

2021 DSI Annual Conference Proceedings

Decision Making in Challenging Times - Equity, Inclusion and Sustainability

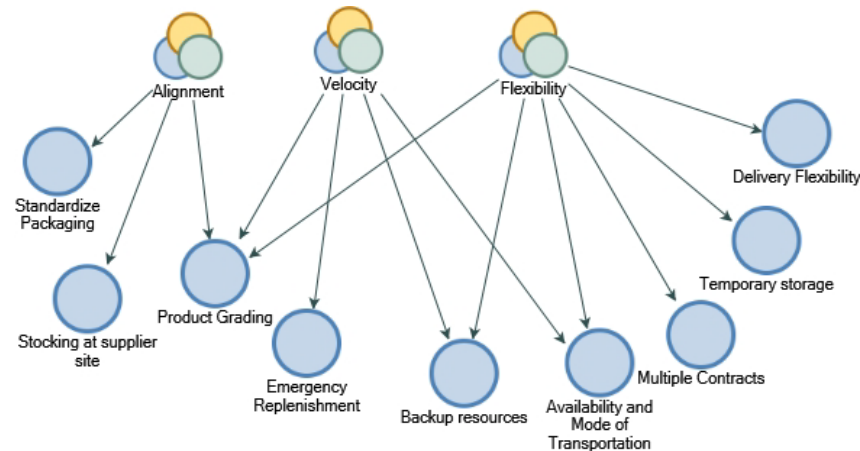


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Logistics operational interdependencies for food supply chain resilience



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Outline



- Introduction
- Literature Review
- Research Methodology
- Analysis: Findings and Discussions
- Conclusions and Contributions

Introduction



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Research Questions



- RQ: What are the logistics operational interdependencies that support food supply chain resilience in disaster prone regions??

Literature Review



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Components/Elements of Logistics

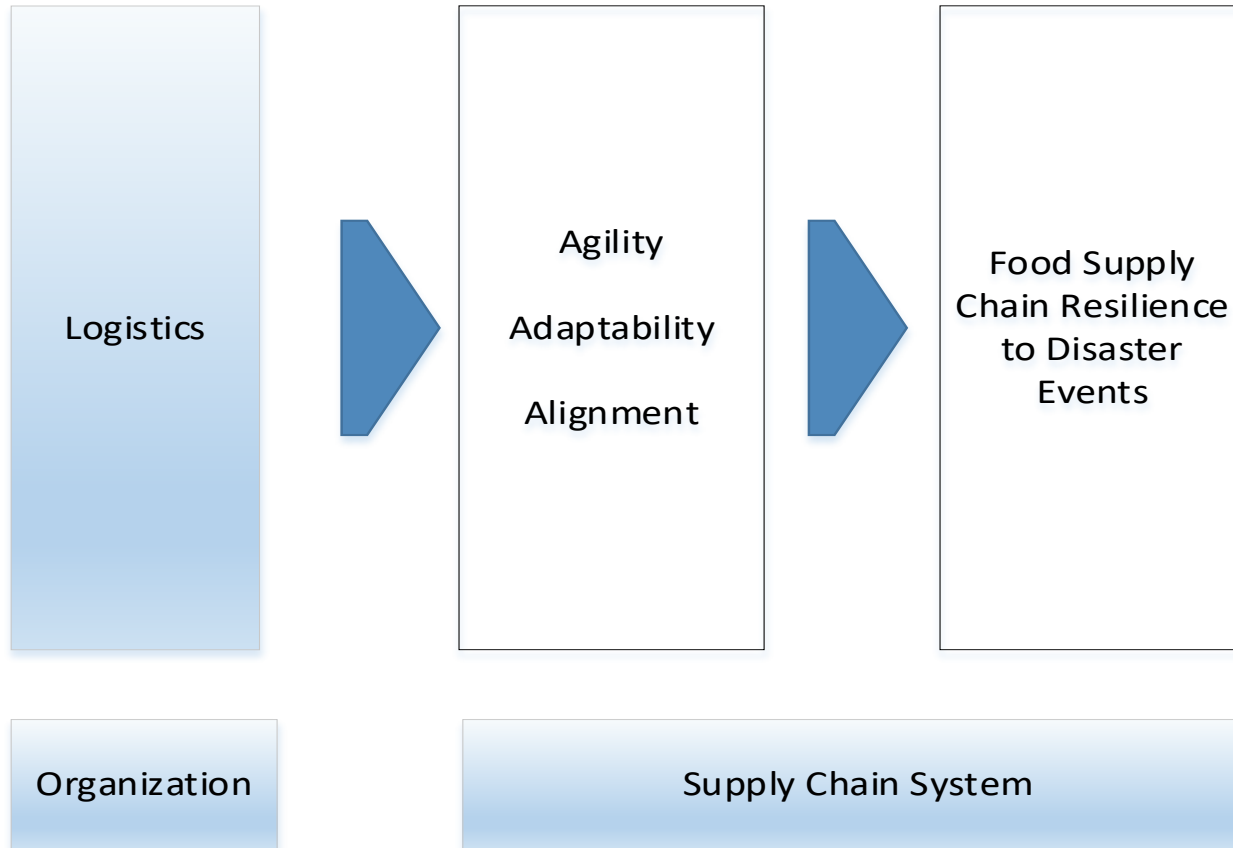


- **Challenges:** unusable routes, safety issues, demand uncertainties, breakdown of normal communication systems, the involvement of local governments, delivery delays and limited resources
- Transportation
- Storage/Warehousing
- Inventory Management
- Packaging

Components/Elements of Supply Chain Resilience

Concept	Reference	Research Summary
Risk Management	(Christopher & Lee, 2004; Jüttner et al., 2003)	Effective risk management culture is an effective moderator of supply chain resilience.
Agility, effectiveness	(Christopher, 2000, 2005; Christopher & Rutherford, 2004)	Quick response to disastrous situations can be called resilience which is closely associated with the concept of agility.
Flexibility, redundancy	(Goranson, 1999; Peck et al., 2003; Rice & Caniato, 2003)	Flexibility and redundancy have great potential to enable resilience. Redundancy is excess of capacity which can be used to replace the capacity lost during disasters.
Visibility	(Christopher & Peck, 2004)	Increasing visibility on both supply and demand side reduce elements of uncertainty in supply chains.
Supply chain structure and network typologies	(Hearnshaw & Wilson, 2013)	Knowledge of complex supply chain structure and better understanding will surely increase resilience.
Knowledge management	(Pettit et al., 2010)	Knowledge management and learning in periods of disaster are important elements of supply chain resilience.
Reduction of uncertainty	(Berkes, 2007)	Reduction of uncertainty increases supply chain resilience.
Collaboration, coordination	(Ponomarov & Holcomb, 2009)	Risk can be managed more effectively through coordination and collaboration
Reduction of complexity, supply chain reengineering	(Peck et al., 2003)	Complexity of supply chain can be reduced through business process re-engineering to increase resilience.
Adaptability	(Fiksel, 2003; Pettit et al., 2010)	For combating demand and supply uncertainties, supply chain processes need to have agility, adaptability and alignment to achieve superior performance.
Alignment	(Lee, 2004)	High degree of complexity in supply chains demand an enterprise view with coordination among all business functions within the company as well as inter- organizational alignment among different actors of supply chain.
Contingency planning	(Tomlin, 2006)	Contingency plans are necessary to address risks in supply chain.
Supply base strategy	(Christopher & Peck, 2004)	Single vs. multiple sources and knowledge about supplier's risk awareness are important elements to be considered in building resilience.

Conceptual Framework



Research Methodology



- Introduction
- Literature Review
- **Research Methodology**
- Analysis: Findings and Discussions
- Conclusions and Contributions

Data Collection



Case (C) & Region (R)	Position in the supply chain	NVivo code	Key Informant	Total Experience (Years)
C1R1	Focal Wholesale Market Commission Agent (CA)	CA1-C1R1	Business Owner	>15
	Focal Wholesale Market Commission Agent (CA)	CA2-C1R1	Business Owner	Not available (NA)
	Supplier: Farmer (Fr)	Fr1-C1R1	Farm Owner	>15
	Supplier: Farmer (Fr)	Fr2-C1R1	Farm Owner	>10
	Supplier: Middleman (MM)	MM1-C1R1	Business Owner	NA
	Supplier: Middleman (MM)	MM2-C1R1	Business Owner	12
	Distributor: Wholesaler (WS)	WS1-C1R1	Manager	>20
	Distributor: Wholesaler (WS)	WS2-C1R1	Manager	>10
	Retailer (Rt)	Rt1-C1R1	Supply chain manager	>5
	Retailer (Rt)	Rt2-C1R1	Business Owner	>10
Market Committee Government Representative (GR)	GR1-C1R1	Town planner	NA	
C2R1	Focal Wholesale Market Commission Agent (CA)	CA1-C2R1	Business Owner	>20
	Focal Wholesale Market Commission Agent (CA)	CA2-C2R1	Business Owner	NA
	Supplier: Farmer (Fr)	Fr1-C2R1	Landlord	>10
	Supplier: Farmer (Fr)	Fr2-C2R1	Farm Manager	>5
	Supplier: Farmer (Fr)	Fr3-C2R1	Landlord	>10
	Supplier: Trader (Tr)	Tr1-C2R1	Business Owner	NA
	Supplier: Trader (Tr)	Tr2-C2R1	Business Owner	>5
	Distributor: Brokers (Br)	Br1-C2R1	Manager	>10
	Retailer (Rt)	Rt1-C2R1	Planning officer	NA
	Labour Supplier (Ls)	Ls1-C2R1	Business Owner	NA
C1R2	Focal Wholesale Market Commission Agent (CA)	CA1-C1R2	Business Owner	NA
	Focal Wholesale Market Commission Agent (CA)	CA2-C1R2	Business Owner	NA
	Supplier: Farmer (Fr)	Fr1-C1R2	Farm Owner	>20
	Supplier: Farmer (Fr)	Fr2-C1R2	Farm Manager	>10
	Supplier: Middleman (MM)	MM1-C1R2	Business Owner	NA
	Distributor Wholesaler (WS & CA)	CA3-C1R2	Manager	NA
	Distributor Wholesaler (WS & CA)	CA4-C1R2	Manager	>15
	Retailer (Rt)	Rt1-C1R2	Business Owner	NA
	Retailer (Rt)	Rt2-C1R2	Business Owner	NA
	Market Committee Member (MC)	MC1-C1R2	Coordinator	NA
C2R2	Distributor Wholesaler (WS)	WS1-C2R2	Manager	>10
	Distributor Wholesaler (WS)	WS2-C2R2	Manager	>20
	Distributor Wholesaler (WS)	WS3-C2R2	Manager	NA
	Distributor Wholesaler (WS)	WS4-C2R2	Manager	NA
	Retailer (Rt)	Rt1-C2R2	Manager	>15
	Retailer (Rt)	Rt2-C2R2	Manager	>10

Coding Process

Descriptive Coding

Good Working History	"when we give stock to people on credit of 5 days or 10 days then if that party gives money in 10 days it is doing on regular basis then for us they are trust worthy" (Tr2-C2R1)
Supplier Logistic Help	"It is the duty of supplier to manage everything. But sometimes in case of emergency we send our own transport to collect." (Tr-C2R1)

Attribute Coding

Disasters and Regions	Region 1, Region 2, Disaster 1, Disaster 2
Supply Chain Attributes	The focal organisation, Competitors, Middleman, 1 st tier suppliers

Process Coding

Resource Sharing	<i>"It is the duty of supplier to manage everything. But sometimes in case of emergency we send our own transport to collect." (Tr-C2R1)</i>
Multiple Contracts	<i>"Yes we have contracts, they send us the vehicle according to our demand and we have number of transport companies to handle these situations." (Pr1-C2R1)(CA2-C1R1)</i>

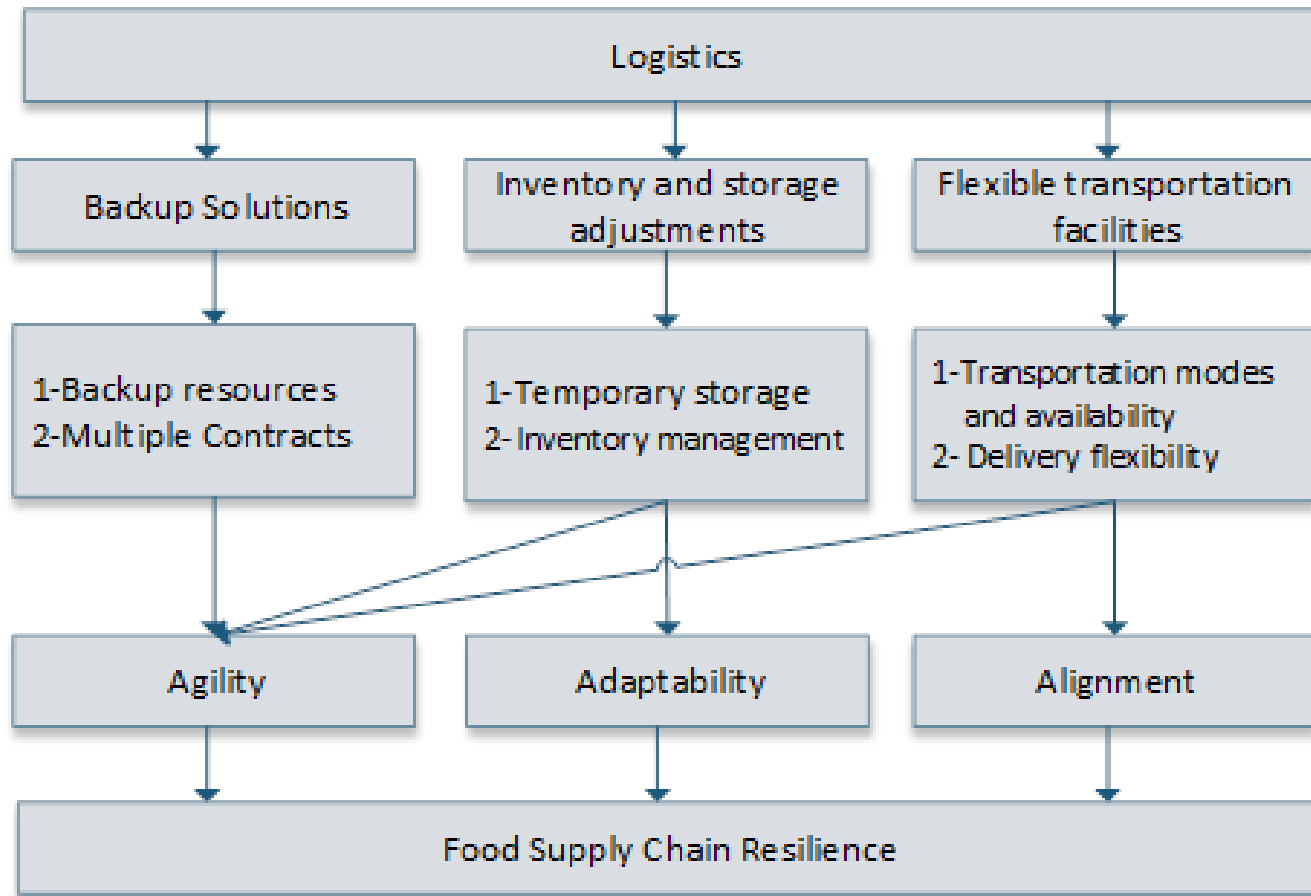
In-Vivo Coding

"Multiple Suppliers"	<i>"However, we have developed multiple suppliers in the market, we give them training." (WS2-C2R1)</i>
"Key Supplier"	<i>"We have some key suppliers who are always there to help up in difficult times]" (CA2-C2R1)</i>

Analysis: Findings and Discussions

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Logistics – Supply Chain resilience



Conclusions and Contribution



- Limited number of interviews
- Food item categories
- Frequency of disasters

Thank you