Event detection system to support decision making for raw materials supply chain management

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**Executive Summary**

The event detection system, designed to support decision making for raw materials supply chain management, identifies events that could impact supply chain operations. This system is crucial for raw materials supply chain experts to adapt to market changes quickly.

**Scientific Challenges**

- **Specificities of the Event Detection Task**
  - Unknown number and types of events
  - Different sizes and impact
  - Evolving in time

- **Specificities of Each Supply Chain**
  - Geographical locations
  - Main actors
  - Particularity of the domain

**Event Detection System**

- **Main Stakeholders and Actions to be Supervised**
  - Purchasers and/or supply chain experts

- **Systematic Review on Impactful Events**

**Methods**

The system performs a systematic review on impactful events, identifies main stakeholders, and actions to be supervised. It uses a combination of filtering, clustering, and detection methods to track events across time windows.

**Results**

- Performances of the system on the Event 2012 dataset, containing 120 million tweets: The system detects approximately 70% of the events.

- An illustration of the tracking process shows the system's ability to track events over time, with each column representing a time window and each dot an event. The process is based on a similarity calculation between representative entities of the events.

**Specificities of Each Supply Chain**

- Geographical locations
- Main actors
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**Conclusion**

The event detection system provides valuable insights for raw materials supply chain management, enabling decision makers to respond effectively to evolving market conditions and crises.

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**References**

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**Figure Legend**

- Event detection system overview diagram
- Illustration of the tracking process
- Performance graph showing detection rates and event types

**Supplementary Material**

- Detailed methodology and implementation of the event detection system
- Case studies highlighting the system's effectiveness in various supply chain scenarios

**Keywords**

- Event detection
- Supply chain management
- Raw materials
- Decision making