Uni Sallnäs, Maria Björklund and Maria Huge- Brodin	Green distribution options in e-commerce – display versus content
14	Daniel Ruben Pinchasik and Inger Beate Hovi	Zero-emission urban logistics from at cost perspective
15	Tim Felix Sievers, Daniel Langner and Erik Hofmann	The era of supply chain disruptions: Towards an approach to leverage mitigation capabilities and enhance supply chain resilience
16	Oskari Rintala	How to not lose oneself: the case for relational identity in collaborative supply relationships
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34	Stefan Selensky	Towards a process-technology fit in supply chain management – a theory-driven approach to understanding Industry 4.0
35	Tore Listou, Per Skoglund, Thomas Ekström and Lasse Elvemo	Would you like some artificial intelligence?
36	Daniel Langner, Erik Hofmann and Tim Felix Sievers	The power of supply chain continuity management: An approach to leverage early indicators of supply chain disruptions

40	Cheryl Basil Sequeira and Günter Prockl	APPLICATION OF DIGITALISATION IN LANDLORD PORTS TO ACHIEVE EFFICIENCY IN PORT PERFORMANCE:IN- DEPTH CASE STUDY OF DANISH PORT
45	Joakim Kembro and Andreas Norrman	Manual, automated or smart? Trends in Swedish Retail's Warehousing.
46	Emmelie Gustafsson, Klas Hjort, Patrik Jonsson and Jan Holmström	EFFECTS OF VIRTUAL FITTING TECHNOLOGY ON ONLINE CUSTOMERS' SHOPPING JOURNEYS AND ORDER PERFORMANCE
49	Elmira Parviziomran and Viktor Elliot	The effects of bargaining power on trade credit in a supply network
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# 2 - Application of Industry 4.0 Technologies in Logistics – Theory and Reality

#### Bennet Zander\*

#### Kerstin Lange\*\*

\*) Jade University of Applied Sciences, Department of Maritime and Logistics Studies, 26931 Elsfleth, Germany. E-mail: bennet.zander@jade-hs.de, Tel. +49 4404 9288-4326

\*\*) Jade University of Applied Sciences, Department of Maritime and Logistics Studies, 26931 Elsfleth, Germany. E-mail: kerstin.lange@jade-hs.de, Tel. +49 4404 9288-4160

#### ABSTRACT

#### Purpose

The positive impact of Industry 4.0 technologies has been emphasized by scientific work. However, existing research has predominantly focused on theoretical assumptions, but not on implemented cases. The focus of this paper is to examine the current practical application of these technologies in logistics companies.

#### Methodology/approach

In order to examine the implementation of Industry 4.0 technologies in practice, a literature and survey review as well as a qualitative survey of German logistics service providers were performed showing the differences between theoretical findings and the use in practice.

#### Findings

Although individual companies already benefit from Industry 4.0, results show that only few technologies have fully been accepted and adopted. Cloud computing, big data, and AR technologies are part of operations, whereas digital twins and artificial intelligence (AI) are still in their infancy. Cybersecurity plays an overriding role in gaining trust in the technologies.

#### **Research limitations/implications**

The research was carried out as part of the Interreg project INDU-ZERO. The survey refers to logistics service providers in Germany.

#### **Practical implications**

Initial approaches in internal logistics are available. However, looking at the whole supply chain, there is still a need to catch up. The more businesses adopt the technologies, the more connected and digital a supply chain could become, from which individual partners could derive added value.

#### **Originality/value**

In contrary to available papers, which concentrate on theoretical solutions, this paper provides an overview of technologies which are crucial for companies and which are already applied. Necessary prerequisites as well as reasons for non-realization are presented.

Keywords: Industry 4.0, Smart Factory, Technology Standards, IoT, Digital Twin, Cloud Computing, Big Data

# 5- CHALLENGES IN CLOSED LOOP SUPPLY CHAINS FOR WINDOW GLASS

#### Helena Forslund\*, Maria Björklund\*\*,\* and Fredrik Lindblad\*\*\*,\*

\* Linnaeus University, Department of Accounting and Logistics, 351 95 Växjö, Sweden, <u>helena.forslund@lnu.se</u>

\*\* Linköping University, Department of Logistics and Quality, 581 83 Linköping, Sweden, <u>maria.björklund@liu.se</u>

\*\*\* Municipality of Växjö, Business Department, 351 12 Växjö, Sweden, fredrik.lindblad@vaxjo.se

#### ABSTRACT

#### Purpose

Even if glass is 100% recyclable, only 1% of window glass is currently handled in closed loop supply chains (CLSC) in Sweden, causing unnecessary environmental impact and indicating the existence of challenges. The purpose of this article is to increase the knowledge on challenges for applying closed loop supply chains (CLSC) for window glass.

#### Design/methodology/approach

Based upon a literature review, a first framework of challenges in different types of CLSC for window glass is developed. The challenges are complemented, elaborated and validated in two workshops with glass experts and construction stakeholders respectively, followed by interviews with experts on glass recycling.

#### Findings

Four different types of CLSC are identified. Many window glass CLSC design challenges in material and information flows are identified; the lack of large-scale actors, lack of general and specific knowledge, lack of business models, uncertain product quality and lack of promotion for window glass CLSC. The literature focuses more on operations and control challenges, as compared to our empirical findings.

#### **Research limitations/implications**

The developed framework structures and exemplifies challenges, which implies expanded CLSC knowledge in a specific setting. Both the model and the identified CLSC types are contributions to the CLSC literature. A research agenda is also presented.

#### **Practical limitations/implications**

Practitioners can learn from and mitigate the challenges. The research agenda indicates and assists in how. This can lead to a higher recycling rate of window glass.

#### **Originality/value**

Very limited research on CLSC for the recycling of window glass is identified, thus the study demonstrates originality.

Keywords: closed loop supply chains, circular flow, supply chain management, window glass, flat glass, Sweden

# 6 Application of agile methods in logistics startups Results from a survey

Malena Zielske, Hamburg University of Applied Sciences, malena.zielske@haw-hamburg.de

 $\label{eq:constraint} \ensuremath{\mathsf{Tobias}}\xspace{\ensuremath{\mathsf{Hamburg}}}\xspace{\ensurem$ 

Athanasios Kourouklis, University of the West of Scotland, thanos.kourouklis@uws.ac.uk

## ABSTRACT

#### Purpose

The logistics industry has seen the emergence of many startups in recent years. Many of these logistics startups use new technologies and software to develop disruptive products, services, or platforms. Unlike many companies founded during the "dot-com bubble", these startups seem to be more successful in creating lasting added value for their customers. This paper aims to answer the research question if the use of agile methods and practices especially in software development in logistics startups, increases entrepreneurial success in regard to rapidly changing customer expectations, business model insecurities, and complex technological decisions. In addition, it is analysed how the application of agile methods changes over the age of the logistics startups.

#### Design/methodology/approach

A global survey was conducted to look at the usage of agile methods, benefits, challenges and the impact on the success of startups. The largest group of participants (95 employees of logistics startups in total) are members of (top) management, agile coaches and team leaders. The questionnaire contains 20 questions, including questions to enable the multidimensional classification of the participants.

#### **Findings**

The findings of the survey demonstrate how startups in the logistics industry apply agile practices to deal with a high level of market insecurity and show how the application and use of agile methods changes over the age of logistics startups. The results indicate that younger logistic startups use agile methods predominantly to design product features and maximise customer value whereas logistics startups older than five years focus more on the optimisation of internal processes through the use of agile methods.

#### **Research limitations/implications (if applicable)**

The sample size does not allow a comparison of start-ups by country of origin as most startups come from Germany or participants did not state their country of origin.

#### **Original/value**

The value of the present study lies in its contribution to the widely unexplored field of agility in logistic startups and the noteworthy opinions of the experienced participants.

Keywords: Agile methods, logistics, startups, survey

# 7- GREEN INNOVATION NETWORKS: A RESEARCH AGENDA

Lisa Melander, Chalmers University of Technology, lisa.melander@chalmers.se

Ala Arvidsson, Chalmers University of Technology, ala.ardvidsson@chalmers.se

#### ABSTRACT

#### Purpose

The purpose of the paper is to develop a research agenda for future studies in green innovation networks. This purpose is achieved by aiming to: (i) identify which actors are involved in green innovation networks and what roles they have in these networks, and (ii) understand how and why actors collaborate in networks, and (iii) what challenges they need to overcome for successful collaboration in green networks.

#### Design/methodology/approach

The findings are based on the review of extant literature on collaborations in networks to develop green innovations. The Scopus database was used for the literature review. 63 papers are included in the review.

#### Findings

The review included a wide range of green innovations, which were sorted into five groups: products, services, processes, business models and marketing. Types of actors were identified as well as why they engage, the extent of networks as well as prevalence of actors. This research discusses what kind of network relationships (e.g. new types or cross-sectoral) that need to be understood in studying these green innovations.

#### Research limitations/implications (if applicable)

In the network, there are distant actors included, such as the firms' suppliers' and customer's networks in other industries. Also, governmental agencies, public actors and academic actors are important in these networks.

#### **Practical implications (if applicable)**

Depending on what kind of green innovation, we see a wide range of environmental gains, however, many focus on reducing emissions, changing to more environmentally sustainable materials and energy savings.

#### **Original/value**

The review gives research on collaborative innovation more nuances on the context of green innovation networks. The review shows that firms share knowledge on green innovation vertically in their supply chains as well as across industries through horizontal collaborations. Dyadic, triadic, supply chain as well as consortia collaborations are identified.

*Keywords: Supply chain management, eco-innovation, actors, horizontal collaboration, literature review* 

# 9-BUSINESS MODEL ALIGNMENT IN SUPPLY CHAIN MANAGEMENT – A LITERATURE REVIEW

#### Jorge Gutierrez Chiriboga \* Maria Huge-Brodin \* \* Uni Sallnäs \* \* \*

\* Scania CV AB, Innovation Office, SE-151 87, Södertälje, Sweden, jorge.gutierrez@scania.com.

\*\* Linköping University, Department of Management and Engineering, Linköping University, SE-581 83, Linköping, Sweden, maria.huge-brodin@liu.se.

\* \* \* Linköping University, Department of Management and Engineering, Linköping University, SE-581 83, Linköping, Sweden, uni.sallnas@liu.se.

#### ABSTRACT

#### Purpose

Efficient interaction between actors within supply chains is crucial for their effectiveness. It could be argued that a certain degree of alignment between the different actors' business model is a prerequisite for the success of interaction. The purpose is to explore how business model alignment between different supply chain actors is described and analysed in the context of Supply Chain Management (SCM).

#### Design/methodology/approach

A systematic literature review on business models in the context of SCM was performed. Based on holistic meta-business model (Kindström, 2005), the findings were analysed with respect to the business model and to the supply chain.

#### Findings

The findings confirm that business models in the context of SCM is a relatively unexplored area, and that the topic has been addressed in a wide variety of journals. In relation to the supply chain, alignment is discussed between buyers and suppliers, between actors in the transport provision chain, between the supply chain and the transport provision chain, and internally. Overall, alignment between buyers and suppliers is confirmed as positive for supply chain performance.

#### **Research limitations/implications (if applicable)**

The results provide bases for further research into more focused areas within the business model frame. In particular, the connection between transport provision and their suppliers – the automotive industry – is missing in the literature.

#### **Original/value**

The business model concept is poorly addressed with the perspective of alignment. Research into business model alignment can contribute to literature on strategic SCM.

Keywords: business model, alignment, buyer-supplier relationship, SCM, literature review

# 10-Innovative sustainable urban last mile: A synthetic review of academic literature, grey literature and media data

Yuan Virtanen \*

Marianna Sobkiewicz \* \*

Kien Do Trung \* \*

Anna Aminoff \* \* \*

#### Britta Gammelgaard \* \*

\* Xi'an Jiaotong-Liverpool University, School of Intelligent Finance and Business, 111 Renai Road, 215123, Suzhou, P.R. China, Yuan.Virtanen@xjtlu.edu.cn.

\* \* Copenhagen Business School, Department of Operations Management, Solbjerg Plads 3, DK-2000, Frederiksberg, Denmark.

\* \* \* Hanken School of Economics, Department of Marketing, Arkadiankatu 22, 00100, Helsinki, Finland.

#### ABSTRACT

#### Purpose

The rapid growth of e-commerce further accelerated by the current Corona crisis demands innovative solutions in creating more sustainable urban last mile logistics. However, academic research is behind practical developments, so that topic has not yet been examined from a practical perspective by considering grey literature and media data. This paper aims to provide an integrated understanding of the conceptual and practical developments in innovative sustainable last mile solutions.

#### Design/methodology/approach

By adopting a 'state-of-the-art' literature review approach, this paper analyses academic literature, grey literature (i.e. industry reports) and media data (i.e. news articles and Twitter tweets). Thematic content analysis was applied to synthesise findings from the data sources and to identify key themes and the front-line of sustainable last mile innovations.

#### Findings

Results reveal that all three data sources highlight innovative solutions within the stages of last mile transport (e.g. innovative vehicles) and last mile delivery (e.g. goods reception solutions), while giving limited consideration towards the processes of last mile fulfilment and last mile reverse logistics. Based on the synthetic review, a structured research agenda is proposed and several key innovative solutions that have high potential for future implementation are suggested.

#### **Original/value**

This paper establishes a novel approach for innovative sustainable last mile by synthesising

academic literature, grey literature and contemporary trends in media sources. This synthesis contributes to the emergence of new understandings of innovative sustainable last mile by bridging the gap between academic scholarship, grey literature and media data under this topic.

Keywords: Last mile logistics, Literature review, Secondary data, Media data, Grey literature, Sustainability, Urban freight innovations

# 11-GREEN DISTRIBUTION OPTIONS IN E-COMMERCE – DISPLAY VERSUS CONTENT

#### Fredrik Eng-Larsson \* Uni Sallnäs \* \* Maria Björklund \* \* \* Maria Huge-Brodin \* \* \* \*

\* Stockholm Business School, Stockholm University, SE-106 91 Stockholm, Sweden, fredrik.englarsson@sbs.su.se.

\*\* Linköping University, Department of Management and Engineering, Linköping University, SE-581 83, Linköping, Sweden, uni.sallnas@liu.se.

\* \* \* Linköping University, Department of Management and Engineering, Linköping University, SE-581 83, Linköping, Sweden, maria.bjorklund@liu.se.

\* \* \* \* Linköping University, Department of Management and Engineering, Linköping University, SE-581 83, Linköping, Sweden, maria.huge-brodin@liu.se.

#### ABSTRACT

#### Purpose

Lately, some e-commerce retailers have started displaying climate labels - i.e., eco-labels focusing on greenhouse gas emissions - on distribution or fulfilment alternatives in the check-out of the online store. Using actual purchase data, the purpose of this research is to understand the impact of climate labelling on customers' choice of fulfillment.

#### Design/methodology/approach

We analyse six months of customer checkout data from a market-leading pharmacy in Northern Europe using a nested logit formulation.

#### Findings

We find that climate labels have a large and significant impact on the probability that a fulfillment alternative is selected by the customer. Further, if the label is attached to a top alternative, it increases the probability that the alternative is chosen. We also find that preselection has a strong effect on the impact of climate labels.

#### **Research limitations/implications (if applicable)**

We note that climate labelling seems to have a strong impact on customer behavior, it opens up several venues for further research. For instance, there may be other relevant ways to slice the data to bring additional insights. And as climate labelling from more "well-known" labels are being used in e-commerce, the impact might be different.

#### **Research limitations/implications (if applicable)**

The results have implications for retailers and logistics service providers alike, by indicating both how the content of the fulfillment option and the display of the option in the check-out impacts the business. The results further underline the importance of coordination between retailers and logistics service providers to provide support to consumers.

#### **Original/value**

Contrary to previous research into greening e-commerce distribution, this paper takes a quantitative approach to address green consumer preferences.

Keywords: Green distribution, e-commerce, last-mile deliveries, consumer preferences, green logistics

# 14- Zero emission distribution in urban logistics? Barriers and opportunities from a cost perspective

Daniel Ruben Pinchasik, Institute of Transport Economics, Norway, drp@toi.no Inger Beate Hovi, Institute of Transport Economics, Norway, ibh@toi.no

#### Purpose

Achieving CO<sub>2</sub>-free city logistics by 2030 requires rapid phase-in of low-/zero-emission vehicles, e.g. biogas, battery-electric and hydrogen-electric technology. For vans, the supply of electric models is increasing. For heavy-duty vehicles (HDVs), supply is more immature, although suppliers are increasingly bringing zero- and low-emission trucks to market. This paper presents a Total Cost of Ownership (TCO) model for seven alternative propulsion technologies, focussing on vehicle classes most likely used in urban logistics, with time span until 2030.

#### Design/methodology/approach

The TCO model is expanded and improved, building extensively on methods/approaches in scientific literature. Using detailed (decomposed) cost functions, we assess today's ownership costs, estimate future costs and cost competitiveness between propulsion technologies, and simulate cost effects of (changes) in public support schemes, user intensity and other assumptions.

#### Findings

For vans, electric propulsion is under some conditions already competitive with diesel vans, but alternative propulsion HDVs currently yield higher TCO than diesel due to higher capital costs, uncertainties (higher investment costs and uncertain rest values) and insufficient savings under operation. By 2025, expected cost decreases for battery-electric vehicles substantially improve their cost competitiveness, but high dependency on subsidies and other advantages remains. By 2030, battery-electric vehicles might compete with ICE in favourable use cases, while hydrogen-electric vehicles still have higher TCO.

#### Practical implications (if applicable)

The TCO model allows efficient assessment for different vehicle segments and propulsion systems under different assumptions. Findings indicate that use intensity and framework condition advantages are highly important, particularly for competitiveness of battery-electric trucks, and continued differential treatment of zero-emission alternatives is likely vital for their adoption. Insights into relative importance of cost drivers helps policy-makers and operators to make better-informed decisions. Simultaneously, there is still much uncertainty on future cost developments for important components, while also factors beyond pure TCO will affect the adoption of zero-/low-emission HDVs.

#### Original/value

The paper contributes to and expands existing analyses in multiple ways: We perform detailed decompositions both of TCO and investment cost differentials between diesel and alternative technology vehicles. Using decompositions and projecting future component prices, we also develop TCO calculations for 2025 and 2030 and a framework for sensitivity analyses. We further employ real-life data on fuel consumption, increasing model representativeness.

Keywords: Total costs of ownership, alternative propulsion technology, city logistics, freight transport, electric vehicles, vans, HDVs, cost competitiveness.

## 15- THE ERA OF SUPPLY CHAIN DISRUPTIONS TOWARDS AN APPROACH TO LEVERAGE MITIGATION CAPABILITIES AND ENHANCE SUPPLY CHAIN RESILIENCE

Tim Felix Sievers \* Daniel Langner \* \* Erik Hofmann \* \* \*

\* University of St. Gallen, Institute of Supply Chain Management, Dufourstrasse 40A, 9000, St. Gallen, Switzerland, felix.sievers@unisg.ch

\*\* University of St. Gallen, Institute of Supply Chain Management, Dufourstrasse 40A, 9000, St. Gallen, Switzerland, daniel.langner@unisg.ch

\* \* \* University of St. Gallen, Institute of Supply Chain Management, Dufourstrasse 40A, 9000, St. Gallen, Switzerland, erik.hofmann@unisg.ch

#### ABSTRACT

#### Purpose

In addition to the omnipresent COVID-19 pandemic, several disruptive events have affected global supply chains in the past years. Due to global supply chain extensions and their increased complexity, supply chains have become more vulnerable to disruptions. Companies need to build mitigation capabilities to enhance supply chain resilience (SCRES) comprehensively and reduce the severe impact of large-scale disruptions.

#### Design/methodology/approach

We employed 30 interviews to identify mitigation capabilities to deal with large-scale disruptions. We investigated internationally operating firms in two rounds based on the *Delphi* technique. The *Grounded Theory* analysis has been applied with the *Gioia* methodology presenting the results of the data analysis.

#### Findings

Seven aggregate dimensions are defined to systematically guide achieving SCRES for each of its three stages: pre-disruption-stage, at-disruption-stage, and post-disruption-stage. Within the interrelated dimensions managerial crisis capability, internal corporate network, supply chain network, market position, business structures, business processes, and social capital, a framework is derived, and 75 mitigation capabilities identified that provide a higher level of detail for organizations to build SCRES.

#### **Research limitations/implications (if applicable)**

Further research is needed to identify and frame specific mitigation capabilities for small and medium-sized enterprises being exposed to large-scale disruptions.

#### Practical implications (if applicable)

This paper provides organizations with a framework of seven overarching dimensions with 75 mitigation capabilities to systematically achieve SCRES and effectively deal with large-scale disruptions in the long-term.

#### **Original/value**

Facing the current pandemic, there is no comprehensive framework for companies and their supply chains to deal with large-scale disruptions during the pre-disruption-stage, at-disruption-stage, and post-disruption-stage.

Keywords: Supply Chain Resilience, Supply Chain Disruption, COVID-19 Pandemic, Mitigation Capabilities, Inductive Research

# 16-How to not lose oneself: the case for relational identity in collaborative supply relationships

#### Oskari Rintala \*

\* University of Turku, Department of Marketing and International Business, Rehtorinpellonkatu 3, 20500, Turku, Finland, aomrin@utu.fi

#### ABSTRACT

#### Purpose

Researchers have for long stressed the importance of identity as a self-defining aspect of social actors, and it has been suggested that collaborating groups benefit from establishing a shared identity between them. This, however, poses a challenge related to a fundamental psychological need to maintain distinctiveness of identities. I apply the theory of intergroup leadership based on the concept of relational identity to address the problem of identity threats in supply chain collaboration and develop understanding regarding identity in the context.

#### Design/methodology/approach

The conceptual research builds on and extends previous views on identity in interorganizational contexts. Relational identity theorizing is applied to build understanding on relational supply chain identity.

#### Findings

Identity and identification are essential mechanisms of interorganizational activity. Supply chain collaboration is better understood when considered with relation to the intergroup identities among supply chains and networks.

#### **Research limitations/implications**

Future studies could support the theoretical suggestions with empirical evidence.

#### **Practical implications**

Interorganizational relationships in supply chains could be better managed by following suggestions on identity management in the context. In particular, managers should pay attention to the nature of collaborative supply relationships and use due rhetoric to manage them.

#### **Original/value**

This study contributes to a call for a better understanding of the relational aspects of supply chains by adapting social psychological theories to study the context. The interdisciplinary approach builds knowledge about supply chain identity and its significance in business practice.

*Keywords: supply chain, social identity, relational identity, collaboration, intergroup relations, identity threat* 

# 19-INDUSTRIAL SYMBIOSIS FOR TEXTILE REUSE AND RECYCLING: NPOs and the separate textile collection system

Anna Zhuravleva, Hanken School of Economics, Helsinki, Finland, anna.zhuravleva@hanken.fi

#### ABSTRACT

#### Purpose

All EU-member states are obligated to introduce separate textile collection by 2025. The study aims at creating an understanding of textile flows and industrial symbiosis for collection of post-use textiles and the position of NPOs in it.

#### Design/methodology/approach

The study employs embedded single case study with the actors of separate textile collection pilot and three largest NPOs. The main data collection method is semi-structured interviews.

#### Findings

The study positions the actors, maps their interests and motivations in textile collection and sorting. The study identifies a lack of mechanisms for textile fraction exchange and conflicting interests between the actors that collect the same textile fraction.

#### **Research limitations**

The study is limited to Finland as a case country and limiting the scope of actors to the ones involved in collection and sorting of post-use textiles.

#### **Practical implications**

The study provides the practitioners with insights on the links between the actors, their interests and motivations of each other. The study finds conflicting motivations that can potentially create tensions between the actors. For NPOs, the study provides insights on upholding their own collection of reusable textiles when the upcoming nation-wide collection system will be established.

#### Social implications

An integration of NPOs has a potential to reduce export of low-quality post-use textiles to the developing countries and increase domestic circularity of textiles. The NPOs' textile reuse activities are an important source of funding for global development projects.

#### **Original/value**

The study addresses a topical issue of post-use textile collection when the phenomenon is just developing, and new roles are established in this area.

Keywords: post-use textile, collection, sorting, textile waste management, NPOs, reverse supply chain.

#### 22 - SELECTING PARTS FOR ADDITIVE MANUFACTURING IN MILITARY LOGISTICS

#### Samu Rautio\* Taneli Malinen\*\*

\*Finnish National Defence University, Finland, samu.rautio@mil.f \*\*Finnish National Defence University, Finland, taneli.malinen@mil.fi

#### Purpose

In the context of military logistics, the availability of troops depends on their maintenance. Maintenance requires a sufficient number of spare parts. The military operating environment places demands on the availability of spare parts. The use of AM has been identified as a potential production method. Its advantage is that a wide variety of parts can be manufactured on the same machine. It is not entirely clear how these spare parts should be selected. The purpose of the study is to find out which factors influence the selection of spare parts when using the Additive Manufacturing (AM) in the military logistics. The study also sought explanation as to how military operating environment affect to AM spare parts decision-making process.

#### Design/methodology/approach

In this study we focus on selection criteria in different readiness states. Multiple-criteria decision analysis (MCDA) was used as the research method.

#### Findings

As a result of the study, it was identified that the selection criteria for military spare parts differ from civilian criteria. We found that time factors in particular are critical for selection.

#### **Research limitations/implications**

The method in this study, MCDA, requires a certain approach. Choosing conflicting criteria affects to outcome. The choice of criteria in a very complex environment is challenging and limits the study to a comparison between these criteria only.

#### **Original/value**

This study introduces a new perspective the using of AM in military maintenance and repair.

Keywords: Military logistics, Additive manufacturing, MCDA, Supporting decision-making

# 25 - Mapping Customer Experience of Unattended Delivery Services in E-Grocery Retail

#### John Olsson \*

\* Department of Design Sciences, Packaging Logistics, Lund University, Lund, Sweden E-mail: john.olsson@plog.lth.se, Tel: +46462223306

#### ABSTRACT

#### Purpose

The purpose of this study is to empirically identify and describe customer experience of unattended delivery services in e-grocery retail, and suggest propositions for further research and development of the research area.

#### Design/methodology/approach

This exploratory research is based on a series of qualitative interviews to explore customer experience of unattended grocery delivery services. Semi-structured interviews with nine early adopters of such services were conducted. The coding revealed patterns of customer experience based on which propositions were put forward.

#### Findings

The empirical evidence shows that there are four dimensions of customer experience created by unattended delivery services. The emotional dimension includes flexibility, ease of use, luxury and futurism. Cognitive experience includes saving time, security, and food safety. The social dimension refers to interactions with family, friends and colleagues. Finally, the behavioral dimension includes willingness to pay, as well as word-of-mouth.

#### **Research limitations/implications (if applicable)**

To support further theory development, this study presents propositions on the dimensions of customer experience created by unattended delivery services. Moreover, the study findings enhance the understanding of customer experience creation throughout the customer journey.

#### Practical implications (if applicable)

What outcomes and implications for practice, applications and consequences are identified? How will the research impact upon the business or enterprise? What changes to practice should be made as a result of this research? What is the commercial or economic impact? Not all papers will have practical implications.

#### **Original/value**

This study contains the first in-depth investigation of customer experience in unattended grocery delivery services, an emerging phenomenon in last mile e-grocery delivery.

Keywords: Customer Experience, Unattended Delivery, Last Mile, Grocery, Retail, Service

#### 26 - Cooperation and Partnership with Suppliers at the Finnish Defence Forces

#### Juha-Matti Hirvonsalo\* Juha-Matti Lehtonen\*\*

\*National Defence University, Finland, juha-matti.hirvonsalo@mil.fi \*\*National Defence University, Finland, juha-matti.lehtonen@mil.fi

#### Purpose

The Finnish Defence Forces (FDF) has unique interests in supplier performance in emergency conditions. FDF classifies its suppliers as either strategic partners, partners, or transaction suppliers based on their intended role in times of national emergency. Simultaneously, the FDF needs to abide by public procurement regulations. Regulations concerning equal treatment and open competition appear to be at odds with partnering, relation-specific investments, and emergency preparedness. The purpose of the study is to find out how the supplier-customer relationship is viewed among the transactions suppliers and should they be given more importance.

#### Study design/methodology/approach

A Webropol-survey to those FDF's suppliers without a partnership classification was carried out in January 2021. There were 27 questions involving perceptions of the supplier-customer relationship, efficiency, and equitability. Exactly 100 responses were received from the 152 companies surveyed.

#### **Findings**

Only tentative findings at this early analysis stage may be reported. However, 41 companies viewed their product as strategic in Kraljic's matrix, 51 stated that they have a critical role and 60 that they have a strategic partnership with FDF.

#### **Originality/value**

The FDF is a preparedness organization. The results will shed light on how its suppliers view supplier-customer relationships and their own role as transaction suppliers. In addition to implications for the FDF, the study may also provide guidelines for all preparedness organisations under public procurement rules on how to balance competition, efficiency, and emergency conditions needs.

Keywords: procurement, supplier cooperation, preparedness

# 28 -A TECHNOLOGICAL BUSINESS MODEL FOR FAIR DISTRIBUTION IN HUMANITARIAN AID SUPPLY CHAINS: A SYSTEMATIC LITERATURE REVIEW

Fatima Ezzahraa Zelmate \*

Associate Professor Aysu Göçer \*\*

#### Associate Professor Özgur Özpeynirci \*\*\*

\* Izmir University of Economics, Department of Logistics Management, Sakarya Street, No:156, 35330, Balcova, Izmir, Turkey, fz.zelmate @gmail.com

\*\* Izmir University of Economics, Department of Logistics Management, Sakarya Street, No:156, 35330, Balcova, Izmir, Turkey, aysu.gocer@ieu.edu.tr

\*\*\* Izmir University of Economics, Department of Logistics Management, Sakarya Street, No:156, 35330, Balcova, Izmir, Turkey, ozgur.ozpeynirci@ieu.edu.tr

#### Purpose

The purpose of this paper is to present the aid flows connecting the humanitarian supply chain (HSC) actors that build a technology driven humanitarian aid business model in order to improve the fairness of the distribution of humanitarian aid.

#### Design/methodology/approach

A systematic literature review (SLR) is carried out as a method for extracting humanitarian aid flows connecting HSC partners; to build humanitarian aid business model; a model to be supported by the latest technologies.

#### Findings

This study proposes a technological model in order to improve the transparency and decision making among the humanitarian aid supply chain (HASC) partners that provides a fair humanitarian aid distribution.

#### **Research implications**

This research presents the connections of aid flows among the HSC actors; in which SLR is conducted and studies the contribution of technology implementation in HASC in order to achieve fairness and transparency. The technology driven humanitarian aid business model presents the big pictures of aid flows among HSC actors and explains where technology should interfere.

#### **Originality/value**

SLR in the humanitarian fair distribution context is presented; the technology driven model developed can be used in the humanitarian projects considering technology as a possible solution to aid transparency and fairness.

Keywords: Humanitarian Supply Chain, Relief, Fairness, Information Sharing, Coordination, Transparency, Technology.

## 29 - Trade wars, embargos and sanctions Implications for supply chain management

Daniel Ekwall, University of Borås, Borås, Sweden, daniel.ekwall@hb.se

Abstract Gyöngyi Kovacs, Hanken School of Economics, Helsinki, Finland, gyongyi.kovacs@hanken.fi

#### **Purpose (mandatory)**

The purpose of the study is to explore the logistics and SC effects linked to trade wars, embargos, and sanctions, or even other geopolitical events that effects and alters the current status quo of international trade and business relations. The paper also provides a research agenda for SCM on this basis.

#### Design/methodology/approach (mandatory)

This is a conceptual paper based on a system approach, which emphasizes a holistic view instead of the characteristics of the different parts. The paper revisits macro-economic and geopolitical developments and evaluates their impact on, and implications for supply chains.

#### **Findings (mandatory)**

The paper frames supply chains within macro-economic and geopolitical events and their development. It shows that causal relationships between acts of trade conflict to an actual and intended change in the trade between actors are weak, paradoxical, and non-linear. Outside of conflicts, changes to the rules and regulations in international business are slow and predictable, allowing for companies and their supply chains to adapt. Trade wars make the changes in trade regulations less predictable but they are also introduced at a much higher pace. This results in higher uncertainty for all involved actors. This also results in a new supply chain systemic behaviour, which is better understood as a complex system instead of the more traditional supply chain view of stable links and nodes.

#### **Research limitations/implications (if applicable)**

#### Practical implications (if applicable)

#### **Originality/value (mandatory)**

The paper contributes to the understanding of geopolitical developments and their implications for supply chain management and develops a specific research agenda for supply chain management.

**Keywords:** Supply chain management, supply chain strategy, international trade, trade wars, geopolitical conflicts

# 33 - Exploring service as a mechanism to close the loop in supply chains: An ABC classification approach

#### Bente Flygansvær \* Mehdi Sharifyazdi \*\* Trond Hammervoll \*\*\*

\* BI Norwegian Business School, Oslo, Norway, bente.flygansvaer@bi.no

\*\* BI Norwegian Business School, Oslo, Norway, mehdi.sharifyazdi@bi.no

\*\*\* Østfold University College, Østfold, Norway, trond.hammervoll@hiof.n

#### Purpose

The purpose of this paper is to investigate into service as a mechanism to close the loop in supply chains. The paper discusses how adapted service levels, using the ABC analysis approach, may increase the share of value in waste resources.

#### Design/methodology/approach

This study investigates a B2B relationship between waste management customers and an agency for waste management. Different methods for ABC classification of customers are explored, based on various criteria (such as volume of waste, number of containers, value of contracts, etc.) as well as on different proportions of customers in each class. Secondly, differentiated levels of service, i.e. frequency of emptying waste containers, are considered for each class. Then, each method is simulated to measure different KPIs such as total cost, capacity utilization of resources, risk of unsatisfied customers, etc. At the end, the methods are compared based on KPIs to find the most suitable way of ABC classification in order to close the loop in supply chains.

#### Findings

The results show that ABC classification of customers has significant effect on KPIs such as cost and service level. They also show that the way ABC analysis is carried out, has significant effect on the performance as well.

#### **Research limitations/implications**

A classic logistical tool of ABC-analysis, combined with service definitions, demonstrates how one can understand the waste management customer.

#### **Practical implications**

This research contributes to knowledge of how customer service is a tool to close the loop in supply chains. This research will give businesses within the waste management industry practical advice and tool in ensuring such an important transition.

#### Original/value

ABC analysis is used and simulated in a new field. It demonstrates the value of applying basic logistics and supply chain management tools and techniques in new settings and contexts.

Keywords: ABC analysis, Closed loop supply chains, Waste, Customer service, Segmentation, Simulation

# 34-Towards a process-technology fit in supply chain management – a theory-driven approach to understanding Industry 4.0

Stefan Selensky, University of St. Gallen, Institute of Supply Chain Management, Switcherland, stefan.selensky@unisg.ch

#### ABSTRACT

#### Purpose

Supply chains are predicted to face severe disruptions due to the deployment of Industry 4.0 technologies. However, a theoretical understanding of Industry 4.0 in supply chain processes and sensemaking of their benefits is still widely missing in the existing literature. Therefore, we utilize task-technology-fit theory (TTF) to explain successful technology deployment in specific supply chain innovation problems.

#### Design/methodology/approach

Informed by task-technology-fit theory, we generate a framework of process-technology fit in supply chains. Subsequently, we assemble a dataset of real-world use-cases containing successful technology-enabled process innovation in supply chains. Finally, we use quantitative cluster analysis to derive and interpret archetypical innovation problems and corresponding solutions.

#### **Findings**

Based on the conceptually derived framework, the quantitative analysis results in seven clusters of innovation problems, fitting technologies that have proven to innovate them successfully, and indications about the general characteristics of these technologies.

#### **Research limitations/implications**

We provide useful and empirically derived archetypes of innovation problems in supply chain processes. This way, the paper supports future research to analyze these different archetypical clusters in-depth. Moreover, to the best of our knowledge, our findings are among the first to provide specific insights on the inter-relationship of process characteristics and technology characteristics in supply chain processes.

#### **Practical implications**

The study reduces the complexity of Industry 4.0 applications by breaking them down into seven manageable clusters. Practitioners can use the resulting clusters to classify their organization's problems, analyze similar problems, and find fitting technological solutions based on our empirical insights.

#### **Original/value**

This study is among the first to apply task-technology-fit theory to a supply chain context on a process level. Therefore, it provides theory-driven insights into the deployment of Industry 4.0 technologies in supply chains, which are scarce to this date.

*Keywords: digitalization, Industry 4.0, task-technology-fit, theory-driven, process innovation.* 

# 35- Would you like some artificial intelligence?

Tore Listau, Norwegian Defence University College, Norway, tlistau@mil.no Per Skoglund, Swedish Defence University, Sweden, per.skoglund@fhs.se Thomas Ekström, Swedish Defence University, Sweden, thomas.ekstrom@fhs.se Lasse Elvemo, Norwegian Defence University College, Norway, lelvemo@mil.no,

### ABSTRACT

#### Purpose

Testing or developing theory requires the researcher to establish the research frontier. Literature reviews are essential to identify relevant publications for a research area. However, the number of publications grows quickly and consequently; conducting literature reviews with traditional methods is becoming increasingly difficult to do. We explore whether and how Artificial Intelligence (AI) can assist the literature search process.

#### Design/methodology/approach

First, we performed a literature review to locate SCM studies based on a Structured Literature Review (SLR). Next, we employed an AI tool to perform a literature review which we compared with a SLR on the topic Supply Chain Resilience. The scope of the paper is to find ways to validate literature searches performed by an AI.

#### **Findings**

SCM SLRs often follows a SLR methodology but have diverse ways of demonstrating rigour for the search process. The corresponding process of AI is not transparent. We therefore develop a framework for validating AI literature searches.

#### **Research limitations/implications (if applicable)**

Limitations: The AI search only scanned Open Access repositories. Including subscribed databases would more accurately reflect the AI's ability to find relevant literature. Implications: The proposed framework will help validating literature studies based on AI, and significantly speed up the search process.

#### Practical implications (if applicable)

The research will help the research community but has no direct implications for business.

## Social implications (if applicable)

N/A

#### **Original/value**

Probably the first systematic study of how to employ AI tool for literature search in logistics and SCM research.

Keywords: Artificial Intelligence, AI, SLR, Structured Literature Review, Supply Chain Resilience, SCR.

# 36-The power of supply chain continuity management

An approach to leverage early indicators of supply chain disruptions

Daniel Langner \* Erik Hofmann \* \* Tim Felix Sievers \* \* \*

\* University of St.Gallen, Institute of Supply Chain Management, Dufourstrasse 40A, 9000, St.Gallen, Switzerland, daniel.langner@unisg.ch.

\*\* University of St.Gallen, Institute of Supply Chain Management, Dufourstrasse 40A, 9000, St.Gallen, Switzerland, erik.hofmann@unisg.ch.

\* \* \* University of St.Gallen, Institute of Supply Chain Management, Dufourstrasse 40A, 9000, St.Gallen, Switzerland, felix.sievers@unisg.ch.

#### ABSTRACT

#### Purpose

Supply chains have become more vulnerable to disruptive events due to a tightly interconnected world. Business continuity management plays a crucial role in reducing the impact of supply chain disruptions. Additionally, there is a growing awareness of the need to be prepared for tough challenges that can be identified using early indicators. When looking at supply chains, business continuity approaches often lack a supply chain orientation and are flawed. Thus, putting purpose first and supply chain continuity management by integrating the awareness of early indicators around it is vital to surviving in a VUCA world.

#### Design/methodology/approach

We conducted 15 semi-structured interviews with international experts. The Grounded Theory analysis has been applied with the Gioia methodology to present the results of the data analysis. The results are underpinned by drawing on the attention-based view.

#### Findings

We identified barriers and drivers that need to be addressed to enhance the effectiveness of early indicators for the continuity of supply.

#### **Research limitations/implications**

Its qualitative approach limits the paper. Additionally, the scope of the mentioned levels is comprehensive but not exhaustive.

#### **Practical implications**

For practitioners, this paper barriers and drivers to enhance the effectiveness of early indicators. Therefore, it provides practical guidelines for organizations to implement proactive measures when early indicators predict a supply chain disruption to come.

#### **Original/value**

This paper is among the first contributions to explore supply chain continuity management by integrating early indicators based on empirical data.

*Keywords:* supply chain continuity management, business continuity management, early indicators, COVID-19 pandemic, inductive research, attention-based view.

#### 40- APPLICATION OF DIGITALISATION IN LANDLORD PORTS TO ACHIEVE EFFICIENCY IN PORT PERFORMANCE: STRUCTURAL EMBEDDEDNESS

Cheryl Basil Sequeira\* Günter Prockl\*\*

\*Department of Digitalization, Copenhagen Business School, Copenhagen, Denmark cb.sequeira@portofrotterdam.com \*\*Department of Digitalization, Copenhagen Business School, Copenhagen, Denmark gp.digi@cbs.dk

#### ABSTRACT

#### Purpose

More focus on Port performance has resulted ports authorities to evolve strongly towards a digitalised port. Nonetheless, there isn't much research focused on how digitalisation contributes to improvements of the networks and its effect on port performance. How can we develop digital platform improve our network's structural embeddedness for efficient port performance?

#### **Design/ Methodology**

Hence, giving this paper the need to investigate the port actors that contribute to the port performance indicators and explore through a combined methodology of case study, design science and action research to build an artefact that contributes to improving the structural embeddedness. We argue that denser structural embeddedness of network speeds up resource sharing, information availability and accessibility to technology. This can be done by creating new information systems for sharing 'information' that would create "efficiency' in port performance. Taking the framework of structural embeddedness, the paper studies the four variables of Network Centrality, Structural Autonomy, Structural Equivalence and Density of Network in context of port network. For this research, the author collected longitudinal data from 2016 - 2019, which is analysed through three different research method.

#### Findings

In outcome, this paper contributes an artefact, which is more customer-focused berth allocation platform that creates denser network centrality and assist the network to engage in more 'efficient' performance while allocating berths to vessel. In addition, the outcome contributes towards "information availability' which play an integral part in the effort of improving efficiency in port performance.

#### Value of the Paper

Moreover, the paper contributes to how ports can digitalise to improve not only their performance in relation to berth allocation of vessel but also have an positive effect on their whole network.

Keywords: Digitalisation, Berth Allocation, Efficiency, Port performance, Network Embeddedness, Design Science

# 45- Manual, automated or smart? Trends in Swedish retail warehousing.

Joakim Kembro, Lund tekniska högskola, Lund, Sweden, joalim.kembro@tlog.lth.se Andreas Norrman, Lund tekniska högskola, Lund, Sweden, andreas.norrman@tlog.lth.se

#### ABSTRACT

#### Purpose

Retail logistics is currently transforming to adopt to innovative omnichannel and ecommerce strategies, turning retailers' attention to the importance of warehousing. As many retailers make big investments in automated material-handling systems, new technologies, robotization, and concepts such as smart warehousing are pushed for. This study describes the current situation and future trends of retail warehousing automation, and conceptualize smart warehousing and networks.

#### Design/methodology/approach

The study is based on an explorative survey, answered by 50 leading Swedish retailers in different segments. The same set of questions was used for both current and future state and to be able to detect significant differences in any respect we used a two-tailed t-test for equality of means.

#### Findings

Leading Swedish retailers strongly increase automation over the next five years, but start their digitalization journey at a slower pace. Implementation of omnichannel strategy seems to fuel the automation trend, while e-tailers appear to be pioneering digitalization and connectivity. Few retailers have currently planned to implement in technologies that accelerate "smart warehousing", and the current focus is on traditional automation rather than connectivity. Interestingly, the retailers planning to move most toward smart warehouses are not the retailers currently most automated.

#### **Research limitations/implications (if applicable)**

Although limited by the explorative approach and the focus on a single country, the conceptualization of smart warehouse and network can, together with prescient insights of implementation routes for omnichannel and e-tailers, guide future research. The contextual explanations for retailers' selection of automation solutions proposed in this study must be further tested.

#### Practical implications (if applicable)

The empirical insights and theoretical discussions provide practically useful guidance, including outlined trends, for selecting and benchmarking automation and complementary technologies in warehouse operations.

#### **Original/value**

The paper captures the recent and future transformation in retail warehousing, making it interesting both for logistics academics and practitioners.

Keywords: omni-channel, e-tailing, retail logistics, warehousing, material handling, automation, smart warehouse, AI, connectivity

# EFFECTS OF VIRTUAL FITTING TECHNOLOGY ON<br/>ONLINE CUSTOMERS' SHOPPING JOURNEYS46-AND ORDER PERFORMANCE

#### Emmelie Gustafsson \* Klas Hjort \* \* Jan Holmström \* \* \* Patrik Jonsson\*

\* Chalmers University of Technology, Department of Technology Management and Economics, Vera Sandbergs Allé 8, 411 33, Gothenburg, Sweden, emmelie.gustafsson@chalmers.se, patrik.jonsson@chalmers.se.

\* \* Lund University, Department of Service Management and Service Studies, Sölvegatan 26, 223 62, Lund, Sweden, klas.hjort@plog.lth.se.

\* \* \* Aalto University, Department of Industrial Engineering and Management, Otsvängen 1B, 00076, Aalto, Finland, jan.holmstrom@aalto.fi.

#### ABSTRACT

#### Purpose

A large portion of returns in online retailing stems from customers' inability to evaluate the fit of a product pre-purchase. In fact, an important distinction between the means for experiencing fit is whether fitting is available pre- or post-purchase and delivery. This paper empirically investigates the effects of an online virtual fitting technology for apparel on order performance and customer tactics for mitigating fit uncertainty.

#### Design/methodology/approach

We analyze the online orders and returns from an apparel retailer over six months, amounting to 129,000 order and return transactions.

#### Findings

By comparing order performances for customers adopting the fitting technology and not, we find that the use of the technology is associated with both increased order size and more returns. For customers using the uncertainty mitigating tactic of ordering multiple sizes, the use of the fitting technology reduced returns. Surprisingly, we also find that the use of the fitting technology increased fit-related returns, while reducing returns related to dissatisfaction with the product or model.

#### Original/value

The paper contributes to a stream of research investigating pre-sales measures of mitigating product returns from a customer journey perspective. There is scarce research on the effectiveness of technologies designed explicitly to reduce return rates. Our research contributes to this scant literature on pre-sales technologies by evaluating a specific fitting technology aimed at reducing returns arising from fit uncertainty.

*Keywords: Retail supply chains, Product returns, Customer orders, E-commerce, Fit uncertainty* 

# The effects of bargaining power on trade credit in a49-supply network

### ABSTRACT

Elmira Parviziomran, Göteborgs Universitet, Göteborg, Seden, elmira.parviziomran@gu.se Viktor Ellliot, Göteborgs Universitet, Göteborg, Sweden, viktor.elliot@gu.se

#### Purpose

This paper aims to develop a model for evaluating the effect of bargaining power on trade credit and tracking the effect of buyers' trade credit on suppliers' trade credit in a multi-tier supply network through the lens of social network theory.

#### Design/methodology/approach

Social network analysis is applied for measuring companies' bargaining power in H&M's (the Swedish clothing retailer) supply network, and the developed models are tested using the negative binomial regression method.

#### Findings

Results show that the buyer's bargaining power significantly affects the choice of trade credit and the supplier's upstreamness is significantly associated with its trade credit, but there is no evidence to support the financial bullwhip effect. This latter finding implies that the common notion of thinking about supply chains as networks, rather than linear chains, has merit also within a financial flow perspective.

#### **Research limitations/implications (if applicable)**

The research is limited to the network of one company up to its fourth tier of suppliers in one financial year; further studies in other supply networks are required to examine the effect of bargaining power on trade credit and its upward propagation.

#### **Practical implications (if applicable)**

Our results can be applied to companies in controlling their cash flow and therefore financial pressure within their supply network.

#### Original/value

This study contributes to the literature by bringing the social network measures into the buyer-supplier relationship linked to trade credit and examining the propagation of financial pressure along with the multi-tier supply network for the first time and expands the relatively scarce literature in this area.

Keywords: Supply chain finance, Trade credit, Financial bullwhip effect, Bargaining power, Social network analysis.

# TOWARDS SALES AND OPERATIONS PLANNING50 -(S&OP) INTEGRATION

#### EXPLORING INTERFACES AND MECHANISMS

ABSTRACT Sahil Ahmed, Chalmers University of Technology, Gothenburg, Sweden, sahil.ahmed@chalmers.se Patrik Jonsson, Chalmers University of Technology, Gothenburg, Sweden, patrik.jonsson@chalmers.se Frida Lind, Chalmers University of Technology, Gothenburg, Sweden, frida.lind@chalmers.se

#### Purpose

Sales and operations planning (S&OP) is a tactical level planning process between the demand and supply as well as other functions in an organization. The aim of the paper is to identify and analyze interfaces in S&OP and to conceptualize and explore integration in those interfaces.

#### Design/methodology/approach

The paper builds on literature on integration and its mechanisms in S&OP and adopts a qualitative and explorative research approach. Two companies with established S&OP processes were selected as cases and interviews were conducted with managers in positions having an overview of the process.

#### Findings

Based on the analysis of the two case companies, eight different interfaces were identified in the two case companies. The interfaces were analysed with regard to which mechanisms used to reach integration. Coordination stands out as the most important mechanism, which is facilitated by process, organisation, and technology.

#### **Research limitations/implications**

The paper starts to conceptualize S&OP integration at the interface level. Based on the case analysis of individual interfaces, initial understanding of how coordination, collaboration, and alignment results in integration was created. The paper ends by raising future research questions regarding S&OP integration.

#### **Practical implications**

Managers involved in S&OP are involved daily in the interfaces. This paper add knowledge on which mechanisms to use to integrate interfaces.

#### **Original/value**

Based on identifying a range of interfaces to be integrated in a well-functioning S&OP, this paper starts a discussion of the meaning of integration in S&OP in relation to individual interfaces as well as cross interfaces.

Keywords: S&OP, interface, integration, collaborative planning

## 53-PROACTIVE AND REACTIVE INTERVENTIONS - REDUCING MEDICINE SHORTAGES IN (AB)NORMAL TIMES

Victoria Ahlqvist\* Nonhlanhla Dube\*\* Marianne Jahre\*\*\* Jin Soo Lee\*\*\*\* Tsegaye Melaku\*\*\*\*\* Andreas Farstad Moe\*\*\*\*\*\* Max Olivier\*\*\*\*\*\* Kostas Selviaridis\*\*\*\*\*\*\* Joe Viana\*\*\*\*\*\*\*\* Christine Årdal\*\*\*\*\*\*\*

\* Lund University- Faculty of engineering, Engineering Logistics, Box 118, 221 00, Lund, Sweden, <u>victoria.ahlqvist@tlog.lth.se</u>.

\*\* Lancaster University, Dept. of Management Science, Bailrigg, LA1 4YW, Lancaster, United Kingdom, <u>n.dube@lancaster.ac.uk</u>.

\*\*\* BI Norwegian Business School, Dept. of Accounting and Operations Management, Nydalsvn. 37, 0365 Oslo, Norway, <u>marianne.jahre@bi.no</u>.

\*\*\*\* BI Norwegian Business School, Dept. of Accounting and Operations Management, Nydalsvn. 37, 0365 Oslo, Norway, <u>jinsoolee.95@gmail.com</u>.

\*\*\*\*\* Jimma University - Institute of Health, School of Pharmacy, Jimma, Oromia, Ethiopia, tsegaye.melaku@ju.edu.et.

\*\*\*\*\*\* BI Norwegian Business School, Dept. of Accounting and Operations Management, Nydalsvn. 37, 0365 Oslo, Norway, <u>andreas.f.moe@bi.no</u>.

\*\*\*\*\*\*\* Erasmus University – Rotterdam, School of Management, Burgemeester Oudlaan 50, 3062 PA, Rotterdam, The Netherlands, <u>maxp.olivier@gmail.com</u>.

\*\*\*\*\*\*\* Lancaster University, Dept. of Management Science, Bailrigg, LA1 4YW, Lancaster, United Kingdom, <u>k.selviaridis@lancaster.ac.uk</u>

\*\*\*\*\*\*\*\*\*\* BI Norwegian Business School, Dept. of Accounting and Operations Management, Nydalsvn. 37, 0365 Oslo, Norway, joe.viana@bi.no.

\*\*\*\*\*\*\*Norwegian Institute of Public Health, Centre for Antimicrobial Resistance, Lovisenberggata 8, 0213, Oslo, Norway, <u>christine.ardal@fhi.no</u>.

#### ABSTRACT

#### Purpose

The study aims to understand the relationship between proactive and reactive interventions to improve medicine availability in normal and abnormal times.

#### Design/methodology/approach

Using an abductive approach and multiple data sources, we map and compare interventions applied in the paracetamol supply chains of seven countries pre- and during COVID-19. We use literature on risk strategies from supply chain risk management (SCRM) complemented with recent papers in supply chain resilience (SCRes).

#### **Findings**

Interventions can be described along two dimensions: conception (i.e., timing of planning) and execution, from which we derive four intervention types. Additional dimensions include type of investments and the level(s) at which investment decisions are made.

#### **Research limitations/implications**

Longitudinal primary and secondary data is used, but the complexity of the problem indicates a need for further in-depth studies employing mixed method designs.

#### **Practical implications**

Decision-makers in the healthcare sector can use the findings when developing preparedness and response plans.

#### **Social implications**

The insights developed can assist in striking a balance between proactive and reactive interventions to improve availability of generic medicines in (ab)normal times.

#### **Original/value**

The paper redefines boundaries between proactive and reactive interventions and how they can be leveraged for preparedness and response. We develop a model for studying and managing medicine supply chains in (from) normal and (to) abnormal times and vice versa.

Keywords: Medicine supply chain, medicine shortage, supply chain risk, resilience, interventions, COVID-19.

# SUPPLY CHAIN RESILIENCE AND ABSORPTIVE CAPACITY: CRISIS IMPACT AND PERFORMANCE 54 - EFFECTS

#### Jan Stentoft \* Ole Stegmann Mikkelsen \*\* Kent Adsbøll Wickstrøm \*\*\*

\* University of Southern Denmark, Department of Entrepreneurship and Relationship Management, Universitetsparken 1, 6000 Kolding, Denmark, stentoft@sam.sdu.dk

\*\* University of Southern Denmark, Department of Entrepreneurship and Relationship Management, Universitetsparken 1, 6000 Kolding, Denmark, osm@sam.sdu.dk

\*\*\* University of Southern Denmark, Department of Entrepreneurship and Relationship Management, Universitetsparken 1, 6000 Kolding, Denmark, kwj@sam.sdu.dk

#### ABSTRACT

#### Purpose

The purpose of this paper is to investigate the relationships of supply chain resilience (SCR) and absorptive capacity (ACAP) with firm performance by specifically assessing the mitigating effects on the crisis impact from an environmental jolt as Covid-19.

#### Design/methodology/approach

The paper is based on data from a questionnaire survey among Danish manufacturing and transport and logistics companies with 174 respondents.

#### Findings

The paper finds a positive relationship between SCR and firm performance as well as ACAP and firm performance. There are moderate indications of a positive relationship between SCR and the crisis impact of Covid-19. In contrast, there is no significant relationship between ACAP and the crisis impact of Covid-19.

#### **Research limitations/implications (if applicable)**

The present study is limited by its focus on Danish companies only. Hence, comparisons to other countries would be of significant interest. Further, surveys with multiple respondents in each company would strengthen the findings.

#### Practical implications (if applicable)

The insights from this study will help practitioners understanding that it does pay off investing in SCR and ACAP in terms of improved performance.

#### **Original/value**

The paper addresses a shortage in extant studies of SCR and ACAP in examining their mitigating effects on specific disturbances and large-scale economic crises. The paper provides novelty in investigating the performance effect of SCR and ACAP in the light of the Covid-19 crisis.

Keywords: Covid-19, crisis, questionnaire survey, environmental jolts, performance

# UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS: AN UNTAPPED POTENTIAL FOR RELEVANT SUPPLY CHAIN MANAGEMENT 55 - RESEARCH

#### Jan Stentoft \* Morten Brinch\* \*

\* University of Southern Denmark, Department of Entrepreneurship and Relationship Management, Universitetsparken 1, 6000 Kolding, Denmark, stentoft@sam.sdu.dk

\* \* University of Southern Denmark, Department of Entrepreneurship and Relationship Management, Universitetsparken 1, 6000 Kolding, Denmark, mobr@sam.sdu.dk

#### ABSTRACT

#### Purpose

The supply chain management (SCM) discipline has considerable scope for expanding research on United Nations (UN) 17 Sustainable Development Goals (SDGs). The purpose of this paper is to advance the understanding of the relevance of the SDGs for SCM research and to uncover perceptions to what degree current SCM research addresses these goals and to what extent this is related to perceptions of practical relevant research.

#### Design/methodology/approach

Mixed-method in terms of a literature review of SDG-related SCM research and data from a questionnaire survey about the practical relevance of SCM research is used. In all, 76 research articles are found relevant for the purpose of this article. Data from 249 responses from SCM-related researchers is included to supplement the findings from the literature review.

#### Findings

SCM research has been carried out to support solutions to the grand challenges unfolded in UNs SDGs. The literature reveals that SDG 12, 13, 8, 9, and 15 is the most often reported area for SCM research. This is supported by the perception of SCM researchers except for SDG 15 that is replaced with SDG 11. The paper reveals that a focus on UN SDGs has the potential to be practical relevant since these goals are established to develop solutions to the earth's biggest challenges before the year 2030.

#### **Research limitations/implications (if applicable)**

The present study does not include contextual factors such as culture, industry, and economic wealth but takes an overall discipline approach. Furthermore, the study only includes the researchers' perspective and do not include the perspectives from industrial and public organizations.

#### Practical implications (if applicable)

The insights from this study will help practitioners understanding how SCM practice can support the achievement of UNs 17 SDGs.

#### Original/value

The paper provides novelty in linking SDGs in a supply chain context with practical relevant research.

Keywords: Practical relevance, rigor, questionnaire-survey, literature review, SDG

#### 57 - IMPROVING CONSTRUCTION TRANSPORTS-A FREIGHT FORWARDERS PERSPECTIVE

#### Fafarah Naz \* Anna Fredriksson \*\* Linea Kjellsdottir Ivert \*\*\*

- \* University of Linköping, Linköping, Sweden, Fafarah.naz@liu.se
- \*\* University of Linköping, Linköping, Sweden, anna.fredriksson@liu.se
- \*\*\* University of Linköping, Linköping, Sweden, linea.kjellsdotter@vti.se

#### ABSTRACT

#### Purpose

The purpose of the study is to contribute to the construction transport time efficiency by identifying non-value adding activities from a freight forwarder perspective and their causes.

#### Design/methodology/approach

A single case study approach has been used with one interview to get a background information that how company plan their transport. Observations were made.Value stream mapping (VSM) has been used as an organizing guide to collect the data. Two workshops have also been conducted to discuss the findings of the VSM.

#### Findings

For deliveries to the construction site, 56.6% of the total time is value adding time and 43.4% of the total time isnon-value adding time. For managing waste, 57.6% of the total time is value adding time and 42.3% of the total time is non-value adding time.

#### **Research limitations/implications (if applicable)**

Limitations of the study is that it is based on a single case of a freight forwarder and only two days of observations. The study does not provide a full picture of construction transport efficiency but provide aa starting point for future studies.

#### Practical implications (if applicable)

The practical contribution of the study is to highlight that what should be possible future state for construction transport flow.

#### **Original/value**

The theoretical contribution of the study is the detailed description of non-value adding activities in construction and the identification of the specifics of the construction transport context, such as short distance, lack of information sharing and complicated routing.

Keywords: Transport efficiency, Construction transport activities, Value stream mapping

# Reverse logistics model for increased polystyrene58-recycling

Rosa Palmgren, VTI, Helsinki, Finland, rosa.palmgren@vtt.fi Ville Hinkka, VTI, Helsinki, Finland, ville.hinkka@vtt.fi

#### ABSTRACT

#### Purpose

The aim of this paper is to build a reverse logistics model for the recycling of polystyrene. The model enables analysing trade-offs between logistics costs and higher recycling rates. The polystyrene material has a low density, which makes it a logistically challenging material.

#### Design/methodology/approach

The empirical study consists of interviews with different actors in the reverse supply chain of polystyrene in Finland. The empirical material is analysed to develop a quantitative model for the reverse logistics of polystyrene.

#### **Findings**

This paper suggests a model for the logistics of the reverse supply chain of polystyrene in Finland. The model includes suggestions for collection and for the placement of equipment to compress the material, in order to facilitate the logistics and reduce logistics costs. The collection requires collaboration between private companies and municipal waste management organizations.

#### **Research limitations/implications**

This paper is limited to Finland. However, research on the reverse logistics of polystyrene in other countries would make an interesting comparison. Long distances in Finland make the need for efficient logistics even greater.

#### **Practical implications**

The paper provides practical suggestions on the reverse logistics for polystyrene. The model can provide ideas to any actors involved in the reverse logistics system, and for other similar fractions.

#### **Original/value**

The reverse logistics system of polystyrene has received little attention in previous research. Due to the low weight of the material, the reverse logistics of recyclable polystyrene should be organized differently than for many other recyclable fractions. Polystyrene collection for recycling is still in its infancy in Finland due to long distances and scattered streams.

Keywords: reverse logistics, polystyrene recycling, circular economy

## 59 - LNG bunker ship operations in the North Sea and Baltic Sea Emission Control Areas

#### Antje Ross \* Kerstin Lange \*\*

\* NOW GmbH National Organisation Hydrogen and Fuel Cell Technology, Germany, antje.ross@now-gmbh.de

\*\* Jade University of Applied Sciences, Germany, kerstin.lange@jade-hs.de

#### Purpose

In the North Sea and Baltic Sea emission control areas (ECAs) regulations have stimulated the adoption of LNG technology by vessels and the development of LNG infrastructure. LNG bunker ships are an integral part of LNG supply chains. In this paper, the LNG bunker ship fleet, its characteristics and its operational profile are analysed.

#### Design/methodology/approach

Bunker ship operations are assessed based on ship operation data provided by VesselTracker.com. Based on this database, two types of events were gathered. First, ship-toship encounters between LNG bunker ships and LNG vessels reflect bunker operations. 233 STS LNG bunkering operations of 31 LNG vessels were analysed. Second, entries and exits of LNG bunker ships in areas marked as LNG storage and distribution facilities reflect loading and unloading operations. For some LNG bunker ships the quantity of LNG transferred could be retrieved.

#### **Findings**

Main types of operation (loading, bunkering and feedering), their geographical coverage and the type of LNG vessel served are depicted. Main differentiating technical parameters such as carrying capacity, propulsion as well as classification as seagoing or inland water vessel affect the operational profiles.

#### **Research limitations/implications**

LNG bunker ships are a rather recent phenomenon. Information on the state of art of the fleet of LNG bunker ships operating in the North Sea and Baltic Sea ECAs is limited.

#### **Practical implications**

The research results foster an understanding of the state of LNG supply infrastructure for LNG vessels, which is of interest i.a. to government organisations co-funding LNG infrastructure as well as ship owners investing in LNG technology or LNG bunker ships.

#### **Original/value**

A detailed appraisal of this fleet and especially its operational profile has not been undertaken before.

Keywords: LNG Bunkering, Ship-to-ship STS, bunkering operations, LNG vessel, LNG Supply Chain, Emission Control Area ECA

#### 60 - IMPROVING CONSTRUCTION TRANSPORTS-A FREIGHT FORWARDERS PERSPECTIVE

#### Fafarah Naz \* Anna Fredriksson \*\* Linea Kjellsdottir Ivert \*\*

\* University of Linköping, Linköping, Sweden, Fafarah.naz@liu.se

\*\* University of Linköping, Linköping, Sweden, anna.fredriksson@liu.se

\*\*\* University of Linköping, Linköping, Sweden, linea.kjellsdotter@vti.se

#### ABSTRACT Purpose

The purpose of this paper is to explore the implementation of three construction logistics services modules as part of a construction logistics setup (CLS) in a major office construction project in Sweden and present their benefits and drawbacks from a multi-actor perspective.

#### Design/methodology/approach

A single case research design has been selected for in-depth understanding. Five interviews and four workshops have been conducted. Service blue printing has been used as a mapping tool to understand what activities the three service modules include and what actors are involved in these different activities. Interviews have been used to identify the different actors' perspectives of the modules.

#### Findings

The implementation of three different construction logistics services modules in a major office construction project in Sweden have been explored and their benefits and drawbacks have been presented from a multi-actor perspective.

#### **Research limitations/implications**

Limitation is that it is a single case study and due to Covid-19 the researchers have not been able to visit the project.

#### **Practical implications.**

The managerial contribution of this study are the blueprints of the different modules making them tangible to the different actors and the findings on the pros and cons of the modules.

#### **Original/value**

The application of concept of service modality have remained academic mostly. Thus, a theoretical contribution to the logistics service literature has been made by providing an empirical description of service modularity in the construction industry.

*Keywords: Logistics service modularization, Service blueprint, Construction logistics setup (CLS)* 

# PARADOXES FOR PACKED PRODUCTS IN FOOD 62 - SUPPLY CHAINS

#### A CONCEPTUAL FRAMEWORK

#### Henrik Pålsson\* Erik Sandberg\*\*

\*) Lund University, Department of Design Sciences, Division of Packaging Logistics, Lund, Sweden

E-mail: henrik.palsson@plog.lth.se, Tel: +46 46 222 7683

\*\*) Linköping University, Department of Management and Engineering, Division of Logistics and Quality Management, Linköping, Sweden E-mail: erik.sandberg@liu.se, Tel: +46 13 28 4492

#### ABSTRACT

#### Purpose

The design of packaging systems must consider numerous, sometimes contradictory, supply chain requirements, as packaging affects the economic and environmental performance of logistics activities, as well as sales and product waste. This leads to tensions or paradoxes between various packaging system requirements. The purpose of this paper is to identify categories of paradoxes for packed products in food supply chains, and to develop a conceptual framework that describes these categories.

#### Design/methodology/approach

This paper is based on a theory building approach, which is typically occupied with the establishment and development of definitions, domains, relationships and different kinds of predictions. The paper develops a conceptual typology framework, which clarifies different types of tensions inherent in a packaging logistics context. The framework is created based on paradox theory as a means to categorise, describe and understand these tensions.

#### Findings

By applying paradox theory to packed products in supply chains, all tensions in the packaging system, and functional and supply chain tensions are described in an integrated framework, which highlights links between these tensions. The paradox theory enable us to structure the tensions in the four categories, which needs to be addressed in different ways.

#### **Research limitations/implications**

The conceptual framework is presented as an analytical tool. It categorises and improves understanding of packaging paradoxes in food supply chains, but it does not provide an exhaustive list of detailed paradoxes.

#### **Practical implications**

The developed framework provides guidance on how to understand and continuously balance tensions (paradoxes) from supply chain requirements on packed food products.

#### **Original/value**

Beyond identification of paradoxes, paradox theory offers a new theoretical lens through which informed decisions about paradoxes in the packed food product supply chain can be made. A structured framework as support for these decisions is lacking in current research.

Keywords: Environment, Packaging, Paradox Theory, Supply Chain

# Reviewers

The following peers did contribute to the review process, thank you all!

Amer Jazairy	Klas Hjort
Andreas Norrman	Konstantina Katsela
Andrew Greasley	Lars Huemer
Anna Aminoff	Lawrence Henesey
Anna Fredriksson	Leif-Magnus Jensen
Anna Zhuravleva	Maria Björklund
Anu Bask	Marianne Jahre
Aseem Kinra	Marta Gonzalez-Aregall
Britta Gammelgaard	Michael Browne
Chuanwen Dong	Morten Brinch
Daniel Ekwall	Morten Moller
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Hana Hulthén	Sharon Cullinane
Hans-Joachim Schramm	Stefan Selensky
Heikki Liimatainen	Tim Felix Sievers
Henrik Pålsson	Tomi Solakivi
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Joakim Kembro	Uni Sallnäs
Joe Viana	Wanja Wellbrock
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Kim Sundtoft Hald	Xiaobei Wang